

Preliminary Assessment Information

The following preliminary assessment information has been prepared to inform and facilitate discussion during the public involvement field trips being held on the Flathead National Forest during August and September 2013.

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Forest Plan Revision

The Flathead National Forest is beginning the first phase of a multi-year planning process to revise the Forest Plan. The intent of the planning framework is to create a responsive planning process that informs integrated resources management and allows the Forest Service to adapt to changing conditions, including climate change, and improve management based on new information and monitoring. The FNF planning process will consist of the following three phases:

1. **Assessment.** The assessment rapidly evaluates existing information about relevant ecological, economic, and social conditions, trends, and sustainability and their relationship to the land management plan within the context of the broader landscape.
2. **Revision.** The plan revision will be based on the identification of the need to change from the assessment. The plan revision will include development of a proposed plan, consideration of the environmental effects of the proposal, providing an opportunity to comment on the proposed plan, providing an opportunity to object before the proposal is approved, and, finally, approval of the plan revision.
3. **Monitoring.** Monitoring is continuous and provides feedback for the planning cycle by testing relevant assumptions, tracking relevant conditions over time, and measuring management effectiveness.

Assessment

The Flathead National Forest is working on phase I – the assessment. The assessment is not a decision making document but provides current information on select topics relevant to the plan area. The assessment contributes to the planning process as follows:

- Informs the development of plan components and other plan content, including desired conditions, objectives, standards, guidelines, and suitability of lands.
- Identifies and evaluates a solid base of existing information relevant to the plan revision.
- Builds a common understanding of that information with the public and other interested parties before starting plan revision.
- Develops relationships with interested parties, government entities, tribes, private landowners, and other partners.
- Develops an understanding of the complex topics across landscapes that are relevant to planning on the forest.

In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following:

1. Terrestrial ecosystems, aquatic ecosystems, and watersheds
2. Air, soil, and water resources and quality
3. System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change
4. Baseline assessment of carbon stocks
5. Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area
6. Social, cultural, and economic conditions
7. Benefits people obtain from the planning area (ecosystem services)
8. Multiple uses and their contributions to local, regional, and national economies
9. Recreation settings, opportunities and access, and scenic character
10. Renewable and nonrenewable energy and mineral resources
11. Infrastructure, such as recreational facilities and transportation and utility corridors

12. Areas of tribal importance
13. Cultural and historical resources and uses
14. Land status and ownership, use, and access patterns; and
15. Existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated areas.

The following is preliminary assessment information that has been prepared to inform and facilitate discussion during the public involvement field trips being held on the Flathead National Forest during August and September 2013.

Terrestrial Ecosystems

Forest Vegetation, Disturbances, and Forest Products

Forests composed of coniferous trees cover the vast majority of the Flathead National Forest (FNF); only about 5% of the land is in a persistent, non-forest type, and these are mainly high elevation cold sites and rock lands. A wide diversity of tree species exist, the most common being subalpine fir, Engelmann spruce, lodgepole pine, Douglas-fir and western larch. Forest ages and size classes are also very diverse, from young forests composed of seedling and sapling size trees, to old forests where some of the largest trees are over 300 years old. Additional information on the forest vegetation and some of the disturbances that alter its character (see section on Ecosystem Disturbances below) can be found in this link to handout materials from the August 8th, 2013, public field trip.

Some general information about the Flathead National Forest (FNF)

- Total acres ~ 2.4 million acres
- Elevation range from 3000 to 10,000 feet.
- Precipitation averages 20-60" /year, mostly as snow in mid to upper elevations
- Soils - Highly variable, with productivity largely determined by the amount of volcanic ash deposition from historical eruptions in the Cascade Range to the west (major one was Mt. Mazama eruption about 7000 years ago, creating Crater Lake)

Potential Vegetation Types (PVTs)

PVTs are lands with similar biophysical environments (climate, soils, etc), thus supporting similar vegetation types. They are useful for understanding and describing the potential and character of vegetation across a landscape. The vast majority of FNF lands are in PVTs capable of supporting relatively densely-stocked forests. Only about 5% (120,000 acres) of the FNF is a persistent non-forest cover type, and most of these sites are high elevation sites with sparse tree cover due to shallow, poor soils or other harsh growing conditions.

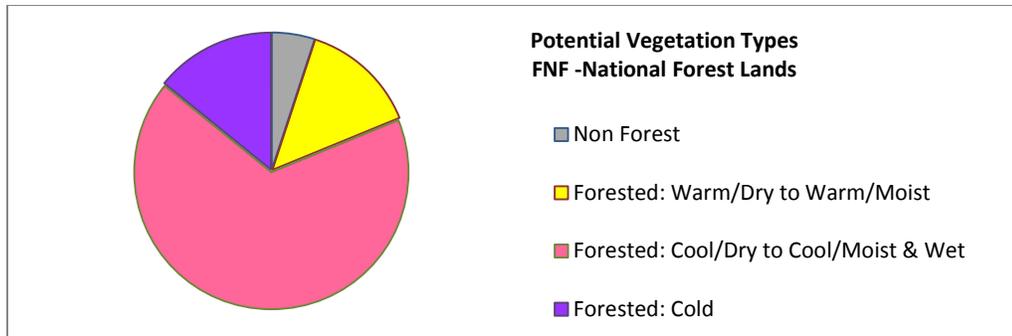


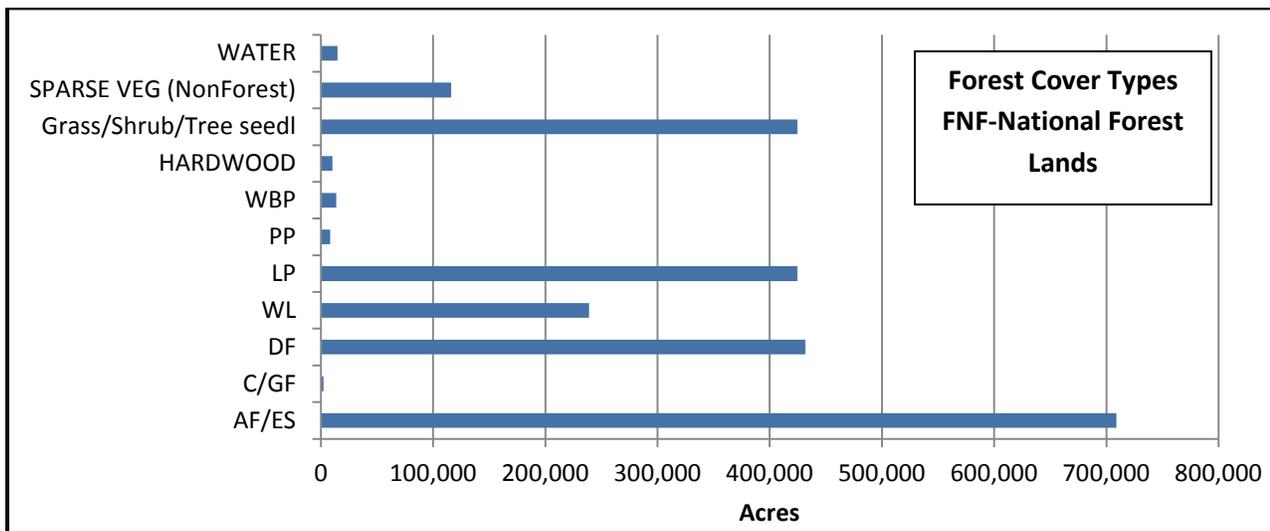
Figure 1. Potential vegetation types on the Flathead National Forest

Summaries describing general forest characteristics on the FNF¹

Why do we care to know about these forest characteristics? Our overall desired condition for the forest resource on public lands is to create and/or maintain ecologically healthy and sustainable forests while providing for compatible levels of human uses and benefits now and into the future. We want forests that are resilient, able to adapt to and tolerate inevitable future uncertainties and fluctuations in climate, insect or disease populations, fire events, and other unknowns. Diversity of vegetation conditions is a key indicator of a healthy, resilient forest landscape. Forest cover types, age and size classes are some important measures of this diversity, though they are a simplification of forests that are actually very diverse in species, sizes, and other structural characteristics.

Forest Cover Types

The FNF is dominated by coniferous trees of a diversity of species. Cover types indicate only the most dominant species, but most stands contain 2 or more different species.



Abbreviations: WBP=whitebark pine; PP=ponderosa pine; LP=lodgepole pine; WL=western larch; DF=Douglas-fir; C/GF=cedar/grand fir; AF/ES=subalpine fir/Engelmann spruce

Figure 2. Forest cover types on the Flathead National Forest

¹ Data source for cover types and size classes are the Forest Service Region 1 existing vegetation classification map (R1- VMap), updated in August 2013 to account for changes due to recent fires and harvesting.

The amount and distribution of tree species on the FNF results largely from the combination of site conditions and disturbances (fire and timber harvest) or lack of disturbance over the last century. LP, WL and to some extent DF are shade intolerant species that typically regenerate after a stand replacing disturbance, such as high severity fire. AF and ES are shade tolerant species that typically become dominant on the cool, moist sites of the FNF as the forest grows and ages over time.

Forest Size Classes

The size class reflects the average dbh² of the most abundant tree class. Non-forest types are primarily grass, shrub and sparsely vegetated areas at upper elevations, where tree cover is very light or absent. “Transitional forest” types are those currently in a grass, shrub or sparsely vegetated condition, but that will become forest types as they develop. They are primarily recently burned areas (i.e. within the last 10-20 years) and recent timber harvest areas.

