

Identification and Inventory

of Areas that may be Suitable for

Inclusion in the National Wilderness

Preservation System

Helena - Lewis & Clark National Forest
Forest Plan Revision



Dupuyer Sunrise, photo by K. Rumsey

January 29, 2016

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1.0 Introduction

The Helena - Lewis and Clark National Forest (HLC NF) are revising their forest plans. In developing a proposed new plan or proposed plan revision, the responsible official shall “identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System (NWPS) and determine whether to recommend to the Chief of the Forest Service (FS) any such lands for wilderness designation” (Forest Service Land Management Planning Handbook 1909.12).

The HLC is seeking public input on the results of the inventory step of the wilderness evaluation process. **Please have comments back to the HLC planning team by March 11, 2016.** For more information on how to comment, please see Section 5, The Next Steps.

2.0 Wilderness Evaluation Process Overview

The process by which lands are recommended for inclusion in the NWPS is intended to be transparent and consistent across the National Forest System (NFS). To accomplish this, the process is designed to occur in the following four primary steps (2012 Forest Service Planning Rule and Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12.):

1. The Responsible Official (the Forest Supervisor) shall identify and create an inventory of all lands that may be suitable for inclusion in the NWPS.
2. The Responsible Official shall evaluate the wilderness characteristics of lands identified in the inventory using a set of criteria based on the Wilderness Act of 1964 and informed by the Eastern Wilderness Act of 1975.
3. The Responsible Official shall consider the areas evaluated and determine which areas to further analyze for recommendation as part of one or more alternative identified in a National Environmental Policy Act (NEPA) document.
4. The Responsible Official shall decide, based upon the analysis and input from Tribal, State, and local governments and the public, which areas, if any, to recommend for inclusion in the NWPS.

Each step of the process requires public participation and collaboration, intergovernmental coordination with state and local governments, and tribal consultation, as required by the broader planning process. Maps and documentation on the process will be made available after each of the process steps to increase transparency and enable public participation, feedback, and input.

All plan revisions must complete this process before the responsible official determines, within the plan decision document, whether to recommend lands within the plan area to Congress for wilderness designation. Wilderness recommendations are only preliminary administrative recommendations; Congress has reserved the authority to make final decisions on wilderness designation.

3.0 Inventory of Lands Suitable for Wilderness Inclusion

The first step in the wilderness evaluation process conducted on the Helena - Lewis & Clark (HLC) planning area was the identification and inventory of lands that may be suitable for inclusion in the NWPS. This report summarizes the process that the HLC NF used to complete this first step in this

process. The primary function of the inventory step is to efficiently and effectively identify all lands within the plan area that may have wilderness characteristics as defined in the Wilderness Act of 1964 (16 United States Code 1131–1136, 78 Stat 890), using a transparent process. Lands included in the inventory are documented and identified on a map and will be carried forward for further evaluation.

This inventory process began by considering the existing and relevant information that was identified during the assessment. Existing designated wilderness, private land inholdings, and patented mining claims were removed from and not considered in the inventory step as these lands are either privately held or already officially designated as wilderness and no further study is needed on them. Inventoried roadless areas (IRAs), Montana wilderness study act areas (WSAs), and areas considered as recommended wilderness in the 1986 Forest Plans were included in the inventory process. These areas do not have formal designation as wilderness and are therefore available for consideration for potential future wilderness designation.

It is important to note that lands included in the inventory provide a starting point for further evaluation, and their identification in the inventory is not a designation that conveys or requires a particular kind of management.

Using the assessment information as a base, an inventory was developed using both the size and improvements criteria outlined in Chapter 70 of the 2015 Final Land Management Planning Directives, Forest Service Handbook 1909.12. These criteria are described in more detail below.

3.1 Size Criteria

According to the Wilderness Act, a wilderness area must meet size criteria set forth in the act. Lands included in the wilderness inventory within the HLC planning area met one of the following size criteria:

- The area was 5,000 acres or greater or,
- The area contained less than 5,000 acres but was of sufficient size as to make practicable its preservation and use in an unimpaired condition, including but not limited to areas contiguous to an existing wilderness, primitive area, administratively recommended wilderness, or wilderness inventory of other Federal ownership.

The initial GIS map created in November 2015 showed a total of 4,175 polygons that could be considered for inclusion in the wilderness inventory. Of these, 59 were greater than 5,000 acres in size, thereby meeting the requirements of the directives. 4,030 of the polygons were less than 1000 acres in size. These smaller polygons were reviewed by the Leadership Team on December 9, 2015. It was determined at this meeting that all of these smaller polygons (except for 4 small polygons adjacent to the Gates of the Mountains Wilderness area) would be dropped from further consideration in the inventory step because they were too small to be effectively managed for wilderness characteristics.

The leadership team recommended that the 86 polygons that were greater than 1,000 acres but less than 5,000 acres be reviewed alongside the 59 polygons that were greater than 5,000 acres in size. All of these remaining polygons were then reviewed by district rangers and their staffs in a series of meetings in early January 2016. After this review, only 1 polygon greater than 1,000 acres but less than 5,000 acres was carried forward for further consideration in the inventory. This polygon, located within the Divide GA, was considered to be an important area for social as well as ecological purposes despite its size.

3.2 Improvements Criteria

In addition to size criteria, lands within the HLC planning area were studied to determine the level of development or “improvements” that were present within these landscapes. Improvements on the landscape can be thought of in two categories: road improvements and other improvements. These improvements and how they were utilized to develop the inventory are described below.

3.21 Road Improvements

The forest plan revision team utilized existing roads data. This data was used in the assessment and was verified by district ranger review. The data reflected the most current travel plans and the maintenance level for each road. (For definitions on Forest Service road maintenance levels, please see the glossary.) The following criteria was used to determine whether an area with an existing road was included in the inventory or excluded from it. GIS was used to create a map using these road improvement criteria. All Maintenance Level 2, 3, 4, and 5 roads were buffered by 33 feet on either side, which is the standard right-of-way (ROW) width for forest service roads.

Road improvements included in the inventory:

- Areas that contain Maintenance Level 1 roads.
- Areas with any routes that were decommissioned, unauthorized, or temporary, or forest roads that are identified for decommissioning in a previous decision document or identified as likely unneeded in a travel management plan.
- Areas with forest roads that will be reclassified to a Maintenance Level 1 through a previous decision document or travel plan.
- Areas with forest roads that have been proposed by the Forest Service for consideration as recommended wilderness as a result of a previous forest planning process; or areas with forest roads that the Responsible Official merits for inclusion in the inventory that were proposed for consideration through public involvement during the assessment or other public or intergovernmental participation opportunity.
- Areas with historic wagon routes, historical mining routes, or other settlement era transportation features considered part of the historical and cultural landscape of the area.
- Areas with Maintenance Level 2 roads that do not meet the criteria for exclusion.

Road Improvements excluded from the inventory:

- Permanently authorized roads validated by a Federal court or the Department of Interior for which a valid easement or interest has been properly recorded.
- Forest roads with a Maintenance Level of 3, 4, or 5.
- Maintenance Level 2 roads or Maintenance Level 3, 4, or 5 roads that will be reclassified to Maintenance Level 2 through a previous decision document or travel planning that meet one or more of the following criteria:
 - Have been improved and are maintained by mechanical means to ensure relatively regular and continued use,
 - Have cumulatively degraded wilderness character or precluded future preservation of the area as wilderness.
 - Have been identified for continued public access and use in a project level or travel planning decision supported by NEPA analysis, or

- Otherwise preclude evaluation and consideration of the area during the public participation and intergovernmental outreach processes as potentially suitable for wilderness, based on assessment information or on-the-ground knowledge.

3.22 Other Improvements

After size criteria and road criteria were identified and evaluated, the HLC planning area was studied to determine the presence of other improvements. Other improvements consist of improvements or developments that show evidence of past and present human activities. These improvements consist of features such as built structures, existing and past management activities, and constructed features related to special use permits.

Some structures such as log cabins, post and log fences, and historic mining features were considered positive cultural elements when looking at landscape character. This complements FSH 1909.12 Chapter 70, 71.22b, which states historic structures, dwellings, and other relics of past occupation, when they are considered part of the historic and cultural landscape of the area, may be included in the inventory of lands that may be suitable for inclusion the NWPS.

