

**Record of Decision**  
**Big Creek Vegetation Treatment Project**

U.S.D.A. Forest Service

Ogden Ranger District, Wasatch-Cache National Forest  
Rich County, Utah

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# Record of Decision

## Big Creek Vegetation Treatment Project

### I. Introduction ---

The project area is located in Rich County, Utah on the Ogden Ranger District of the Wasatch-Cache National Forest. The 21,000 acre project area is located about 50 miles east of Ogden, Utah at the headwaters of the 171,000 acre Big Creek watershed, which drains to the east into the Bear River. Approximately 4,800 acres within the 21,000 acre project area are proposed to be treated. See FEIS, Appendix A, Map 1 for a general vicinity of the project area.

Wasatch-Cache National Forest resource specialists conducted a watershed assessment of the 21,000 acre portion of the Big Creek watershed in 2005 (USDA Forest Service 2008). The assessment characterized the current condition of the area and identified opportunities for vegetation management.

As indicated in the watershed assessment, vegetation communities on National Forest System lands within the 21,000 acre project area are composed of approximately 7,000 acres of conifer, 3,500 acres of aspen/aspen-conifer, 1,500 acres of conifer-aspen, and 6,000 acres of sagebrush. The remaining balance is private land within the project area boundary (see FEIS, Appendix A, Maps 2 and 3).

Prescribed fire has been used over about 750 acres (1990-1992) and about 1,375 acres have been previously harvested (approximately 500 acres in clearcuts and 800 acres in partial cuts, between 1965 and 2000).

### II. Background (Purpose and Need) ---

The Big Creek Watershed Assessment indicates vegetation communities are substantially altered from what they were historically and many communities are not at properly functioning condition (USDA Forest Service 2008). When landscapes are generally within the range of historic conditions, they are said to be in “properly functioning condition.” When landscapes are generally outside the range of historic conditions, they are considered not to be properly functioning. Some of the notable communities at risk in the project area are: aspen communities (being encroached upon and potentially replaced by conifer trees), sagebrush communities (in late seral condition with closed canopies of sagebrush; sites which were shared historically by sagebrush, grass, and forbs) and Engelmann spruce/subalpine fir, Douglas-fir, and lodgepole pine forests (composed primarily of dense stands skewed heavily toward old and mature age classes).

Within the aspen communities in the Big Creek project area, there has been an ongoing loss of aspen to decadence and spruce/fir encroachment as a result of fire suppression. Structural diversity is being lost as aspen stands mature and older classes are found across the landscape. Aspen in properly functioning condition would have a balanced range of structural classes across the landscape with about 40% in grass/forb and seedling/sapling, 30% in young, mid, and mature, and about 30% in old forests. Historically, fire has been the most important disturbance factor for maintaining the patterns and structural diversity of aspen, with a typical fire return interval of 20 to 100 years. Fire suppression and other practices over the past 100 years have created conditions that are inconsistent with the normal successional trends in these ecosystems. Within the Big Creek project area, approximately 5,000 acres are in the aspen, aspen-conifer, and conifer-aspen communities and the majority of it is in mid-age to mature forests. Few pure aspen stands remain, as conifer encroaches from adjacent stands.

A similar situation exists within sagebrush communities, which comprise about 6,000 acres of the Big Creek project area. These communities are skewed toward older age classes and have a dense canopy cover that precludes grasses and forbs valued for preventing erosion and providing forage for wildlife and livestock. Fires, which historically occurred in sagebrush every 20 to 40 years providing a mosaic of age classes and canopy cover, have been suppressed for many years, contributing to the current deteriorated condition. Sagebrush communities in properly functioning condition would have a balanced range of structural stages. Currently, sagebrush communities in the project area are in late seral, closed canopy structural stages, indicating they are highly departed from the natural fire regime, and are not in properly functioning condition.

Conifer forests composed of Engelmann spruce/subalpine fir, Douglas-fir, and lodgepole pine, in pure and mixed stands comprising about 7,000 acres of the Big Creek project area, are skewed heavily toward mature and old age classes. These conifer types in properly functioning condition would have a desired structure of about 10% in each of the grass/forb and seedling/sapling structural stages and about 20% in each of the young, mid-aged, mature, and old forest structures. The Big Creek watershed assessment indicates the majority of the conifer type is in the mature and old forest structures and is not in properly functioning condition (USDA Forest Service 2008).

The first purpose of this project is to improve vegetation structure and pattern for cover types within the Big Creek project area to move toward properly functioning condition at the landscape scale. The need for improving the vegetation structure and pattern of vegetation cover types in the project area is clearly demonstrated when comparing the existing conditions (as summarized in FEIS, Section 1.3, Current Condition of Vegetation Communities) to the desired landscape structure for these types in the Forest Plan (USDA Forest Service 2003; page 4-39, Guideline 14). These communities are clearly not at properly functioning condition and timely treatments are needed to begin moving in that direction.

A second purpose of this project is to enhance ecosystem resiliency and to maintain desired fuel levels with fire operating within historical fire regimes as described in the Forest Plan (USDA Forest Service 2003; pages 4-10, 4-19). A fire regime refers to the natural role that fire plays across the landscape, characterized by occurrence, frequency (Fire Return Interval), and intensity or severity of fire. A Fire Regime Condition Class (FRCC) analysis was conducted as part of the Big Creek watershed assessment (USDA Forest Service 2008). This analysis is a standardized tool for determining how the current vegetation, fuels, and disturbance regimes compare to historic reference conditions. The Big Creek assessment shows that the subwatersheds within the project area are moderately to highly departed from reference conditions for their natural fire regimes. This is primarily indicated by the predominance of older vegetation, and the lack of young and mid-seral age classes, due to a reduction in natural fires over the last century or so. Because of this departure, there is a need for action to move towards a more natural fire regime. A more natural fire regime can lessen the potential for very high intensity wildfires with undesirable effects, such as injury of the aspen clonal root system from exposure to extreme heat.

A third purpose of this project is to provide commercial timber that contributes to a sustainable level of goods and services. The Forest Plan directs the use of timber harvest where allowed, to contribute to the economy while achieving properly functioning conditions of vegetation and watersheds (USDA Forest Service 2003; page 4-23). There is a need to provide a product to supply local and regional sawmills.

This action responds to the goals and objectives outlined in the Wasatch-Cache Revised Forest Plan, and helps move the project area towards desired conditions described in that plan (USDA Forest Service 2003).

### III. Decision – Selection of Alternative 1 with Modifications

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Based upon my review of all alternatives, it is my decision to select and implement Alternative 1 with Modifications which will result in the treatment of approximately 4,361 acres.

My conclusion is based on a review of the record that shows a thorough review of relevant scientific information, a consideration of responsible opposing views, and acknowledgement of incomplete or unavailable information, scientific uncertainty, and risk. I have considered input from groups and individuals with responsible opposing views and discussed our response to them in Chapter 5 of the FEIS, Chapter 3, and the project record. I have considered the scientific information that is necessary to adequately assess the effects of my decision.

I know that my decision will not completely satisfy every group or individual; however I have concluded that it is an informed choice that provides a reasonable mix of moving the project area towards properly functioning condition, addressing concerns about goshawk habitat, and meeting Forest Plan direction. Based on the effects analysis presented in Chapter 3 of the FEIS, I believe that Alternative 1 with Modifications meets the purpose and need for the project. In my judgment, Alternative 1 with Modifications is consistent with the Revised Wasatch-Cache Forest Plan (USDA 2003) as well as with all laws, regulations and policy governing National Forest System land management. All practical means to avoid or minimize environmental harm from the decision have been adopted.

#### A. Description of Alternative 1 with Modifications

Alternative 1 with Modifications will result in the treatment of approximately 4,361 acres of aspen, conifer, and sagebrush communities within the Big Creek project area. A summary of activities is listed in Table R.1.

**Table R.1. Summary of the activities that are included in the decision.**

Activity	Quantity
Acres Treated	4,361 acres
Acres Harvested	1,211 acres
Prescribed Fire / Herbicide / Mechanical	2,469 acres *
Prescribed Fire Mosaic	681 acres *
Temporary Roads	7.4 miles
Road Construction	0.6 miles

\*Assumes 80% burn effectiveness.

In order to move toward a landscape structure more balanced between older and younger vegetation, as identified in the properly functioning condition analysis and the fire regime condition class assessment, a combination of mechanical treatments (including both commercial timber harvest and non-commercial cutting or brush harrowing), prescribed fire, and/or herbicide treatment (specifically herbicide treatment to thin sagebrush) is proposed across the project area. Alternative 1 with Modifications moves the project area towards properly functioning condition while ensuring the Forest Plan standards are fully met as well as reducing roads and treatment acres to a level that addresses most of the concerns and issues brought up during the analysis.

While Alternative 1 provides for the maximum movement towards PFC by creating approximately 1,193 acres of early seral vegetation, there were concerns as this related to important goshawk habitat. In particular there were two areas of concern. One was the amount of mature forested vegetation in the DF territory which was already at about the minimum desired, and more treatment would move this even further away. The other concern was an alternate nest stand in the OC territory where creating openings could make this stand undesirable as a nest stand in the future.

To remedy these concerns a mix of Alternatives 1 and 3 was developed and named Alternative 1 with Modifications. Alternative 1 with Modifications resulted in not creating new early seral in the DF territory, and did not create openings in the OC nest stand. South of Dry Fork Creek, Alternative 3 will be applied which allows for maintaining the current level of mature forest in that territory. Further to the south, Alternative 3 is similar to 1 in treating the aspen/conifer stands to create early seral patches. In the OC stand (unit 18) an Irregular Shelterwood system will be applied as described in Alternative 3. This first entry will essentially be a commercial thin which will favor retention of the larger dominant trees on the site, also increasing the average spacing and VSS class. In the longer term this will establish wind firmness in the residual stand, remove phenotypically inferior trees, and subalpine fir within the future seed tree population. Table R.8 shows a comparison of the alternatives and Alternative 1 with Modifications.

Alternative 1 with Modifications would reduce the effects of vegetation treatment associated with the percentage mature and old forest within the foraging areas, thus more so resembling Alternative 3. This is especially important with regards to the DF territory which primarily due to natural vegetation conditions (i.e., high component of non-forested habitat) is below 40% of mature and old forest in the foraging area. Alternative 1 with Modifications would reduce the treatment of mature and old forest within this territory, thus reducing the potential effects associated with goshawk occupancy and productivity.