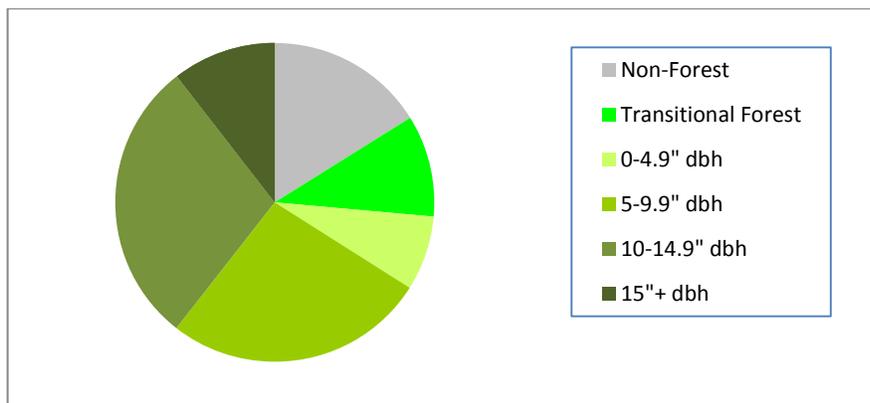


Figure 3. Tree size classes on the Flathead National Forest

Forest Age Classes/Successional Stage

Succession - At its simplest can be defined as the basic ecological process of change in the composition, structure, and function of plant communities over time. Common local example is the establishment, growth and development of the forest after a wildfire, passing through “early (young) successional” forests, to mature “mid-successional” forests, and finally (barring any new disturbance) to “late successional,” old forests.

Size classes are sometimes used to help determine age classes or successional stage of a forest. Relation of size to age is strong at the smaller sizes (i.e. the vast majority of seedling/sapling size class forests are young, <40 years old), but much less reliable at larger size classes. Old trees are not necessarily large (high densities will stunt growth and keep tree sizes small as they age); large trees are not necessarily old (high site productivity and relatively open stand conditions all trees to grow fast and large over shorter time periods).

Old growth forest is a subset of the late successional stage of development, developing over a long period of time (i.e. >160 years) in some forest stands, and defined by a specific set of forest conditions. These conditions include sufficient density of large old trees and adequate amounts of dead wood material (snags, etc). Though a late successional forest may be advanced in age, they do not necessarily have the needed characteristics to function and be considered as old growth.

² Dbh = diameter at breast height (4.5 feet up from the ground)

The 2007 estimate of percentage old growth on the FNF is 11.0%, based on inventory plots systematically located across the forest. It ranges from about 7% to 13% across the different subbasins (lowest in the Swan subbasin, highest in the South Fork Flathead subbasin).

Summaries of primary disturbances that shape the vegetation

Fire

Areas of similar fire severity, frequency, size and pattern have a similar fire regime. Fire severity refers to the ecological effects of fires on the dominant organism of the ecosystem, in this case the trees. Fire frequency refers to the recurrence of fire in a particular area.

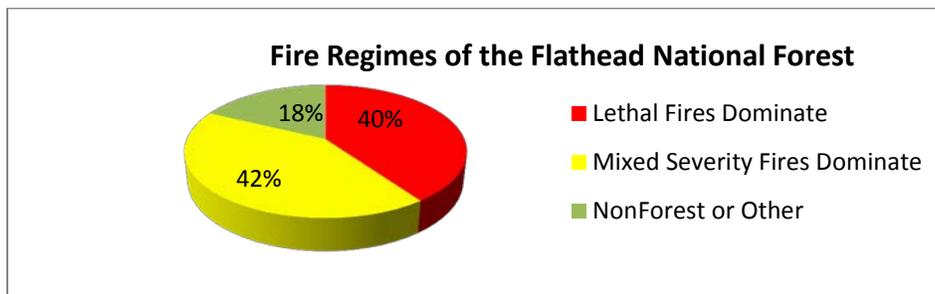


Figure 4. Fire regimes of the Flathead National Forest

Relatively accurate fire history records on the FNF exist from about the mid-1900s, with some mapping of fires dating back to the late 1880s.

An estimated 1.4 million acres of National Forest System lands on the FNF have been affected by wildfire since the late 1880s (~58% of all NFS lands)

- About 60% of this occurred before 1930.
- The 70 years between 1930 and 2000 saw many fewer fires, with overall total ~ 80,000 acres
- 2000 to present saw a notable jump in fire activity, with about 370,000 acres of NFS lands total burned in this 12 year period.
- Recent fires have been both large and with substantial portions burning at moderate to high severity (high tree mortality).

Examples of total acres of some of the more recent fires (all land ownership included)

- 2001 - Moose fire – nearly 71,000 acres
- 2003 - Wedge Fire and Robert Fire – each nearly 55,000 acres
- 2003 - West Side Reservoir complex of fires – total approx. 30,000 acres
- 2003 - Little Salmon Creek Fire (wilderness) – nearly 31,000 acres
- 2007 - There were 7 fires that were over 20,000 acres in size, with the largest being the 60,000 acre Fool Creek fire (wilderness).

- 2007 - Brush Creek Fire (visited on the field trip August 8, 2013) burned a total of about 30,000 acres and typified the fire pattern and severity of these recent fires. Some items of interest about the Brush Creek fire:
 - Pre-fire area that had been harvested in the past (mid-1950s to 2007) = 12,600 acres (50% of fire area).
 - Pre-fire forest size classes = 35% seedling/sapling, 18% small tree; 47% medium/large tree.
 - Post fire size classes= 80% seedling/sapling, in a very large >20,000 acre patch.
 - Pre-fire late successional/old forest= 25% of the fire area (6,500 acres). About 80% of this burned at high severity. Post fire late successional/old growth = 7%
 - Proportion of the size classes that burned at high to mod severity (high tree mortality):
 - Seedling/sapling= 50%;
 - Small tree = 65%
 - Med/Large tree = 95%, with most of this (80%) burning at high severity, killing >80% of the trees
 - Salvage sales were conducted in fire area. The selected alternative salvaged approx. 3,900 acres of fire-killed trees

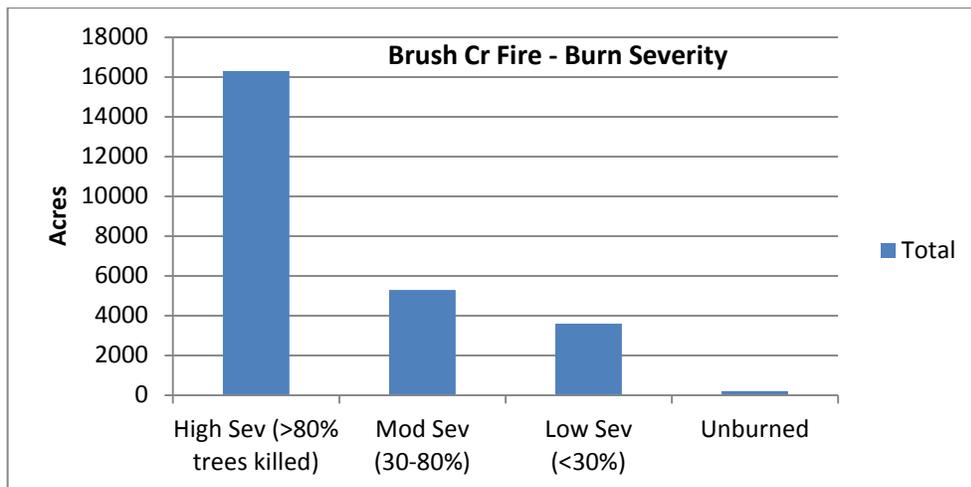


Figure 5. Brush Creek Fire burn severity

Insect and Disease

Climate and forest conditions are primary factors affecting populations, intensity of infestation of insects and disease. Aggressive and dramatic impacts occur (such as Mountain pine beetle epidemics) and more subtle, but no less influential impacts (such as root diseases). Most are native; some are “exotic” (introduced) pests. The introduced disease white pine blister rust has caused very high mortality in our 5-needle pines, which are western white pine (a lower elevation species) and whitebark pine (high elevation species) on the FNF.

Human Activities

Native American influences – some deliberate burning for centuries, concentrated in the river valleys and lower elevations. Settlement of the area by European Americans starting in mid-1800s. Forest Reserves and National Forest System established beginning late 1800s into early 1900s.

Invasive plants

Continued inventory and treatment, special focus on locating and treating new invaders. Some successes with control (tansy ragwort, leafy spurge in the Bob Marshall Wilderness); others weeds are increasing (orange hawkweed, spotted knapweed in some areas).

Timber harvest

Timber harvest of any substantial amount began in the 1950s, post WWII boom. Lands suitable for timber management under the current forest plan = approximately 720,000 acres (30% of total FNF lands-see map).

The source of following information is the latest Flathead Forest Plan Monitoring Reports. The funded timber program and volume offered were relatively stable over the decade, with the exception of increases for fire salvage in 2005 and 2009. The funded timber target from 2000 through 2010 averaged 30.5 MMBF. Volume offered exceeded the target, with an average of 37.8 MMBF. Volume sold averaged 31.7 MMBF. The forest has stabilized the volume offered at a level of 25-30 MMBF, unless there is an increased salvage program in a given year. Refer to chart below.

