United States
Department of
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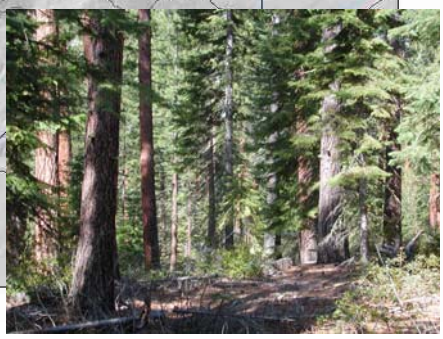
Forest
Service

June 2007

Five Buttes Project

Record of Decision



League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

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Record of Decision Table of Contents

Decision Summary 2
Project Background 2
Purpose and Need for Action 7
Proposed Action 9
Public Involvement 10
  Consultation with Government Agencies 11
Issues 11
  Issue #1 – Spotted Owl Habitat 12
  Issue #2 – Strategic Placement of Treatment Units 12
Alternatives Considered in Detail 13
  Alternative A – No Action 13
Decision and Rationale 14
Response of the Alternatives to the Purpose and Need 18
Response of the Alternatives to the Key Issues 19
  Effects to Northern Spotted Owl 19
  Strategic Placement of Treatment Units 22
Environmental Consequences 22
Other Public Concerns 23
Changes between Draft and Final EIS 28
ESA Consultation/Conferencing with U.S. Fish and Wildlife Service 29
Legal Requirements and Policy 29
Other Policy or Guiding Documentation 33
The Environmentally Preferable Alternative 35
Design Measures/Mitigation Measures 36
Monitoring 37
Consistency with the Deschutes National Forest Land and Resource Management Plan and the Northwest Forest Plan 37
Implementation 37
Appeal Rights 38
Contact Persons 39
Responsible Official 39

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Record of Decision

Five Buttes Project

USDA Forest Service
Crescent Ranger District, Deschutes National Forest
Klamath and Deschutes Counties, Oregon

Townships 21, 22, 23, 24 South and Ranges 5 ½, 6, 7, 8, 9 East (Willamette Meridian)

Decision Summary

This Record of Decision (ROD) documents my decision and rationale for the selection of a modified version of Alternative C, the preferred action described in the June 2007 Final Environmental Impact Statement (EIS) titled *Five Buttes Project*. Along with the activity units proposed in Alternative C, I have included an additional fuels treatment unit with small diameter thinning to reduce risk of wildfire moving from National Forest System land to adjacent private land. Identified in the FEIS as Unit 435 and analyzed under Alternative B as a commercial harvest unit, it complements adjacent risk reduction activities planned in Alternative C. The environmental effects of this modification are within the realm of determinations disclosed in the analysis. The Five Buttes Project continues to work toward the broad goals of increasing resistance to wide-scale disturbance events on a landscape scale through risk reduction activities while retaining large trees on the landscape.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

In summary, my decision includes:

- 4,235 acres of commercial thinning, with an estimated volume of 14.4 million board feet;
- 4,235 acres of fuels treatments associated with commercial harvest units;
- 3,931 acres of fuels treatments in units (including 368 acres in Unit 435) that will not have commercial harvest at this time;
- 5.9 miles of temporary road construction and rehabilitation of temporary roads when they no longer are needed.
- Incorporating all mitigation measures and monitoring identified for Alternative C.

Project Background

The Crescent Ranger District began a proactive approach to forest health issues in 1996 (Seven Buttes Environmental Assessment). The Five Buttes Project continues to work toward the broad goals of increasing resistance to uncharacteristically severe insect, disease, and fire events on a landscape scale through risk reduction activities while promoting, enhancing, and retaining large trees on the landscape. Other objectives are development, maintenance, and enhancement of wildlife habitat conditions appropriate for management areas specified in the

Northwest Forest Plan, and providing for scenic quality and economic yields of forest products.

The 160,000-acre Five Buttes analysis area (Figure 1) includes portions of twelve subwatersheds. Approximately 141,772 acres of the project area are National Forest System lands within the Deschutes National Forest, and the remaining acres are privately owned. The project area is located about 50 miles south of Bend, Oregon, in Townships 21, 22, 23, 24 South and Ranges 5 ½, 6, 7, 8, 9 East. Approximately 133,565 acres (about 83%) of the project area are within the boundary of the Northwest Forest Plan. The project area includes the 48,900-acre Davis Late Successional Reserve (Figure 2).

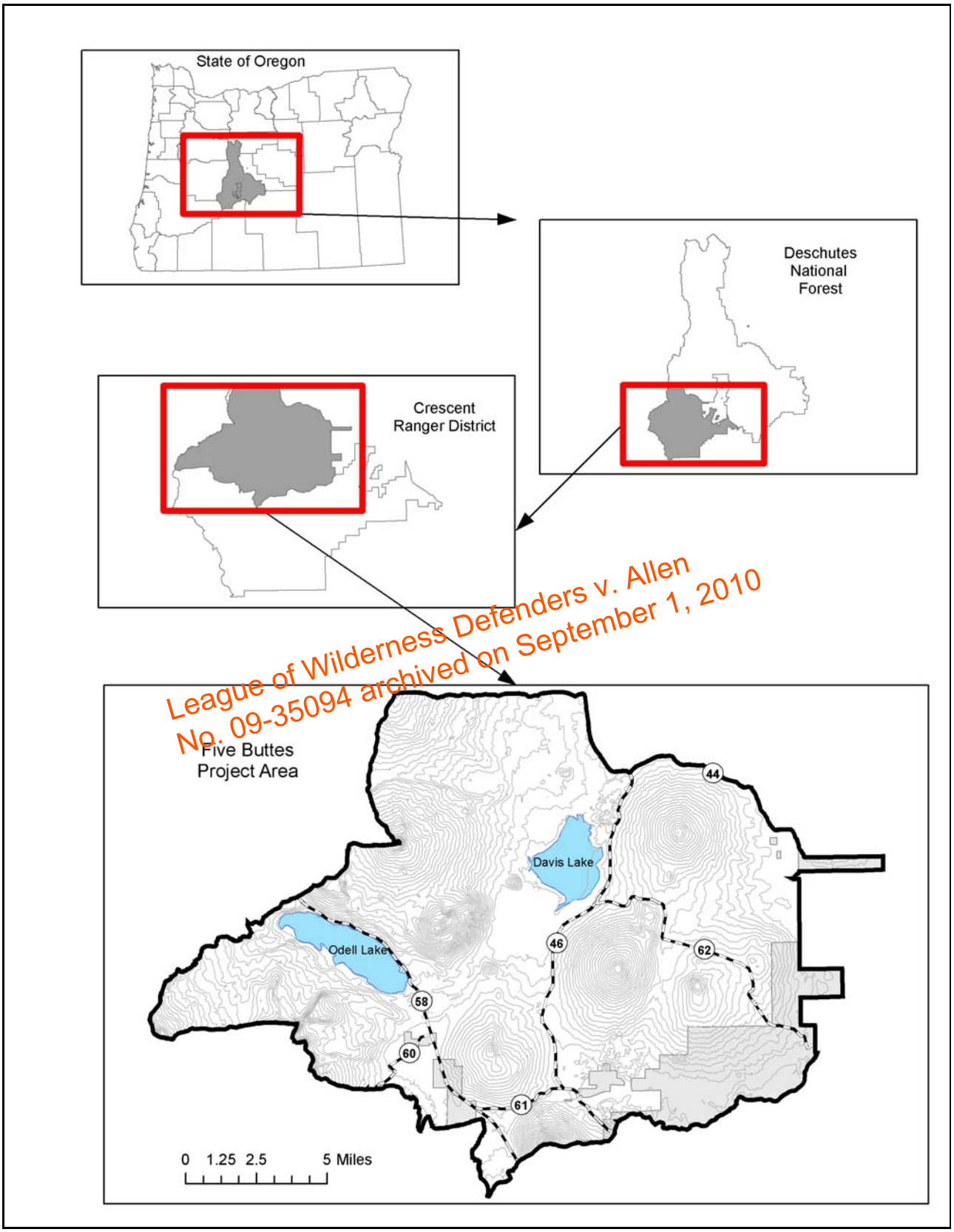
The Davis Fire, which started in June of 2003 and burned 21,000-acres in the Five Buttes analysis area, was the first documented "problem fire[1]" event to take place on the Crescent Ranger District in recorded history. Weather and fuel conditions at the time of the Davis Fire are common on the Crescent Ranger District, so there is a possibility of similar events occurring in the future.

The project area lies within twelve 6th field subwatersheds. Davis Lake and its tributaries are part of the Odell Lake Bull Trout Recovery Unit. Bull trout are predominately found in Trapper Creek and Odell Lake, which both lie within the Odell Lake subwatershed in the project area boundary. None of the lakes or streams within the subwatersheds has a connection to the ocean that would allow for anadromous fish. Odell Creek and Crescent Creek are the only streams within the project area included on the Oregon DEQ 303(d) list; Odell Creek does not meet standards for temperature, pH, and chlorophyl *a*, and Crescent Creek does not meet standards for temperature.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