After the inventory had been distilled based upon the size of polygons, additional refinement of the remaining polygon boundaries was conducted. District rangers and their staffs reviewed the other improvements within the polygons and adjusted polygon boundaries to account for fragmentation concerns related to the configuration and juxtaposition of other improvements within the polygons. Fragmentation within the polygons was created by the presence of large numbers of timber harvest units, open roads networks, patented mining claims, and private land inholdings that affected to cohesiveness of the polygons. Where these fragmented areas occurred, the boundaries of the polygons were adjusted to exclude these more developed areas from the inventory.

3.22a. Substantially Noticeable

These constructed features and management activities were analyzed to determine whether they are substantially noticeable. The term “substantially noticeable” is not directly defined in the Forest Service Handbook 1909.12, Chapter 70. This was done purposefully by the Handbook to give the Responsible Official discretion and judgement based on the unique factors associated with the forest on which the wilderness inventory is being conducted.

The forest plan revision team, together with other forest resources, reviewed the list in the Forest Service Handbook and made determinations on what improvements might be considered “substantially noticeable”. These determinations were based on the type of materials used to construct or develop the improvement, the connected aspects associated with utilizing the improvement, and how evident the improvement and associated features appeared on the landscape. During these determinations, the principles of scenery management were considered, as were the degree to which the landscape appears unaltered by human activities.

Not all improvements or management activities are considered to be substantially noticeable. If an improvement was determined to be not substantially noticeable, it was included in the inventory. Improvements included in the inventory:

- Heliports. Constructed features associated with heliports within the plan area are generally not visually evident.
- Vegetation treatments that are not substantially noticeable. (For details, see appendix B)
- Timber harvest treatments that are not substantially noticeable. For details, see appendix B).

- Areas with unpatented mining claims, since these claims tend to change year to year and location to location and generally create minimal impact.
- Areas with saleable mineral materials.
- Areas with oil and gas leases with no above ground developments.
- Areas considered for solar, wind, and geothermal where no above ground features currently exist.
- Range improvement areas with minor structural improvements such as wire and post and pole fencing. Minor spring developments (without obvious and lengthy pipelines) are also included in the inventory.
- Dispersed recreation improvements, including dispersed campsites, minor hunter and outfitter camps, occupancy spots, and minor trail access points.
- Improvements associated with motorized and non-motorized trails such as signs, trail bridges, and drainage structures. Areas containing jeep trails are also included in the inventory.
- Ground-return telephone lines, electric lines, and powerlines if a right-of-way has not been cleared or is not required through special use authorization.
- Watershed treatment areas that are not substantially noticeable.
- Structures, dwellings, and other relics of past occupation and activity that are considered a part of the historical and cultural landscape of the area.
- Structures and infrastructure associated with special use permits that are not substantially noticeable.
- Areas with improvements that have been proposed by the Forest Service for consideration as recommended wilderness as a result of a previous forest planning process or that the Responsible Official merits for inclusion in the inventory that were proposed for consideration through public or intergovernmental participation opportunities.

If an improvement was found to be substantially noticeable, it was excluded from the inventory. A number of improvements were found to be substantially noticeable across the HLC landscape. These improvements were identified on the inventory maps and then buffered to provide for the proper maintenance and/or management of these improvements. Other improvements excluded from the inventory include:

- Airstrips. All airstrips within the HLC are located next to open roads that would be excluded from the inventory. By this association, the airstrips were also excluded from the inventory.
- Permanently installed vertical structures, such as electronic installations that support television, radio, telephone, or cellular communications. These sites were buffered with a radius of 150 feet.
- Timber harvest treatments that are substantially noticeable (See appendix B for a definition of substantially noticeable timber and vegetation treatments). Areas with substantially noticeable timber harvest units were excluded where a series of treatments were found to be present within a larger area or a drainage.
- Areas containing mine waste rock, tailings, mine waste repository sites, and areas with toxic heavy metals in concentration. Polygons boundaries were buffered by 200 feet.
- Areas with identified federal and state superfund sites. This would include Upper Blackfoot Mine Complex Comprehensive Environmental Cleanup Responsibility Act (CECRA), Barker-Hughesville Comprehensive Environmental Response, Compensation, and Liability Act

(CERCLA), Carpenter Creek-Snow Creek (CERCLA), and Tenmile Watershed (CERCLA). The Superfund site boundaries were used for exclusion.

- Range improvements with substantially noticeable structural improvements such as large scale water troughs and pipelines associated with these improvements. Water troughs were buffered with a radius of 150 feet. Pipelines were buffered by 75 feet either side of the pipeline.
- Developed recreation sites, including developed fee campgrounds, picnic areas, group camping and picnic sites, and large trailheads. Developed recreation sites were buffered by 200 feet.
- Powerlines with cleared rights-of-way, pipelines, and other permanently installed linear rights-of-way structures. All powerlines, pipelines, and permanently installed linear features were buffered by 150 feet on either side of the linear structure.
- Lands adjacent to development or activities that impact opportunities for solitude.
- Structures and infrastructure associated with special use permits that are substantially noticeable. Such improvements might be connected to permitted cabins, recreation residences, lodges and resorts, ski area resorts, organizational camps, and individual special use permits for road and/or water access. These improvements were buffered by 150 feet.
- Administrative sites and miscellaneous buildings used by the Forest Service. These sites/buildings were buffered by 150 feet.
- Target ranges. The official target range boundary was used for the exclusion boundary.

4.0 Results of the Inventory

The areas listed in the following tables have been identified as potentially suitable for inclusion in the NWPS. These areas will be included in the inventory and will be carried forward for further evaluation. The evaluation of the inventoried areas, the second step, will take a more detailed look at these inventoried areas to determine how well they meet wilderness characteristics using a set of criteria based on the Wilderness Act of 1964.

Table 1. Areas potentially suitable for inclusion in the NWPS

Geographic Area	Wilderness Evaluation Inventory #	Appx. Acres
Big Belts		
	BB1	10,254
	BB2	5,784
	BB3	39,383
	BB4	14,140
	BB5	25,787
	BB6	23,879
	BB7	18,335
	BB8	6,197
	BB11	7
	BB12	22
	BB13	39
	BB14	54

Geographic Area	Wilderness Evaluation Inventory #	Appx. Acres
Castles		
	CA1	33,002
	CA3	8,676
Crazies		
	CR1	25,605
	CR3	13,210
Divide		
	D2	7,978
	D3	29,066
	D5	8,168
	D13	4,173
Elkhorns		
	E1	57,279
	E3	15,180
Highwoods		
	H1	15,824
	H2	26,210
Little Belts		
	LB1	89,321
	LB2	45,334
	LB3	7,965
	LB4	8,355
	LB5	6,839
	LB6	11,374
	LB8	49,068
	LB10	6,337
	LB11	12,598
	LB15	9,817
	LB16	98,312
	LB18	106,178
Rocky Mountain Range		
	RM1	125,795
	RM2	56,006
	RM3	71,106
	RM4	15,312
	RM5	30,030
Snowies		
	S1	103,480
Upper Blackfoot		
	UB1	44,141

Geographic Area	Wilderness Evaluation Inventory #	Appx. Acres
	UB2	30,046
	UB3	10,220
	UB4	21,539
	UB5	1,756
	UB9	5,636
	UB10	51,027

5.0 The Next Steps

5.1 Public Participation

Public participation is required for each step of the wilderness inventory and evaluation process. The HLC planning team intends to actively engage the public, tribes, other local governments, and government agencies throughout this process to acquire feedback and input on each stage of the process.

The HLC is seeking public input on the results of the inventory step of the wilderness evaluation process. An interactive map is available on the HLC forest plan revision website

(<http://www.fs.usda.gov/goto/hlc/forestplanrevision>). This map displays the initial inventory of lands that may be suitable for inclusion in the National Wilderness Preservation System. This map, coupled with this document explaining the methodology used to arrive at it are available for a 45-day comment period.

Please have comments back to the HLC planning team by March 11, 2016. Comments may be submitted in three different ways:

- Send via postal mail to Liz Van Genderen, Helena-Lewis & Clark National Forest, 2880 Skyway Dr., Helena, MT 59602
- Send electronically to the revision inbox at hlcplanrevision@fs.fed.us , or
- Use the collaborative mapping tool on the HLC forest plan revision website

Reference

Province of British Columbia, Ministry of Forests. 1994. A First Look at Visually Effective Green-up in British Columbia. A Public Perception Study. Recreation Branch Technical Report 1994:1.