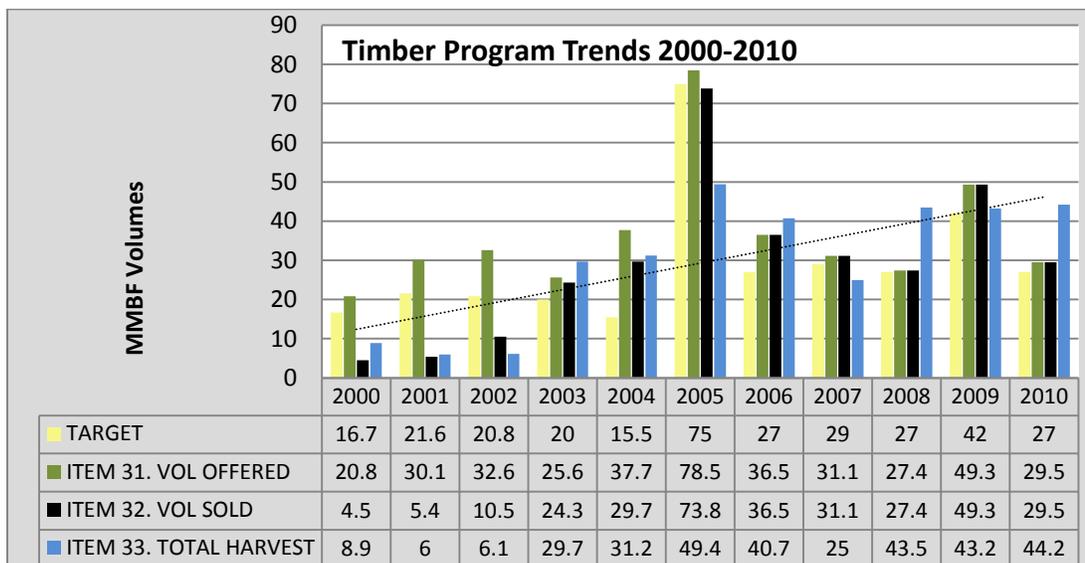


Figure 6. Timber program trends 2000-2010

Acres harvested annually to meet all resource objectives, averaged 2,853 for the decade. This is a decline of almost 750 acres since the 2008 monitoring report. Overall, timber management activity is occurring on significantly less National Forest System lands that the Forest Plan projected on an annual basis. At the same time, fire is playing a greater role than projected, causing additional vegetative change. These two factors together have resulted in change in the vegetation on an average of 2% of the Flathead National Forest annually over the last five years (timber harvest portion = 0.1%). Refer to chart below.

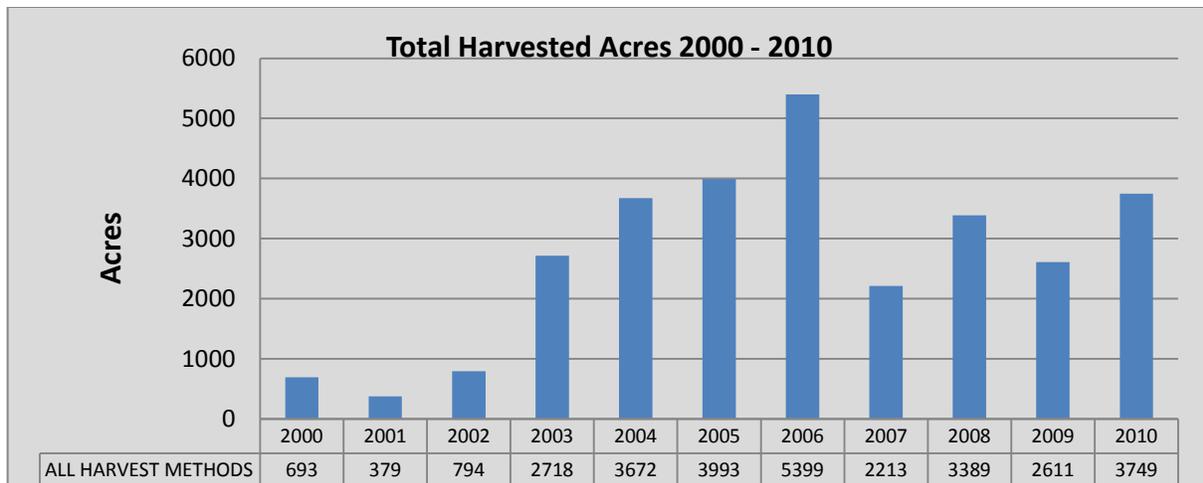


Figure 7. Total harvested acres 2000-2010

Timber stand improvement

Activities consist primarily of thinning in young sapling stands, to maintain health, vigor and growth of trees and to promote desired species. The funding for these treatments has steadily declined since the late 1990s, with no funding received during 2003, 2004 or 2006. This reduction in funding is in part due to the priority placed on reforestation in fire areas, as well as severe restrictions on thinning activities imposed by the listing of Canada lynx as a threatened species. This is because snowshoe hare, the dominant food of the lynx, are known to feed and shelter in dense, young sapling forests in the winter, the critical season influencing lynx survival. The average acres of timber stand improvement treatments (thinning) for the decade is 806 acres. The average over the last 3 years is 1,165. This increase over the last few years is reflective of the program shift towards thinning in the wildland urban interface, which is compatible with lynx management direction. Current thinning needs on the forest is estimated at approximately 34,000 acres. However, the trend is for continued limited funding and opportunity to treat these acres.



Figure 8. Timber stand improvement 2000-2010

Some additional general trends in forest conditions

Inferences drawn from recent changes, as summarized in the Flathead Forest Plan Monitoring reports (2012):

There is a “bulge” in the middle aged forest and size classes (5+” dbh) due to natural succession of forests that burned earlier in the 20th century, and the reduction in stand replacing disturbances since then (fire suppression, recent reductions in timber harvest). The exception is in the North Fork of the Flathead, and in the portions of the Bob Marshall Wilderness. These areas have experienced the bulk of the fire events over the last decade and fire has altered both the composition and structure of the landscapes to a considerable degree. Other areas have been impacted to lesser degrees by fire. Fires have also reduced amount of old growth slightly over the last decade. However, additional stands have also likely developed into the old growth stage during that period.

Changes on the FNF landscape due to fire dwarfs any impacts due to forest management. The magnitude of change on the landscape over the last decade due to harvest represents only about 9% of the total change that has occurred. Fire has shifted some areas back towards larger patch sizes of smaller, younger forest size and age classes. This pattern more closely matches those produced historically, with fire the dominant driver of vegetation change. Harvest has a tendency to occur over much smaller areas, causing some degree of fragmentation of the landscape. This is more similar to the results of mixed-severity fires, rather than large, high severity fires.

Large stand replacing wildfires have always been part of the natural processes which have shaped historical conditions on the forest. The natural range of variability in forest age and size classes across our landscapes is typically very wide. Due to this high variability in historical conditions, we cannot conclude that the extent of fire in the last decade and its resulting effect on the vegetation is outside the historical range. Much of the mature forest visible today is from a series of large fires which occurred between 1910 and 1929 (see historical fire summary earlier in this document).

Wildlife

The 2012 planning rule takes a coarse filter/fine filter approach to assessment of wildlife. The first step, the coarse filter, assesses the condition, trend, stressors, and drivers of ecosystems. The FNF is using information compiled by the Montana Department of Fish, Wildlife and Parks (MT FWP) and the Montana Natural Heritage Program (as part of the Crucial Areas Assessment) as the basis for assessing ecosystems that occur on the FNF including riparian, shrub, grass/herb, deciduous tree, coniferous tree, and non-forest. The desired future condition will be described for each ecosystem and then forest plan management direction will be developed accordingly. The second step, the fine filter, considers the wildlife species associated with each ecosystem to determine whether species-specific forest plan direction is needed or whether species needs will be addressed by ecosystem management direction. In this step, all threatened, endangered, recently de-listed, and species proposed for listing are evaluated, as well as species listed as being at risk according to global or state NatureServe rankings. Species will be listed in the following categories; 1) species of conservation concern, 2) species of public interest that are commonly enjoyed for observing, hunting, or trapping, and 3) focal species for monitoring which provide insight into the integrity of ecological systems. Each of these categories has very specific criteria under the 2012 planning rule and the FNF will be posting its assessment of ecosystems and species sometime this fall.

In addition, the FNF plan revision will assess the effects of implementing the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy on 5 national forests. The USFWS recently published the draft interagency Strategy in the Federal Register and is currently evaluating public comments. The strategy would put direction in place to maintain a recovered NCDE grizzly bear population and remove it from the threatened species list.

Aquatic Ecosystems, Watersheds, and Riparian Areas

Aquatic habitats, watersheds and streams are in very good condition. Non-native fish species and aquatic invasive species are the primary threats to native bull trout and westslope cutthroat trout. Watershed Condition Classification for all 6th code watersheds on the Flathead were assessed in 2011. The results are summarized in the table below. Through the implementation of watershed restoration activities, four Class 2 watersheds are anticipated to be moved into Class 1 over the next 2-3 years.

Table 1. Acres by watershed condition class

Watershed Condition Class	Description	6th Code Watersheds	Acres
Class 1	Watersheds exhibit high geomorphic, hydrologic, and biotic integrity relative to their natural potential condition	171	2,311,699
Class 2	Watersheds exhibit moderate geomorphic, hydrologic, and biotic integrity relative to their natural potential condition	11	148,946
Class 3	Watersheds exhibit low geomorphic, hydrologic, and biotic integrity relative to their natural potential condition	0	0

Air, Soil, and Water Resources and Quality

The air quality within and surrounding the FNF is considered good to excellent throughout most of the year, meeting Montana air quality laws and the Clean Air Act. The FNF is adjacent to Glacier National Park, which has additional, more stringent requirements for maintaining air quality under the Clean Air Act. Fire, which has been and will continue to be a part of the ecosystems of the FNF, produces local, short-term impairment of air quality and is the primary source of pollutants in the area.

Soil quality is generally very good on the FNF. A large majority of the soils on the forest are in an undisturbed, native state. Where vegetation management activities occur, the forest designs activities to meet the Region 1 soil quality standard to protect long-term soil productivity and function.

Water quality is generally very good on the Flathead, reflecting the presence of relatively intact watersheds and riparian ecosystems. Water quality concerns linked to human activity exist in limited locations, near roads and developed areas. There are currently 11 perennial streams within the Flathead NF on the Montana 303(d) list of impaired waters totaling approximately 110 miles over mixed ownership. These listed streams represent approximately two percent of the total perennial stream miles (5916 total) within the Flathead NF.