As in Alternative 3, Alternative 1 with Modifications would not treat several units which overlap into two different goshawk foraging areas (RW and DF territories) which may potentially have higher goshawk usage.

As in Alternative 3, Alternative 1 with Modifications would not treat vegetation within active or alternate goshawk nest areas. Harvest and road construction would occur within three replacement nest areas within the OC territory; timber harvest would be designed to improve future nest stand characteristics.

As in Alternative 3, Alternative 1 with Modifications would maintain a mix of cover (older forest) and treatments to create some young patches within the southeastern portion of the project area. Within this area, the forage to cover ratio would likely benefit elk and deer more so than Alternative 1. Alternative 1 treats a greater proportion of area leaving a smaller amount of forested cover.

**Table R.2. Comparison of the treatment types and approximate acreage in each alternative.**

Prescription	Alt. 1 (Acres)	Alt. 1 (Acres)	Alt. 3 (Acres)	Alt. 1 with Modifications (Acres)
Clearcut	206	0	137	187
Conifer Removal with Patches	27	0	27	27
Conifer Removal followed by Fire	556	0	343	343
Group Selection	256	0	183	183
Groups and Patches	150	0	0	60
Irregular Shelterwood (IRSW)	71	0	211	180
IRSW with Groups / Patches	140	0	0	31
Overstory Removals	130	0	130	130
Prescribed Fire / Herbicide / Mechanical	2,513	0	2,469	2,469
Prescribed Fire Mosaic	681	0	681	681
Shelterwood Prep	32	0	9	32
Thin with Groups	38	0	0	38
Total Treated Acres	4,800	0	4,190	4,361

In addition to protecting and enhancing the goshawk habitat, Alternative 1 with Modifications requires less road construction (temporary and intermittent) which has benefits in terms of soil and water quality and impacts on wildlife habitat. This mix also provides timber product to the local economy. Table R.3 shows a comparison of the purpose and need factors for the three alternatives as well as the road construction.

**Table R.3. Comparison of approximate timber volume, PFC acres, and roads in each alternative.**

	<b>Alt. 1</b>	<b>Alt. 2</b>	<b>Alt. 3</b>	<b>Alt. 1 with Modifications</b>
Timber Volume	21,300 ccf	0 ccf	13,700 ccf	16,900 ccf
Temporary Roads	9.0 miles	0 miles	5.6 miles	7.4 miles
Road Construction	1.5 miles	0 miles	0.5 miles	0.6 miles
Early Seral (Forested)	1,993 Acres	0 Acres	844 Acres	906 Acres

### Treatments/Prescriptions

Based on the Big Creek Watershed Assessment (USDA Forest Service 2008) there are several major vegetation groups within the watershed, all of which are weighted heavily towards the older age classes. The following is a description of these vegetation groups and the type of treatments that would be applied to change the distribution of species based on the project objectives.

Alternative 1 with Modifications is composed of the following treatments and parameters:

Sagebrush (approximately 2,796 acres): Prescribed fire, herbicide application, and/or mechanical treatments in the sagebrush type are proposed to achieve a mosaic of treated and untreated patches. In general, these areas are those where older sagebrush is the predominant cover. Approximately 30 to 40% of the area in a unit would be targeted for treatment. Herbicide application or mechanical methods such as a Dixie harrow or disking would be used primarily where more precise targeting of vegetation is desired, where rabbit brush is present, or adjacent to private lands where fire is not appropriate.

For each of the six sagebrush mosaic units (most of which include small stands of aspen and other vegetation types), the approximate acre range of each of the potential treatment types (prescribed fire, herbicide, or mechanical/Dixie harrow) are displayed. The 2,469 acres (listed in Table R.1) proposed in the prescribed fire / herbicide / mechanical prescription are gross acres, not net acres. Within any treatment type, the actual acres burned, sprayed, or harrowed would be less than the gross acres. Our preferred course of action is to burn the proposed acres, however if that is not feasible because of weather conditions, or steep slopes, or other conditions then herbicide or mechanical treatment will be used. All potential acres of each treatment type have been analyzed. Within the 2,469 total acres, up to 2,469 acres are proposed for burning, up to 1,005 acres are proposed for herbicide, and up to 1,470 acres are proposed for mechanical treatment see Table R.4.

**Table R.4. Alternative 1 with Modifications – Prescribed Fire / Herbicide / Mechanical treatment by Unit.**

<b>General Location</b>	<b>Alt. 1 with Modifications Unit #</b>	<b>Acres</b>	<b>Burn Acres</b>	<b>Herbicide Acres</b>	<b>Mechanical Acres</b>
Monument Peak	59	139	0-139	0-35	0-70
Bowery Fork	61	314	0-314	0-80	0-160
Pole Hollow	62	651	0-651	0-130	0-100
The Valley	35	913	0-913	0-500	0-800
SW of Crawford	52	227	0-227	0-100	0-150
W of Valley Spring	63	225	0-225	0-160	0-190
<b>Totals:</b>		<b>2,513</b>	<b>0-2,469</b>	<b>0-1,005</b>	<b>0-1,470</b>

Source: Corbin 2008.

Herbicide treatment would involve using tebuthiuron (Spike®), 2,4D (2,4-dichlorophenoxy acetic acid), and/or picloram (Tordon K®) to kill some of the sagebrush (and other shrubs) and create a mosaic of younger shrub patches within the older sagebrush stands. Herbicide treatment units would generally be less than 40 acres in size, and about 30 to 40% of the area within the unit would be treated. Herbicide would be applied by ground-based (rather than aerial) methods, and strictly applied according to label specifications. Identified sensitive area (such as riparian areas, Brewer's sparrow blocks, rare plant locations, shallow soil areas, etc.) will be avoided. Methods to increase efficacy to treat woody vegetation and reduce impacts to non-target species will be applied; for example, Spike® would be applied during the dormant season to minimize effects on perennial grasses (Dow 2007).

Aspen and Conifer Mix (approximately 585 acres): The three treatments being considered in the aspen and conifer mix type are: fire alone, conifer removal followed by fire, and harvesting in patches.

Fire alone would be used in areas where conifer fuels accumulations are enough fuel to carry fire through portions of the stands and cause 60 to 80% mortality in the overstory to regenerate the aspen. Typically these are stands with only scattered conifer or an understory of smaller subalpine fir where fire would not be expected to cause severe burning conditions.

Merchantable conifer would be removed with a timber sale, followed by burning in areas where there is sufficient conifer present, and conditions (e.g., slopes, access, soils, etc.) are appropriate for timber harvest. Slash from the timber harvest would be scattered within the stand to create a fuel bed to carry the fire throughout the stand at an appropriate intensity to regenerate the aspen without damaging the aspen clone's root system or causing soil damage.

Timber harvest in patches would be used in areas where burning is not desired (such as areas adjacent to private land) or where the aspen is patchy and mixed in with other timber types. Patches (generally under 20 acres) would be clearcut and all stems either removed or felled to stimulate regeneration of the aspen clone. Some slash would be left on site to provide protection for the regenerating aspen and nutrient cycling back into the soil, particularly the larger pieces that will hinder ungulate use. Where slash is dense, matted, or would inhibit regeneration it would be piled and burned.

Lodgepole Pine (approximately 516 acres): Several harvesting systems are being considered in the lodgepole pine type, depending on past treatments and on resource concerns. Past harvests were less than 40 acres and created an unnatural patchwork effect. The lodgepole pine type is being treated to create young stands and also to congeal the older harvest patches into a size and pattern that would more closely resemble what would occur under natural fire conditions. Harvesting of this type provides a substantial portion of the commercial timber being produced from this project.

Where a partial harvest (such as seed tree or shelterwood) was done in the past to create a new age class, the older overstory would be removed, and if appropriate the younger stand thinned to improve its vigor and achieve target future densities based on stand objectives. In some cases these are adjacent to older clearcut units and will contribute to the patch size changes.

Where the stand is adjacent to or between older clearcut units, similar clearcut treatments will be applied in order to achieve the increased patch size objective. Lodgepole pine naturally regenerates well following this type of harvest. Slash in excess of what is needed for site protection would be pile and burned.

In some cases, shelterwood preparatory cuts will be used to reduce density and improve wind firmness within the stand to prepare for future regeneration harvests, while maintaining a mature cover type in the

present. In some cases an ‘irregular’ application of the shelterwood method will be applied which allows for longer time periods before the next entry, than would be specified with the traditional form of the method.

One important consideration within the northern goshawk post fledgling area (PFA) is maintaining 40% to 70% of the area in mature and old stands. Where it is acceptable within the goshawk’s PFA some groups and patches will be created within the matrix of irregular shelterwood to create pockets of young trees. Approximately 20% of a given stand’s total area will be included in these small openings. Groups will average ¼ to 1 acre in size where Douglas-fir or spruce predominate the species mix. Where aspen or lodgepole pine predominate, patches would be up to 10 acres depending on the acreage of that species patch.

Some small stands that are within larger burn units and on slopes less than 40% would be burned along with the sagebrush to regenerate the stand.

Spruce/fir, Douglas-fir, and Mixed Conifer (approximately 464 acres): Treatments in these types would focus on maintaining and enhancing uneven aged stand structures. In general, fire is not appropriate in this type.

Small group selection harvest (patches generally ¼ to 1 acre) would be used over approximately 20% of a stand’s area to regenerate a new age class. Future similar entries over time would further develop and maintain the uneven aged characteristics. Patch size would depend on several factors including the species mix, tree heights (for shade), slope position and aspect, and any existing natural variations in stand structure.

Uneven aged thinning (both commercial and non commercial) would be utilized in between the groups where stand density is high and the stand structure includes trees in multiple size classes. Trees would be removed in each of the size classes to maintain appropriate densities in each and to represent an uneven aged stand structure. This treatment can also be used to manipulate future species composition by favoring some tree species over others in the smaller size classes.

Table R.5 shows approximate unit acres treated by vegetation cover type. Table R.6 shows approximate unit treated acres by prescription type. Table R.5 and Decision Map in Appendix A shows approximate acres treated by prescription and vegetation type.