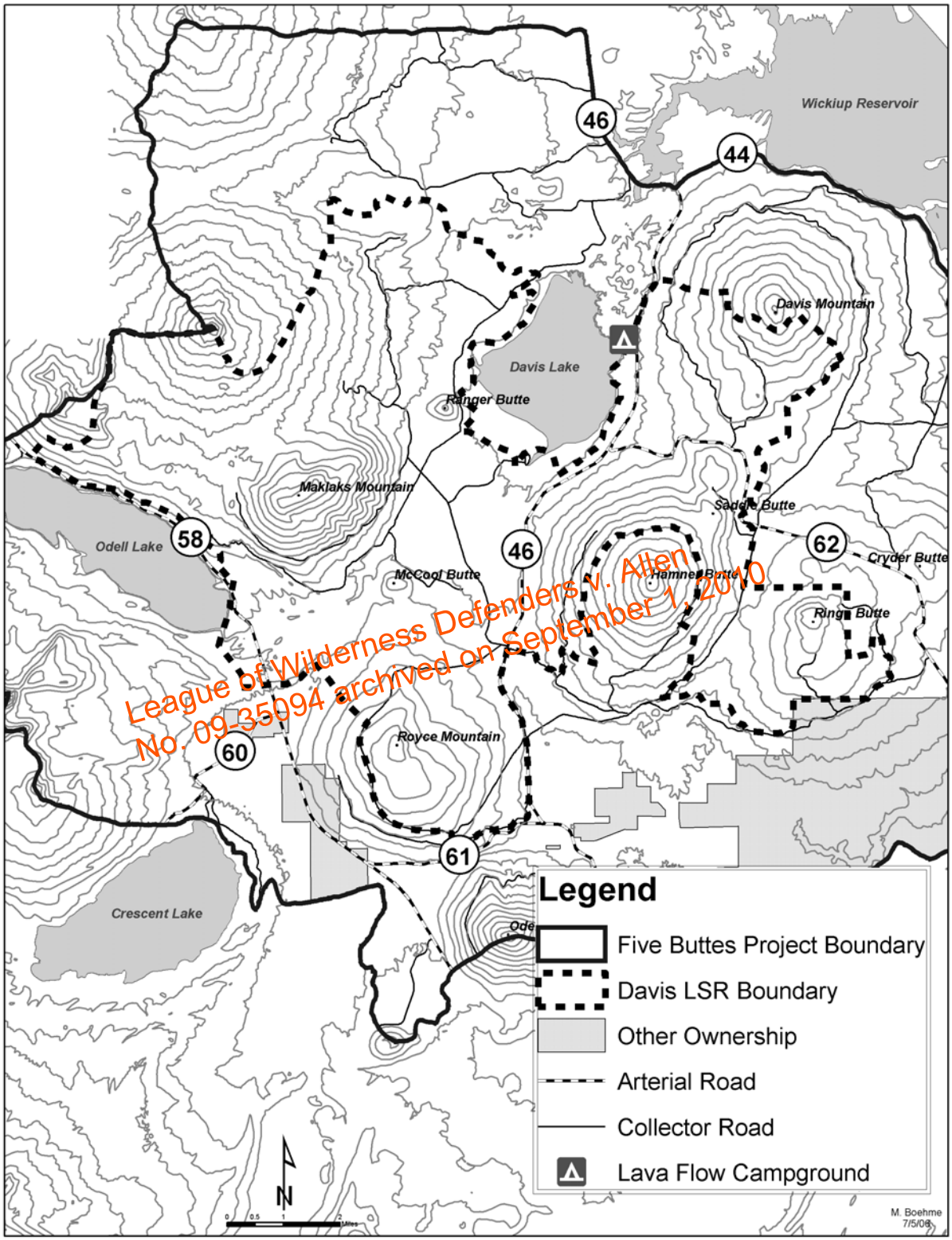
Soils on the slopes of the larger buttes are primarily composed of a deep mantle of ash and pumice fall from Mt. Mazama over an older layer of similar material weathered in place. A deep mantle of ash and pumice fall also overlies an older soil located above glacial outwash within the Davis Lake basin. These soils are characterized as highly permeable.

[1] Refer to the "Fire and Fuels" section in Chapter 3 of the FEIS for a definition of "problem fire."



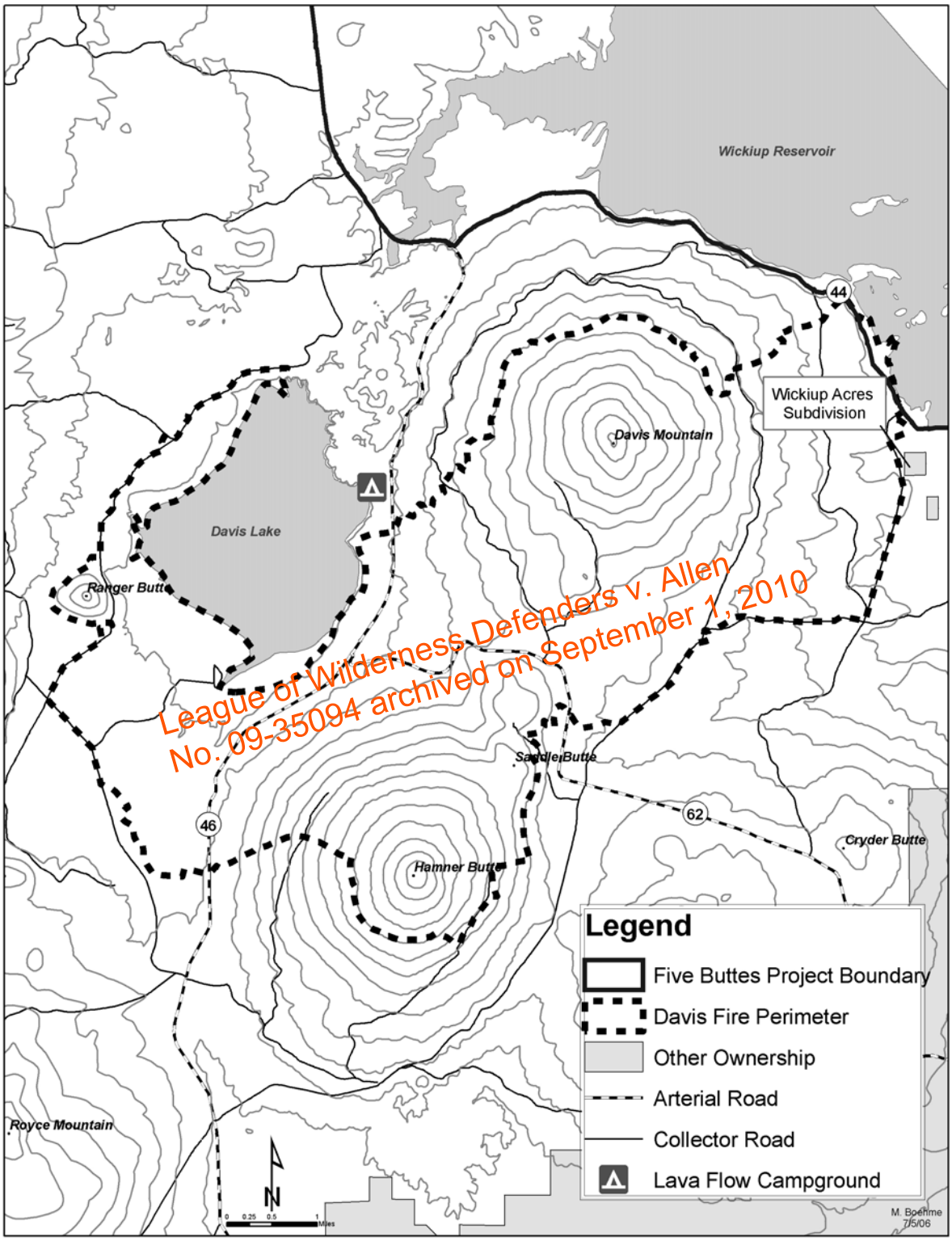
League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Figure 1. The Five Buttes Project Area near Crescent, Oregon.



League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Figure 2. Davis Late-Successional Reserve.



League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Figure 3. The Davis Fire of 2003.

Purpose and Need for Action

The Davis Late Successional Reserve Assessment (Revised LSRA, 2007) found that the most immediate need within the Late Successional Reserve (Figure 2) was to reduce the risk of large-scale effects of insect attack, disease, or wildfire in the existing late- and old-structured stands. The Revised LSRA concluded that in some Management Strategy Areas there is an immediate need to reduce stand density and fuel loadings as well as modify fuel arrangements before habitat loss occurs in the late- and old-structured stands. Analysis of the Five Buttes Project area confirmed that the entire landscape is at high risk of large-scale disturbance events similar to the Davis Fire (Figure 3).

There are two basic underlying needs identified for the Five Buttes Project:

1. There is a need to strategically reduce fuel loadings and forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest. As used here, the term "strategically" means to locate a mix of management actions in specific places on the landscape where they will reduce the risks to desired habitats, specifically late- and old-structured stands and large trees.

2. There is a need to contribute to the local and regional economies by providing timber and other wood fiber products.

League of Wilderness Defenders v. Allen
No. 09-35004 archived on September 1, 2010

My proposed action consists of a variety of management activities including commercial thinning, fuel reduction, and timber salvage. The needs for the proposed action are derived from the differences between current conditions and desired conditions. Desired conditions are based on Forest Plan direction and management objectives, and on recommendations from the Odell Watershed Analysis (USDA Forest Service, 1999) and the Revised Davis Late Successional Reserve Assessment (USDA Forest Service, 2007).

- ✓ ***Strategically reduce fuel loadings and forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.***

After the Davis Fire of 2003 and other recent large wildfires in and around the Deschutes National Forest moved thousands of acres of forest from late- and old-structured habitat to early-seral stage, the Forest Service determined that the remaining late- and old-structured habitat in the Five Buttes Project area is elevated in its importance to dependent species. It is especially important to reduce risk to these areas, as well as ensure fuel loadings and arrangements are maintained so that the role of fire can successfully be integrated back into appropriate plant associations. In addition, reduction of all sizes of fuels can elevate the chance of a successful initial attack on a wildfire adjacent to residential communities in the La Pine basin and the Crescent/Gilchrist area.

Across the landscape within the mixed conifer dry plant association group, the true fir component has increased dramatically in recent times. This condition is found largely within the stands classified as suitable for spotted owl nesting, roosting, and foraging in the project area. Because of the dry site conditions and a stand structure that provides ladder fuels from

the ground to the crown, these stands are at the highest risk of being lost to a large-scale fire event or insect or disease attack. Some of the most desired characteristics of these stands (such as fire-resistant large ponderosa pine and Douglas-fir) are placed at risk because the increasing true fir component creates a structure that allows ground fires to reach the crowns of the larger trees.

The vegetative condition of the project area is typified by very dense multi-storied stands with high-hazard fuel conditions. There is an immediate need to reduce stand density and fuel loadings as well as modify fuel arrangements on the landscape before large-scale, uncharacteristic loss of late- and old-structured stands occurs.

The lodgepole pine areas are often interspersed with other plant associations, usually in relatively abrupt transitions associated with topographic change. As noted from the Davis Fire, the considerable loading of fuels that often dominates lodgepole areas is a very real threat to adjacent areas in the event of fire. In addition, these lodgepole areas are often heavily traversed and used by people who recreate in the project area, which increases the chance of human-caused fires. There is a need to identify and reduce the fuel loadings in areas adjacent to late- and old-structured stands and other habitat areas.