Ecosystem Drivers and Stressors

An ecosystem can be defined as a group of organisms in a given area that interact among themselves and with the environment around them. Ecosystem disturbances, drivers and stressors can be broadly defined as events or factors that directly or indirectly cause a change in an ecosystem. For purposes of this assessment, the term “drivers” will be used to encompass all these terms. The primary ecosystem drivers that have historically affected the forests of the FNF are fire, insect and diseases, and climate factors.

Fire was widespread and of highly variable size, severity and frequency. The plant and animal communities of the FNF are supremely adapted to fire as a common and natural disturbance process. Insects and disease can cause major shifts in species composition and other forest characteristics over time, though the changes are less obvious than fire. Periodic drought and fluctuations in climate over time can alter forest characteristics substantially as well, both by causing direct mortality or rendering certain sites inhospitable to the establishment or growth of some tree species.

In addition to these historical ecosystem drivers, forests of today are also affected by human factors or stressors. The primary ones affecting the forests of this area are land use changes (such as the conversion of forest lands to agriculture or housing developments), timber harvest (see discussion under Multiple Use section below), and non-native plant and animal species (such as the invasion of noxious weeds into grassland or forested areas). Land use changes and the suppression/exclusion of fire for over a century have altered the historical role of fire in this ecosystem, changing the forest character and pattern across the landscape. This in turn has changed the way that some insects and diseases have interacted with the forests.

Climate and Carbon

Trees take up carbon dioxide (CO₂) and release oxygen (O₂) through photosynthesis, transferring the carbon (C) to their trunks, limbs, roots, and leaves as they grow. When leaves or branches fall and decompose, or trees die, the stored C will be released by respiration and/or combustion back to the atmosphere or transferred to the soil. Because of these processes, forests can store considerable carbon and their growth can provide a carbon sink. The forests of the FNF are just such a carbon sink, and store more carbon than they release. This removal of carbon from the atmosphere and storage in the biomass helps mitigate the effects of greenhouse gas emissions and associated climate change. Increases in disturbance events such as wildfires and insect outbreaks can release large amounts of carbon to the atmosphere (short- and long-term) and reduce carbon stocks.

Carbon storage is not limited to the above ground plant material, but also is stored underground. The recent “Rapid Assessment of U.S. Soil Carbon” estimates there is between 65 and 110 Mg/ha of belowground soil organic carbon within the region encompassing the Flathead NF.

Social Economic Conditions and Trends

Area of Influence

The land administered by the Flathead NF 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 decided that the area of influence (hereinafter called the analysis area) for the social and economic analysis would consist of four counties in North Western Montana that are adjacent to, or in the immediate vicinity of the Flathead NF-- 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 was used as a justification for the exclusion of Glacier County. Lincoln County, on the other hand, is included due to both substantial commuting across county lines and also some timber processing of FNF timber products in Lincoln County. Both Sanders and Lake Counties were included because of commuting, trade and travel corridors across these counties. Even though Missoula County does process timber harvested from the FNF and does contain Flathead NF land, it was not included in the impact area because it is a Metropolitan Statistical Area, 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 only weak economic ties to the rest of the counties in the analysis area.

Preliminary Highlights

Land Ownership and the Wildland Urban Interface

The most populous counties and those with the highest population density are Flathead and Lake. Flathead County has the larger population, with 90,317 people in 2011 (as compared to 28,628 for Lake County), but Lake County has a higher population density than Flathead County (19.2 persons per square mile as opposed to 17.8). Both Lincoln County and Sanders County have very low population densities, low enough to be

considered a “frontier county”, with population densities of less than 6 persons per square mile. Frontier areas are sparsely populated rural areas that are isolated from population centers and services. Forty-five of Montana’s 56 counties are considered to be “frontier”.

Approximately 30 percent of Montana’s land is under federal ownership (similar to that of the nation), while 6.2 percent is owned by the state and another 9 percent is tribal land. The amount of land under federal ownership is substantially larger for the FNF analysis area than for the state as a whole, with approximately 63 percent of the land area in the FNF analysis area under federal ownership. Lincoln County and Flathead County each have around three quarters of their land area under federal ownership, while Sanders County is approximately two-thirds federal land. Only 17 percent of the land in Lake County is federally owned. Almost all of the federal land is administered by the FS, with the exception of Flathead County where approximately 20 percent is managed by the National Park Service.

For the FS, and other natural resource agencies, housing development in proximity to public lands is a major concern because of the risk of wildfire. Wildfire directly impacts safety, private and public costs, and landscape health. As defined in the National Fire Plan, the WUI includes areas “where structures and other human development meet or intermingle with undeveloped wildland.” Headwaters Economics, the developers of Economic Profile System—Human Dimensions Toolkit (EPS-HDT), define the WUI as private forestlands that are within 500 meters of public forestlands. In total, 1,025 square miles of the analysis area met this definition of WUI in 2010. Given that the total square mileage of the analysis area is 12,952 square miles, this is around 8 percent of the total land area. Of the total 1,025 square miles of this defined WUI area, approximately 15.5 percent contained houses in 2010, compared to 16.3 percent for the eleven western states and 9.4 percent for the state of Montana. In 2010, Flathead County had the largest percentage of WUI area with homes, at 27.2 percent, compared to 15.1 percent for Lincoln County, 12.2 percent for Lake County, and only 6.6 percent for Sanders County.

The General Economy of the Four-County Analysis Area

Employment and Income (All Sectors)

Montana state wages and salaried employment increased 12.3 percent from 2001 to 2011, down from the 28 percent increase from 1990 to 2000 reported. Except for Flathead, where employment increased by 15.54 percent from 2001 to 2011, all other counties in the analysis area saw employment growth that was slower than for the state as a whole. Employment increased by less than 1 percent for Lake and Sanders Counties and by only 3 percent for Lincoln County. This is substantially lower employment growth than experienced in the previous decade, where employment increases ranged from 48 percent in Flathead and Lake Counties down to 6.8 percent for Lincoln County.

For all counties in the analysis area and the state of Montana, services-related employment makes up a larger percentage of the economy than does non-service-related jobs. Almost all jobs created in the U.S. today are in service sectors. From 1990 to 2008, for example, more than 99 percent of net new jobs created in the U.S. economy were in service sectors. Despite the strong growth of employment in services, the term “services” is often misunderstood. Services consist of a wide mix of jobs, combining high-wage, high-skilled occupations (e.g., doctors, software developers) with low-wage, low-skilled occupations (e.g., restaurant workers, tour bus operators). The service sector typically provides services, such as banking and education, rather than creating tangible objects. However, some service sectors, such as utilities and architecture, are closely associated with goods-producing sectors.

In 2011, services-related employment, as a percentage of total employment, ranged from 74 percent of employment for Flathead County down to 54 percent for Lake. Over the ten 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. Of the services-related jobs in the analysis area, in 2011, the top three service sectors in terms of employment were Retail trade (8,454 jobs), Health care & social assistance (7,047 jobs), and Accommodations & food services (5,892 jobs).

In 2011 non-services related jobs (such as farming, forestry, mining, construction, and manufacturing) accounted for 28.6 percent of total employment in Sanders County down to 16.7 percent in Flathead County. For the state as a whole, non-services related employment increased by only 0.6 percent, with the largest percentage decreases occurring in farming and manufacturing and the largest percentage increase occurring in mining. Unlike the state, the four counties in the analysis area all saw drops of from 7 to 16 percent in non-services related employment.

From 1990 to 2012, all four counties in the analysis area have had a higher rate of unemployment than the state of Montana. With a couple of exceptions, Lincoln County has had the highest unemployment rate in the four-county analysis year during this time, ranging from a high of 16 percent in 1994 down to 6.4 percent in 2006. Only in 1996 and 2009 did another county in the analysis area, Sanders County, have a higher unemployment rate than Lincoln County. With the exception of 2001, Sanders County has had the second highest unemployment rate in the analysis area, ranging from a high of 14.5 percent in 2011 down to 4.9 percent in 2006. Flathead and Lake Counties have experienced much lower unemployment rates than Lincoln and Sanders Counties. The lowest unemployment rate for both counties occurred in 2006, when Flathead had an unemployment rate of only 3.6 percent and Lake of 4.5 percent. For Flathead County, unemployment reached a high in 11 percent in 2010, while the highest rate in Lake County, 9.8 percent, occurred in 2011.

Although per capita personal income is increasing for all the counties, per capita personal income in Montana, at \$39,684, is lagging somewhat behind the national average of \$42,433 in 2011. For three of the counties in the analysis area, per capita 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. Per capita income in Flathead County in 2011, \$36,628, was only slightly lower than the state average. From 2000 to 2011, the percent change in per capita income was highest Lincoln County (17.6 percent) and lowest in Flathead County (11.3 percent), compared to only a 17.6 percent increase for the state. The percent change in average earnings per job from 2000 to 2011 was less than for per capita income in all four counties, ranging from an increase of 3.9 percent in Lincoln and Sanders Counties up to 10 percent in Lake County.

In many places non-labor income can be the single largest component of total personal income, and also the largest source of new personal income. Nationally, non-labor income represented 33 percent of total personal income in 2008 and 26 percent of net new personal income from 1990 to 2008. Unlike most sources of labor income, non-labor income, which often arrives in the form of a dividend check or retirement benefit, can be more difficult to see in a local economy. For the state of Montana, non-labor earnings were a slightly smaller component of total personal income in 2011 than were labor earnings, which made up 60.3 percent of total 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 had the largest percentage of personal income attributable to non-labor income at 57.9 percent. The biggest percent change in non-labor income over the period was in transfer payments, which includes age-related payments, such as social security and Medicare, as well as income-maintenance payments. Transfer payments increased by 81.8 percent for Sanders County, 78.3 percent for Flathead County, 68.2 percent for Lake County, and 67 percent for Lincoln County.