**Table R.5. Total approximate unit acres to be treated by vegetation cover type in Alternative 1 with Modifications.**

Cover Type	Acres
Aspen/Conifer	246
Conifer/Aspen	339
Douglas-fir	83
Lodgepole Pine	516
Mixed Conifer	249
Spruce/Fir	132
Sage Mix	2,796
Total	4,361

**Table R.6. Alternative 1 with Modifications – Approximate treated acres by prescription type.**

<b>Prescription</b>	<b>Alt. 1 with Modifications (Acres)</b>
Clearcut	187
Conifer Removal with patches	27
Conifer Removal followed by Fire	343
Group Selection	183
Groups and Patches	60
Irregular Shelterwood (IRSW)	180
IRSW with groups / patches	31
Overstory Removals	130
Prescribed Fire / Herbicide / Mechanical	2,469
Prescribed Fire Mosaic	681
Shelterwood Prep	32
Thin with Groups	38
<b>Total Treated Acres</b>	<b>4,361</b>

## Roads

The Big Creek project area has a fairly extensive road system in place and most of the general treatment areas are accessible. However, some road construction and road improvement to access the treatment units will be required.

Existing system roads will be improved primarily by the addition of gravel, grading and shaping, cleaning ditches and drainage structures, and possibly some culvert replacement. Existing roads will not need to be realigned or widened.

There are two types of new roads that will be constructed.

Approximately 7.4 miles of temporary roads will be constructed to access specific treatment units. Temporary roads will be constructed only to the level needed to access the units for treatment and remove products. These will be native surface, with temporary drainage structures or culverts. Following treatment and any follow-up needs such as tree planting or pre commercial thinning, these will be obliterated, the road prism put back to the original slope contour and revegetated. These will be used where no treatment will be needed in the reasonably near future such as clearcut units or irregular shelterwood where the next entry will be several decades in the future.

Approximately 0.6 miles of roads are proposed to be constructed to access partial cut units in the spruce-fir cover type. Referred to as “intermittent service roads,” they will be constructed where needs are anticipated in the reasonably near future, such as in the group selection or shelterwood prescriptions where reentry will be within a few decades. Following treatment and follow up these will be closed to traffic using gates or other physical barriers, drainage improved and revegetated to prevent erosion. The road prism will stay in place so that future access can be accomplished with relatively little site and soil disturbance.

All of the created roads will be gated and/ or otherwise closed to public access during the harvesting operations.

## Fireline

There are five basic techniques that will be used to contain prescribed fire in the treatment units. Fire will be used alone or in conjunction with commercial timber harvest, mechanical treatments including Dixie harrow, and/or herbicide treatments to achieve a mosaic of burned and unburned patches within each of the units. Specific methods of line control will be specified in the burn plan for each unit or group of units likely to be burned at a time. The following estimates of miles of each kind of fire line are approximate, but represent the upper end (most line construction) for control lines. It is likely that firing techniques will be utilized more, and constructed lines less than the estimates given.

1) Firing Techniques – Many of the units are quite large and cover a variety of terrain and aspects. Timing and placement of ignitions within this will allow fire to burn only in portions that are ready. For example in the spring northerly slopes will be moist and with snow cover while the southern slopes will be dry for burning. Ignitions along the ridge will only move down the dry south slopes. Other terrain features can be used in conjunction with the firing patterns to selectively burn portions of the units. Natural features such as rock outcrops, openings, and wet riparian / stream corridors, can also serve as anchors for utilizing firing techniques. Created features such as sagebrush patches recently treated with herbicides or Dixie harrow thinning may also be appropriate for control lines, depending on fuel conditions. At least 25 miles of unit perimeter will utilize this technique.

2) Handline – Where vegetation is short and light, such as in sage and grass, fireline constructed by hand will be used to anchor the burning. Primarily this is adjacent to private land and/or goshawk nest stands where fire would not be acceptable. Handline will average 24 to 36 inches wide and be clear to mineral soil. Line will be appropriately rehabilitated (by mulching, seeding, and/or water barring, as needed) following completion of the burning to prevent erosion. Up to about 14.3 miles of handline will be built and rehabilitated.

3) Machine line – Where equipment is being used in conjunction with timber operations and fuels are larger than feasible for handline, fireline will be built using heavy equipment. Line will average 72 to 96 inches in width and be clear to mineral soil. These are primarily smaller units in the more heavily forested portions of the project area. Following burning the lines will be rehabilitated (seeded and water barred as needed, and where available woody debris may be scattered along for microsite protection). Possible equipment includes (but not limited to) bulldozers, rubber tired skidders, trail cats, and tracked excavators. Approximately 0.8 miles of machine line is expected to be used.

4) Skid Trails – In timber sale units that have burning as secondary treatments skid trails for log removal will be placed along the perimeter and used also for containment of the fire. Skid trails are generally about 96 inches in width and have mineral soil exposed throughout much of their surface. As in the machine line, these will be rehabilitated following burning to prevent erosion. In small portions where it is not feasible to skid along the boundary then machine line will be built. Approximately 5.2 miles of skid trails (including incidental machine line) will be used as fire containment lines.

5) Forest System Roads – Where existing roads coincide with burn unit boundaries these will be used as fire lines. Approximately 2.0 miles of road will be used for fire containment.

## Design Elements and Mitigation Measures

In addition to the description of the alternative above, the specific design elements and mitigation measures listed in Table R.7 will be required with implementation of this project (refer to FEIS, Section 2.2).

**Table R.7. Description of required design elements and mitigation measures.**

<b>Design Elements and Mitigation Measures</b>
<b>Aquatic Resources (FEIS, Section 3.2) and Water Resources (FEIS, Section 3.11):</b>
A 300 foot buffer will be established around known boreal toad sites.
Harvest and treatment related activities would be limited to high-risk, individual tree cutting that will be left on site for woody debris recruitment. There will be no lighting of prescribed fire within the Riparian Habitat Conservation Areas (RHCAs). Burning within RHCAs is not expected, however, there may be minimal backing in some areas. The following is a description of RHCAs by category and stream type: <ul style="list-style-type: none"> <li>• <u>Category 1. Fish-Bearing Stream</u>: RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 300 feet slope distance (600 feet, including both sides of the stream channel).</li> <li>• <u>Category 2. Permanently Flowing Non-Fish-Bearing Streams</u>: RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to 150 feet slope distance (300 feet, including both sides of the stream channel).</li> <li>• <u>Category 3. Ponds, Lakes, Reservoirs, and Wetlands Greater Than 1 Acre</u>: RHCAs consist of the body of water or wetland and the area to 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond, or lake.</li> <li>• <u>Category 4. Seasonally Flowing or Intermittent Streams, Wetlands Less Than 1 Acre, Landslides, and Landslide-Prone Areas</u>: This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include, landslides and landslide-prone areas, 100 feet slope distance in watersheds containing Bonneville or Colorado River cutthroat trout, and 50 feet slope distance for watersheds not containing Bonneville or Colorado River cutthroat trout (<i>Oncorhynchus clarki pleuriticus</i>).</li> </ul>
<b>Fire, Air Quality, and Herbicides (FEIS, Section 3.3):</b>
In the prescribed burn, do not target low sagebrush areas, but incidental fire within or on the edge of these stands is acceptable (but is unlikely to carry far due to the low fuel loading).
In the northern three sagebrush units where the big sagebrush is patchier (between more low sagebrush openings), the burn prescription should result in a very patchy burn pattern that will create relatively small openings within the (already patchy) big sagebrush. Ideally, burn patches would be in the range of 0.1 to about 2 acres in size, and preferably with lots of edge remaining adjacent to unburned big sagebrush. (That is, without large burned blocks where the interior is a long way from a sagebrush seed sources.) Within the northern sagebrush burn units; desired "black" will be a fairly low percentage of the whole, about 10 to 40%, since the units have a relatively large proportion of low sagebrush.
Within the sagebrush units are several aspen (and perhaps aspen/conifer) stringers. Target burning the big sagebrush adjacent to these stringers, and let the fire carry within and through the stringers to the extent possible as well.
In the Crawford Bottom area, target the older mountain big sagebrush stands, rather than previously burned (mid-seral) sagebrush, or low sagebrush stands. Incidental burning within low sagebrush or mid-seral big sage is acceptable, but not preferred. Concentrate on burning big sagebrush stands adjacent to aspen or aspen/conifer, and incorporate the mosaic burn into those stands. In the Crawford Bottom area, desired "black" will be about 15 to 50% of the area within each sagebrush unit.
For sagebrush stands treated with herbicides, the burning recommendation is similar to burning big sagebrush; burn patch sizes could be larger (since there is no concern about seeding sagebrush into the stand), but since the treated sagebrush stands within this particular area are fairly small anyway, that will not be a consideration.
Specific sagebrush areas have been identified and analyzed for treatment. During project implementation, the Forest will determine which sagebrush areas will be targeted for herbicide, mechanical, and prescribed fire treatments. For example, sagebrush stands adjacent to conifer areas that we don't want to burn may be good candidates for herbicide rather than burning. In addition, putting in at least a few small areas of herbicide treatment in the larger sagebrush matrix to compare the response to adjacent burned (and unburned) areas would give the forest some good management option information for future projects.
In general, burning sagebrush will be the preferred tool over herbicide use or mechanical treatment, due to cost considerations.
Aspen/conifer stands (generally identified for mosaic burning) with high concentrations of standing conifer may need to be logged (like the conifer/aspen stands) before burning to minimize the potential for undesirably hot burns pockets which may kill underground aspen stems. Similarly, areas with high concentrations of heavy dead and down fuels (logs) may need to be pre-treated or burned first under particularly moist conditions to avoid undesirable