Stands that historically were dominated by large pines and Douglas-fir (greater than 21" in diameter) are now dominated by smaller and less fire-resistant species such as the true firs. In overcrowded conditions, existing overstory ponderosa pine and Douglas-fir cannot compete with true firs for nutrients and water. In a dense stand condition, replacements for the large overstory trees are not able to seed in and grow. The trend in these forests is for the large-tree component to decline due to overcrowding from and competition with younger, smaller trees. These conditions have caused a shift in species composition in the understory (mostly to true fir and lodgepole pine) leaving a few overstory ponderosa, sugar pine, white pine, and Douglas-fir. Not enough trees of the species desired for long-term habitat objectives exist in the understory to adequately replace the larger trees that are being lost to density-related mortality.

League of Wilderness Defenders v. Allen
No. 09-35054 archived on September 1, 2010

The decline of large-tree dominated stands affects habitat for the bald eagle and the northern spotted owl, species listed as Threatened under the Endangered Species Act. A decline in large-tree habitat near Odell and Davis Lakes could reduce the amount of nesting and perching sites available to bald eagles. Especially on the drier sites near Davis Lake, open stands have seen considerable ingrowth of small trees. Due to the problems related to overcrowding, stands that provide the large tree and multi-storied canopy structure that spotted owls need for nesting, roosting, and foraging cannot be sustained over the long-term on many of the drier locations found in the project area.

Most stands within the planning area are still capable of responding favorably to management actions and characteristics that are desired can be achieved and/or maintained through vegetative treatments. An example of a stand that would not respond favorably is one that has such an infestation of disease and/or insects that trees that remain after thinning have already lost the ability to respond to the decreased competition and grow.

- ✓ ***Contribute to the local and regional economies by providing timber and other wood fiber products.***

Each of the existing and desired conditions relevant to providing improved conditions and accomplishing commodity extraction for jobs and income can be linked to the purpose for the proposed action.

Most of the stands currently are in a condition where there are too many trees competing for light, water, and nutrients. As noted above, this puts the large trees at risk. Thinning is needed to reduce the competition enough to make the large trees more resistant to disturbance events. Smaller- and medium-sized trees, especially the true fir and lodgepole pine, are planned to be thinned, but even that may not be enough in some areas to reduce competition adequately. Some of these stands would still have too many trees if all large trees were retained, so some of the large trees would need to be removed as well.

The Northwest Forest Plan recognized the need for forest products from forest ecosystems and the need for a sustainable supply of timber and other forest products that will help maintain the stability of local and regional economies on a predictable and long-term basis (FSEIS, p. S-4, 1994). Although 31 percent of the analysis area is within the Davis Late-Successional Reserve, the Northwest Forest Plan acknowledges risk management activities are sometimes necessary within the Reserve to reduce the probability of major stand-replacing events (Final SEIS, p. B-74 and ROD C-12). Silvicultural activities with an attendant benefit of providing timber are an appropriate way to manage these lands.

League of Wilderness Defenders v. Alley
No. 09-35004 archived on September 1, 2010

Proposed Action

The proposed action, described in Chapter 2 of the Final EIS, is to implement a variety of vegetation management activities across approximately 5,522 acres. The proposed action would commercially harvest about 18.9 million board feet (mmbf) and would incorporate a combination of logging methods (about 4,439 acres of ground-based logging and 1,083 acres of advanced harvest systems, either cable or helicopter). The proposed action includes the following activities:

- Thin to create or maintain single-story stands and culture large trees (1,175 acres);
- Thin to reduce stand competition but retain multi-story canopy and large trees (3,153 acres);
- Thin to reduce stand competition, culture large trees and retain a combination of single-story and multi-story canopy (1,160 acres); and
- Salvage dead lodgepole pine (34 acres) to reduce risk to adjacent stands.

Fuels Management inside Commercial Harvest Units

- Remove trees 6 inches diameter and smaller, retaining approximately 100 - 275 trees per acre depending on site objectives (5,522 acres);
- Prune limbs to 8 feet (5,522 acres);
- Prescribed underburn retaining 15-20 percent in an unmanaged condition (3,998 acres);
- Utilize thinned trees as special forest products (3,343 acres);
- Grapple piling of activity-generated slash (4,439 acres);

- Hand pile activity-generated slash (2,275 acres); and
- Dispose of piles by either prescribed burning or a combination of utilization (5,522 acres).

Connected Actions

In order for the Proposed Action to be implemented, the following connected actions are needed:

- About 34 miles of currently closed Maintenance Level 1 roads would be opened to allow timber hauling and other activities. Roads would be closed following implementation.
- Road maintenance, especially blading and brushing, would be performed on about 110 miles of Maintenance Level 1 and 2 roads.
- About 6.4 miles of temporary roads would be constructed to facilitate economical timber harvest removal. These would be obliterated following implementation and restored to a condition that is hydrologically functional and able to revegetate more quickly.

Public Involvement

The Five Buttes Project was initially proposed to the public in April of 2004; at that time the project was called "Five Buttes Interface." Five public organizations submitted comments at that time. Based on comments received, as well as internal and interagency discussion, the Five Buttes planning team determined that the appropriate level of analysis and documentation would include an environmental impact statement and a Record of Decision.

League of Wilderness Defenders v. Allen
No 09-35094 archived on September 1, 2010

The Notice of Intent (NOI) was published in the Federal Register on April 1, 2005. The NOI asked for public comment on the proposal from April 1, 2005 - May 1, 2005. The Crescent Ranger District held a public field trip to the Five Buttes Project area (July 9, 2005) that was attended by ten members of the public. As an additional effort to involve the public in the planning process, the District mailed a description of the project's range of alternatives to the mailing list on January 11, 2006. Using the comments from the public and other agencies (see *Issues* section), the interdisciplinary team developed a list of issues to address.

A 45-day comment period for the Five Buttes Project Draft Environmental Impact Statement (DEIS) was provided for interested and affected publics, including appropriate local, state, and federal government agencies and Tribes. This period started with Notice of Availability in the Federal Register on February 16, 2007. The public comment period ended April 2, 2007. During this period, the Forest Service received comments from different sectors of the public, with a range of concerns and questions. Some comments resulted in a clarification of discussions within the DEIS. I considered the comments in the decision-making process. The Forest Service received 17 separate pieces of mail during the comment period, from 16 sources. All comments were reviewed and substantive comments received the focus during this comment analysis. The complete comment record are kept within the Five Buttes Project public record and are available for review at the Crescent Ranger District, Crescent, Oregon.

On April 5, 2007, the Five Buttes team briefed the Provincial Advisory Committee, a group representing various federal agencies, state, American Indian tribes, and others, on public comments received and the decision to be made.

On May 21, 2007, a meeting and field trip were arranged with Blue Mountain Biodiversity, Sierra Club and Cascadia Wildlands. At that time, the groups had the opportunity to discuss their concerns with members of the planning team and the Crescent District Ranger.

Consultation with the Tribes

During the early stages of this project, contacts were made with affected tribes (Klamath, Confederated Tribes of Warm Springs, and Burns-Paiute). On May 16, 2006, the Forest Supervisor met with the Burns-Paiute, presented the project, and no specific concerns were raised. Government-to-government consultation has been informal through meetings between the Deschutes National Forest supervisor and their representatives, scoping letters, and personal contact with natural resource members representing all three tribes. On April 5, 2007, the Five Buttes team briefed the Provincial Advisory Committee, a group which includes a representative in Natural Resources from the Confederated Tribes of Warm Springs. Also, the interdisciplinary team has offered to present proposed activities at the quarterly meetings for the Confederated Tribes of Warm Springs Reservation. No special concerns about Tribal resources were identified.

It is acknowledged that the Tribes may have lost the verbal history and they may not know where desired plant species and resources may be found. This affects their ability to tell Federal agencies where Tribal trust resources can be located on Federal lands. Restoration of the landscape would promote the types of plants, including those used for gathering by native peoples, so they would remain or increase in the project area.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Consultation with Government Agencies

Coordination has also occurred with federal, state, and local government officials (see also Chapter 4 of the FEIS). Consultation with the U.S. Fish and Wildlife Service and the Environmental Protection Agency was extensive. On March 8, 2007, the U.S. Fish and Wildlife Service sent a letter of support for the project, which read in part that: “The Department [DOI] supports the Deschutes National Forest's proposal to implement the Five Buttes Project on a 160,000-acre area to reduce the risk of natural disturbances such as fire that may lead to large-scale loss of forest resources.” On April 2, 2007, the Environmental Protection Agency wrote: “EPA understands the risk that natural disturbance processes such as insects, disease, and fire may pose to valuable forest resources. As a result, we support many of the vegetation management strategies identified in the Preferred Alternative and which are put forward to improve resource conditions while reducing the risk of large-scale loss of forest from the project area. The draft EIS also includes a good analysis of potential impacts to resources in the project area, and includes mitigation measures and Best Management Practices (BMPs) to avoid and reduce the impacts.”

Issues

In response to my proposed action, the public and the Forest Service identified two key issues. These issues were then used to develop alternatives to the Proposed Action. Issues include:

Issue #1 – Spotted Owl Habitat

The Five Buttes Project proposes to reduce the risk of large-scale forest loss to catastrophic wildfires and beetle epidemics within the 160,000-acre analysis area. To address these concerns, treatments would be designed to reduce fuel loadings in selected areas through a combination of underburning and/or stand density management. Commercial and small-tree thinning, in addition to underburning where appropriate, would be utilized to maintain and enhance forest health including the development of large tree-structure. However, the intensity of the treatments, their timing, and placement on the landscape may have a negative effect on the northern spotted owl, a federally listed species. Silvicultural activities aimed at making forested stands more resistant to insects, disease, and fire may also cause a short- or long-term modification or degradation of suitable habitat. At the present time, ten of the thirteen remaining northern spotted owl territories on the Crescent Ranger District reside in the Five Buttes planning area. In addition, the majority of the suitable northern spotted owl habitat on the District is present in this planning area.