The Economy and Public Lands

The economic health and wellbeing of area communities is always a topic of ongoing interest. Public lands can play a key role in stimulating local employment by providing opportunities for commodity extraction. Timber, mining, and agriculture are together referred to in this report as commodity sectors because they have the potential for using public lands for the extraction of commodities. Public lands can also play an important role in stimulating local employment by providing opportunities for recreation. Communities adjacent to public lands can benefit economically from visitors who spend money in hotels, restaurants, ski resorts, gift shops, and elsewhere.

The counties in the analysis area all derive a higher percentage of their employment from timber-related industries than either the state or the nation. Sanders County and Lincoln County both derive more than 5 percent of their employment from timber-related industries. Lake County had the smallest amount of timber-related employment, at 1.8 percent, and Flathead County's timber-related employment in 2011 was 3.6 percent.

Since the 1990s changes in the federal harvests and the timber industry have affected rural communities in Montana. According to McIver et al. (2012), from 1998 to 2009 the number of primary wood product facilities in Montana fell from 220 to 127. In 2009, the number of workers in Montana's wood and paper products industry was 7,051, down from the most recent peak of 12,116 employees in 1990. In a more recent update, Morgan et al. (2013) estimated that employment had fallen to 6,650 workers by 2012, up 3 percent from the previous year. They list the reasons for the decline in the primary wood industry as: 1) the decline in Federal timber sale program after 1987 and 2) the collapse of the U.S. housing market (2006-2010). They state that the volume harvested from National Forests in Montana declined 76 percent from 1987 to 1995, and the NFs proportion of the total harvest in Montana dropped from over 40 percent to approximately 20 percent. In 2006, the housing market began to collapse, with a severe collapse occurring during 2008 and 2009 when the country was hit with the "Great Recession".

From 1998 to 2011, Lincoln County had the fastest rate of change in timber employment and Flathead County had the slowest. The pattern of change over this time period differed substantially by county. Employment in Flathead County and Sanders County remained fairly steady in the 2000s up until the recession in 2008. In Lincoln County, employment fell almost every year since 1998, while Lake County saw an upward trend in timber-related employment until the recession in 2008.

Average annual wages in timber-related industries tend to be relatively high compared to the average for other sectors. From 1998 to 2011, wages have remained fairly steady, at approximately \$48,000 per year for Wood Products Manufacturing jobs (adjusted for inflation to 2012\$), and slightly less for Forestry & Logging jobs (\$44,000 per year). The average annual wage in the four-county area in 2011 was approximately \$34,000 per year.

Public lands can play a key role in contribution to local employment by providing opportunities for recreation. Communities adjacent to public lands can benefit economically from visitors who spend money in hotels, restaurants, ski resorts, gift shops, and elsewhere. As defined by EPS-HDT, travel and tourism consists of sectors that provide goods and services to visitors to the local economy, as well as to the local population. These industries are: Retail trade; passenger transportation; Arts, entertainment, and recreation; and Accommodation and food. It is also not known what proportion of the jobs in these sectors is attributable to expenditures by visitors, including business and pleasure travelers, versus by local residents nor do these numbers indicate how much is directly attributable to recreation on public lands.

Around 20 percent of total private employment in the four-county area is associated with industries connected to travel and tourism, with 13 of the 20 percent associated with the Accommodation and food

sector. The four counties in the analysis area vary from 16.6 percent of total private employment occurring in travel and tourism-related sectors for Lake County up to 20.6 percent for Sanders County. For all counties, the largest amount of travel and tourism-related employment is associated with Accommodation and food service.

Though travel and tourism-related industries can benefit local economies by bringing in people from outside the area to spend money in hotels, restaurants, and on recreational activities, these types of jobs often tend to be seasonal, leading to higher rates of unemployment during winter months. They are also often part-time. Jobs in travel and tourism-related sectors also tend to pay substantially lower wages than most other jobs in an economy. Other than passenger transportation, which supports few jobs in the area, the wages are extremely low, paying \$17,000 per year, or less, compared to the four-county average wage of \$34,000. The lowest paying sector, Accommodation & Food Services, also has the most employees.

Natural Amenities and the Economy

Public lands provide recreational, environmental, and lifestyle amenities that can stimulate growth. While amenities alone are typically not sufficient to foster growth, they have increasingly been shown to contribute to population growth and economic development. Many factors can contribute to economic growth, including access to raw materials, workforce quality, availability of investment capital, and transportation networks. In recent decades, amenities have also become increasingly important for people who can choose where to live and work, and for businesses that are not subject to location constraints.

In 1999, the USDA Economic Research Service (ERS) published their “natural amenity” scale (McGranahan 1999). According to the ERS and other sources (e.g, Cordell et al. 2011, Hunter et al. 2005, Harris et al. 2003, Rudzitis 1989), population change in rural counties is strongly related to their attractiveness as places to live. Factors that influence a county’s “attractiveness” include warm winters, more days of winter sun, a temperate summer climate, low summer humidity, topographic variation, and proximity to water. (McGranahan 1999). With the median rank being 4, 40 of Montana’s counties ranked as average or slightly above and 16 counties ranked below average. Of the four counties in the analysis area, only Lake County ranked higher than 4 with a score of 5. The other three counties received a score of 4. The four counties in the analysis area ranked high in topographic variation, low summer humidity, and temperate summers; low on warm winters and winter sun; and about average on water area.

Results from a recent study of natural amenities and rural migration (Cordell et al. 2011) estimated that changes in natural amenities would have positive effects on rural population migration trends in the Intermountain and Pacific Northwest regions. Counties were classified into one of four categories: Moderate-High positive amenity migration (rural net migration greater than 2 percent), Low to Moderate positive amenity migration (rural net migration between 0 and 2 percent), Low to Moderate negative amenity migration (rural net migration between 0 and -2 percent), and Moderate to High negative amenity migration (rural net migration less than -2 percent). With the exception of Lake County, amenity migration is anticipated to be positive for counties in the analysis area. The RPA study estimated that Lincoln and Sanders County will see Low to Moderate positive amenity migration, regardless of time horizon or climate scenario. The most amenity driven growth is forecast to occur in Flathead County, which depending upon time horizon and climate scenario, is either slightly above or slightly below the Moderate to High amenity classification. Lake County is expected to have Low to Moderate negative amenity driven migration. For reference, the only counties in Montana forecast to have Moderate to High amenity migration (≥ 2 percent) are Gallatin and Madison Counties (Carbon County, Cascade County, and Missoula County were not included in the analysis).

Wildland Dependency

One measure of reliance on natural-resourced based industries is wildland dependency. Wildland dependency is calculated as the percentage of county total labor income (employee compensation and proprietor income) earned in five wildland resource areas (timber, mining, grazing, recreation and wildlife, and Federal wildland-related employment (e.g. Forest Service, Department of Interior agencies, etc.)) (Gebert and Odell 2007). The National Forest-Dependent Rural Communities Economic Diversification Act of 1990 (Public Law 101-624) defined a county as being wildland dependent if 15 percent or more of their total county labor income (primary and secondary income) came from industries associated with forest resources.

Data from the 2007 Gebert and Odell study showed that, of the four counties in the FNF analysis area, all but Lake County exceeded the 15 percent criterion for wildland dependence with Flathead County deriving 20 percent, Lincoln County 57 percent, and Sanders County 28 percent of total county labor income from natural resource dependent economic activities and the associated indirect and induced effects. Lake County only derived around 12 percent of their total labor income from natural resource dependent economic activities in 2000.

The wildland dependency numbers were recently updated using data from 2010. These numbers show a drop in wildland dependency for all counties, though the decrease was much more substantial for some counties than for others. In 2010, Lincoln and Sanders County still met the 15 percent criterion for wildland dependency, at 31.7 percent and 18.6 percent of total labor income derived from wildland-related industries. Flathead's dependency had dropped to around 13 percent and Lake County's dependency decreased to 4 percent.

Federal Land Payments to States

In recognition that states cannot tax federal lands within their boundaries and that these lands create a fiscal burden on the states, policies provide for funding from federal lands to local governments through two programs: Payments in Lieu of Taxes (PILT) and what is commonly termed "Payments to States", "Revenue-Sharing Payments" or "Secure Schools and Roads" funding. In rural counties these funds can be an important source of funding to maintain roads and provide support for schools.

The state of Montana ranks in about the middle of the 13 Western states with respect to PILT payments, receiving \$26.2 million in 2012. The largest PILT payment went to the state of California, while the lowest (not counting Hawaii) went to the state of Oregon. There was a jump in payments that occurred in 2008 as a result of the Emergency Economic Stabilization Act. For the state of Montana, payments went from \$17.2 million in 2007 to \$27.3 million in 2008.

In 2012, for the counties in Montana, Lewis and Clark County received the highest PILT payment, \$2.2 million. Treasure County received the smallest payment, \$254 (Daniels County received no PILT payments in 2012). In 2012, Flathead County received the highest PILT payments for the four-county analysis area, ranking second in the state at \$2.1 million. Lincoln County ranked 16th in the state, at \$595 thousand; Lake County ranked 22nd at \$390 thousand, and Sanders County came in 27th, at \$310 thousand. Many counties in Montana saw a significant increase in PILT payments after 2008. Payments in Lincoln, Lake, and Sanders Counties more than doubled, while payments in Flathead County increased by around 50 percent.