<b>Design Elements and Mitigation Measures</b>
fire severity.
Aspen/conifer areas with few conifers and/or very low fuel loadings may need to have conifers felled to provide surface fuels to assist in generating the desired heat to kill remaining conifers and above-ground aspen stems.
Conifer/aspen areas with heavy fuel loads will need to be carefully evaluated before burning. In many areas, logging alone may be the preferred treatment. Particularly, removing conifers from small aspen clones within a conifer stand is a priority for maintaining aspen across the landscape.
<b>Range (FEIS, Section 3.5):</b>
Schedule treatments in conjunction with the livestock operations on the grazing allotments. In areas where prescribed fire isn't occurring, use livestock to reduce fine fuels.
Protect range structures such as fences and water developments during the prescribed burns.
<b>Scenery (FEIS, Section 3.7):</b>
Use a local genotype of native seed species for seeding disturbed areas.
Stockpile topsoil to one side of the construction activity until the desired track is constructed.
During construction of intermittent service roads use slope rounding and landscape contouring in cut slopes to reduce geometric effect of the road alignment.
<b>Soil (FEIS, Section 3.8):</b>
For all harvest blocks, restrict ground based mechanical harvest and skidding to the normal dry or frozen ground operating season to mitigate the potential for detrimental compaction to occur when soils are moist or wet.
For all temporary roads and harvest blocks, restore soil productivity on main haul trails, log landings, and temporary roads by mitigation practices such as light tilling or ripping of the compacted soils and revegetating with native forbs and grasses.
For system, intermittent, and temporary service roads used to implement the treatments under this alternative on Sambrito, Mult, Baird Hollow, Bullnell and Richens soil types, install drainage dips at a frequency/spacing of no more than 250 feet.
For native surface roads constructed under this alternative on Sambrito, Mult, Baird Hollow, Bullnell and Richens soil types, limit the gradient to no more than 8%. Obliterate temporary roads using equipment to push and/or lift back in the fill and put the prism back to slope, and then seeded with an appropriate mix. Intermittent roads will be gated or closed with some other means, drained and seeded.
Proposed use of herbicides on this project will be conducted under a decision tree methodology used in the Forest Noxious Weed Treatment Program and using rationale that minimizes the use of known persistent herbicides. The decision tree and other rationale allows for the use of relatively more persistent agents only when less toxic and persistent agents are ineffective in controlling the target species.
All herbicides will be applied at concentrations no greater than specified in their label, which further reduces the potential for impacts to soil productivity to occur as a result of these applications.
<b>Vegetation – Plants and Noxious Weeds (FEIS, Section 3.10):</b>
Develop a plan for treatment of known infestations of noxious weeds according to Wasatch-Cache Noxious Weed EIS 2006. Treat infestations prior to project implementation. Wash equipment prior to entering the forest to begin implementation. If equipment is removed from the Forest to work at another job site – it should be washed again prior to returning to the Forest.
<b>Water Resources (FEIS, Section 3.11):</b> In addition to RHCA previously described under the Aquatic Resources, several best management practices are part of the proposal so that adverse effects to soil and water resources from soil disturbance, reduced ground cover, and road construction can be minimized. Specifically, the BMPs are:
Minimize soil disturbance through use of designated skid trails roads.
Minimize the introduction to water bodies of organic and inorganic chemicals from harvesting and pesticide applications by using pesticides or herbicides in accordance with manufacturer's specifications and allowing Riparian Habitat Conservation Areas (RHCAs) that act as buffer zones to streams and springs.
<b>Wildlife (FEIS, Section 3.12):</b>
New temporary and roads for "administrative use only" will be constructed, but these roads will not be considered for public use (during or after harvest activities). Open road density will not change as part of this project.
Newly created temporary roads will be closed and rehabilitated, directly after completion of harvest activities to reduce impacts to wildlife.
Newly created administrative use only roads will be gated (or closed by other means) directly after completion of

<b>Design Elements and Mitigation Measures</b>	
harvest activities to reduce impacts to wildlife.	
Roads designated for “administrative use only” will have very limited motorized use after harvest activities are completed; thus little or no affect on wildlife species after project implementation. Some existing administrative use only roads will be opened temporarily to complete the harvest/treatment activities. Use of these roads for project implementation will be temporary (approximately two seasons within a specific area).	
The sale administer and road engineer will closely coordinate sale activities and road construction prior to each season’s operational period with a wildlife biologist to have updated location nest site data in order to avoid disturbance to goshawk nest areas and post fledgling areas.	
To minimize effects to neotropical birds, mechanical and herbicide vegetation treatment of shrublands <u>will</u> occur prior to May 1 or in late summer or fall. Treatment of shrublands and forested stands with the use of prescribed fire, <u>should</u> occur prior to May 1 or in late summer or fall, but may occur later (no later than May 31) due to weather, snowpack, and other conditions to provide a window of opportunity to conduct burn activities. Road construction and timber harvest activities <u>should</u> be planned when possible to occur within the late summer, fall, or winter to minimize effects to neotropical birds.	
Vegetation treatment <u>should</u> occur prior to May 1 or in late summer or fall to avoid affecting nests, eggs, and nestlings.	
Patches of mountain big sagebrush larger than 1.2 acres in size (average territory size), distributed within the treatment areas, should be retained to provide Brewer’s sparrow habitat. Retained areas should be selected to have taller and denser sagebrush and have greater amounts of bare ground or less herbaceous understory vegetation than surrounding habitat. The areas should also have a greater percent of live shrub growth and less rock covered ground.	
Appendix X of the Forest Plan (USDA Forest Service 2003) provides implementation guidance for northern goshawk. The most applicable guidance for this project are: <ul style="list-style-type: none"> <li>• Identify two alternate and three replacement nest areas per active territory. Each nest area should be 30 acres in size.</li> <li>• Alternate nest areas should be located in suitable habitat with similar vegetation structure as the active nest area.</li> <li>• Replacement nest areas should be located in habitat which will develop similar vegetative structures as the active nest area at the time when the active and alternate nest areas are projected to no longer provide adequate nesting habitat.</li> <li>• Within PFAs, management activities <u>should</u> be restricted during the active nesting period (March 1 to 30 September).</li> <li>• Plan the transportation system to minimize disturbance to PFAs.</li> </ul>	
Following a site-specific analysis of the project area, the following additional conservation guidance has been recommended for this project area: <ul style="list-style-type: none"> <li>• Vegetation treatments designed to maintain or promote a VSS 4, 5, and/or 6 group (mature and old age classes) should typically range from 40-70% in the foraging area and within the post-fledging area.</li> <li>• Planned vegetative management treatments in mature and/or old structural groups in a landscape that is at or below the desired percentage of land area in mature and old structural stages (40% conifer, 30% aspen), should be designed to maintain or enhance the characteristics of these structural stages and treatments should not move them out of the mature and old structural stage.</li> <li>• Forest manipulation within active, alternate, and replacement nest areas should be designed to maintain or improve desired nest area habitat.</li> </ul>	

## Unit Specific Mitigation Measures

Unit specific mitigation measures implemented with this decision are listed in Table R.8 (FEIS, Section 2.2, Table 2.2.1a).

**Table R.8. Unit specific mitigation measure description.**

Unit Number	Site Specific Mitigation Measure
22	Avoid potential severe soil burning effects in Unit 22 by treating with prescribed fire in the spring when soil moisture content is at least 20% by volume.

## Applicable Forest Plan Standards and Guidelines

In making my decision, I considered the relationship of the project to the 2003 Revised Forest Plan Wasatch-Cache National Forest. The 2003 Revised Forest Plan sets forth management direction for managing the land and resources of the Wasatch-Cache National Forest. The Forest Plan is the result of programmatic analysis, which is addressed in the Forest Plan FEIS (USDA Forest Service 2003). The Big Creek Vegetation Treatment Project is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. A 2007 court ruling enjoined the Forest Service from implementing the 2005 planning rule (*Citizens for Better Forestry v. USDA*). The Forest Service is currently operating under the 2004 interpretive rule that requires best available science to be considered in implementing the current plan. Literature reviewed and considered by specialists in the analyses is referenced in the FEIS, Appendix B. A new 2008 Rule was approved April 9, 2008. Its effective date has not yet been established.

Chapter 4 of the Revised Forest Plan contains Forest-wide as well as area-specific management direction. The pertinent Forest Plan Standards and Guidelines are summarized in Tables R.9 and R.10.

**Table R.9. Wasatch-Cache NF Standards (S) that apply to this project.**

Revised Forest Plan (RFP) Standards (USDA Forest Service 2003)
(S1) Allow no ground-based skidding and oil and gas surface occupancy on slopes greater than 40% (RFP, p. 4-36).
(S2) Apply runoff controls during project implementation to prevent pollutants including fuels, sediment, oils, from reaching surface and groundwater. (RFP, p. 4-36).
(S4) Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water. (RFP, p. 4-36).
(S6) Within legal authorities, ensure that new proposed management activities in watersheds containing 303d listed water bodies improve or maintain overall progress toward beneficial use attainment for pollutants which led to listing; and do not allow additions of pollutants in quantities that result in unacceptable adverse effects. (RFP, p. 4-37). (See RFP, Appendix II provides for clarification of terms used in this Standard).
(S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (RFP, p. 4-37). (See RFP, Appendix VII for potential ground cover values by cover type).
(S12) Prohibit forest vegetation treatments within active northern goshawk nest areas (approximately 30 acres) during the active nesting period. (RFP, p. 4-39).
(S13) At least 20 percent of each forested cover type by ecological section (McNab and Avers 1994) shall be maintained with old forest landscape structure with patch sizes of at least 10 acres. These old forest areas are dynamic, changing location as disturbances occur. (RFP, p. 4-39).
(S17) All decommissioned roads/trails will be properly drained. (RFP, p. 4-45).
(S20) When constructing or maintaining roads, trails and facilities, use Best Management Practices to minimize sediment discharge into streams, lakes and wetlands. (RFP, p. 4-46).
(S25) As a tool to achieve desired conditions of riparian areas, maximum forage utilization standards (stubble height) for low to mid elevation greenline species apply. (RFP, p. 4-51).