The silvicultural and fuels treatments proposed would reduce stem density, overall canopy cover, and may reduce the amount of down wood that provides prey base habitat. These activities may reduce the quality, effectiveness, and the distribution of habitat available to the northern spotted owl in the planning area for the short- and long-term as well as directly, indirectly and/or cumulatively. Consequences of active management may have a negative impact on the northern spotted owl and its ability to establish and maintain breeding territories, find sufficient prey base habitat, and disperse across the landscape.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Issue #2 – Strategic Placement of Treatment Units

The proposed action responded to the identified biological needs: reducing the likelihood of large-scale disturbance from insect, disease, and wildfire processes, and maintaining large trees on the landscape.

The Interdisciplinary Team, after hearing from some members of the public that the proposed action did not go far enough to protect the landscape, looked at the set of conditions; including terrain features, vegetation conditions, and weather, which resulted in the Davis Fire. This led to identification of several parts of the Five Buttes Project area where similar terrain features and stand conditions occur, and consideration of associated key landscape assets that remain at risk in a wildfire scenario. This analysis, plus computer modeling and professional judgment, verified the public's concern. Although the Proposed Action essentially had identified vegetation management in the appropriate place to meet the Purpose and Need of the project, modeling showed that the proposed units were not large enough to be effective from a wildfire suppression standpoint. A problem fire would burn around units and between features, such as lava flows, essentially unimpeded. There are places on the landscape where unit placement and additional fuels activities in adjacent stands could improve suppression capability, reduce the risk of large-scale disturbances, and reduce the risk of tree mortality in the event of disturbances.

Ten additional issues were considered in the assessment of effects, but were not used as the basis for alternative development as they were resolved in other ways (Record of Decision, page 23).

Alternatives Considered in Detail

Two action alternatives and a "No Action" alternative were analyzed in the FEIS. Two alternatives were considered in the FEIS and dropped from detailed consideration (FEIS, page 31). The two action alternatives considered in the FEIS examine different combinations of activities and were developed to address the significant issues and the purpose and need. For additional details on these alternatives, see the FEIS (Chapter 2, Alternatives B and C).

Alternative A – No Action

The purpose of this alternative is to allow current processes to continue, along with associated risks and benefits, in the Five Buttes Project area. Under the No Action alternative, current management plans would continue to guide management of the project area. No additional thinning or fuels treatments would be implemented to accomplish project goals. Custodial activity would continue, such as routine maintenance of roads and timber plantations. Response to environmental emergencies, such as suppression response to a wildfire, would continue. In Alternative A (no action), no risk reduction activities would occur; therefore, the potential remains for large-scale loss of northern spotted owl habitat, similar to the scale seen in the Davis Fire of 2003. These disturbance events are expected to increase the potential to become more frequent and larger in scope than at present.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Alternative B

Alternative B was described as the "Proposed Action" on page 9 in this document and in the FEIS.

Alternative C

Alternative C was described in detail in the FEIS, starting on page 17. This alternative was developed to address both key issues associated with landscape-scale fire behavior modification and retention of spotted owl habitat. Alternative C emphasizes reducing the likelihood and size of another large fire event like the Davis Fire of 2003, and the protection of key assets such as spotted owl home ranges, bald eagle habitat, and late- and old-structured stands. This alternative would strategically place fuels treatments on the landscape to coordinate with past treatments to create and maintain fuel modifications[2] around identified habitats. As a result of more effective protection of key assets, some important habitat for the northern spotted owl, such as Nesting, Roosting and Foraging (NRF) and dispersal habitat proposed for active management in Alternative B, was deferred for the foreseeable future. This resulted in the reduction of the amount of commercial timber harvest by about 1,287 acres. Alternative C would harvest approximately 14.4 million board feet of timber. Management activities to reduce risk on the landscape would take place on approximately 7,798 acres and would include:

[2] Fuel modifications are intended to result in areas in which fire behavior would reduce in severity enough to improve suppression effectiveness.

- Thin to create or maintain single-story stands and culture large trees (688 acres);
- Thin to reduce stand competition, but retain multi-story canopy and large trees (2,387 acres);
- Thin to reduce stand competition, culture large trees and retain a combination of single-story and multi-story canopy (1,160 acres);

Fuels Management Activities inside Commercial Harvest Units
The following activities would be utilized to reduce activity-generated residue and to maintain fire-dependent ecosystems:

- Remove trees 6 inches in diameter and smaller, retaining approximately 100 - 275 trees per acre, depending on site objectives (4,325 acres);
- Prune limbs to 8 feet (4,325 acres);
- Prescribed underburn retaining 15-20 percent in an unmanaged condition (3,939 acres);
- Utilize special forest products following commercial harvest (2,593 acres);
- Grapple pile activity-generated slash (3,453 acres);
- Handpile forest residue (1,932 acres) and
- Dispose of piles by either prescribed burning, or in combination with utilization (4,325 acres).

Fuels Management Activities outside Commercial Harvest Units
The following fuels management activities on 3,563 acres would be utilized to reduce natural fuel loading within existing activity areas adjacent to commercial harvest units:

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

- Remove all trees 3 inches diameter and smaller in stands that meet the description of Nesting, Roosting and Foraging (NRF) habitat for spotted owls, retaining approximately 100 - 275 trees per acre, depending on site objectives (394 acres);
- Remove all trees 6 inches diameter and smaller in stands that are not identified as NRF, retaining approximately 100 - 275 trees per acre, depending on site objectives (385 acres);
- In stands that have a mixture of NRF and non-NRF, removing all trees up to 3 inches diameter in NRF and up to 6 inches diameter in non-NRF, retaining approximately 100 - 275 trees per acre, depending on site objectives (2,782 acres);
- Prune limbs to 8 feet (2,092 acres);
- Prescribed underburn small diameter natural fuels in non-NRF (approximately 1,148 acres);
- Utilize special forest products following natural fuels reduction activities (3,483 acres);
- Grapple pile slash (1,097 acres);
- Hand pile natural fuel residue (3,563 acres); and
- Dispose of piles by either prescribed burning or in combination with utilization (3,563 acres).

Decision and Rationale

It is my decision to select modified Alternative C (Figure 4) as the Forest Service plan for the Five Buttes Project. For a detailed discussion of all the facets of Alternative C, see

FEIS, starting on page 17. My decision is to select Alternative C in its entirety, and add Unit 435, which would receive the fuels treatment activities that have been analyzed regarding application in spotted owl NRF habitat. The prescription for Unit 435 would thin trees with an upper diameter limit of 3 inches, and northern spotted owl Nesting, Roosting, and Foraging habitat would remain. The addition of Unit 435 would contribute to the strategy for reducing the landscape-level risk of wildfire spread and would reduce the risk of wildfire traveling from National Forest to adjacent private property. Other than complementing the strategic fuels management plan, addition of this unit to Alternative C is within the realm of disclosed effects for all resources discussed in Chapter 3 for Alternative C. Unit 435 was analyzed in Alternative B as a commercial timber sale, and small-diameter and post-sale activities would be less intense treatments.

My conclusion is based on a review of the record, which shows a thorough review of relevant scientific information, a consideration of responsible opposing views, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk. Particularly relevant was the information regarding long-term management of habitat for the northern spotted owl provided in the following documents:

- *Scientific Evaluation of the Status of the Northern Spotted Owl* (Sustainable Ecosystems Institute, Courtney et al. 2004);
- *Status and Trends in Demography of Northern Spotted Owls, 1985-2003* (Anthony et al. 2004);
- *Northern Spotted Owl Five Year Review: Summary and Evaluation* (USFWS, November 2004); and
- *Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station* (Lint, Technical Coordinator, 2005).

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

The best available data on dead wood relationships to wildlife habitat were used in the form of DecAID and local data sets. Effectiveness monitoring is ongoing in terms of research, and DecAID continually will be updated with new science as it becomes available. As this information is updated, management will adapt to the new information. This project demonstrates the Forest Service commitment to adaptive management to meet the needs of wildlife. The analysis also considered a recent publication (Rhodes, 2007) that provided peer-reviewed information from recent research on forestry management techniques and fire risk reduction. For landscape modeling of how actions affect fire behavior on a landscape scale, FlamMap (Version 3) was the primary risk analysis tool with the best available vegetation projections provided by Forest Vegetation Simulator (FVS) coupled with the Fire/Fuels Extension (FFE). Much of the analysis process was conducted in the ArcFuels (Ager, 2006) analysis framework. The conditions found on the Davis Fire, which is in the middle of the analysis area, provided key inputs to model a “real world” scenario.

In making this decision, I carefully considered the comments received about the proposed project, alternatives considered, and comments received on the DEIS during the 45-day comment period. Some members of the public expressed concern about the condition of the landscape in and around the Five Buttes Project area and communicated a desire for the Forest

Service to take immediate action to reduce stand densities and fuel loads in order to reduce risk of large-scale disturbance events.

Some members of the public expressed a desire for the Forest Service to contribute wood products to the economy.

Some members of the public expressed the opinion that the Five Buttes Project area is a damaged and fragmented landscape, and that no vegetation management activities would be desirable. Others communicated the opinion that commercial harvest activities are not desirable on this landscape, but fuels treatment activities (including small-diameter tree thinning) would be acceptable.

I recognized that the public was passionate about what they felt was best for the land and the community, and that there is no management strategy that could totally satisfy all concerns that were expressed. I have selected an alternative that addresses all of these concerns, though it is not likely to resolve the conflicting points of view.

Landscape-level risk reduction is becoming an increasingly important concept in land stewardship in dry forests on the east slope of the Cascade Range. In terms of needs and opportunities, I have considered the two main questions: What are the best actions to take to reduce risk while maintaining the desired forest structure on the landscape? And, where should these actions take place on the land to assure desired outcomes, especially in the long-term of 30 years and beyond? I reviewed the latest peer-reviewed ecological science and considered its relevance to the Five Buttes Project area. Both Alternatives B and C would help to ensure a healthy and productive forest ecosystem, including clean water and biological diversity, but I prefer Alternative C (with a modification). I explain my reasoning for choosing C instead of B under the *Response of the Alternatives to the Purpose and Need* section beginning on page 18.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

I acknowledge commenters who believe there should be no commercial removal of trees from the Five Buttes landscape. I have considered their arguments in favor of either allowing passive processes to take their course or conducting only small-tree thinning to meet risk reduction objectives. I have determined that neither of these proposed courses of action would meet the purpose and need of the project for the following reasons:

- Analysis of the Five Buttes Project included modeling of vegetation and fire risk. Results of the analysis showed that the current condition of vegetation across the Five Buttes landscape and beyond maintains a very high risk of large-scale wildfire, which not only could result in loss of late- and old-structured habitat, but could also create risks to public and firefighter health and safety, and damage to private land. The effects of thinning with an upper diameter limit of 8 inches, 12 inches and 15 inches were modeled; it determined that small-diameter thinning alone (that is, in the absence of removal of commercial-sized trees in some units) in most places, would not change the vegetation and fuels structure enough to reduce fire risk. In essence, small-tree thinning by itself would have similar effects on the landscape as the No Action alternative, but would cost the public many thousands of dollars and follow a

trajectory for a wide-scale loss of additional northern spotted owl habitat. Further discussion of a small-diameter only alternative can be found on page 30 in the FEIS.