From 1991 to 2000, three of the four counties in the analysis area (Lincoln, Sanders, and Flathead) received the highest average revenue sharing payments out of all of Montana's 56 counties. Lincoln County received, on average, \$6.7 million annually from 1991 to 2000. Sanders County averaged around \$1.9 million per year in revenue sharing payments and Flathead County around \$1.4 million annually. All other Montana counties averaged less than \$1 million annually. Lake County, the remaining county in the four-county analysis area, averaged about \$105,000 annually. However, only Flathead County and Lake County received the vast

majority of their money from activities on the Flathead NF. Lincoln County's payments came primarily from activities on the Kootenai NF and Sanders County's payments from activities on the Lolo NF.

From 2001 to 2012, as with revenue sharing payments, Lincoln, Sanders, and Flathead Counties had the highest payments Secure Rural School Act payments out of all of Montana's counties. From 2001 to 2010, Lincoln County averaged \$7 million in SRSA payments, which was only a slight increase over their average revenue sharing payments of the previous decade. From 2001 to 2010, Sanders County's SRSA payments averaged \$2.4 million, a nearly 25 percent increase over their revenue sharing payments of the previous decade. Flathead County experienced the largest percentage increase with the switch to the SRSA payments, with SRSA payments of \$2 million annually, a 45 percent increase from the previous decade of revenue sharing payments. In 2008, the formula for computing SRSA payments changed (and was retroactive to 2008). This change had a substantial impact on the payment received by some counties and little effect on others. For the four counties in the analysis area, Sanders County was the most impacted by this change, with payments almost doubling from 2007 to 2008. The changes were much smaller for the other three counties. However, some counties in Montana saw their payments increase more than 400 percent from 2007 to 2008.

Overall, federal land payments make up approximately 11.4 percent of the total county general revenue for the four counties in the Flathead NF analysis area. Lincoln County is the most dependent on federal land payments, with more than 40 percent of the county's general revenue coming from federal land payments. Sanders County also depends on federal land payments for a substantial part of their revenue, more than 18 percent. Flathead and Lake Counties are much less dependent on these funds, at 5.2 percent and 1.8 percent respectively.

Flathead NF Contributions to the Analysis Area Economy

- The National Forests contribute to the local economies by the products (e.g., timber, forage, etc.) that are produced by the National Forest and processed in the local economy, by the uses (e.g., recreation visits, etc.) that occur on the National Forests, by the expenditures of the forests on supplies, equipment, and contracted activities, and by the spending by Forest Service employees in the local economy.
- Management of the Flathead National Forest (Flathead NF) drove a small share (2 percent) of the area economy in 2010, or around 1,384 jobs and \$53 million in earnings.
- More information on the breakdown of FS contributions to the economy broken down by program area (timber, grazing, etc.) is forthcoming.

Multiple Use and Ecosystem Services

Multiple Use

Multiple use as defined by the Multiple- Use Sustained-Yield Act (MUSY) of 1960 (16U.S.C. 528–531) is “the management of the various renewable surface resources of the NFS so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output”. The following multiple uses will be discussed in the assessment. Preliminary information is provided below.

Energy and Minerals

Mineral resources are another valuable contribution that public lands make to the American economy. There are three general types of mineral resources associated with national forests: leasable minerals, locatable minerals, and mineral materials. For the Flathead NF, mineral materials, specifically landscape rock, has been the predominant use in recent years, with free-use permits being issued for 300 short tons, on average, over the past three years (2010-2012).

Grazing

Western Montana has a grazing history tied to open range and public lands. While the proportion of grasslands is much lower than neighboring areas in Southwestern and eastern Montana, some cattle and horse grazing on the Flathead NF still occurs. Over the past several years (2010-2012), authorized grazing on the FNF has averaged around 1,869 HMs annually.

Timber

Though scattered cutting of trees from public lands started with settlement of the area in the mid to late 1800s, commercial timber harvest didn't begin in earnest until the late 1940s, and grew rapidly in the post WWII boom years. The amount of timber volume sold has varied over the past 60 years. Volume sold over the years 2000 to 2010 averaged nearly 32 MMBF per year. Timber volume offered and sold has generally been in decline since the 1980s. Timber products are of high importance to the local communities and economy (refer also to Social Economic Conditions above). The decade of the 1990s saw a sharp decline in the volume harvested. In 1988, the Flathead NF harvested nearly 122 million board feet (MMBF) of timber. The smallest amount of timber was harvested in 2001, when only 6 MMBF was harvested. After 2003, harvests began to increase somewhat, and in 2012, the harvest on the Flathead NF was 28 MMBF.

The four Northwest Montana counties have seen a substantial decline in harvest since 1988, from 725 MMBF in 1988 to 171 MMBF in 2009. The largest decline occurred in Lincoln County, where the harvest in 2009 (11.6 MMBF) was only 13 percent of the 1988 level. For Flathead County, the harvest in 2009 was around 30 percent of that experienced in 1988.

Ecosystem Services

The 2012 Planning Rule defines ecosystem services as “the benefits people obtain from ecosystems”. Healthy forest ecosystems are life-supporting systems that provide a full suite of goods and services (ecosystem services) that are vital to human health and livelihood. Though in practice, the categories of multiple use listed above (outdoor recreation, range, timber, watershed, and fish and wildlife) largely fall under the broader umbrella of ecosystem services (benefits people obtain from ecosystems), the multiple-use mandate under the MUSY Act of 1960 (16 U.S.C. 528-531) and the National Forest Management Act of 1976 (16 U.S.C. 1600 et seq.) requires that land management plans address multiple uses, whether or not they are identified as an important ecosystem service. Therefore, the assessment will include assessments of the multiple use categories and any key ecosystem services that are not addressed in the multiple use section.

In addition to the multiple use resource topics listed above, the Flathead NF has identified the following key ecosystem services that will be addressed in the assessment:

- Forest products (huckleberries, wood products: timber, fiber, post and pole, firewood, Christmas trees/boughs)
- Water (water quality: clean drinking water)
- Air (clean air)

- Wildlife and Fish (non-consumptive: full complement of native species—addressed by ecosystem integrity, consumptive will be addressed under multiple use)
- Inspiration and non-use values (spiritual, solitude)
- Cultural services (cultural heritage, research and education)
- Regulating Services (flood control, climate regulation/carbon sequestration)

Cultural and Historical Resources and Use

Forest land managers consult with Salish and Kootenai tribal staff as well as State Historic Preservation Staff on ensuring the protection of cultural resources during program and project planning and implementation.

Recreation Settings, Opportunities and Access, and Scenic Character

Sharing the name of the lake and rushing rivers that wind through it, the Flathead National Forest is a critical piece of an incredible intact ecosystem that sustains both the grizzly bear and the quality of human life. Whether visitors trek deep into the world-renowned Bob Marshall Wilderness or view the towering mountains from their backyard, the Forest is a “tap root” essential to the communities. Forest visitors experience self-reliance, challenge and renewal on downhill slopes, as well as in rustic settings along Wild and Scenic Rivers, mountain lakes, and wilderness.

Settings, Special Places, and Values

The spectacular glacial mountains feature majestic peaks, lush forests, snowfields, lakes and alpine. Waters of the Forest flow from numerous mountain streams into the Swan, Stillwater, and 3-forks of the Flathead River downstream into Flathead Lake, largest freshwater lake west of the Great Lakes. World-class wild lands include the Bob Marshall Wilderness Complex, three nationally designated Wild & Scenic Rivers, and the adjacent Glacier National Park. As stewards of portions of both the BMWC and Northern Continental Divide Ecosystem, the Forest has a responsibility to provide educational opportunities to help sustain this incredible landscape for future generations.

FNF Activities/Opportunities/Experiences

Most of the activities are setting related and less facility dependent and provide a sense of freedom. Facilities provide access to opportunities. Some increased use levels are accommodated through management and by other providers. Outfitter & guides help provide quality recreation experiences. Environmental education is a focus and provided through partnerships.

Flathead National Forest National Visitor Use Monitoring

There is a monitoring program across the entire national forest system where every 5 years, each forest monitors their use through exit surveys. The FNF has done 2 of these rounds with the next round scheduled in 2015.

Table 2. Total estimated NF visits

Year	Total Estimated Visitors	% From Flathead County
2010	885,000	70%
2005	852,000	75%

Top 10 activities

Some trends between 2005 and 2010: Viewing natural features went from #2 to #1. Hiking and walking went from #1 to #4. Relaxing went from #6 to #3. Basically, the top 10 activities stayed in the top 10 slots.

Table 3. Top 10 recreational activities on the Flathead NF National Visitor Use Monitoring 2010 and 2005

2010 Top 10 Activities	Percentage Participation	2005 top 10 activities	Percentage Participation
1 Viewing Natural Features	42.2%	1 Hiking / Walking	28.2%
2 Viewing Wildlife	35.8%	2 Viewing Natural Features	27.6%
3 Relaxing	33.7%	3 Viewing Wildlife	21.8%
4 Hiking / Walking	33.5%	4 Downhill Skiing	20.9%
5 Downhill Skiing	30.1%	5 Hunting	19.5%
6 Driving for Pleasure	20.3%	6 Relaxing	17.2%
7 Hunting	18.0%	7 Driving for Pleasure	16.2%
8 Nature Center Activities	12.2%	8 Fishing	11.8%
9 Fishing	11.7%	9 Nature Study	8.8%
10 Gathering Forest Products	9.4%	10 Gathering Forest Products	8.0%

State use numbers (SCORP 2012)

88% of MT residents over 18 are active in outdoor recreation with 74% of MT residents visiting public lands (public lands include National Forest Service, National Park Service and/or Bureau of Land Management).