**Table R.10. Wasatch-Cache NF Guidelines (G) that apply to this project.**

Revised Forest Plan (RFP) Guidelines (USDA Forest Service 2003)
(G2) Projects in watersheds with 303(d) listed waterbodies should be supported by scale and level of analysis sufficient to permit an understanding of the implications of the project within the larger watershed context. (RFP, p. 4-37).
(G3) Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act. (RFP, p. 4-37).
(G4) At the end of an activity, allow no more than 15% of an activity area to have detrimental soil displacement, puddling, compaction and/or to be severely burned. (RFP, p. 4-37).
(G5) Do not allow activities that could result in water yield increases that would degrade water quality and impact

<b>Revised Forest Plan (RFP) Guidelines (USDA Forest Service 2003)</b>
beneficial uses. (RFP, p. 4-37).
<b>(G6)</b> In Riparian Habitat Conservation Areas when projects are implemented, retain natural and beneficial volumes of large woody debris. (RFP, p. 4-37).
<b>(G8)</b> In stream channels naturally occurring debris shall not be removed unless it is a threat to life, property, important resource values, or is otherwise covered by legal agreement. (RFP, p. 4-37).
<b>(G9)</b> Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. (RFP, p. 4-38).
<b>(G11)</b> Use Best Management Practices and Soil and Water Conservation Practices during project level assessment and implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect of designated beneficial uses. (RFP, p. 4-38).
<b>(G12)</b> Locate new actions (such as incident bases, fire suppression camps, staging areas, livestock handling facilities, recreation facilities, roads and improvements including trails) outside of Riparian Habitat Conservation Areas. If the only suitable location for such actions is within Riparian Habitat Conservation Areas, sites will be located to minimize resource impacts. (RFP, p. 4-38).
<b>(G13)</b> Any long-term crossing of stream channels containing fish habitat will provide for desirable aquatic passage. (RFP, p. 4-38).
<b>(G14)</b> Manage vegetation for properly functioning condition at the landscape scale. Desired structure and pattern for cover types of the Wasatch-Cache National Forest (from USDA Forest Service 1996) are listed in the Revised Forest Plan on pages 4-39 to 4-30 except in the Wildland Urban Interface, where vegetation structure and pattern should be managed to reduce threat of severe fire to property and human safety. (RFP, p. 4-39).
<b>(G15)</b> In goshawk habitat, design all management activities to maintain, restore, or protect desired goshawk and goshawk prey habitats including foraging, nesting, and movement. (RFP, p. 4-42).
<b>(G16)</b> When treating vegetation in the following cover types, maintain or restore snag and woody debris habitat components at a stand level (where they are available distributed over each treated 10 acres). If the minimum number of snags is unavailable, then use largest trees available on site. Snag and woody debris requirements by forest type are listed on page 4-42 of the RFP. (RFP, p. 4-42).
<b>(G29)</b> Avoid disruptive management activities in elk calving areas and elk spring use areas from May 1 through June 30 (RFP, p. 4-44).
<b>(G35)</b> The full range of fuels reduction methods is authorized consistent with management direction for the specific area. (RFP, p. 4-45).
<b>(G45)</b> Access routes for heavy equipment should be selected to limit disturbance to riparian vegetation and to limit the number of stream crossings. (RFP, p. 4-46).
<b>(G47)</b> Waste material should be handled in a manner to avoid sidcasting materials to areas where they may enter a stream. (RFP, p. 4-46).
<b>(G73)</b> Delay livestock use in post-fire and post-harvest created forest openings until successful regeneration of the shrub and tree components occurs (aspen trees reach an average height of 6 feet). (RFP, p. 4-52).

## Project Specific Monitoring

Monitoring is also a key part of my decision. Because not all proposed activity areas can be monitored, representative areas will be identified for the proposed activities and sampled. The results of the data and interpretations from the sample sites will be extrapolated to similar areas and activity types. Most monitoring completed under this program will be ongoing for 4 to 5 years.

Implementation monitoring will include documentation ensuring that timber sale preparation of all harvest units on the ground and in the contract are in compliance with the Big Creek EIS requirements. It will also include documentation of timber sale administration site visits and observations of overall contract compliance.

The monitoring specifics outlined in FEIS Section 2.2, and Table R.11 will be followed.

**Table R.11. Project specific monitoring.**

<b>Project Specific Monitoring</b>
Post-burn Monitoring: After project implementation, fuels plots (established in 2006) in units that were burned will be monitored at one, three, and five years after the burn. The same information as was collected pre-burn will be measured (i.e., plot description, tree data, fuel loading, and photographs). Some of the unburned plots may also be

<b>Project Specific Monitoring</b>
remeasured (depending on time and resource availability), to provide a control comparison for changes due to factors besides the fire. Analysis of these data will allow us to see whether specific fuels and vegetation objectives have been met, at least on the plot-level scale.
Monitoring locations should not be placed too close to established range water developments, trails, or fences as described in the Forest Plan monitoring guide.
Post harvest effectiveness monitoring in regeneration treatment units will include third and fifth year stocking surveys to determine compliance with the Revised Forest Plan minimum stocking standards as well as certification of adequate stocking for NFMA requirements. In planted areas, stake rows will be established following FSH guidelines and be used to determine first and third year plantation survival. Post harvest stand exams will be done in thinned units to determine the composition and density of the residual stand.
In addition to the annual Aerial Detection Survey, the sale prep personnel, sale administrator, and Silviculturist will observe/monitor active areas of insect activity throughout the life of the project and anticipating where additional populations could develop, explore these areas with walk-through exams. Any increases in, or new activity will be considered for treatment or longer-term monitoring.
Annual monitoring will occur to determine occupancy and location of active nest sites/nest areas in all goshawk territories in which the proposed project could affect the nest areas or post fledgling area. In the event that a goshawk selects a new nest site not within the identified nest areas or outside of the post fledgling area (PFA), the new nest site will be incorporated into the existing PFA or changes will be made to modify the PFA to incorporate the new site. If this situation occurs, standards and guidelines will be met to prevent impacts to the active nest area and PFA.

#### **IV. Rationale for Decision**

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##### **A. How the Alternatives Meet the Purpose and Need for Action**

The purpose and need for the proposed action contains the following elements:

- 1) To improve vegetation structure and pattern for cover types within the Big Creek project area to move toward properly functioning condition at the landscape scale.
- 2) To enhance ecosystem resiliency and to maintain desired fuel levels with fire operating within historical fire regimes.
- 3) To provide commercial timber that contributes to a sustainable level of goods and services.

Alternative 2 – No Action does not meet the purpose and need in this analysis. Both Alternatives 1 and 3 meet the elements of the purpose and need to varying degrees as follows:

- 1) To improve vegetation structure and pattern for cover types within the Big Creek project area to move toward properly functioning condition at the landscape scale.

Alternative 1 provides the most movement of forest cover types toward properly functioning condition (of the approximately 1,811 acres treated, about 1,193 acres would be moved directly to an early structural stage) as compared to the approximately 1,240 acres treated under Alternative 3 with about 844 acres moving directly to an early structural stage. Under the selected Alternative 1 with Modifications, approximately 1,565 forested acres would be treated with about 906 of that going to early seral. There is essentially no difference in the non forested treatments between alternatives. Alternative 1 treats approximately 3,194 acres with either prescribed fire, mechanical, or herbicide means while Alternative 3 and Alternative 1 with Modifications similarly treat approximately 3,150 acres. In each case about 40% of the treated area will be moved to early seral. Differences in the alternatives are primarily driven by the need to balance between creating early seral and maintaining mature forest in existing goshawk territories and therefore are primarily within the forested treatment types. Table R.12 provides a description of post treatment PFC distribution.

**Table R.12. Approximate post treatment PFC distribution in Alternative 1 with Modifications.**

Alt. 1 with Modifications – Cover Type (Acres)	Distribution	Grass/Forb (Acres)	Seed/Sap (Acres)	Young (Acres)	Mid (Acres)	Mature (Acres)	Old (Acres)
Spruce-Fir (1,354 Acres)	Current	27	0	0	349	845	133
	Desired	135	136	271	271	271	271
Mixed Conifer (1,144 Acres)	Current	85	0	27	43	976	13
	Desired	114	114	229	229	229	229
Lodgepole Pine (2,421 Acres)	Current	299	0	295	825	1,002	0
	Desired	243	243	485	484	484	484
Douglas-fir (482 Acres)	Current	39	0	0	137	306	0
	Desired	49	49	96	96	96	96
Aspen - Aspen/Conifer (2,834)	Current	353		2,481			0
	Desired	1,134		851			850

*Note: Acres created in early seral are put into the grass/forb stage, however it will be a relatively short time before these acres become seedling/sapling. For aspen this should only be one or two years.*

- 2) To enhance ecosystem resiliency and to maintain desired fuel levels with fire operating within historical fire regimes.

Alternative 1 increases the amount of early seral in most vegetation types. The landscape moves closer to reference condition, changes in stand structure occurs, and fuel loading decreases.

Following treatment, fire behavior will be: mosaic, less severe, and smaller in size. Alternative 3 will have similar impacts to Alternative 1 although on a smaller scale because of fewer treated acres.

These treatments all maintain a variety of vegetation types, ages, and patch sizes, and protect watersheds, and aquatic and terrestrial species' habitat thus enhancing ecosystem resiliency. Under Alternatives 1 and 3, Fire Regime Condition Class remains in a Class 2, however the percentage departure from historic reference conditions is reduced by 13% in Alternative 1 and 11% in Alternative 3. Total fuel loading for each alternative on a tons per acre basis is reduced from 92 to 25 in the conifer/ aspen types, 81 to 24 in the lodgepole pine clearcuts, 81 to 56 in the lodgepole partial cuts, and 73 to 60 in the mixed conifer treatments.

- 3) To provide commercial timber that contributes to a sustainable level of goods and services.

Alternative 1 provides the greatest recovery of economic values through volume offered (21,409 CCF compared to 13,755 CCF in Alternative 3). Alternative 1 with Modifications provides an intermediate economic value with 16,900 CCF to be offered.

## **B. How Selected Key Issues Were Considered**

Concerns related to effects on soil productivity, water quality, and wildlife habitat were raised during scoping. The Forest Hydrologist, Soils Scientist, Plant Ecologist, Archaeologist, Fisheries Biologist, Wildlife Biologist, Silviculturist, Environmental Coordinator, and Timber Management Coordinator visited the harvest units, modified units from the original proposed action, and prepared general management direction, design elements/mitigation measures (FEIS, Section 2.2), and unit specific mitigation measures where needed for each of these sites (FEIS, Section 2.2, Table 2.2.1a). Analysis

indicates that mitigation measures and project design will protect resource values. Management requirements and implementation/effectiveness monitoring will address any differences or concerns common to both action alternatives identified during this analysis.