Glossary

Forest road. A road wholly or partly within or adjacent to and serving the National Forest System (NFS) that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

Road Maintenance Levels. The level of service provided by, and maintenance required for, a specific road (FSH 7709.59, ch. 60, sec. 62.3).

- **Maintenance Level 1.** These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are to "prohibit" and "eliminate" all traffic. These roads are not shown on motor vehicle use maps. Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic but may be available and suitable for non-motorized uses.
- **Maintenance Level 2.** This level is 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 not provided with the exception that some signing, such as W-18-1 "No Traffic Signs," may be posted at intersections. Motorists should have no expectations of being alerted to potential hazards while driving these roads. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to "discourage" or "prohibit" passenger cars. "Accept" or "discourage" strategies may be employed for high clearance vehicles.
- **Maintenance Level 3.** This level is 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. The manual on uniform traffic control devices is applicable. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations. Roads in this maintenance level are typically low speed with single lanes and turnouts. Appropriate traffic management strategies are either to "encourage" or "accept" passenger cars. "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.
- **Maintenance Level 4.** This level is assigned to roads that provide a moderate degree of user comfort and convenience at 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. The manual on uniform traffic control devices is applicable. The most appropriate traffic management strategy is to "encourage" passenger cars. However, the "prohibit" strategy may apply to specific classes of vehicles or users at certain times.
- **Maintenance Level 5.** This level is assigned to roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities. Some may be aggregate surfaced and dust abated. The manual on uniform traffic control devices is applicable. The appropriate traffic management strategy is to "encourage" passenger cars.

Appendix A. Determination of Substantially Noticeable Vegetation Treatments

Introduction

This paper outlines the process used to determine if vegetation treatments on the landscape are substantially noticeable relative to the wilderness inventory for Forest Plan Revision. Our definition of substantially noticeable is: “what a viewer will likely see when viewing harvest areas and associated roads from the background, mid-ground and foreground of an area to assist in determining whether or not vegetation treatments, timber harvest, and prior road construction were substantially noticeable and, consequently, whether or not they are included or excluded from the wilderness evaluation inventory.” The following characteristics may be visible after vegetation treatments. The timeframe in which these characteristics exist varies.

- Foreground (0-0.5 miles away): Roads; stumps; logging slash; vegetation may be noticeably more open, evenly distributed, and/or absent.
- Midground (0.5-4 miles away) and Background (4 or more miles away): Roads; geometric edges; vegetation may appear more open, evenly distributed, and/or absent.

The steps of the analysis included:

1. Define substantially noticeable characteristics associated with vegetation treatments.
2. Determine the timeframes needed to achieve visual recovery after treatments.
3. Map areas with vegetation treatment that are substantially noticeable. Identify areas that have burned since treatment, and determine if they are still substantially noticeable.
4. Conduct internal and external review of rationale and mapping.

Treatments Evaluated and What a Viewer is Likely to See

For this analysis, vegetation treatments can be categorized into 3 main types. The descriptions below provide an overview of each type and what a viewer may see in the foreground, midground, and background.

1. Prescribed Fire and Fuels Treatments

Prescribed fire and fuels treatments include activities often accomplished by hand or prescribed fire. Activities such as slashing and handpiling reduce the amount of small trees and create small diameter stumps. Prescribed burning may consume surface fuels, small trees, and cause some overstory tree mortality. Dead and scorched trees remain on the landscape. In the foreground, factors such as stumps, slash, and slash piles are visible until piles are burned or the slash decomposes into the grass, shrub, and litter layer (generally within 5 years). Some treatments may be accomplished with mechanical equipment, such as piling and burning large jackpot piles. Prescribed burning is visible through charred vegetation for a short time, but often appears similar to the effects of wildfire. Treatment unit shapes and residual tree densities are often irregular and indistinguishable from the natural landscape when viewed from the middle or background. These treatments are generally not considered substantially noticeable, with the exception of fuel breaks which may be delineated with geometric patterns.

2. Intermediate Treatments and Uneven-Aged Regeneration Harvests

Intermediate treatments remove some trees in a stand, leaving behind residual trees (i.e., thinning). Treatments in young stands, such as precommercial thinning, are often accomplished by hand, and may leave residual trees on a relatively even spacing. Small stumps and slash are visible in the foreground for 5 to 15 years depending on site conditions; as material starts to decompose it becomes covered with grasses, shrubs, and the litter layer. In the middle and background the regular spacing of trees could be visible. Intermediate treatments in mature stands, such as commercial thinning, are often accomplished with ground-based mechanical equipment. Stumps and logging slash would be visible in the foreground in the short term. Because of their larger size, stumps may be visible for decades. Because residual trees are left, often roads are not highly visible. In some cases treatments were accomplished with skyline logging methods, creating linear corridors; delineated in units with geometric edges; and/or created low tree densities that are visible from the midground and background for decades until tree crowns and understory development softens the pattern. Conversely, some treatments are irregular in shape and residual density, and blend in almost immediately in the middle and background. Uneven-aged treatments, such as single tree selection, are designed to regenerate trees but the appearance is similar to an intermediate treatment. Intermediate and uneven-aged treatments are substantially noticeable for 5 to 20 years depending on the specific treatment.

3. Even-Aged Regeneration Harvest

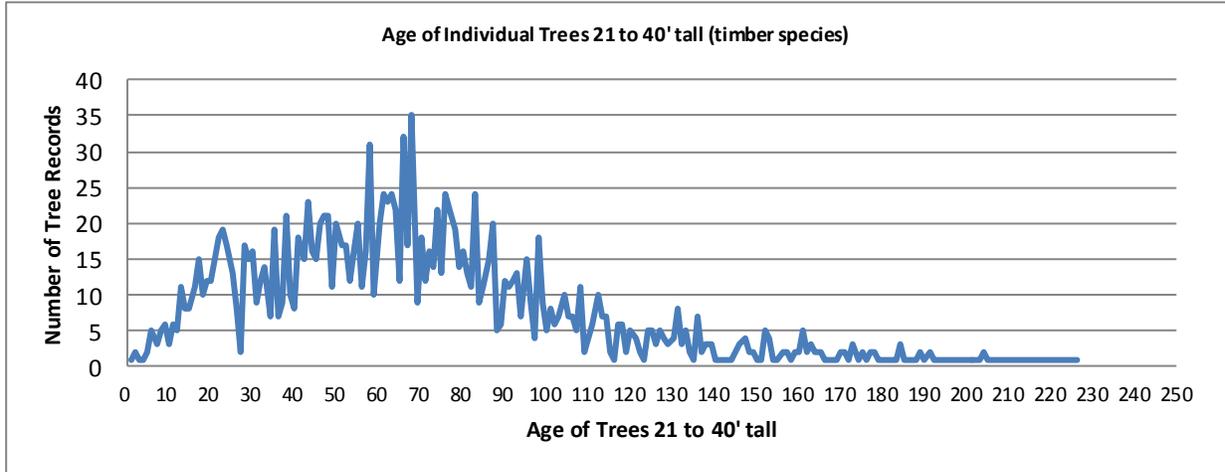
Even-aged regeneration harvests generally remove most of the existing trees, and include treatments such as clearcuts, seed tree, and shelterwood cuts. These activities are often associated road building and may be followed by prescribed burning. In the past, clearcuts were often delineated with geometric edges that contrast with unharvested areas. Recent harvests tend to be more irregularly delineated and with more patches of reserve trees. Seedtree and shelterwood cuts leave behind scattered residuals and in some cases appear like a thinning. Nevertheless, it is assumed that most regeneration harvests left behind few trees. In the foreground, logging slash is visible in the short term and stumps may be visible for decades, although grass and shrub cover may cover them on some sites. Road cuts are evident in the foreground for a long time. The delineation between harvested and unharvested areas diminishes as young trees grow and reduce views. In the middle ground, roads and geometric patch shapes are visible until newly established trees grow to a height that blocks visibility of the road and blends in with the landscape. These characteristics are similar for the background except that the viewer may not have a continuous line of sight, as the features may be interrupted by terrain and vegetation. When seen from the background, harvested areas are typically distinct and noticeable as compared to unharvested areas until trees re-grow. Roads within and surrounding the harvested area are particularly visible during the first few decades. Steep terrain or poor re-stocking/slow growth can increase the visibility roads, and require longer time periods before trees are tall enough to block a continuous view of the road and reduce the delineation between harvested and unharvested areas.