- Commercial thinning, as planned in this project, would not only contribute to risk reduction on the landscape, but would improve the overall health and resilience of the trees that are retained in activity units. Although, in some areas, trees over 21 inches in diameter would need to be removed to meet project objectives, commercial harvest activities would retain the largest available trees (see the Project Design Features, page 21 in the FEIS). After thinning, the trees that are retained on the landscape are expected to increase in health and vigor due to reduced competition for resources.
- Strategically placed thinning of commercial-sized timber will produce a by-product in the form of merchantable material. This makes sense when undertaken with appropriate environmental protection. The project potentially contributes to the economic health of forest-dependent communities, especially the local towns of Crescent/Gilchrist and La Pine, Oregon. Several economic opportunities are expected to trickle down in all forms of goods and services resulting from timber sale contracts, stewardship agreements, and service contracts for small diameter thinning.

Through history, fire has played a major role in the project area. Fires on east Cascade landscapes were generally frequent, low-intensity fires that reduced ladder fuels and stand densities by killing small trees. However, recent wildfires including Davis, Eyerly, B&B, and Road 18 fires in 2002-2003 have been uncharacteristically severe, with high fire intensity, extreme fire behavior, and exceptionally large size resulting in severe mortality and stand replacement. Some commenters believe these events, along with the Davis Fire, were "natural occurrences." The severity of these fires was due to fuel loading and arrangement of fuels that are likely outside the range of conditions that existed when fire played a more frequent role on the landscape. This is largely due to past fire exclusion policy. If vegetation is not managed on the landscape right now in the Five Buttes Project, there is an elevated risk that:

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

1. fuel loads will remain as high or become higher than they were before the fire seasons of 2002 and 2003;
2. another wide-scale disturbance is likely; and
3. the safety of those that work and/or visit the forest area will be compromised.

Alternative C provides the best combination of commercial and non-commercial activities to reduce risk and improve forest health on the landscape while maximizing the retention of desirable habitat features, including late- and old-structured forest for wildlife species that are dependent upon those habitats. By strategically placing blocks of activity units between and adjacent to blocks of mature forest, Alternative C can provide the best possible protection of these habitats from wildfire without actually thinning many of the stands themselves. In order to meet project objectives, some late- and old-structured stands will need to be thinned, and some multi-storied stands will be transitioned to single-storied stands. I see this as a necessary trade-off to maximize risk reduction on a landscape level. All practicable means to avoid or minimize environmental harm have been adopted {CEQ 1505.2(c)}.

The Five Buttes Project alone will not reduce risk or improve forest health across the entire landscape, but is a step in the process begun by the Seven Buttes and Seven Buttes Return

projects. In addition, the Five Buttes Project is one of the first steps toward landscape-level management using vegetation and fire-behavior modeling as planning tools. It also initiates a landscape strategy to cycle the most vulnerable habitat to disturbance process (Nesting, Roosting, and Foraging for northern spotted owls) in order to gain greater assurance it would remain somewhere on the landscape. Activities that will be implemented under this decision represent a limited portion of the landscape; nonetheless, the strategic placement of units will achieve risk reduction to a fairly large percentage of acres in the project area while only conducting activities on a small percentage of acres. Future activities such as prescribed fire and thinning will likely be needed, along with maintenance of fuels activities already considered as part of the landscape strategy. Appropriate environmental review would be accomplished at that time.

After concluding that active landscape-level management was appropriate in the Five Buttes Project area, I weighed the pros and cons of each alternative based on the purpose and need and significant issues listed above. Following is a discussion of these considerations and my conclusions. Reference pages 32-36 of the FEIS for tables that summarize and compare the alternatives by how each responds to the purpose and need.

Response of the Alternatives to the Purpose and Need

- ✓ *There is a need to strategically reduce fuel loadings and forest vegetation density so as to lessen the risk that disturbance events such as insect, disease, and wildfire will lead to large-scale loss of forest.*

League of Wilderness Defenders V. Allen
No. 09-35094 archived on September 1, 2010

In evaluating the alternatives response to this purpose, I considered the analysis presented in the FEIS.

None of the alternatives would affect the chance of a fire starting in any given location. In fact, risk of wildfires or other disturbance events occurring in untreated stands, especially those maintained for late- and old-structured, multi-storied habitat, will not change. Conditions in stands managed in a passive management scenario may contribute to uncharacteristic fire behavior with increased flame lengths, longer burn duration, and increased potential for crowning and spotting. Fires exhibiting such behavior limit the effectiveness of suppression actions and place firefighters and the public at an elevated risk.

By modifying forest structure and the availability and arrangement of fuels between areas of un-altered mature forest, Alternatives B and C would reduce the risk of wildfire moving from one untreated area to another. Modeling of the action alternatives showed that of the alternatives considered, Alternative C (with the addition of small-diameter thinning in Unit 435) would be most effective in reducing landscape-level wildfire risk in and adjacent to the project area (reference the Fire and Fuels discussion starting on page 80 of the FEIS).

- ✓ *Contribute to the local and regional economies by providing timber and other wood fiber products*

The analysis presented in the FEIS discloses that Alternative B would produce the highest output for both volume of timber and jobs supported (reference the Economic and Social Analysis discussion starting on page 316 of the FEIS). Table 1 displays the outputs for the alternatives. Alternative B best meets this purpose.

Table 1. Economic Outputs of the Five Buttes Project.

Economic Element	Alternative		
	A	B	C
Volume of Commercial Timber in MBF	0	18.9	14.4
Potential Shifts Supported at the Local Mill	0	53	48

Response of the Alternatives to the Key Issues

Effects to Northern Spotted Owl

Well-supported by recent science (Sustainable Ecosystems Institute, Anthony et al., and the monitoring from the Northwest Forest Plan), silvicultural and fuel-reduction activities that have the capability to reduce the risk of long-term permanent loss of owl habitat are an increasingly important strategy for the persistence of spotted owls on the Deschutes National Forest. Both action alternatives would change the function of some existing northern spotted owl Nesting, Roosting, Foraging (NRF) habitat; some acreage of NRF would be converted to single-story stands that would take longer to return to a condition that could be considered NRF. These areas are typically drier sites dominated by ponderosa pine and are more suited to a frequent fire regime. Other acreage would retain its ability to become NRF in the future much sooner and become part of a strategy to cycle spotted owl habitat on the landscape. Since spotted owl habitat has an inherently higher disturbance risk than on more open areas, by cycling spotted owl habitat on the landscape, the strategy reduces the risk of wide-scale disturbance processes removing thousands of acres of owl habitat all at once. Alternative C would change the function of NRF habitat on fewer acres that Alternative B. Through strategic placement of treatments, Alternative C would result in the greatest reduction of risk to spotted owl habitat with the least impact to existing spotted owl habitat.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2016

The Five Buttes Project follows a larger plan which is the Davis Late-Successional Reserve Assessment (available on file at the Crescent Ranger District). The Assessment specifies a strategy for cycling habitat around the landscape. With the recent loss of over 5,000 acres of NRF habitat and two owl territories in the Davis Fire, the strategy for the LSR has changed to a more strategic active management scenario. The desired condition is to manage at least 60 percent of the remaining unburned area toward a climatic-climax condition through time, maintaining at least 25 percent in NRF habitat. This requires a landscape-scale strategy to cycle in and out of NRF habitat while maintaining the large-tree component throughout the cycle. The cycling from non-NRF to near-NRF to NRF across the landscape over time would reduce risk to large and contiguous blocks of habitat to disturbance processes. Part of this strategy is to incorporate the drier and more strategic sites for risk reduction in an open condition to benefit bald eagles and white-headed woodpeckers. In areas that are more

suitable for spotted owl habitat, it is estimated that in 2-3 decades, canopy cover will have increased enough (particularly in the understory) to meet NRF standards once again. This strategy would maintain NRF habitat for northern spotted owls over time, while reducing threats from wide-scale disturbance processes.

Single-story late-seral stands created in key locations for the bald eagle would function as dispersal spotted owl habitat for the foreseeable future. These activities would occur outside known spotted owl home ranges.

All alternatives, including passive management, "**May Affect, and are Likely To Adversely Affect**" the northern spotted owl. In Alternative A (no action), no risk-reduction activities would occur; therefore, the potential remains for large-scale loss of northern spotted owl habitat, similar to the scale seen in the Davis Fire of 2003. In Alternatives B and C, active management would not change Nesting, Roosting, and Foraging habitat in occupied spotted owl territories. However, NRF habitat outside these areas would be affected across the project area in the short-term.

Alternative B proposes the greatest amount of commercial thinning within NRF habitat (2,822 acres) although Alternative C proposes more total treatment acres of NRF habitat (3,254). In Alternative C there would be 2,023 acres of NRF habitat with commercial thinning and 1,231 acres of NRF habitat with fuels reduction treatment where only live trees less than 3 inches in diameter would be removed. Existing NRF habitat would continue to function as NRF after fuels-only treatment. Alternative C would convert fewer acres from NRF habitat to a foraging or dispersal habitat condition than would Alternative B.

League of Wilderness Defenders v. Allen, No. 09-35094 archived on September 1, 2010

In addition to the 3 inch upper diameter limit for thinning in NRF stands, Alternative C also proposes fuels treatments in non-NRF stands by removing live trees 6 inches in diameter and smaller. This would occur in the Odell Creek drainage, Royce Mountain, McCool Butte, and along the Cascade Lakes Highway. The combination of small-tree thinning (fuels units) and commercial thinning would result in Alternative C providing better risk reduction of NRF stands than Alternative B because Alternative C provides larger blocks where wildfire behavior is potentially modified.