In making my decision, I compared the two action alternatives (FEIS, Section 2.4) and how they responded to the issues. The key issues identified in the analysis (FEIS section 1.9) and a description of how the alternatives respond to those issues is as follows:

### **Issue 1 – Soil Productivity**

Effects to the soil resource will be disclosed in terms of the kind and amount of detrimental disturbance predicted or anticipated from the various types of proposed treatment activities.

#### **Indicators:**

- 1) The amount of increased soil erosion.
- 2) The amount of soil compaction.
- 3) A severe soil burning hazard assessment.

Approximately 0.8 miles of machine fireline and about 14.3 miles of handline is expected to be constructed to contain prescribed fire activities within proposed unit boundaries. Since soils in these units do not generally rate with a high compaction hazard (Flood, DEIS p. 3-66) and the number of passes along the line is limited, as well as the total mileage, it is not expected that soil compaction will be detrimental. This will not significantly increase the amount of detrimental soil disturbance in any one unit to exceed the Forest Plan maximum of 15%.

Within the sagebrush/aspen mosaic stands proposed for treatment with mechanical disk or pipe harrowing, the direct effect on soil quality would be one of short-term soil disturbance occurring that would not be likely to result in significant amounts of soil erosion and very little detrimental soil compaction occurring.

In the Big Creek project treatments the proposed use of herbicides is very unlikely to result in a reduction in soil quality/productivity as measured by the ability of the soil to support native vegetation.

Analysis of detrimental soil disturbance including soil displacement, soil erosion, compaction, and soil hydrophobicity (water repellence) due to severe fire effects indicates slight differences between Alternatives 1 and 3 and Alternative 1 with Modifications and that Forest Plan Standards and Guidelines would be met. Results of erosion modeling using the FS WEPP methodology indicate that the average annual erosion rate for all proposed timber and prescribed fire treatments is either at or below the allowable soil loss (“t” value) for the soil type, and that none of the prescribed fire treatment units would experience detrimental soil erosion as a result of the most probable type of rainstorm. Therefore, under Alternatives 1, 3, and Alternative 1 with Modifications long-term soil quality and productivity would not be impaired.

Compaction from heavy equipment can be avoided by mechanically harvesting and skidding on normal dry or frozen ground. Under Alternative 1, construction of temporary and intermittent service roads would cause 13 acres of compacted soil under Alternative 1 and 7.5 acres of compacted soil under Alternative 3. Although these effects would not be a permanent impairment of soil productivity, full recovery of soil quality would not occur within the ten year timeframe for analysis of future effects. Soil quality could be partially restored, but not to pre-timber harvest conditions, on the main haul trails, log landings, and temporary roads by mitigation practices such as ripping of the compacted soils and revegetating with native forbs and grasses.

Under Alternative 1, Units 18, 19, 21, 22, 26-30, 32, and 45 and under Alternative 3, Units 18, 21, and 26-29 and under Alternative 1 with Modifications, Units 18, 19, 21, 22, and 26-30 were of concern due to small amounts of detrimental soil loss that could occur if RFP Standard S-1 was not followed. RFP Standard S-1 will be followed, resulting in no detrimental soil loss in those units.

### **Issue 2 – Water Quality**

Forest canopy removal and erosion following log skidding, prescribed burning, herbicide or mechanical treatments, and/or road construction could lead to adverse effects on water quality, and for this project specifically, sedimentation of water and changes in pH of stream water.

#### **Indicators:**

- 1) The amount of sediment entering streams or wetlands.
- 2) Estimated concentration of herbicides in receiving waters.
- 3) Changes in pH of stream water.

Under Alternatives 1, 3, and 1 with Modifications, the RHCA should serve as a buffer resulting in no sedimentation of streams or springs.

The implementation of RHCA mitigation would minimize the likelihood of herbicides from moving into water features by providing a buffer between treatments and stream channels and springs. It is expected that some herbicide will move into the surface water and groundwater but the concentration of the herbicide will be very low and not adversely affect the health of riparian or aquatic vegetation or exceed water quality standards. Also, the buffer strips between the treatment area and riparian areas will slow the movement of herbicide to the point where the herbicide will break down before it reaches riparian or aquatic features.

This would result in very minor, short-term increases in the level of pH in streams and very minor cumulative effects.

No adverse effects to wetlands are expected.

### **Issue 3 – Wildlife/Habitat**

The project area supports a variety of wildlife species and habitats. The proposed action and alternatives will have varying effects on wildlife species and their habitat depending on the amount of treatment, the location, and the type of treatment. Species include: USFWS listed threatened, endangered, proposed, and candidate species, USDA Forest Service Sensitive species, Management Indicator Species (MIS), neotropical migratory birds (priority species), Wasatch-Cache NF Species at Risk, and general species of local concern (e.g., deer, elk, and moose).

#### **Indicators:**

- 1) Acres of specific habitat and/or vegetation types treated/modified for select species.
- 2) Miles of new road construction within specific habitat and/or vegetation types for select species.
- 3) Distance of potential disturbance activities from nest sites/territories for select species such as the northern goshawk.
- 4) Changes in open road density by 6<sup>th</sup> order watershed.
- 5) Changes in elk patch size.

Impacts to Alternative 3 are similar to Alternative 1 although on a smaller scale because of fewer treated acres and miles of road construction. Alternative 1 with Modifications would provide an intermediate level of impacts and goes further to protect goshawk habitat.

### **Terrestrial Wildlife and Their Habitat (FEIS Section 3.12) –**

Analysis of the effects of human activity during timber harvesting, prescribed burning, and road construction under Alternative 1 indicate it is likely to have more direct and cumulative effects on the movements of some species of wildlife than Alternative 2 the No Action Alternative, Alternative 3, or Alternative 1 with Modifications. These effects are mitigated by actual design of the alternatives and unit specific mitigation measures. Analysis of the effects of alternatives on landscape vegetation species and age class diversity is generally similar to effects of historical natural disturbance and positive in maintaining that diversity. Alternative 1 treats more acres and moves the landscape closer to historical conditions. Fragmentation is temporary and quite limited under both action alternatives, due to regeneration and growth of young forest and revegetation of temporary roads. The effects of intermittent service roads under Alternative 1 as opposed to Alternative 3 are minor due to revegetation and closure of these roads to public and administrative motorized use between periods of harvest. Cumulative effects of past harvesting are minor since past harvest has been limited and spread over a long period of time on this landscape.

As a result of maintaining and improving forest age class diversity, species composition, and fire regime condition classes, Alternative 1 also maintains and improves diversity of habitat for some wildlife species. Species that prefer early seral vegetation would be more likely to benefit from harvest or prescribed fire. Species that prefer old or mature species will likely have some impact in the short term, but treatment under this alternative will move vegetation toward PFC in the long term.

### **Big Game Species (FEIS Section 3.12) –**

- **Mule Deer** – Long-term beneficial effect to deer summer habitat from aspen and conifer treatment. Short-term negative effect to forage availability and temporary displacement.
- **Elk** – Same as deer, only more benefits to elk summer range due to increases in grasses and forbs. Elk Patch Size - Temporary short-term disturbance effects, but no change from the Ogden Travel Plan in patch size since all routes will be closed after harvest.
- **Moose** – Aspen treatments will benefit the same as deer.
- **Gray Wolf** – No breeding pairs or a pack identified in Utah to date, only one dispersing animal in 2002. Short-term displacement to prey species such as elk.

### **Terrestrial Management Indicator Species (FEIS Section 3.12) –**

- **Northern Goshawk (also a sensitive species)** – Vegetation levels move towards PFC. Additional openings and early successional stands improve prey abundance in long-term but reduce older/mature forest and overstory stand structure. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Snowshoe Hare** – Data suggests snowshoe hare are increasing. Removing overstory causes short-term negative effect to habitat. Creation of age-class diversity and overall treatments will enhance habitat and support greater numbers in long term within the project area in the future and possibly influencing the trend (increasing the population) in snowshoe hare within a portion of the Wasatch/Bear River Range.
- **Beaver** – Beneficial impacts to beaver habitat. Increase in forage and decrease of loss of aspen in stands close to water. No effect to population trend.

**Threatened and Endangered Terrestrial Species (FEIS Section 3.12)** – Concurrence on Canada lynx and black-footed ferret was obtained from the U.S. Fish and Wildlife Service on April 1, 2008 (U.S. Fish and Wildlife Service 2008).

- **Canada Lynx** – Ogden RD within a “travel corridor” between two larger habitat areas and is not considered permanent lynx resident habitat. Short-term negative effects directly after

implementation, but overall enhancement of prey species' habitat and numbers. Activities will not likely affect connectivity (i.e., be a barrier to movement). *Finding: May effect, but is not likely to adversely affect the lynx or its habitat.*

- **Black-footed Ferret** – No black-footed ferrets are expected to occur within USFS portion of Big Creek watershed. *Finding: No effect.*

#### **Forest Service Intermountain Region Sensitive Species (FEIS Section 3.12) –**

- **Northern Goshawk** – Discussed under MIS. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Sharp-tailed grouse, Spotted Bat, Bald Eagle, Peregrine Falcon, Great Gray Owl, and Pygmy Rabbit** – Not expected to occur in project area. *Finding: No impact.*
- **Greater Sage Grouse** – Nearest lek site 5 miles from project area. *Finding: No impact.*
- **Boreal Owl** – Effects to possible habitat with treatments in mature and old forest, but enhances and moves habitat toward PFC. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Wolverine** – Creation of age-class and structural diversity benefit wolverine and prey species. Short-term displacement effects from roads and harvest to prey species. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Townsend's Big-eared Bat** – Short-term negative effects to insect abundance following fire. Beneficial long-term effects to foraging habitat. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Flammulated Owl** – Similar impacts to Boreal Owl. Beneficial long-term impacts to habitat. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*
- **Three-toed Woodpecker** – Treatment of mature and old forest affects possible habitat, but moves toward PFC. Treatment of mature forest will improve habitat in short term. *Finding: May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.*

#### **Neotropical Migratory/Song Birds (FEIS Section 3.12) –**

- **Brewer's Sparrow** – Creates age class and structural diversity within shrublands, making habitat less susceptible to catastrophic wildfires. Short-term reduction in nesting habitat. Long-term benefit to population stability and reduction in the risk of catastrophic fire.
- **Broad-tailed Hummingbird** – Timber harvest and burns will increase wildflowers and have beneficial impacts in the long term. RHCA buffers benefit hummingbird habitat.