Tree Heights and Timeframes Needed for Visual Recovery after Regeneration Harvest

Factors such as tree height, stand density, and topography influence when a regeneration harvest area is no longer substantially noticeable. There is a range of variability across the HLC, but generally it is assumed that tree heights of 21 to 40 feet are needed to achieve visual recovery (Ministry of Forests, British Columbia 1994), depending on topography and treatment unit delineation. The timeframe needed for trees to grow to this height range varies because height growth, especially in young, immature tree stands, depends upon site productivity and species. An analysis of existing vegetation data on the HLC was done to determine an average timeframe needed to achieve this height range. The analysis provided a summary of the age of trees and stands that are 21 to 40 feet tall. Metadata can be found in the project file (VegSubstNoticeable_Heights_Analysis.xlsx). A description of vegetation data used can also be found in the Assessment of the Helena and Lewis & Clark National Forests, Appendix B.

- Individual tree data on forested plots was examined for species commonly harvested (Douglas-fir, lodgepole pine, western larch, subalpine fir, and Engelmann spruce). Figure 1 shows the age/height relationships recorded. Outliers ranged from 10 years to over 300 years old; however, most trees were between 33 and 99. The mode (most common) age was 80. Trees that met the lower end of the range (21') averaged 62 with a mode of 55.

Figure 1. Age/height relationship of individual trees 21-40' tall, of timber species



- Plot level information was also reviewed. Plots in cover types most commonly harvested were included (dry Douglas-fir, mixed mesic conifer, lodgepole pine, and spruce/fir). These data showed that plots between 21 and 40' tall had an average age of 44. Plots in the lower end of the desired height range (21 to 25 feet) averaged 31 years old.

Timber harvest was usually conducted on the more productive sites. Generally tree regeneration following harvest is established within 5 years per National Forest Management Act (NFMA) requirements. Accounting for the 5 year establishment period, and the range of ages seen in data, an average timeframe of 55 years is used to represent a point in time that, in general, areas harvested with even-aged regeneration methods have ceased to be substantially noticeable.

Detailed Activity Code Rationale (FACTS) and Example Photographs

The Forest Activity Tracking System (FACTS) is a corporate database that provides the best available data for activities that occur on NFS land. The same acre often has a sequence of activities. The following table lists activity codes found in FACTS on the HLC, along with the determination as to whether it is considered substantially noticeable, and for what period of time. “Date completed” is utilized to reflect when treatment actually occurred on the ground.

Table 2. FACTS codes and rationale for substantially noticeable

From FACTS data dictionary. Only codes currently recorded on the HLC are included. Codes that indicate no effects to vegetation are NOT included: 1100, 1182, 2035, 2101, 2111, 2121, 2242, 2321, 2341, 2360, 2510, 2530, 2550, 3170, 3190, 3191, 4038, 4290, 4301, 4310, 4314, 4315, 4318, 4320, 4331, 4341, 4342, 4343, 4344, 4346, 4381, 4382, 4383, 4384, 4391, 4392, 4393, 4401, 4402, 4403, 4404, 4406, 4409, 4501, 4502, 4504, 4506, 4509, 4631, 4632, 4633, 4910, 4920, 4953, 5215, 5217, 5300, 5510, 5530, 5550, 5633, 6000, 6010, 6030, 6100, 6120, 6410, 6421, 6430, 6450, 6620, 7075, 8110, 8210, 9300.

ACTIVITY	CODE(S)	Substantially Noticeable?	RATIONALE
Broadcast/Jackpot/Underburn/Ecosys/Wildlife burn	1111, 1113, 6101	NO	Appearance similar to wildfire
Wildfire (Fuels Ben/Fire Use)	1115-1118	NO	Wildfire, natural effects
Yarding	1120	NO	Disturbance not visible more than 1 season.
Burn of Piles	1130	NO	Appearance similar to wildfire
Rehab burn piles	5633	NO	Restoration of natural vegetation
Range grazing systems	2000	NO	Grazing not obvious; affects grass/shrub
Fireline Construction	1140	YES – 5 yrs	Visible foreground. Could include construction with equipment. Usually rehabbed after burn.
Rearrangement or Slashing; Lop & Scatter; Site Prep Slashing	1150, 1160, 4455	YES – 10 yrs	Tree cutting usually by hand, <6" diameter. Stumps/slash visible foreground. Material "melts" into grass/forb/shrub/litter.
Compacting/Crushing	1152	YES – 10 yrs	Woody material scattered but grass/forb recover quickly and chunks "melt" into grass/forb/shrub/litter.
Piling of Natural or Activity Fuels	1153	NO	Piles only visible in foreground until burned in <5 years.
Chipping of Natural or Activity Fuels	1154	NO	Chips usually removed, spread, or burned.
Natural Abatement-Natural or Activity Fuels; Misc	1156, 1256, 1169	NO	No action; natural process. Try to group with something?
Fuel Break & Maintenance; Permanent Land Clearing; Harvest without Restocking	1180, 4270, 4242	YES – permanent	Stumps foreground, geometric edge mid/background, maintained indefinitely, usually on roads, ridges, near communities. May be road buffers, powerlines, etc.
Clearcut - patch, strip, stand, salvage, w/or w/o reserves	4111, 4113, 4115, 4117	YES – 55 yrs	Regen harvest, often geometric in the past w/ roads
Prep cut Shelterwood, Seedtree	4121, 4122	YES – 20 yrs	Visually appears similar to thinning.
Shelterwood or Seed tree seed cut (w/reserves) w/ or w/o leave trees	4131, 4132	YES – 55 yrs	Shelter/seed trees left for a period of time while regen establishes, then are removed.
Shelterwood or Seedtree final cut, or Removal w/ LT's or reserves	4141, 4142, 4146, 4148, 4196	YES – 55 yrs	Overstory removal from regeneration; some reserves could be left. Regeneration harvest.
Single-tree selection	4151	YES – 20 yrs	Visually appears like a thinning, only small gaps created.
Group selection cut	4152	YES – 20 yrs	Usually 1/3 of stand removed in small patches
2-aged Shelterwd or Seedtree Est or Removal w/ Res.	4183, 4193, 4194	YES – 20 yrs	Seed/shelter trees left indefinitely for 2-storied appearance. Timeframes more similar to intermediate harvest.
Improvement Cut; Commercial Thin	4210, 4220	YES – 20 yrs	Intermediate harvest, ample residuals, usually irregular.
Liberation Cut; Overstory removal from regen w/ or w/o reserves	4211, 4143	YES – 50 yrs	Overstory is removed from well-established regeneration, generally at least 5' tall.
Sanitation or Salvage (Intermediate)	4231, 4232	YES – 20 yrs	Thinning of dead or special product trees (post/poles), intermediate.
Natural Changes (excludes fire)	4250	NO	Natural changes (bugs or wind)
Tree planting, seeding, natural regen, animal dmg, seeding, planting propagules	4411, 4431, 4432, 4448, 4450, 4451, 4452, 4453, 4460, 4461, 7030, 7031	NO	Planting/reforestation looks similar to natural process

ACTIVITY	CODE(S)	Substantially Noticeable?	RATIONALE
Leave Tree Protection, Disease control, Insect Prevention/Control	4466, 8100, 8200, 8220	NO	Pulling slash away, or application of pheromones etc – not visually impactful.
Burning site prep for planting, seeding, or naturals	4471, 4481, 4491	NO	Looks similar to wildfire.
Chemical or manual site prep for planting, naturals, seed; fertilizing	4472, 4475, 4495, 4550	NO	Minimal ground or veg disturbance; short term impact to localized areas of grass/shrub; not visible for more than 1 growing season.
Mechanical site prep for planting, seeding, or nats	4474, 4484, 4494	NO	Scarification of soil – grass/forb/shrub recovery with conifers fairly rapid (1 season)
Individual tree or area release/weed or Precom thin; other stand tending; wildlife slash	4511, 4521, 4570, 6133	YES – 5 yrs	Small stumps/slash visible foreground only
Prescribed burn or Other control of understory veg	4540, 4541	NO	Looks similar to natural disturbance.
Seed production areas, seed orchards or genetic plantation establishment, maintenance	4931, 4932, 4933, 4934, 4940, 4941, 4950, 4951, 4981	YES – permanent	Maintained for specific seed/genetic tests. Regular tree spacing, stakes, tags, etc.
Wildlife Habitat Improv	6050, 6080	NO	Effects similar to natural conditions