Both action alternatives manipulate the stands in a manner that reduces risk of an active crown fire. A commercial timber sale is used as an integrated process to remove crowns that touch each other, and reduce ladder and ground fuels. Accomplished in the appropriate places on the landscape, a commercial timber sale can retain the largest trees within the harvest unit itself while affording protection to adjacent habitat from an event similar to the Davis Fire. If large trees are lost, it would take centuries before Nesting, Roosting, and Foraging habitat develops on those sites.

While fire risk can be predicted, it is impossible to predict the potential for large-scale loss of large trees due to insects in overstocked stands. Infestations are stochastic in nature, and a wide variety of climatic and other environmental conditions can alter the intensity of insect outbreaks. The Deschutes National Forest has seen this condition previously on Santiam Pass. By the time density reduction could be implemented on that site, it was too late and a

stand replacement event resulted in almost complete stand mortality. Reduction of competition between trees in overstocked sites through commercial thinning is a hedge against epidemic loss of the largest trees to insect and disease. Alternative B does the best job of reducing competition. While large-tree loss may still occur in stands that have been thinned, it would likely be at endemic levels. Additional small tree thinning in "fuels only" units would not benefit stands from an insect and disease standpoint because it does not sufficiently reduce the competition for scarce nutrients, sunlight, and water. In both alternatives, the largest trees would be retained.

Although Alternative B affords some level of risk reduction in NRF habitat in five spotted owl home ranges (Maklaks, Royce, Hamner, Ringo and Saddle Butte), it does not alter fuels profiles on large enough blocks to reduce fire travel pathways on the landscape as well as in Alternative C, and therefore does not provide enough strategic protection of LOS stands or other landscape features. In Alternative C, fires appear to have the least travel times and reduce risk to owl home ranges the best.

Although Alternative C is likely to adversely affect Primary Constituent Elements of spotted owl critical habitat at the forest stand level, the U.S. Fish and Wildlife Service does not anticipate that the Five Buttes project will adversely affect the function of CHU OR-07. Four percent (258 acres) of the suitable habitat within the CHU will be removed to dispersal habitat for the purpose of improving fire resiliency of the forest and to promote continued development of late seral habitat within the CHU. The remaining suitable habitat for the owls is well distributed throughout the CHU, except for the area south and east of Davis Lake, where the Davis fire resulted in a large stand replacement fire, which removed 36 percent of suitable owl habitat within the CHU in 2003.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Given that a primary purpose of the project is to reduce the threat of a fire occurring in late seral forests throughout an 81,000-acre landscape, which includes fire risk reduction to spotted owl home ranges within the CHU, the Five Buttes project likely will have a beneficial effect on the forested areas within the CHU over time. The implementation of Fire Behavior Modification Areas within and adjacent to the CHU has been shown to reduce the fire risk to spotted owl home ranges by modeling implementation of the Five Butte project versus a "No Action" alternative within the EIS. The Hamner and Maklaks areas of fire behavior modification are particularly important in reducing the spread of fire to McCool and Hamner home ranges.

In summary, I find that Alternative C best responds to the issue of impacts to the northern spotted owl because:

- Alternative C would alter fewer acres of NRF habitat than Alternative B;
- Alternative C would maintain at least three areas of habitat that are available for immediate occupancy by dispersing or relocating spotted owls; and
- Alternative C provides the best strategy for risk reduction and long-term maintenance of spotted owl habitat on the landscape.

Strategic Placement of Treatment Units

The design of Alternative C incorporated the concept of Strategically Placed Landscape-area Treatments (SPOTS) to optimize fuels reduction on the landscape (Finney 2002). The SPOT concept stresses that the placement and type of fuels reduction is much more important than the amount of fuels treatment. Alternative C places activity units to complement past activities, creating large "blocks" in which the fuel profile is modified. This alternative reduces the amount of commercial harvest, but includes additional fuels activity on adjacent areas identified for commercial thinning in order to influence fire behavior on a landscape scale. In addition, approximately 7,502 acres (2,504 acres greater than Alternative B) would be available for returning an appropriate fire regime for the plant association.

Among the alternatives considered, Alternative C best uses strategic placement of treatment units with the following anticipated results:

- Alternative C is the best at interrupting travel routes of wildfire on a landscape level;
- Alternative C would result in the best capability of containing a fire start in an area of late- or old-structured forest (LOS) before the fire could spread to the next downwind LOS stand; and
- Firefighter and public safety is the highest in Alternative C because it creates fire areas that afford more options for initial attack resources, safe anchor points to attack the fire, and contingency areas.

Environmental Consequences

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

In selecting Alternative C, I carefully reviewed disclosures in Chapter 3 of the FEIS. Most notable effects of the action alternatives include:

- There will be an increase in forest health on the landscape level, where growing conditions suitable for resiliency are improved to resist wide-scale disturbance events (reference the "Forested Vegetation" and "Fire and Fuels" sections of the EIS).
- There is a reduction in risk that wildfire will cause long-term loss of late- and old-successional habitat where strategically placed Five Buttes activities combine with past activities to create contiguous blocks of acreage on which the severity of fire behavior has been reduced (reference the "Fire and Fuels" section of the EIS).
- Alternative C provides landscape level protection of remaining NRF and increases the likelihood of spotted owls being able to persist in their current home ranges.
- There are no cumulative effects to soil quality. It would be maintained to Regional policy for maintaining soil productivity, past and present actions are accounted, and no foreseeable actions with potential for causing detrimental soils overlap units of activity.
- Water quality is not expected to be affected as the result of active management. This is due to very flat topography, high infiltration rates, limited harvest inside riparian reserves, and mitigation measures applied to logging and log hauling.
- For all activities, snag recruitment over time and across the landscape, is similar compared to Alternative A, no action. Changes in snag densities over time are very similar to what would happen under a passive management scenario.

Other Public Concerns

In addition to the key issues that drove alternatives, concern was expressed during the public scoping and in the comments on the DEIS about the effects of the proposed actions on:

- Soils
- Threatened, Endangered, Candidate and Sensitive Species (wildlife, fish, and plants)
- Survey and Manage Species (wildlife and plants)
- Management Indicator Species
- Resident and Migratory Landbirds
- Invasive Plant Species
- Cultural Resources
- Recreation
- Unroaded Areas
- Economic and Social Well-Being

Soils

Under either action alternative, the amount of disturbed soil associated with log landings and skid trails would be limited to the minimum necessary to achieve management objectives. Project Design Features, Management Requirements, and Best Management Practices (BMPs) are built into the action alternatives and are all designed to avoid or minimize potentially adverse impacts to the soil resource. Compliance with LRMP standard and guideline SL-5 (LRMP 4-70) is addressed by using advanced logging systems or measures to reduce disturbance on slopes greater than 30 percent, restricting numbers of equipment passes, using existing harvest transportation systems, and seasonal restrictions on wet areas. Best Management Practices for Timber Management and Road Systems would be applied to protect the soil surface and control erosion on and adjacent to roads and logging facilities that would be used during project implementation. These conservation practices would be implemented during and following project activities to meet the stated objectives for protecting and maintaining soil productivity. The Ranger District and Forest have had success using these practices and is assured they can be implemented by contract provision.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Soil restoration would be applied to reduce the amount of detrimentally compacted soil in areas of the proposed activity. Restoration treatments, such as subsoiling, are designed to promote maintenance or enhancement of soil quality. These conservation practices comply with LRMP interpretations of Forest-wide standards and guidelines SL-3 and SL-4 (Final Interpretations, Document 96-01, Soil Productivity, 1996), and Regional policy (FSM 2520, R-6 Supplement No. 2500-98-1) for planning and implementing management activities.

The percentages of detrimental soil conditions, following implementation of project and restoration activities, would increase above existing conditions in each of the proposed activity areas. All activity areas would comply with Forest Plan Standards and Guidelines SL-3 and SL-4, and Regional policy (FSM 2520, R-6 Supplement No. 2500-98-1) for maintaining soil productivity.

Threatened, Endangered, Candidate, and Sensitive Species

I have considered the effects to this category of species found in Chapter 3 of the EIS. The following determinations were made for Alternative C:

- There would be **"No Effect"** to the Canada lynx or the Oregon spotted frog.
- Alternative C **"May Affect, but is Not Likely to Adversely Affec**t" the northern bald eagle and the Pacific fisher.
- Alternative C "**May Affect, and is Likely to Adversely Affect**" the northern spotted owl and designated Critical Habitat.
- There would be **"No Effect"** to bull trout or their habitat.
- There would be **"No Impact"** to redband trout.
- There would be **"No Impact"** to any Region 6 listed sensitive plants.

Survey and Manage Species
There would be no effects to any listed Survey and Manage plants. Unit 678 contains *Tritomaria exsectiformis* in the narrow, perennial, low-flow channel associated with Dell Spring. A 100-foot buffer would be maintained between activities and the existing population, which will protect the population from any effects associated with active management.

Management Indicator Species
Management Indicator Species are discussed in Chapter 3 of the FEIS under the heading "Wildlife". All activities have been found to be consistent with the Deschutes National Forest Land and Resource Management Plan for this category of species.

Unroaded
Within the area planned for activities, there are no unroaded, Inventoried Roadless Areas, or wilderness areas as defined by Forest Service Manual 7712.16a "Contiguous Unroaded Areas." Unit 345 on Maklaks Mountain is located approximately 500 feet (167 m) from the boundary of the Marden Peak Inventoried Roadless Area. The vegetative prescription calls for thinning to 90 percent Upper Management Zone with a multistory objective. Proposed activities also include prescribed underburning. The proposal is to use an advanced harvest system, which would likely be helicopter. No additional temporary roads would be needed and helicopter landings would be located at lower elevations, further away from the Inventoried Roadless Area boundary.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

The following values often characterize inventoried roadless values:

High quality or undisturbed soil, water and air.
Activities do not overlap the IRA; therefore effects to soil, water, and air quality are as disclosed in those sections of the FEIS. The IRA is uphill from the proposed activity and any potential affects to water quality would be down slope. No actions associated with this project would change the condition of any waterway or water body in the project area. Prescribed fire managers will use smoke management forecasts to minimize smoke generated from fuels reduction activities from entering into undesirable areas, including Class 1 airsheds. The IRA is located between the project and northeast of the Diamond Peak Wilderness; therefore, ambient air quality would remain unchanged. Prescribed fire operations would be scheduled during the approved Visibility Protection Period, between July 1 and September 15.