#### **Species at Risk (FEIS Section 3.12) –**

- **Fringed Myotis** – Not found on Ogden RD. Similar to effects on Townsend's big-eared bat.
- **Pine Marten** – Selective logging will not reduce marten habitat if removals are kept below 30% of the stem basal area. Removing mature and old forest will effect marten habitat, it will move the forest toward PFC while maintaining a proportion of old and mature forest conditions.

**Aquatic Habitat (FEIS Section 3.2)** – There will be very minor to no effects on aquatic species' stream, wetland, and riparian habitat since riparian habitat conservation areas (RHCA) are being maintained along all of the streams in the analysis area.

### **Threatened, Endangered, or Sensitive Aquatic Species (FEIS Section 3.2) –**

There are no threatened or endangered aquatic species on the Wasatch-Cache National Forest. There are three sensitive aquatic species on the Wasatch-Cache NF the Colorado River cutthroat trout, the Bonneville cutthroat trout, and the Columbia spotted frog. Neither Colorado River cutthroat trout nor Columbia spotted frog are found on the Ogden Ranger District; therefore, all alternatives result in a “No Impact” determination for those species. Bonneville cutthroat trout are not found in the proposed project area however they are found in Big Creek on private property below the proposed project area. This population has experienced an apparent increase in numbers in the last three years while non-native trout species numbers have decreased. Activities proposed under Alternatives 1, 3, and 1 with Modifications in the Little Creek, Otter Creek, and Lower Big Creek subwatersheds would have no impact to Bonneville cutthroat trout because the species is not present. *Finding for Bonneville Cutthroat Trout: No impact.*

**Aquatic Management Indicator Species (FEIS Section 3.2)** – In addition to being a sensitive species, Bonneville cutthroat trout is a management indicator species for aquatic habitat under the Revised Wasatch-Cache Forest Plan. Implementation of any of the alternatives identified in this project should result in no impact to Bonneville cutthroat trout because the species is not present.

### **Aquatic Forest Service Species at Risk, State Sensitive Species (FEIS Section 3.2)**

Boreal toad have been observed at one spring within the proposed project area and two springs adjacent to this area. Observations at these sites have included one to three adults at infrequent intervals. Riparian habitat conservation areas (RHCAs) are established around known boreal toad sites and all water features within the project area (see FEIS, Appendix A, Map 4). In upland areas outside of RHCAs, boreal toad would be vulnerable to activities conducted from May through September. Since boreal toad utilize this area in such low densities, overall impacts to this population would be low. With fewer acres being treated than in Alternative 1, Alternative 1 with Modifications and Alternative 3 has even less chance of impacting individuals.

## **V. Public Involvement**

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A Notice of Intent (NOI) to prepare an environmental impact statement was published in the Federal Register on May 16, 2006. The NOI asked for public comment on the proposal from May 16 to June 16, 2006. At that time, a scoping letter and document was sent to approximately 225 interested agencies, tribes, groups, and individuals. A total of seven responses (letters containing short to lengthy comments) to this initial mailing were received. Using the comments from the public and other agencies, the interdisciplinary team developed a list of issues to address (see *Issues* section and FEIS, Section 1.9, Issues).

On May 25, 2006 an informational public meeting in conjunction with the Scoping and NOI was held at Randolph, Utah.

In addition, as part of the public involvement process, the agency has listed the project on the Wasatch-Cache National Forest’s Schedule of Proposed Actions (SOPA) since April 2006. It has also been posted on the Wasatch-Cache web page at: <http://www.fs.fed.us/r4/wcnf/projects/proposed/index.shtml>.

On July 20, 2007 a Notice of Availability of the Draft Environmental Impact Statement was published in the *Federal Register*. On July 10 and August 6, 2007 additional fieldtrips to the project area were held. A Notice of Opportunity for Comment was published in *The Salt Lake Tribune* on July 30, 2007. The public comment period ended on September 4, 2007. Five responses were received and reviewed by the interdisciplinary team. Specialists responded to those comments in the FEIS, Chapter 5, and where needed, updated sections of the EIS.

## **VI. Alternatives Considered**

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### **A. Alternatives Considered in Detail**

In addition to the selected alternative, I considered three other alternatives in detail, which are discussed below. A more detailed comparison of these alternatives and a summary of the impacts under each alternative can be found in FEIS, Sections 2.2 and 2.4.

#### **Alternative 1 – Proposed Action**

The action proposed by the Forest Service to meet the purpose and need is treatment over approximately 4,800 acres of aspen, conifer, and sagebrush communities within the Big Creek project area. See FEIS, Section 2.1, Table 2.1.1 for a description of acres in each prescription type. The Proposed Action moves towards properly functioning condition while ensuring the Forest Plan standards are fully met as well as reducing roads and treatment acres to a level that addresses most of the concerns and issues brought up during the preliminary analysis.

See FEIS, Appendix A, Map 2 for general treatment areas. Not all acres would be treated within the general treatment areas. For a detailed description of Proposed Treatments under this alternative refer to the FEIS, Section 2.2.

This alternative would produce approximately 21,300 CCF (Hundred Cubic Feet) in timber volume output.

Approximately 9 miles of temporary roads are proposed to be constructed to access specific treatment units. Approximately 1.5 miles of roads, referred to as “intermittent service roads,” are proposed to be constructed. For a detailed description of roads refer to the FEIS, Section 2.2.

See Chapter 2, Section 2.2 for a detailed description of the five basic techniques that will be used to contain prescribed fire in the treatment units. The following estimates of miles of each kind of fire line are approximate, but represent the upper end (most line construction) for control lines. It is likely that firing techniques will be utilized more, and constructed lines less than the estimates given. At least 25 miles of unit perimeter will utilize firing techniques. Up to about 14.3 miles of handline will be built and rehabilitated. Approximately 0.8 miles of machine line is expected to be used. Approximately 5.2 miles of skid trails (including incidental machine line) will be used as fire containment lines. Where existing Forest system roads coincide with burn unit boundaries these will be used as fire lines. Approximately 2.0 miles of road will be used for fire containment.

#### **Alternative 2 – No Action**

Under the No Action Alternative, current management plans would continue to guide management of the project area. No vegetation treatment activities would be implemented to accomplish project goals.

#### **Alternative 3 – Reduced Treatment and Wildlife Emphasis**

The action proposed by the Forest Service to meet the purpose and need is treatment over approximately 4,190 acres of aspen, conifer, and sagebrush communities within the Big Creek project area. See FEIS, Section 2.2, Table 2.2.2 for a description of acres in each prescription type. Compared to the Proposed Action, Alternative 3 is a reduced level of treatment and a significantly reduced level of road construction to minimize effects to goshawk habitat and other resources while still providing movement towards PFC and timber output, and ensuring Forest Plan standards are met.

See FEIS, Appendix A, Map 3 for general treatment areas. Not all acres would be treated within the general treatment areas. For a detailed description of Proposed Treatments refer to FEIS, Section 2.2. The types of proposed treatments would be the same in Alternatives 1 and 3 with differences in the amount of acres treated (see FEIS, Section 2.4, Table 2.4.1 for a comparison of acreage).

This alternative would produce approximately 13,700 CCF (Hundred Cubic Feet) in timber volume output.

Approximately 5.6 miles of temporary roads are proposed to be constructed to access specific treatment units. Approximately 0.5 miles of roads, referred to as “intermittent service roads,” are proposed to be constructed. For a detailed description of roads refer to the FEIS, Section 2.2.

See Chapter 2, Section 2.2 for a detailed description of the five basic techniques that will be used to contain prescribed fire in the treatment units. The following estimates of miles of each kind of fire line are approximate, but represent the upper end (most line construction) for control lines. It is likely that firing techniques will be utilized more, and constructed lines less than the estimates given. At least 25 miles of unit perimeter will utilize firing techniques. Up to about 14.3 miles of handline will be built and rehabilitated. Approximately 0.8 miles of machine line is expected to be used. Approximately 5.2 miles of skid trails (including incidental machine line) will be used as fire containment lines. Where existing Forest system roads coincide with burn unit boundaries these will be used as fire lines. Approximately 2.0 miles of road will be used for fire containment.

## **B. Alternatives Considered, but Eliminated from Detailed Study**

Four alternatives were considered, but eliminated from detailed study. See FEIS Section 2.3 for more details and the reasons why these alternatives were eliminated from detailed study. They included:

### **Original Proposed Action**

The original action proposed by the Forest Service to meet the purpose and need was treatment over approximately 4,000 acres of aspen, conifer, and sagebrush communities within the Big Creek project area. See FEIS, Section 2.3 for more details on acres and treatment types.

Approximately 12 miles of temporary roads are proposed to be constructed. Approximately 2 miles of roads, referred to as “intermittent service roads,” are proposed to be constructed to access partial cut units.

### **Maximum Properly Functioning Condition Alternative**

Another alternative proposed by the Forest Service to meet the purpose and need was treatment over approximately 5,500 acres of aspen, conifer, and sagebrush communities within the Big Creek project area. See FEIS, Table 2.3.1 for a description of acres by prescription type. This alternative was developed to maximize movement toward properly functioning condition at the landscape scale by improving vegetation structure and pattern for cover types and creating early seral vegetation to move the landscape more quickly towards a more balanced range of structural stages.

Approximately 11.5 miles of temporary roads are proposed to be constructed to access specific treatment units. Approximately 2.2 miles of roads, referred to as “intermittent service roads,” are proposed to be constructed to access partial cut units in the spruce-fir cover type.

This alternative would produce approximately 29,700 CCF (Hundred Cubic Feet) of timber volume.

## **Prescribed Fire Only and No Road Construction or Reconstruction Alternative**

An alternative proposed by a group would use prescribed fire only and no road construction or reconstruction of any kind to alleviate short-term trends from broken trophic level relationships.

## **Restore Top Trophic Level Alternative**

An alternative was proposed by a group to restore the top trophic level (i.e., wolves) so that exotic and native ungulate grazing patterns are natural and good for aspen health.