Figure 2. Example photographs of vegetation treatments

Intermediate Harvest, Foreground, >20 years after harvest:	Intermediate Harvest, Middle Ground, >20 years after harvest:
	
Seedtree Regeneration Harvest, Foreground, <30 after harvest	Clearcut Harvest, Mid to Background, <5 years after harvest
	

Review of Vegetation Treatment Mapping and Assessing Effects of Wildfire

Wildfire may soften edges of vegetation treatments as well as consume stumps, standing trees, and logging residual to reduce the visual effect of treatments. However, it may also expose roads and skid trails. To ensure the accuracy of areas mapped as substantially noticeable vegetation treatments, stands that later burned in a wildfire were reviewed to determine if the fire ameliorated the visual effects. The latest fire history layer (2014) and additional 2015 fire areas were intersected with the substantially noticeable vegetation treatment layer to create a layer depicting treatment areas that experienced a burn after the treatment. This resulted in roughly 500 treated stands being flagged for review across 38 wildfire areas. Specialists reviewed each stand with 2014 imagery and made the determination of whether or not the treatments are still substantially noticeable. If treated areas still appeared substantially noticeable, they were flagged as “Y” and no change was made. If treated areas were determined to no longer be substantially noticeable, they were flagged as “N” and included back into the wilderness inventory. In some cases, the fires were so recent as to not be reflected in aerial imagery; in these cases, the stands were flagged as “M”, and are considered to be substantially noticeable until such time that more information is available.

1. Big Belts

Several large fires in the Big Belts GA affected some vegetation treatment areas; primarily the Maudlow-Toston and Cave Gulch fires of 2000. Past vegetation treatments occurred across this GA outside of the wilderness and inventoried roadless areas.

Table 3. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Maudlow-Toston 2000	011201A300100003000	Stand Clearcut 1968	Fire burned surrounding landscape, so all stands regenerating; no vegetation delineation or roads visible.	N
	011201A300100001000	Stand Clearcut 1968		
	011201A270300090000	Stand Clearcut 1973		
	011201A270300001000	Stand Clearcut 1973		
	011201A260100072000	Seed Tree 1989		
	011201A260100030000	Stand Clearcut 1968		
	011201A260100075000	Seed Tree 1964		
	011201A260100002000	Seed Tree 1964		
	011201A260100009000	Stand Clearcut 1968		
	011201A260100006000	Stand Clearcut 1973		
	011201A260100060001	Shelterwood 1973		
	011201A260100012000	Stand Clearcut 1968		
	011201A260100005000	Shelterwood 1970		
	011201A260200054000	Liberation 1989		
	011201A260200053000	Liberation 1989		
	011201A270300116000	Stand Clearcut 1976		
011201A270300005000	Stand Clearcut 1973			

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011201A270300004000	Stand Clearcut 1973	vegetation delineation and roads still noticeable. Harvest is common across the landscape surrounding these stands.	
	011201A270300003000	Stand Clearcut 1973		
	011201A270300006000	Stand Clearcut 1974		
	011201A270300013000	Stand Clearcut 1986		
	011201A270300010000	Stand Clearcut 1987		
	011201A270300008000	Stand Clearcut 1987		
	011201A270200013000	Stand Clearcut 1987		
	011201A270100156001	Liberation 1987	Fire does not appear to have affected these stands substantially.	Y
	011201A270100004000	Liberation 1987		
	011201A270100001000	Stand Clearcut 1963		
	011201A270100002000	Stand Clearcut 1963		
	011201A270200131000	Stand Clearcut 1964	Fire did not burn much in stands; vegetation delineation noticeable.	Y
	011201A270200001000	Stand Clearcut 1964		
	011201A270200018000	Clearcut & Lib 1986		
	011201A270200002000	Stand Clearcut 1963	Stand indistinguishable from adjacent meadows.	N
	011201A270200010001	Liberation 1987		
	011201A270200010000	Stand Clearcut 1963	Regenerating vegetation delineation still obvious. In some stands, only small portions in fire perimeter. Roads visible.	Y
	011201A270200006000	Stand Clearcut 1963		
	011201A270100003000	Stand Clearcut 1964		
	011201A270200007000	Stand Clearcut 1963		
011201A270200004000	Stand Clearcut 1964			
011201A270200005000	Stand Clearcut 1964			
Cave Gulch 2000	011201A500200020000	Stand Clearcut 1972	Fire did not burn, vegetation change and roads obvious.	Y
	011201A510100004000	Stand Clearcut 1968	Fire burned across landscape blurring lines between harvested and unharvested.	N
	011201A510100002000	Stand Clearcut 1964		
	011201A510100015000	Stand Clearcut 1982	Tiny sliver burned – most of units unaffected by fire.	Y
	011201A510100012000	Liberation 1983		
	011201A510100016001	Seed Tree 1982	Fire burned lower intensity, treatments still obvious compared to adjacent stands and roads visible.	Y
	011201A510100018000	Seed Tree 1982		
	011201A510100014000	Seed Tree 1982		
	011201A510100017000	Stand Clearcut 1982		
	011201A510100011000	Stand Clearcut 1971	Fire stand-replaced adjacent stands, vegetation delineation	N
011201A510100003000	Stand Clearcut 1964			

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
			not obvious.	
	011201A53020002000	Stand Clearcut 1973	Fire did not affect units, vegetation delineation and roads remain obvious.	Y
	011201A53020004000	Stand Clearcut 1973		
	011201A530200012000	Stand Clearcut 1981		
	011201A50020001000	Stand Clearcut 1965	Fire burned adjacent stands and blurred edges of vegetation; no roads.	N
	011201A50020005000	Stand Clearcut 1985		
	011201A50020009000	Stand Clearcut 1965		
	011201A500200010000	Stand Clearcut 1966	Fire impacted the stands little and delineation obvious from adjacent stands, and logging associated roads very visible.	Y
	011201A50020003000	Stand Clearcut 1966		
	011201A500200011000	Stand Clearcut 1966		
	011201A50020004000	Stand Clearcut 1972		
	011201A500200119000	Stand Clearcut 1972		
	011201A46020007000	Seed Tree 1981		
	011201A460100016000	Seed Tree 1984		
	011201A460100007000	Seed Tree 1981		
	011201A500200002000	Stand Clearcut 1964	Partially obvious vegetation lines with adjacent stand; roads highly visible.	Y
	011201A460100001000	Stand Clearcut 1974	Fire burned in mosaic nearby but vegetation lines and roads still clearly noticeable.	Y
	011201A460100013000	Stand Clearcut 1973		
	011201A460100020000	Stand Clearcut 1984		
	011201A460100014000	Seed Tree 1981		
	011201A530200013000	Stand Clearcut 1984		
	011201A460100015000	Seed Tree 1981		
	011201A460100018000	Stand Clearcut 1984	Fire stand-replaced adjacent stands, blurring vegetation delineation and no harvest-associated roads visible	N
	011201A460100019000	Stand Clearcut 1984		
	011201A460100002000	Stand Clearcut 1974		
	011201A460100017000	Seed Tree 1984		
Cabin Gulch 2015	011201A240300236001	Improvement Cut 2014	Harvest & burned after aerial photo – effects unknown.	M
	011201A240300236002	Improvement Cut 2014		
		011201A250100142000	Slashing 2010	Small trees cut & burned – no visible vegetation lines.
Lakeside 2010	011202A220100057001	Slashing 2008	Fire burned across slashed area, indistinguishable from untreated fire area	N

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Sheep Camp 2003	011201A560100086000	SingleTreeSelect 1998	Fire did not affect.	Y
Kelly Gulch Complex 2013	011202A170100015000	Harv w/o Restock 1999	Tiny portion burned	Y
	011202A170100013000	Harv w/o Restock 1999	Tiny portion burned	Y
	011202A160200010000	Harv w/o Restock 1999	Tiny portion burned	Y
Meriwether 2007	011202N003132143003	Slashing 2006	Tiny sliver burned	Y
	011202N003132141002	Rearrangement of Fuels	Tiny sliver burned	Y

2. Castles

Past substantially noticeable vegetation treatments were fairly limited in the Castles GA, with a large part of the GA being inventoried roadless. No wildfires have occurred in any substantially noticeable vegetation treatments mapped in this GA.