Recreation Trends

A recent publication by Cordell (2012), in support of the 2010 Resource Planning Act (RPA) Assessment, describes the trends and outlooks for outdoor recreation in the United States. Some important trends especially relevant to recreation on public lands include:

- The mix of activities is evolving over time and is different than at any other time in the past. Some of the more “traditional” outdoor activities such as hunting and fishing are declining and being replaced by more nature-based recreation, such as wildlife or bird watching and photography.
- There is overall growth in outdoor recreation participation. Between 2000 and 2009, the total number of people who participated in one or more of 60 outdoor activities grew by 7.5 percent, and the total number of activity days of participation increased over 32 percent.
- There is substantial growth in both participants and annual days for five nature-based viewing and photography activities: viewing birds, other wildlife (besides birds), fish, wildflowers/trees and other vegetation, and natural scenery.
- Different segments of society chose different types and levels of participation in different mixes of outdoor activities.
- Public lands continue to be highly important for the recreation opportunities they offer. In the West, recreation on public lands account for 69 percent of annual recreation days, slightly more than 60 percent of viewing and photographing nature activity, around three-fourths of backcountry activity, 57 percent of hunting, and 67 percent of cross-country skiing.

- Visits to national forests have been declining, visits to National Parks and Bureau of Land Management lands have been fairly steady, and visits to FWS National Wildlife refuges have been growing.

Projected trends in outdoor recreation up to the year 2060 were also highlighted in the 2010 RPA Assessment. The five activities projected to grow fastest in number of participants are developed skiing, undeveloped skiing, challenge activities, equestrian activities, and motorized water activities. The activities with the lowest projected growth in participant numbers are visiting primitive areas, motorized off-road activities, motorized snow activities, hunting, fishing, and floating activities.

Introduction to the Recreation Opportunity Spectrum (ROS)

ROS are zones recreation settings and opportunities that are based on desired social, managerial, and physical attributes. A goal of the Forest Service is to provide opportunities for the recreationist to obtain satisfying experience in whatever recreational activity they choose. The Forest Service utilizes a framework called recreation opportunity spectrum (ROS) to describe different settings across the landscape that the public might desire and attributes associated with that setting. The ROS has six classes in a continuum to describe settings that range from highly modified and developed to primitive and undeveloped (USDA Forest Service, 1986). The six classes are: Urban (U), Rural (R), Routed natural (RN), Semi-primitive motorized (SPM), Semi-primitive non-motorized (SPNM), and Primitive (P)

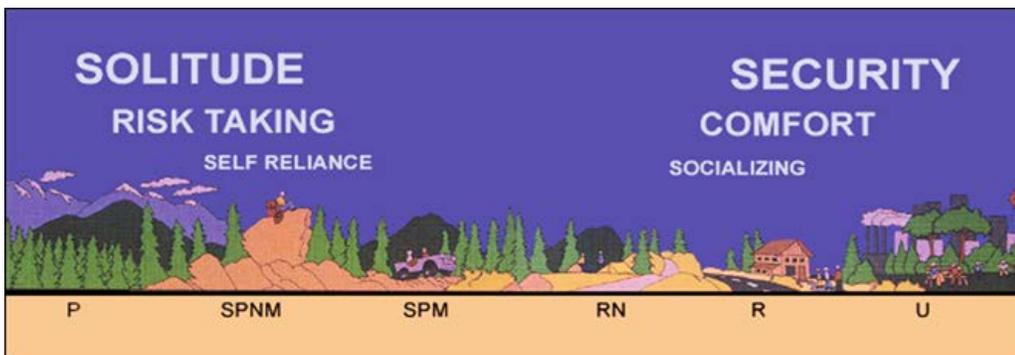


Figure 9. ROS spectrum graphic

Table 4. Preliminary acres and percentage of existing summer ROS classes on the FNF

ROS Classification	Acres	% of class on FNF
Urban	642	<1%
Rural	5,612	<1%
Routed Natural	601,895	25%
Semi-primitive Motorized	41,311	1.7%
Semi-primitive non-motorized	646,869	27%
Primitive	1,098,506	46%

Table 5. Preliminary acres and percentage of existing winter ROS classes on the FNF

ROS Classification	Acres	% of class on FNF
Urban	277	<1%
Rural	10,919	<1%
Roaded Natural	194,261	8%
Semi-primitive Motorized	714,863	30%
Semi-primitive non-motorized	548,511	23%
Primitive	926,047	39%

Wilderness and Outfitters and Guides

Wilderness

The United States Congress designated the Bob Marshall Wilderness in 1964 and this wilderness is the largest wilderness in the Bob Marshall Wilderness Complex at 1,009,356 acres. The Great Bear Wilderness was established in 1978 and is 286,700 acres.

The Bob Marshall, Great Bear, Scapegoat (not on the FNF) wildernesses comprise the Bob Marshall Wilderness Complex (BMWC) which makes up an area of more than 1.5 million acres, the third largest in the lower 48 states. The BMWC is managed by the Flathead, Lolo and Lewis and Clark National Forests under the Bob Marshall, Great Bear, Scapegoat Wilderness Recreation Management Direction (1987).

The Mission Mountain Wilderness was designated in 1975 and is 73,877 acres.

Outfitter and guide

Table 6. Number of permits, and service days by activity on the Flathead NF for 2012

Activity Type	Number of permits by activity type	Service Days
Backpacking	6	377
Dog Sledding	1	45
Environmental ED	1	959
Fish/float day use	21	11,859
Fish/Float overnight	6	510
Hiking drop camp	3	22
Day use hiking	2	122
Day use horse trail rides	11	2,530
Hunting	20	3,588
Hunting drop camps	1	14
Livery service	7	556
Horse packing	16	5,409
Llamas packing	1	88
Rafting overnight	11	1,408
Rafting day use	5	27,861
Snowmobiling	3	1,129
Total	52	56,680

Fees generated in 2012 from the activities listed in table 6 totaled \$178,039.

Wild and Scenic Rivers

FNF has 3 three designated WSR – South Fork, Middle Fork and North Fork of the Flathead that were designated by Congress in 1976 for a total of 219 miles. The FNF co-manages the North Fork of the Flathead with Glacier National Park. There are three types of WSR classification – wild, scenic or recreation. Management of the WSR is dependent on what classification it is and why it was designated (what is/are the outstanding remarkable values it was designated for). As part of the revision process, we will be looking at the eligibility of potential WSR on the forest and we will have an in-depth discussion on the WSR eligibility process on Sept 26th field trip.

Scenery

Viewing scenery is one of the top activities in the national forest (viewing natural features is the number one activity on the FNF). Scenery is defined as the general appearance of a place and the features of its views or landscapes. The physical setting of a place is the production of both natural process and human culture. Natural processes such as fire, insect and disease outbreaks cause scenery to continually change. Cultural alterations made by people at various times and places and result in changes to the physical landscape.

Although the adage “beauty is in the eye of the beholder” has truth for some, research has shown that landscapes with high degree of natural-appearing character are most desirable.

The Scenery Management System (SMS) provides a methodology for inventorying, analyzing and monitoring the aesthetic values of National Forest lands.

The SMS considers the following components:

- Scenic character and scenic attractiveness
- Concern level of residents and visitors
- Visibility from key areas such as highways, high use recreation sites

Scenic attractiveness is the scenic importance of a landscape based on human perception of the intrinsic beauty of landforms, rockforms, waterforms, and vegetation patterns. There are three classifications:

- A. *Distinct* (special landscape which stands out from common landscape)
- B. *Typical or common* (landscape with ordinary and routine scenic attractiveness)
- C. *Undistinguished*

Scenic integrity (the degree of intactness) is based on social desires (visibility, and importance to residents and visitors) and ecological context.

Scenic integrity objectives (SIOs) express the desired condition for scenic character across the forest. SIO are classified as: very high, high, moderate low, and very low, as illustrated in the examples below.

Scenic Integrity	Scene	Characterization
Very High		Landscape character is intact.
High		Landscape character appears unaltered.
Moderate		Activities are noticeable but subordinate to the landscape character.

Scenic Integrity	Scene	Characterization
Low/Very Low		Activities are evident and sometimes dominate the landscape character.

Table 7. Existing landscape character across the Flathead NF

Landscape Integrity	Acres
Very High	<i>forthcoming</i>
High	“
Moderate	“
Low/very low	“

Fees collected and recreation budget

How do concessionaires, OG and cabins fit into the recreation budget? Federal Lands Recreation Enhancement Act in 2004 allows us to collect fees and use on forest instead of going to the general treasury; cabins, OG and Interagency Pass sales come back to the forest. Receipts from ski areas and recreation residences do not.