## **VII. Environmentally Preferred Alternative** \_\_\_\_\_

Alternative 3 is the environmentally preferred alternative. The objective of this alternative was a reduced level of treatment and a significantly reduced level of road construction to minimize effects to goshawk habitat and other resources while still providing movement towards PFC, maintenance of desired fuel levels with fire operating within historical fire regimes, and timber output, and ensuring Forest Plan standards are met.

Alternative 3, however, was not the one I selected for implementation for several reasons. This alternative would reduce the percentage of the analysis area that could be moved toward properly functioning conditions and reduce the timber utilization in areas treated. Although the selected alternative has slightly larger impacts than the environmentally preferred alternative, the Silviculturist and Wildlife Biologist worked together to reduce the effects to goshawks and their habitat. In addition, the impacts of the selected alternative are still less than Alternative 1 – Proposed Action.

Further, it is my opinion that with the implementation of Alternative 1 with Modifications, and the application of management direction, design elements/mitigation measures (FEIS, Section 2.2), and unit specific mitigation (FEIS, Section 2.2, Table 2.2.1a), this project will not result in harm to the environment. The selected alternative is an environmentally acceptable project, which is responsive to public demands, and appropriate management of the forest in the Big Creek project area of the Ogden Ranger District.

## **VIII. Findings Required by Other Laws and Regulations** \_\_\_\_\_

**National Forest Management Act (NFMA)** – This decision to implement Alternative 1 with Modifications is consistent with the intent of the 2003 Revised Forest Plan's forest wide goals, subgoals and objectives listed on pages 4-16 to 4-34 and the desired future condition of the Bear Management Area on pages 4-19 to 4-127. The project incorporates applicable forest wide standards and guidelines from Chapter 4, Section A4. This decision is consistent with management prescription direction mapped for the area. Under 36 CFR 219.27 ((c) (1)), no timber harvesting, other than salvage sales or sales to protect other multiple use values shall occur on lands not suited for timber production. I have found that timber harvest on the lands with Forest Plan Management Prescriptions of 3.2d, 4.4, 5.1, and 6.1 is consistent with the direction under 36 CFR 219.27(c)(1). In addition, there will be some mosaic prescribed fire treatments in Unit 60 which is located in Forest Plan Management Prescription 3.2U and is in compliance with that prescription (USDA Forest Service 2003, page 4-70). My decision is consistent with the NFMA.

**Clean Water Act** – The Clean Water Act requires each state to implement its own water quality standards. The State of Utah's Water Quality Anti-degradation Policy requires maintenance of water

quality to protect existing in-stream Beneficial Uses on streams designated as Category I High Quality Water. All surface waters geographically located within the boundaries of the Wasatch-Cache National Forest whether on public or private lands are designated as Category I High Quality Water. This means they will be maintained at existing high quality. New point sources will not be allowed and non-point sources will be controlled to the extent feasible through the implementation of Best Management Practices (BMPs) or regulatory programs. The State of Utah and the Forest Service agreed through a 1993 MOU to use Forest Plan standards and guidelines and the Forest Service Handbook (FSH) 2509.22 Soil and Water Conservation Practices (SWCPs) as BMPs. The requirement for using SWCPs in my decision meets the water quality protection elements of the Utah Non-point Source Management Plan and Non-point Source Management Plan for Silvicultural activities.

**Executive Order 11990 of May 1977** – This order requires the Forest Service to take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In compliance with this order, Forest Service direction requires that analysis be completed to determine whether adverse impacts would result. The only wetlands that are in the treatment units are those associated with Stove Spring a small spring area that is located in Unit 35. No other wetlands are found in the treatment units. No adverse effects are expected to wetlands because the RHCA buffer would protect them. My decision is in compliance with EO 11990.

**Executive Order 11988 of May 1977** – This order required the Forest Service to provide leadership and take action to (1) minimize adverse impacts associated with occupancy and modification of floodplains and reduce risk of flood loss, (2) minimize impacts of floods on human safety, health and welfare, and (3) restore and preserve natural and beneficial values served by floodplains. Floodplains do not occur in the treatment areas since the streams in the project area are very small, are located on relatively steep stream channel gradients (greater than 2%) that result in very few areas that would be considered a true floodplain in the sense that a floodplain is a relatively flat area on each side of a channel where flood flows spread out during flood events. My decision is in compliance with EO 11988.

**Endangered Species Act** – This Act directs that all Federal departments and agencies shall seek to conserve endangered, and threatened (and proposed) species of fish, wildlife and plants. This obligation is further clarified in a National Interagency Memorandum of Agreement (dated August 30, 2000), which states our shared mission to “...enhance conservation of imperiled species while delivering appropriate goods and services provided by the lands and resources.” Based on the disclosure in Chapter 3, concerning threatened and endangered or proposed wildlife, plant or fish species, and the Biological Assessment/Biological Evaluation (USDA Forest Service 2008), it has been determined there are no adverse effects to populations of endangered, and threatened (and proposed) species of fish, wildlife and plants relative to this decision. The US Fish and Wildlife Service concurred with this determination on April 1, 2008 (U.S. Fish and Wildlife Service 2008).

**Executive Order 13186 of January 10, 2001** – Based on the discussion in Chapter 3, Section 3.12, Wildlife of the FEIS and information in the project file concerning migratory birds, my decision is in compliance with this Executive Order for the Conservation of Migratory Birds.

**Executive Order 13112 – Invasive Species** – This Executive Order directs that Federal Agencies should not authorize any activities that would increase the spread of invasive species. Based on the mitigation and management requirements included as part of my decision, the approved activity will not increase the spread of invasive species.

**American Antiquities Act of 1906 and the National Historic Preservation Act of 1966** – The project area has been surveyed for cultural properties, and all project activities have been cleared with the State

Historic Preservation Officer (SHPO). The SHPO concurred with the findings of no effect to cultural resources for Big Creek by default, i.e., letting time expire without sending letter (Flanigan 2007).

New sites discovered during sale operations would be protected by provisions in the timber sale contract (C6.24#). Other non-timber sale related activities would be under the same obligations of avoidance and protection that the law requires.

**Clean Air Act, As Amended In 1977** – Based on discussion in Chapter 3, Section 3.3 of the FEIS concerning air quality, it has been determined that There are no Class I designated airsheds (highest protection) in northern Utah, per the 1977 Clean Air Act Amendment (WC Forest Plan Revision FEIS, p 3-58). As a result of the decision, there will be no effects on Class I airsheds, and at most minor, temporary effects on the closest communities (Randolph and Woodruff).

**Roadless Area Conservation Rule of January 12, 2001** - The intent of the rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple use management. It prohibits road construction and reconstruction and timber harvest in inventoried roadless areas on National Forest System lands. For the Big Creek project timber harvest and road construction will take place outside inventoried roadless areas. The decision is consistent with this Rule.

**Travel Management Rule of November 9, 2005 – (36 CFR Parts 212 and 261)** – The rule requires designation of roads, trails, and areas open to motor vehicle use. It prohibits the use of motor vehicles off the designated system. New roads will be constructed as part of my decision; however, all of the created roads will be gated and/or otherwise closed to public access during the harvesting operations. Following harvest operations temporary roads will be obliterated, recontoured and revegetated. Intermittent service roads will be closed to public access. My decision does not make changes to roads or trails open to motor vehicle use and is consistent with this Rule.

**Prime Farmland, Rangeland and Forest Land (Secretary of Agriculture Memorandum 1827)** – There is no prime farmland within the project area. The Decision does not make any changes to grazing allotments found within the project area.

**Civil rights** – Based on comments received during scoping and the DEIS comment periods, no conflicts have been identified with other Federal, State or local agencies or with Native Americans, other minorities, women, or civil rights of any United States citizen. See FEIS Section 3.14.

**Executive Order 12898 of February 16, 1994 “Federal Actions to Address Environmental Justice on Minority Populations and Low-income Populations”** – This order requires Federal Agencies to the extent practicable and permitted by law to make achieving environmental justice part of its mission by identifying and addressing as appropriate disproportionately high and adverse human health effects, of its programs and policies and activities on minorities and low income populations in the United States and territorial possessions. In compliance with this Executive Order the Wasatch-Cache National Forest through intensive scoping and public involvement attempted to identify interested and affected parties, including minorities and low-income populations for this project. A comment period was held for 45 days following the publication of the Notice of Availability in the Federal Register. No minorities and low-income populations were identified during public involvement activities. See FEIS, Section 3.14.

## **IX. Appeal Opportunities, Implementation, and Contact Person \_\_\_\_\_**

This decision is subject to appeal pursuant to Forest Service regulations at 36 CFR 215. Appeals must meet the content requirements of 36 CFR 215.14. Only individuals or organizations who submitted comments or otherwise expressed interest in the project during the comment period may appeal. Appeals

must be postmarked or received by the Appeal Deciding Officer within 45 days of the publication of the notice in The Salt Lake Tribune. This date is the exclusive means for calculating the time to file an appeal. Timeframe information from other sources should not be relied on. Incorporation of documents by reference is not allowed. The Appeal Deciding Officer is Harv Forsgren, Regional Forester. Appeals must be sent to: Appeal Deciding Officer, Intermountain Region USFS, 324 25<sup>th</sup> Street, Ogden, Utah 84401; or by fax to 801-625-5277; or by email to: [appeals-intermtn-regional-office@fs.fed.us](mailto:appeals-intermtn-regional-office@fs.fed.us). Emailed appeals must be submitted in rich text (rtf), Word (doc) or portable document format (pdf) and must include the project name in the subject line. Appeals may also be hand delivered to the above address, during regular business hours of 8:00 a.m. to 4:30 p.m. Monday through Friday.

## Implementation

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, 5 business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

## Contact Person

For additional information concerning this decision or the Forest Service appeal process, contact Chip Sibbersen, Ogden Ranger District, 507 25<sup>th</sup> Street, Ogden, Utah 84401 phone (801) 625-5112.

/s/ Brian Ferebee  
**BRIAN FEREBEE**  
Acting Forest Supervisor  
Wasatch-Cache National Forest

April 15, 2008  
**DATE**

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**ROD**

**Appendix A**

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**Decision Map**

**Alternative 1 with Modifications**