3. Crazies

Substantially noticeable treatments in the Crazies GA are somewhat limited in extent. Only a few of these areas were by wildfires.

Table 4. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Forest Lake/Smith Creek 1994	011506A220100005000	Stand Clearcut 1988	Fire didn't burn in the unit.	Y
Cottonwood 1966	011506A230400056000	Stand Clearcut 1961	Fire does not appear to have burned in the unit.	Y
	011506A230400057000	Stand Clearcut 1961		Y

4. Divide

There are many substantially noticeable treatments across the landscape in the Divide GA; however, very few were burned by wildfire after being treated.

Table 5. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Still Substantially Noticeable?
Snowshoe 1974	011203A340100003000	Stand Clearcut 1971	Only a small sliver burned	Y
	011203A340100007000	Stand Clearcut 1971	Regen and roads visible	Y
	011203A340100012000	Stand Clearcut 1971	Sparse regen, roads	Y
	011203A340100009000	Stand Clearcut 1971	Only a small sliver burned	Y
	011203A340100011000	Stand Clearcut 1971	Sparse regen, roads	Y

5. Elkhorns

Most of the substantially noticeable vegetation treatments in the Elkhorns GA are located in the southern portion, and are comprised of hand slashing and prescribed burning treatments. Relatively small and scattered harvest treatments occurred as well in other areas. The only fire area that impacted substantially noticeable vegetation treatments in the Elkhorns GA was the Warmsprings fire of 1988.

Table 6. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Warmsprings 1988	011203A290200001000	Stand Clearcut 1973	Fire removed delineation of vegetation. Roads noticeable.	Y
	011203A290200005000	Liberation 1966	Fire removed delineation of vegetation and no harvest associated road network.	N
	011203A280100001000	Shelterwood 1964		
	011203A280100002000	Stand Clearcut 1965		
	011203A280100003000	Stand Clearcut 1964		
	011203A280100011000	Shelterwood 1964		
	011203A280100008000	Stand Clearcut 1964		
	011203A280100007000	Stand Clearcut 1964		
	011203A280100004000	Stand Clearcut 1965	Vegetation delineation and roads still visible; fire burned around these areas.	Y
	011201A010100005000	Stand Clearcut 1971		
	011201A010100006000	Stand Clearcut 1971		
	011201A010100003000	Shelterwood 1971		
	011201A010100004000	Stand Clearcut 1968		
	011201A010100002000	Shelterwood 1969		
	011201A010100001000	Shelterwood 1969		
	011201A020100001000	Seed Tree 1971	Fire removed delineation of vegetation and associated road appears re-vegetated.	N

6. Highwoods

The small Highwoods GA burned extensively around the turn of the last century and the primary multiple use occurring on the landscape is grazing. No substantially noticeable vegetation treatments have been mapped in the Highwoods GA.

7. Little Belts

Substantially noticeable vegetation treatments are fairly extensive across the roaded portions of this GA. Some of these stands burned in a handful of relatively small wildfires.

Table 7. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Anderson Peak 1970	011504A650100001000	Stand Clearcut 1969	Fire did not affect, vegetation and roads starkly obvious.	Y
	011503A700200003000	Stand Clearcut 1967		
Iron Claim 1988	011504A620900008000	Shelterwood 1987	Vegetation lines are indistinguishable.	N
	011504A620900005000	Shelterwood 1987		
Turkey 1990	011504A610900016000	Seed Tree 1987	Vegetation lines are indistinguishable from surrounding landscape.	N
	011504A610900025000	Stand Clearcut 1987		
	011504A610900026000	Seed Tree 1987		
	011504A610900018000	Stand Clearcut 1987		
Tollgate 1998	011504A600400006000	Commercial Thin 1996	Fire did not substantially impact these stands.	Y
	011504A600400003000	Commercial Thin 1996		
High Springs 2000	011504A510400013000	Shelterwood 1992	Vegetation lines are indistinguishable from surrounding landscape.	N
	011504A510400014000	Shelterwood 1985		
	011504A510400028000	Stand Clearcut 1962		
Coyote 1996	011507A110400208000	Stand Clearcut 1995	Roads are still obvious.	Y
	011507A110800103000	Stand Clearcut 1994		
	011507A110800102000	Stand Clearcut 1993		
	011507A110400032000	Stand Clearcut 1995	Vegetation lines no longer obvious.	N
	011507A110400098000	Stand Clearcut 1995		
	011507A110400030000	Stand Clearcut 1978		
	011507A110500098000	Stand Clearcut 1994		
	011507A110500002000	Stand Clearcut 1994		
	011507A110500031000	Stand Clearcut 1988		
	011507A110800025000	Stand Clearcut 1989		
	011507A110800008000	Stand Clearcut 1962		
	011507A110800107000	Stand Clearcut 1979		
	011507A110800011000	Stand Clearcut 1962		
	011507A110800029000	Stand Clearcut 1979		
	011507A110700054000	Stand Clearcut 1993		
	011507A110700038000	Stand Clearcut 1988		
	011507A110700112000	Stand Clearcut 1992		
	011507A110700017000	Stand Clearcut 1969		
	011507A110500012000	Stand Clearcut 1962		

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011507A110800101000	Stand Clearcut 1993	evident.	
	011507A110800099000	Stand Clearcut 1993		
	011507A110800018000	Clearcut/TL area 1974	Vegetation lines, vegetative patterns and roads are still evident.	Y
	011507A110800122000	Genetic Evaluation Plantation Establishment		
	011507A110800055000	Stand Clearcut 1979		
	011507A110500025000	Stand Clearcut 1975	Vegetation lines are no longer obvious but roads are still visible.	Y
	011507A110800098000	Stand Clearcut 1995		
	011507A110500009000	Stand Clearcut 1962	Vegetation lines and roads are still evident.	Y
	011507A110800007000	Stand Clearcut 1960		
	011507A110800072000	Stand Clearcut 1962		
	011507A110800100000	Stand Clearcut 1993		
	011507A110800047000	Stand Clearcut 1984		
	011507A110800035000	Stand Clearcut 1989		
	011507A110700011000	Stand Clearcut 1962		
	011507A110700013000	Stand Clearcut 1961		
	011507A110600072000	Stand Clearcut 1995		
	011507A110600001000	Stand Clearcut 1971		
	011507A110600073000	Stand Clearcut 1995		
	011507A110600074000	Stand Clearcut 1995		
011507A110600003000	Stand Clearcut 1973			
Whitetail Ck 1970	011506A330300004000	Stand Clearcut 1964	Fire did not affect unit.	Y
Mill Ck Sale 1966	011506A320500003000	Stand Clearcut 1964	Fire did not affect unit.	Y
Hoover 2011	011504A500300025000	Stand Clearcut 1997	Fire did not affect majority of units, still obvious.	Y
	011504A500300008000	SPA Establish 1989		
Lyon Creek 1972	011506A310500004000	Stand Clearcut 1965	Fire did not impact unit.	Y
Smokey Mountain 1969	011507A060100008000	Stand Clearcut 1971	Fire did not substantially impact these treated areas; vegetation lines still obvious on landscape.	Y
	011507A060100002000	Stand Clearcut 1961		
	011507A060200002000	Stand Clearcut 1963		
	011507A060200003000	Stand Clearcut 1963		
	011507A060200005000	Stand Clearcut 1971		
Newlan Ck 1985	011507A070200009000	Shelterwood 1981	Fire did not affect unit.	Y
Thornquist 1973	011507A080300012000	Stand Clearcut 1971	Fire did not affect unit.	Y
Miller Gulch 1967	011507A080200003000	Stand Clearcut 1964	Fire did not affect majority of units; still obvious.	Y
	011507A080200001000	Stand Clearcut 1964		
	011507A100800036000	Stand Clearcut 1964		