Table 8. Revenue from cabins, OG and Interagency Pass Sales 2009-2012 for Flathead NF

	FY2009	FY2010	FY2011	FY2012
Cabins	\$56,688.63	\$75,980.75	\$93,960.83	\$96,131.96
Outfitter/Guide	\$169,707.34	\$186,950.95	\$205,996.02	\$178,039.01
Interagency Pass Sales	\$1,608.00	\$1,724.50	\$1,577.00	\$2,764.50
Totals	\$228,003.97	\$264,656.20	\$301,533.85	\$276,935.47

Table 9. Gross revenue and fees paid to government from campground concessionaire 2009 to 2012 for FNF

Campground Concession Permit	CY2009	CY2010	CY2011	CY2012
Gross Revenue	\$265,951.48	\$232,149.05	\$223,070.18	\$261,524.74
Fee Paid to the Government	\$12,970.14	\$11,358.92	\$13,118.87	\$15,461.04

*Resource Advisory Projects (RAC)***Table 10. RAC funding for rec/trails for FY 2009-2012 for the Flathead NF**

	FY 2009	FY 2010	FY 2011	FY 2012
Rec/Trail Projects	\$71,600	\$129,979	\$100,050	\$94,521

*Appropriated Funds***Table 11. Appropriated funds for recreation, wilderness, trails, facilities and heritage FY2009-2013 FNF**

Fund Code	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
NFRW (Rec/Wild/Hert)	\$1,225,200	\$1,220,000	\$1,045,300	\$1,042,000	\$1,010,000
CMTL (Trails)	\$710,500	\$684,000	\$774,000	\$737,800	\$572,000
CMFC (Facilities)	\$53,000	\$120,000	\$110,000	\$107,000	\$107,000
Total	\$1,988,700	\$2,024,000	\$1,929,300	\$1,886,800	\$1,689,000

*Access**Trails***Table 12. Allowed trail use in miles by geographical area on the Flathead NF**

Allowed Use	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Outside Area*	TOTAL MILES
Bicycles	119	63	184	145	81	151	5	747
Hiking	154	407	184	151	850	230	14	1,988
Pack & Saddle (stock)	122	407	184	145	850	222	14	1,943
Summer Motorized	56	17	10	91	5	60	3	242
Winter Motorized	99	53	134	79	25	143	5	537
Total Miles	430	884	512	465	1,730	654	35	4,710

* Trail may go off forest or through private land easement

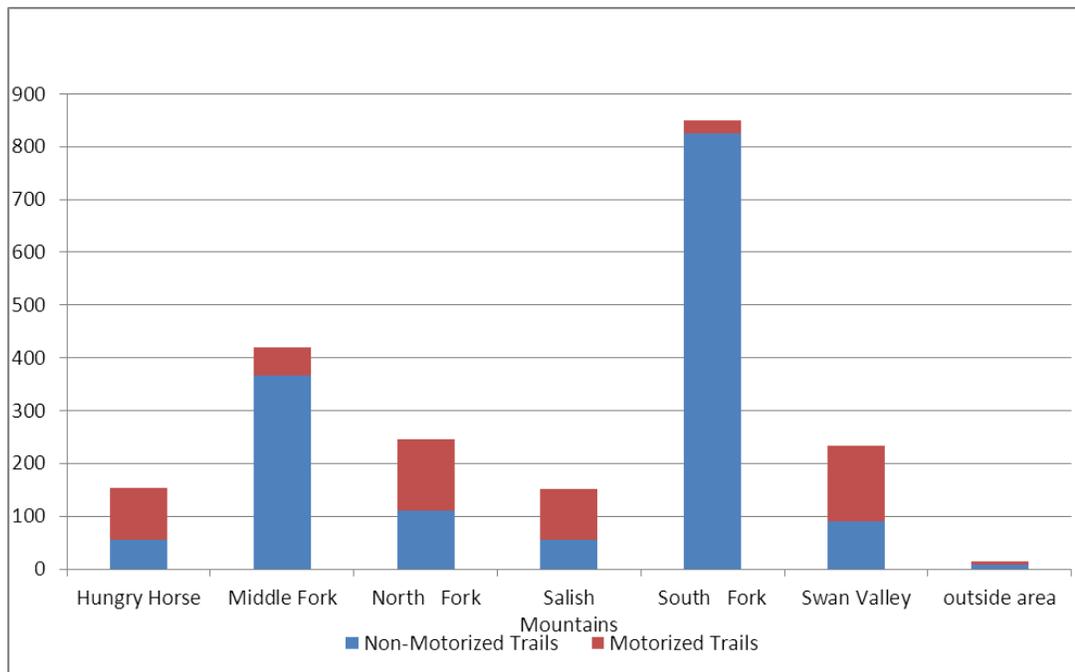
Table 13. Miles of trails by managed use on the Flathead NF

Managed Use	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Outside Area*	Total Miles
ATV				0				0
Bicycle			0	36		13	3	51
Cross Country Ski				28				28
High Clearance Vehicle				11				11
Hiker/Pedestrian	46	6	13	80	0	30	3	179
Motorcycle	46		2	28		32		108
Mtr Over-Snow Vehicle		26	62	2		13		102

Managed Use	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Outside Area*	Total Miles
Non-Motorized	11			3	5	20		40
OHV <=50"	6	8	8			25		47
Over Snow Travel		1						1
Pack and Saddle	45	389	163	70	845	131	14	1,656
Snow Shoe				11				11
TOTAL MILES	155	430	248	268	850	264	19	2,234

* Trail may go off forest or through private land easement

Figure 10. Miles of motorized and non-motorized trail on the Flathead NF



Note: Non-motorized trails do not necessarily allow all types of non-motorized traffic, and may have various restrictions by type and season of non-motorized traffic. Motorized trails do not necessarily allow all types of motorized traffic, and may have various restrictions by type and season of motorized traffic.

Infrastructure, such as Recreational Facilities and Transportation and Utility Corridors

Roads

Table 14. Miles of road by operational maintenance level on the Flathead NF

Operational Maintenance Level	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Outside Area*	Total Miles
Basic Custodial Care (closed)	317	39	260	609	74	777	1	2,076
High Clearance Vehicles	67	17	99	269	12	34	0	500
Passenger Car	171	21	144	345	46	225	0	952
TOTAL MILES	554	77	504	1,224	133	1,036	1	3,528

* Roads may go off forest or through private land easement

Table 15. Miles of roads open to the public by maintenance level and geographic area on the Flathead NF

Operational Maintenance Level	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Total Miles
Basic Custodial Care (closed)	0	0	0	0	0	0	0
High Clearance Vehicles	55	17	93	264	12	34	475
Passenger Car	170	21	144	345	46	224	951
TOTAL MILES	225	38	237	611	58	256	1,426

Table 16. Miles of roads closed to the public by maintenance level and geographic area on the Flathead NF

Operational Maintenance Level	Hungry Horse	Middle Fork	North Fork	Salish Mountains	South Fork	Swan Valley	Outside Area*	Total Miles
Basic Custodial Care (closed)	316	39	260	607	74	768	1	2,065
High Clearance Vehicles	12	0	6	6	0	4		29
Passenger Car	1		0		0	0		2
TOTAL MILES	330	39	266	613	74	773	1	2,096

* Roads may go off forest or through private land easement

Maintenance and Budget Limitation

Table 17. Road maintenance workload, backlog and budget levels on the Flathead NF

Maintenance in 2012	Current Backlog Miles	FY 2012 Budget
700 miles	3,522	\$1,486,000

Road Decommissioning

Since 1995, total system road mileage on the Flathead National Forest has gone from 3,842 miles to 3,384 miles. Over the next couple of years, Plum Creek Timber Company roads from the MT Legacy Project will

have their ownership updated to National Forest System Road (NFSR) status, increasing the total Flathead NF system road mileage.

Table 18. Flathead National Forest road decommissioning mileage summaries since 1995.

Year	Miles of Road	Cumulative
1995	69.97	
1996	40.38	110.35
1997	28.40	138.75
1998	18.36	157.11
1999	109.20	266.31
2000	37.24	303.55
2001	1.25	304.80
2002	56.54	361.34
2003	36.43	397.77
2004	41.52	439.29
2005	28.09	467.38
2006	46.67	514.05
2007	42.09	556.14
2008	48.44	604.58
2009	22.43	627.01
2010	54.84	681.85
2011	12.40	694.25
2012	13.03	707.28
Total	707.28	

Aviation

Table 19. Airstrips on the Flathead NF by geographic area

Geographic Area	Site Name	Remarks
Middle Fork	Schafer	Wilderness; maintained by USFS, open to public
South Fork	Meadow Creek	Wilderness; maintained by USFS, open to public
South Fork	Spotted Bear	Front country; maintained by USFS, open to public
Swan Valley	Condon	Front country; maintained by USFS, open to public

Existing Designated Areas

Wilderness

The Flathead National Forest has xx acres of designated wilderness in 3 wilderness areas: Great Bear, Mission Mountains and Bob Marshall. We will be completing a wilderness evaluation process to determine if there is a need for additional wilderness on the forest.

The United States Congress designated the Bob Marshall Wilderness in 1964 which is [1,009,356 acres](#); the largest wilderness in the Bob Marshall Wilderness Complex. The Great Bear Wilderness was established in 1978 and is [286,700 acres](#). The Bob Marshall, Great Bear, Scapegoat (not on the FNF) wildernesses comprise the Bob Marshall Wilderness Complex (BMWC) which makes up an area of more than 1.5 million acres, the third largest in the lower 48 states. The BMWC is managed by the Flathead, Lolo and Lewis and Clark National Forests under the Bob Marshall, Great Bear, Scapegoat Wilderness Recreation Management Direction (1987).

The Mission Mountain Wilderness was designated in 1975 and is [73,877 acres](#).

Wild and Scenic Rivers

There are 3 designated wild and scenic rivers on the Flathead NF – South Fork, Middle Fork and North Fork of the Flathead that were designated by Congress in 1976 for a total of 219 miles. The FNF co-manages the North Fork of the Flathead with Glacier National Park. There are three types of WSR classification – wild, scenic or recreation.

Management of the WSR is dependent on what classification it is and why it was designated (what is/are the outstanding remarkable values it was designated for). Water plays an important part on the Flathead Forest Recreation Niche and our WSR are special designations that protect the river corridor. As part of the revision process, we will be looking at the eligibility of potential WSR on the forest.

Inventoried Roadless Areas

Inventoried Roadless areas (IRAs) are statutorily designated areas under the Roadless Area Conservation Rule (RACR; USDA Forest Service 2001; 36 CFR Part 294). These areas were first inventoried by the Forest Service in 1972, as part of the Roadless Area Review and Evaluation phase I (RARE I). A second inventory was completed for RARE II in 1978.

Other special designations

On the Flathead NF include Jewel Basin Hiking Area, portion of the Continental Divide Trail, 7 national recreation trails, 3 national register of historic places, 6 research natural areas, 1 botanical area, an experimental forest and a research demonstration forest.