Inventoried Roadless Areas provide large, relatively undisturbed blocks of important habitat for terrestrial and aquatic species, as well as providing for diversity of animal and plant communities.
Important terrestrial species that have the potential to utilize the IRA are the wolverine, Pacific fisher and the northern spotted owl. Activities are not expected to affect wildlife movement or change associated unique ecological values that may be habitat. The effects are within the realm as discussed in the FEIS for the wolverine, Pacific fisher, and northern spotted owl dispersal and connectivity to west-side late- and old-forested conditions. There would be no effect to aquatic plant or animal species or their life cycles.

Activities do not overlap or influence botanical resources in the IRA. Risk of introduction of invasive plant species is disclosed in the FEIS and any effect to the adjacent IRA is within those parameters. Clean equipment in Unit 345 would be utilized, as well as advanced harvest systems, which typically have a lower risk rating due to less potential for soil disturbance. Since no ground-disturbing activities would overlap the IRA, the main vector for introduction or spread of invasive plants would not be present.

The Five Buttes Project would maintain a full suite of plant and animal species to ensure adaptability for a wide range of climatic conditions. There would be no identified effects to animal or plant diversity within the IRA.

Inventoried Roadless Areas often provide a range of outstanding recreational opportunities.
Human use of the Maiden Peak area is concentrated near the Willamette Pass Ski area, Rosary Lakes, and trails that link to the Pacific Crest Trail. There would be no effect to these areas beyond those described in Chapter 3 of the FEIS. The Maiden Peak IRA would remain in a condition similar to wilderness-like values. The area immediately adjacent to Unit 345, there may be short-term (1-2 year) seasonal and intermittent noise associated with harvest systems and hauling, but it is not likely this would overlap with human presence or effect recreational opportunities.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Implementation provides an overall beneficial effect to attributes associated with unroaded characteristics by providing a landscape-scale risk reduction for a potentially large-scale wildfire originating from the project area and burning into the Maiden Peak IRA.

Resident and Migratory Landbirds
The Forest Service has prepared a Landbird Strategic Plan (January 2000) to maintain, restore, and protect habitats necessary to sustain healthy migratory and resident bird populations to achieve biological objectives. The primary purpose of the strategic plan is to provide guidance for the Landbird Conservation Program and to focus efforts in a common direction. Species selected to be analyzed represent focal species for habitat types or features considered at risk. The Landbird Strategic Plan was considered and trade-offs are associated with individual species. For example, habitat cannot be provided on every acre for species with different requirements. The effects are displayed in Chapter 3, Wildlife.

Invasive Plant Control, Guiding Documents, and the Mediated Agreement
Region 6 of the Forest Service has prepared an Invasive Plant Environmental Impact Statement (R6 IP EIS). The Final EIS was released in June 2005 and the Record of Decision (ROD) was signed in October 2005; implementation began March 1, 2006. The R6 IP EIS applies to non-native invasive plant species, but not to native, competing, and unwanted vegetation. Standards and Guidelines in the R6 IP EIS are incorporated into Forest Plans in the region. Consistency can be found in Appendix A of the Five Buttes EIS.

Based on the vectors and proposed activity, Alternative C was determined to have the greatest risk rating for introduction and spread of existing populations of invasive plants. The risk rating is mostly based on the amount of ground disturbance. Since Alternative C has the greatest amount of activity (including small diameter fuels reduction), the potential is the greatest. However, the 2003 Davis Fire created more favorable conditions for introduction of invasive plants than any activity considered in the Five Buttes Project and Alternative A (no action) has the greatest potential for another wildfire of that proportion.

This project will use prevention as the main strategy to manage invasive plant species (R6 Invasive Plant EIS Standard #7). Actions conducted or authorized by written permit (contracts) that operate outside the limits of the road prism require clean equipment prior to entering National Forest System Lands. All active gravel, fill, sand stockpiles, quarry sites, and borrow material will be inspected for invasive plants before use and transport. Only weed-free gravel, fill, sand, and rock would be used.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Cultural Resources
The effects of the alternatives on cultural resources are described in the FEIS, starting on page 279. Activity units in both action alternatives overlap an eligible, or potentially eligible, cultural resource site. The sites would be protected by avoidance. There are no direct, indirect, or cumulative effects anticipated on cultural resources under either action alternative. There are no anticipated effects on cultural resources that would be an irreversible or irretrievable commitment. If a new cultural resource site is discovered during implementation, the site would be protected by contract provisions and notification of the appropriate personnel.

Based on the current knowledge about cultural use of native plants by American Indian tribes and the nature of the proposed action, there would be no effect. Access to potential culturally important areas, such as Davis Lake, would not change as a result of proposed actions.

Recreation and Scenery Management
The effects of the alternatives on recreation resources are described in the FEIS, starting on page 283. Alternative C would maintain scenery and the Recreational Opportunity Spectrum of a “Roaded Natural” condition.

Highway 46 near Davis Lake is allocated to a scenic view of Retention Foreground. Measures have been designed to meet the Forest Plan Standard for this area by making activity less evident, particularly after one year. There are a few areas, such as along Wickiup Reservoir, allocated to Partial Retention. The same measures apply in Partial Retention and

Retention, but cleanup can be accomplished within two years in Partial Retention, as opposed to one year in Retention.

Economic and Social Well-Being

I considered the surrounding physical and biological environments that influence human social life in the central Oregon area. This is most evident in rural areas where the variety and quality of available natural resources often determine the chief means of economic livelihood and what leisure activities people are likely to pursue and, therefore, influence local preferences for the use of public lands. Also, I considered comments I received from people that wanted limited activity to occur on the landscape.

Alternative C was determined to be a viable timber sale. It is less economically efficient than Alternative B, with approximately 4.4 million board feet less commercial timber harvested and approximately 2,276 additional acres of fuel reduction associated with small diameter thinning, limbing of trees, and ground fuel modification.

Several commenters expressed preference for Alternative B over Alternative C from an economic standpoint. One commenter wanted to remind the agency that what little infrastructure remains in central and eastern Oregon is vital to the agency's ability to get work accomplished.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

I weighed the trade-offs carefully between all three alternatives and how they respond to economic opportunity. I recognize the need for forest products from forest ecosystems to help maintain the stability of local and regional economies. Within the Late-Successional Reserve, it is very important to manage for dependent late- and old-growth dependent species. However, silvicultural activities with an attendant benefit of providing timber are an appropriate way to manage these lands. Providing forest products to the economy is one of the two “needs” identified for this project.

Alternative C provides an estimated 14.4 million board feet to the economy. Although there is no guarantee this will be a local or regional resource, it would provide enough material to run approximately 48 shifts at the local mill. It provides some economic benefits while providing positive ecological outcomes. Also, it does not preclude opportunities for future wood from the area as a result of land stewardship.

Air Quality and the Clean Air Act

I have considered the effects of the alternatives on air quality described in the FEIS. All prescribed fire and pile burning would be conducted under the State of Oregon Smoke Management System to track smoke produced and would be coordinated through Oregon Department of Forestry. Prescribed fire and pile burning would be conducted under favorable smoke dispersal conditions, avoiding impacts to Class I airsheds and urban areas. Inversion conditions, which would increase the potential for smoke pooling in valleys and drainages, would be avoided during burning operations.

The closest Designated Area to the project area is the city of Bend, Oregon; the communities of Crescent, Chemult, Sunriver, and La Pine are closer to the project area but are not as

highly-populated. The greatest risk of exposure to airborne toxins from prescribed fires or wildfires would be to firefighters and forest workers implementing the prescribed burning. It is unlikely the general public would be exposed to toxin levels adverse to human health during implementation of prescribed burning operations in the Five Buttes Project area because of the distance from populated areas and the application of prescriptions designed to lessen the release of particulate matter. People who suffer from breathing ailments may experience some difficulty during periods of prescribed burning, especially during atmospheric conditions that do not favor dispersion of smoke. The Forest Service voluntarily follows the guidelines assigned by Oregon Smoke Management to limit state-wide exposure on a cumulative basis, in compliance with the Clean Air Act.

Changes between Draft and Final EIS

The following changes were made between the Five Buttes Project Draft and Final EIS. This list does not include minor grammatical corrections, editorial formatting, and clarification of data previously presented. The changes were driven by public comment and a comprehensive internal review.

- Unit 370 was initially identified as dispersal habitat, but was misidentified. Further reconnaissance has determined this stand does not currently provide dispersal habitat. Proposed activities would accelerate attainment of dispersal habitat by allowing the understory to grow free of competition. It is estimated it would be 30 years before the stand would provide the necessary canopy structure. Without active management, this timeframe could be much longer. This does not change the effects disclosed regarding the capability for northern spotted owls to disperse within the project area, as well as from adjacent LSRs.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

- An error was made in the calculation of sensitive soils and overlap with management activities. In Alternative B, the overlap is 887 acres, not 493. In Alternative C, the overlap is 684 acres, not 782. This correction has been made to the FEIS. The action alternatives remain consistent with regional policy and forest standard and guidelines due to the prescription for advanced harvest systems which protect soil quality. The effects remain as described in the DEIS. Sensitive soils are delineated on gross landtype acres and only portions of those landtypes are actually on sensitive soils. There will be no construction of temporary roads, primary skid trails, or log landings on sensitive soils with slopes greater than 30 percent, soils with high hazard for surface erosion, or potentially wet soils with a seasonally high water table. Advanced harvest systems minimize mechanical disturbance in these areas.

- Cleanup of slash was mistakenly identified to be completed within two years in areas of scenery allocated to Retention Foreground. The change was made to complete cleanup within one year, with two years for areas allocated to Partial Retention.

- Project Design Features were added in Chapter 2. These are assumptions and rationale that frame the desired condition for every project design.

- Page 214 of the DEIS stated Unit 610 is within the boundary of the Maklaks Old-Growth Management Area (OGMA) when it should have read Unit 810.