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Cross Creek 1970	011504A500100023000	Stand Clearcut 1962	Vegetation lines are still evident.	Y
	011504A500100027000	Stand Clearcut 1960		
	011504A500900025000	Stand Clearcut 1963		
	011504A500900024000	Stand Clearcut 1960		
	011506A350400012000	Stand Clearcut 1961		
	011504A500900031000	Stand Clearcut 1960	Roads and vegetation lines still obvious.	Y
	011504A500900051000	Stand Clearcut 1960		
	011504A500900033000	Stand Clearcut 1960		
	011504A500900004000	Stand Clearcut 1960		
	011504A500100026000	Stand Clearcut 1960	Vegetation lines not obvious.	N
	011504A500400014000	Stand Clearcut 1960	Roads and vegetation lines still obvious.	Y
	011504A500900023000	Stand Clearcut 1960		
	011504A500400011000	Stand Clearcut 1960		
	011504A500400008000	Stand Clearcut 1960		
Harley Creek 2008	011503A750300005000	Stand Clearcut 1972	Vegetation lines are still evident.	Y
	011503A750300002000	Stand Clearcut 1963		
Wilson Park 1970	011503A760400002000	Stand Clearcut 1966	Vegetation lines no longer obvious.	N
	011503A760500001000	Stand Clearcut 1968		
Willow Park 1991	011503A500900091000	Patch Clearcut 1960	Softened by fire but some vegetative lines are still evident.	Y
	011503A350400042000	Stand Clearcut 1990	Vegetation lines are still evident.	Y
	011503A350400016000	Stand Clearcut 1965	Vegetation lines not obvious.	N

8. Rocky Mountain Range

Vegetation treatments are not common in the Rocky Mountain Range GA, due to the rugged terrain and extent of wilderness areas. Some substantially noticeable vegetation treatments are recorded in the far northern part of the GA, and along the eastern edge. Several of these treated stands have burned in wildfires.

Table 8. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Fool Creek 2007	011501A060500001000	Seedtree (SPA) 1982	Fire softened edges, no vegetation delineation or road visible.	N

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011501A080200001000	Stand Clearcut 1969	Fire stand-replaced, unit edges still very visible.	Y
	011501A080700001000	Stand Clearcut 1970	Fire eliminated vegetation delineation but road visible.	Y
Skyland Fire 2007	011501A330600047000	Commercial Thin 2002	Fire stand replaced unit.	N
	011501A330600044000	Commercial Thin 2002	Fire only burned tiny sliver	Y
	011501A330600016000	Patch Clearcut 2002	Fire burned portions but majority of unit not burned and vegetation delineation still noticeable	Y
	011501A330600005000	Commercial Thin 2002		
	011501A330600007000	Patch Clearcut 2002		
	011501A330500001000	Commercial Thin 2002		
	011501A330100041000	Patch Clearcut 2002	Fire burned into edges, no visible vegetation delineation or roads.	N
	011501A330100040000	Patch Clearcut 2002		
	011501A330300016000	Patch Clearcut 2002	Fire stand-replaced, no visible vegetation delineation or roads.	N
	011501A330100004000	Stand Clearcut 1960	Also burned in Challenge Creek 1998. Fire avoided treated area.	Y
011501A330100003000	Stand Clearcut 1960	Also burned in Challenge Creek 1998. Stand-replaced, no vegetation delineation visible.	N	
Challenge Creek 1998	011501A330100001000	Stand Clearcut 1966	Stand-replaced, no vegetation delineation visible or roads.	N
	011501A330100002000	Stand Clearcut 1966		
Ford Creek 2006	011501A500300005000	Fuel Break 1999	Tiny sliver burned	Y

9. Snowies

The Little Snowies portion of this GA had a scattering of substantially noticeable vegetation treatments. The Big Snowies portion of this GA has had very few substantially noticeable vegetation treatments, which are fairly small and scattered. No wildfires occurred after the completion of any treatments in this GA.

10. Upper Blackfoot

Substantially noticeable vegetation treatments occurred across the roaded portions of this GA. Some of these have been affected by wildfire, most extensively the Snow Talon fire of 2003. Some stands burned in Snow Talon re-burned in the Sucker Creek fire.

Table 9. Wildfire areas and vegetation treatment areas reviewed for substantially noticeable conditions

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
Davis 2010	011204A320300186002	Slashing 2008	Vegetation lines are still evident.	Y
Moose/Wasson 2003	011204A370200321000	Stand Clearcut 1991	Roads and vegetation lines are still evident.	Y
	011204A370200232000	Shelterwood 1976	Vegetation lines are still evident.	Y
	011204A370200216000	Shelterwood 1976		
	011204A370200322000	Stand Clearcut 1990		
	011204A370200219000	Shelterwood 1976	Roads still visible.	Y
	011204A370200319000	Stand Clearcut 1991	Vegetation lines not evident.	N
Copper Creek Fire 1998	011204A170100102000	Stand Clearcut 1963	Roads are evident.	Y
	011204A170100107000	Stand Clearcut 1963		
	011204A170100120000	Stand Clearcut 1963		
Snow Talon 2003	011204A190100119000	Stand Clearcut 1990	Roads are evident.	Y
	011204A190100020002	Stand Clearcut 1997		
	011204A200100112000	Stand Clearcut 1971		
	011204A200100124000	Stand Clearcut 1991		
	011204A170100119001	Patch Clearcut 1989		
	011204A170200187000	Stand Clearcut 1990		
	011204A170200184000	Stand Clearcut 1969		
	011204A170200107000	Stand Clearcut 1968		
	011204A170200104000	Stand Clearcut 1969		
	011204A170200105000	Stand Clearcut 1969		
	011204A170200129000	Stand Clearcut 1967		
	011204A170100137000	Stand Clearcut 1964		
	011204A170100120000	Stand Clearcut 1963		
	011204A170100102000	Stand Clearcut 1963		
	011204A170100100000	Stand Clearcut 1963		
	011204A170100107000	Stand Clearcut 1963		
	011204A190200095000	Stand Clearcut 1989		
	011204A170100131000	Patch Clearcut 1963		
	011204A200100110000	Stand Clearcut 1966		

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011204A200100064000	Stand Clearcut 1987		
	011204A200100113000	Patch Clearcut 1971		
	011204A200100114000	Stand Clearcut 1972		
	011204A190100036000	Stand Clearcut 1971		
	011204A200200136000	Stand Clearcut 1989		
	011204A200200148000	Stand Clearcut 1989		
	011204A200200150000	Stand Clearcut 1989		
	011204A210200018000	Stand Clearcut 1963, Re-burned 2015 (Sucker Ck)	Roads and vegetation lines are still evident after Snow Talon Fire in 2003. The effects of Sucker Creek are unknown.	M
	011204A210200128000	Shelterwood 1963, Re-burned 2015 (Sucker Ck)		
	011204A210200022000	Stand Clearcut 1963, Re-burned 2015 (Sucker Ck)		
	011204A210100056000	Stand Clearcut 1967, Re-burned 2015 (Sucker Ck)		
	011204A210100189000	Shelterwood 1989, Re-burned 2015 (Sucker Ck)		
	011204A210200179000	Stand Clearcut 1989	Roads and vegetation lines are still evident.	Y
	011204A200200151000	Stand Clearcut 1989		
	011204A200200152000	Stand Clearcut 1989		
	011204A190100068000	Seed Tree 1977		
	011204A200200153000	Stand Clearcut 1989		
	011204A200200156000	Stand Clearcut 1987		
	011204A190100120001	Stand Clearcut 1990		
	011204A190100125000	Stand Clearcut 1997		
	011204A190100055000	Stand Clearcut 1971		
	011204A190100050000	Patch Clearcut 1971		
	011204A190100020001	Stand Clearcut 1997		
	011204A190100021000	Stand Clearcut 1971		
	011204A190100124000	Stand Clearcut 1991		
	011204A190100017000	Stand Clearcut 1971		
	011204A170200058000	Stand Clearcut 1969		
	011204A170200186000	Stand Clearcut 1969		
	011204A170200185000	Stand Clearcut 1969		

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011204A170200126000	Stand Clearcut 1968		
	011204A170100078000	Stand Clearcut 1964		
	011204A170100090000	Stand Clearcut 1964		
	011204A200100028000	Stand Clearcut 1967		
	011204A170200169000	Stand Clearcut 1963		
	011204A170200133000	Stand Clearcut 1967		
	011204A200100118000	Stand Clearcut 1989		
	011204A200100123000	Stand Clearcut 1991		
	011204A200100007000	Patch Clearcut 1968		
	011204A200100011000	Stand Clearcut 1966		
	011204A190200125000	Patch Clearcut 1968		
	011204A190200133000	Patch Clearcut 1968		
	011204A200100024000	Stand Clearcut 1966		
	011204A200100046000	Stand Clearcut 1972		
	011204A200100111000	Stand Clearcut 1971		
	011204A200100098000	Stand Clearcut 1973		
	011204A200100048000	Patch Clearcut 1972		
	011204A190100123000	Stand Clearcut 1990		
	011204A190100121000	Stand Clearcut 1990		
	011204A190100022000	Stand Clearcut 1971		
	011204A210200043000	Shelterwood 1963	Fires softened edges of the old units. Roads and vegetation lines no longer evident.	N
	011204A210200044000	Stand Clearcut 1963		
	011204A210200122000	Shelterwood 1963		
	011204A190100072000	Shelterwood 1966		
	011204A190100069000	Shelterwood 1966		
	011204A200200154000	Stand Clearcut 1988		
	011204A200200155000	Stand Clearcut 1988		
	011204A190100054001	Stand Clearcut 1997		
	011204A190100052001	Stand Clearcut 1990		
	011204A190100037000	Stand Clearcut 1990		
	011204A190100033000	Stand Clearcut 1971		
	011204A190100028000	Stand Clearcut 1962		
	011204A190100027000	Stand Clearcut 1963		
	011204A190100019000	Stand Clearcut 1971		
	011204A200100120000	Stand Clearcut 1987		
	011204A200200157000	Stand Clearcut 1986		
	011204A200100119000	Stand Clearcut 1987		

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011204A200100014000	Stand Clearcut 1989		
	011204A170200192000	Patch Clearcut 1993		
	011204A170100044000	Stand Clearcut 1964		
	011204A170200137000	Stand Clearcut 1968		
	011204A170100139000	Stand Clearcut 1989		
	011204A170100129000	Patch Clearcut 1971		
	011204A170100127000	Stand Clearcut 1989		
	011204A200100115000	Patch Clearcut 1983		
	011204A190200132000	Liberation 1989		
	011204A200100067000	Stand Clearcut 1971		
	011204A210200128000	Shelterwood 1963		
Sucker Creek 2015	011204A210200018000	Stand Clearcut 1963	The effects of the Sucker Creek fire could not be seen with imagery because it occurred so recently. These sites cannot be ruled out without field visits or newer photography. In some cases, the SnowTalon fire also burned these areas previously and they remained evident after that burn.	M
	011204A210200022000	Stand Clearcut 1963		
	011204A210100056000	Stand Clearcut 1967		
	011204A210200184001	Sanitation 2012		
	011204A210200122000	Shelterwood 1963		
	011204A210200043000	Shelterwood 1963		
	011204A210200044000	Stand Clearcut 1963		
	011204A210200123000	Stand Clearcut 1963		
	011204A210200045000	Stand Clearcut 1963		
	011204A210200124000	Patch Clearcut 1978		
	011204A210200073000	Stand Clearcut 1962		
	011204A210200071000	Patch Clearcut 1970		
	011204A210200070000	Patch Clearcut 1970		
	011204A210200126000	Stand Clearcut 1965		
	011204A210200089000	Stand Clearcut 1965		
	011204A210200084000	Patch Clearcut 1967		
	011204A210100141000	Stand Clearcut 1962		
	011204A210100127000	Seed Tree 1961		
	011204A210100186000	Shelterwood 1989		
	011204A210100184000	Shelterwood 1989		
	011204A210100185000	Shelterwood 1989		
	011204A210100109000	Patch Clearcut 1965		
	011204A210100179000	Shelterwood 1990		
	011204A210100182000	Shelterwood 1989		
011204A210200035000	Patch Clearcut 1967			
011204A210100180000	Shelterwood 1990			

Fire Name & Year	FACTS Unit ID	Treatment Type & Year	Rationale	Substantially Noticeable?
	011204A210100183000	Shelterwood 1990		
	011204A210100076000	Stand Clearcut 1968		
	011204A210100189000	Shelterwood 1989		
	011204A210100181000	Patch Clearcut 1989		
	011204A210100055000	Stand Clearcut 1967		
	011204A21010056000	Stand Clearcut 1967		
	011204A210200019000	Seed Tree 1997, Burned 2003 (Snow Talon), Reburn 2015		
	011204A210200183000	Stand Clearcut 2006		
	011204A210200182000	Stand Clearcut 2006, Burned 2003 (Snow Talon), Re-burn 2015		
011204A200200162000	Seed Tree 2006, Burned in 2003 (Snow Talon), Reburn 2015			
Alice #2 2007	011204A120100116001	Slashing 2007 – RX Wildlife Burn	Breaks in vegetation are evident.	Y

Local Site Specific Review

After completing the wilderness inventory mapping, local personnel reviewed the draft product. In several specific cases, the local staff stated that the vegetation treatment mapped as substantially noticeable was in fact no longer noticeable, due to the sparseness of the treatment and/or subsequent prescribed burning treatments. These specific areas that initially met the criteria for substantially noticeable (Table 2) are included back in the wilderness inventory and considered to be no longer substantially noticeable.

- Alice Creek prescribed burning units, Upper Blackfoot GA
- Hogum prescribed burning unit, Upper Blackfoot GA
- Fuel break treatment areas, Rocky Mountain Range GA
- Wildlife habitat slash treatment areas, Snowies GA

The FACTS SUIDs associated with these included treatments are listed in the table below.

Table 10. Stands with vegetation treatments included back in inventory based on site specific determination

011501A100200009000	011501A330300016000	011501A090100013000	011501A090100028000
011501A100200027000	011501A060100009000	011501A090100014000	011501A660200022000
011501A100200012000	011501A060100014000	011501A090100015000	011501A660200023000
011501A100200014000	011501A060100015000	011501A090100016000	011501A600200001000

011501A100200016000	011501A060100016000	011501A090100017000	011501A500300005000
011501A100200018000	011501A090100003000	011501A090100018000	011501A500300009000
011501A100200019000	011501A090100004000	011501A090100019000	011501A500300010000
011501A100200020000	011501A090100005000	011501A090100020000	011501A500300011000
011501A100200021000	011501A090100006000	011501A090100021000	011501A500300012000
011501A100200022000	011501A090100007000	011501A090100022000	011501A500300013000
011501A100200023000	011501A580400007000	011501A590200010000	011204A110300130000
011501A100200025000	011501A580400008000	011501A590200011000	011204A120100070000
011501A100200030000	011501A580400009000	011501A590200012000	011204A120100114000
011501A100200031000	011501A580400010000	011501A590200023000	011204A120100116001
011501A100200034000	011501A580400011000	011501A590200024000	011204A120100116002
011501A500500016000	011501A580400012000	011501A590200025000	011204A120100117000
011501A580400025000	011501A580400013000	011501A590200026000	011204A120100118000
011501A580400026000	011501A580400014000	011501A590200027000	011204A120100119000
011501A580100004000	011501A580400015000	011501A590200028000	011204N003066528001
011501A580100005000	011501A580400016000	011501A590300013000	011204N003066528002
011501A580100008000	011501A580400017000	011501A590300014000	011204N003066529000
011501A580100009000	011501A580400018000	011501A590300015000	011501A500100052000
011501A580100010000	011501A580400019000	011501A590300017000	011501A500100053000
011501A580100011000	011501A580400020000	011501A590300020000	011501A500100052000
011501A580100012000	011501A580400021000	011501A590300022000	011501A500100053000
011501A580100013000	011501A090100008000	011501A590300032000	011204A280300026000
011501A580100014000	011501A090100009000	011501A500300005000	011204A280300167000
011501A580100015000	011501A090100010000	011204A110200075000	011204A280300168001
011501A580100016000	011501A090100011000	011204A110200090000	011204A280300168001
011501A580400001000	011501A090100012000	011501A090100023000	011204A280300169000
011501A580400002000	011501A580400022000	011501A090100024000	011204A280400133002
011501A580400003000	011501A580400023000	011501A090100025000	011204A280400133005
011501A580400004000	011501A580400024000	011501A090100026000	011204A280400133006
011501A580400005000	011501A580400027000	011501A090100027000	011501A500300014000
011501A580400006000	011501A580400028000	011204A110200092001	011501A500300016000
011504A160100030000	011501A580400029000	011204A110200144000	011501A500300017000
011504A160100031000	011501A590200002000	011204A110200145000	011501A500300018000
011504A160100032000	011501A590200003000	011204A110200146000	011501A500500015000
011504A160100033000	011504A160400034000	011504A160400035000	