- Text documenting consistency with the Deschutes Land and Resource Management Plan as amended by the Northwest Forest Plan Aquatic Conservation Strategy was added.

- Additional discussion on the effects of West Nile Virus, Sudden Oak Death, and barred owl competition on northern spotted owls has been added.

- A commenter requested an alternative with an upper diameter limit of 15 inches. This, along with 8 and 12 inches, were modeled, and they did not considerably alter the stands to sufficiently reduce risk. This modeling was added to the section "Alternatives Considered but Eliminated from Detailed Study" in the FEIS.

- The Davis Lake Special Interest Area (SIA) overlaps activity at the lake, including emphasis for bald eagles, maintaining Riparian Reserves, reducing risk to the remaining uphill northern spotted owl habitat, and the recreational experience. A discussion on consistency with the SIA, and other overlapping values, has been added to the FEIS.

- Consistency with the Maiden Peak Inventoried Roadless Area was expanded.

- The distance of activity within the Wild and Scenic River boundary was clarified to display avoidance of the Riparian Reserve.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

ESA Consultation/Conferencing with U.S. Fish and Wildlife Service

All required consultation and conferencing with the U.S. Fish and Wildlife Service was completed. It was determined that after reviewing the current status of the spotted owl, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the U.S. Fish and Wildlife Service's biological opinion that the Five Buttes Project is not likely to jeopardize the continued existence of the spotted owl. The U.S. Fish and Wildlife Service reached a no jeopardy determination for the Five Buttes Project. Documentation is in the project file.

Legal Requirements and Policy

In reviewing the EIS and actions involved in modified Alternative C, I have concluded that my decision is consistent with the following laws and requirements that have not previously been discussed in this document:

The National Environmental Policy Act (NEPA)

NEPA establishes the format and content requirements of environmental analysis and documentation. The entire process of preparing this environmental impact statement was undertaken to comply with NEPA.

The National Forest Management Act (NFMA)
I find this decision to be consistent with the Deschutes Forest Plan, as amended, and with the requirements of the National Forest Management Act implementing regulations; specifically:

Silvicultural Practices
In Alternative C, there is no timber harvest on lands classified as unsuitable for timber production. Alternative C is consistent with 36 CFR 219.27(c)(1).

Vegetative Manipulation/Management Requirements
The selected action is consistent with the seven management requirements from 36 CFR 219.27 and the vegetation requirements from 36 CFR 219.27(b).

Maintaining Viable Populations of Fish and Wildlife Species
The selected action is consistent with the viable population requirements of 36 CFR 219.19.

The Five Buttes Project meets or exceeds standards given in the amended Deschutes Land and Resource Management Plan and the 2007 Davis LSRA. The design criteria common to all alternatives is to retain all existing snags greater than 9 inches in diameter except those that pose a hazard (FEIS, Resource Protection Measures and Project Design Criteria). The Five Buttes Project seeks to manage the retention and recruitment of snags and down wood habitat at various densities across the landscape utilizing a reference condition based on the historical range of variability as described in the FEIS (Chapter 3, Snags and Down Wood Habitat). Managing within the historical range would provide for those species that survived to the present with those densities meeting NFMA objectives. The best available science on dead wood relationships to wildlife habitat was used in the form of DecAID and local data sets. Effectiveness monitoring is ongoing in terms of research and DecAID will be continually updated with the new science as it becomes available. As this information is updated, management will adapt to the new information. This project demonstrates the Forest Service commitment to adaptive management to meet the needs of wildlife. NEPA requires a disclosure of effects of federal actions. The direct, indirect, and cumulative effects of implementation of the alternatives on snag habitat are disclosed in Chapter 3 of the FEIS. The effects analysis is based on habitat needs determined by research.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

The Preservation of American Antiquities Act, June 1906 and The National Historic Preservation Act: The Oregon State Historic Preservation Officer (SHPO)
A cultural resource inventory has been completed for the project area. On June 09, 2006, the Deschutes National Forest completed the "Project Review for Heritage Resources under the Terms of the 2004 Programmatic Agreement" with the Oregon State Historic Preservation Officer (SHPO). The activities in the selected alternative have been designed to have No Effect or No Adverse Effect to cultural resource sites through both protection and avoidance. The project is compliant with the SHPO regulations.

The Endangered Species Act of 1973, as amended
Biological Assessments have been prepared to document possible effects of proposed activities on endangered and threatened species in the Five Buttes Project area. See the summary of effects to Threatened, Endangered, Candidate and Sensitive species on page 23 of

this document. Appropriate coordination, conferencing, and consultation with USFWS have been completed (See previous section of this document titled Consultation/Conferencing with USFWS).

Aquatic Conservation Strategy

This project has been determined to be consistent with the Deschutes Land and Resource Management Plan as Amended by the Northwest Forest Plan Record of Decision for the Aquatic Conservation Strategy (ROD, B-9) by meeting the nine objectives, as well as Key Watershed Standards and Guidelines found in the ROD, C-7. I have determined that Alternative C with modification is consistent with the Aquatic Conservation Strategy for the following reasons.

I have reviewed the 1999 Odell Watershed Analysis and I utilized this information to be informed on the ecological functions within this watershed. On page 56, the Watershed Analysis identified the current condition as "marked by early-seral overstories with late-seral understories." The Watershed Analysis identifies the Historic Range of Variability as having a deficit of late-seral stands, mainly due to the establishment of true fir and lodgepole pine understories. The stands have sufficient mature early-seral trees, but the species shift has been identified as a condition that has the potential to change either rapidly through a stand replacement event or through competition with less fire susceptible species.

League of Wilderness Defenders v. Allen
No. 09-35054 archived on September 1, 2010

Active management associated with this project in the mixed conifer/dry plant association is necessary to restore the Historical Range of Variability, particularly in the late- and old-successional stands. I have reviewed the proposed management activities from a project and watershed-level scale. While accomplishing project objectives, proposed activities will not retard or prevent attainment of Aquatic Conservation Strategy Objectives. By focusing on understory removal, Alternative C is the best at moving the watershed toward the range of conditions that were most likely found prior to fire exclusion. This would result in multiple benefits associated with the Strategy Objectives. First, it would reduce competition to the largest trees, possibly keeping them on the landscape longer; large trees are the component that would take the longest to replace in late-structured stands. Second, strategic risk reduction would allow fire to return to its role in selected and appropriate areas, allowing the watershed to potentially return to the proper scale and range of disturbance that probably occurred prior to fire exclusion.

These actions would reverse a disturbing trend the Watershed Analysis identified to address in three primary areas: 1) retention of large trees on the landscape, 2) development of replacement trees as large trees inevitably are lost from the landscape, and 3) resilience of forest stands to disturbance agents (insects and fire). The Watershed Analysis recommended "Vegetative treatments should be designed to promote development of large tree dominated stands, late successional forest, and bald eagle habitat and may include prescribed fire and thinning" (page 157, Recommendations).

This project has no consequences to listed fish, water quality, or other resources identified as important in this watershed (FEIS, pages 224 and 242). I acknowledge the potential for adverse effects to riparian resources when action is taken and the ground is disturbed.

However, these risks are characterized as very low: and the trade-off is to restore this watershed into a more sustainable condition; the potential consequences of doing nothing are not acceptable.

I have reviewed the Aquatic Conservation Objectives (FEIS, Water Quality, Chapter 3) in light of the analysis found in the soil and water quality sections. I have determined that the actions in Alternative C meet, and do not prevent attainment of these objectives. The following rationale supports my conclusions:

Aquatic systems would be avoided by active management on all stream reaches and would be protected by a reduction of risk associated with a large disturbance in the upland vegetation entering the Riparian Reserve. The only activities associated with the Five Buttes Project that are within Reserves are: 1) understory commercial thinning, handpiling, and disposal of forest residue on 53 acres at Davis Lake; and 2) hauling and maintenance on up to 4.2 miles of road in Alternative B. None of these activities are within areas typically associated with riparian vegetation.

I am confident that Best Management Practices (BMPs) and Standard and Guidelines listed in Appendix A of the FEIS, Project Design Features and Mitigation Measures identified in Chapter 2, along with compliance with local and Regional Soil Quality Standards, will protect beneficial uses of the streams in the project area in a manner consistent with the Aquatic Conservation Strategy outlined in the Northwest Forest Plan and the Clean Water Act of 1972. BMPs have been used numerous times on the Deschutes National Forest in contract provisions and for other similar vegetation management projects and have been proven to be effective in resource protection.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

The Clean Water Act, 1982 and 303(d)

The selected alternative will comply with the Clean Water Act. This Act establishes a non-degradation policy for all federally proposed projects. The selected alternative meets anti-degradation standards through planning, application, and monitoring of Best Management Practices (BMPs). The Environmental Protection Agency has certified the Oregon Forest Practices Act and regulations as BMPs. The State of Oregon has compared Forest Service practices with the State practices and concluded that Forest Service practices meet or exceed State requirements. Site-specific BMPs have been designed to protect beneficial uses. Chapter 2 of the Final EIS lists the design criteria and resource protection measures that are common to all action alternatives. A number of these measures are BMPs. Appendix A of the Final EIS describes the application of water quality BMPs and lists the BMPs that will be utilized to implement the activities.

The Final EIS documents the analysis of effects to streams listed on the 2004/2006 state 303(d) list of Water Quality Limited Water Bodies for summer water temperature. These streams are Crescent Creek and Odell Creek. Implementation of the selected activities should not result in any measurable increase in water temperatures in any fish-bearing or non fish-bearing perennial stream in the project area. Commercial timber harvest and non-commercial thinning activities were designed so that they do not reduce shade. Also, Odell Creek has recently been listed for chlorophyll *a* and pH originating from Odell Lake. These parameters

would not change as a result of implementation of the Five Buttes Project because no sedimentation to streams or lakes from either action alternative is expected. The Environmental Protection Agency has assigned an LO (Lack of Objections) rating for Alternative C.

Civil Rights and Environmental Justice
Executive Order 12898 on environmental justice requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects on minority and low income populations. The analysis focuses on potential effects from the project to minority populations, disabled persons, and low-income groups.

There would be no change in access and no known adverse effects that would be disproportional to any minority or low income population as a result of implementation of the Five Buttes Project.

Other Policy or Guiding Documentation

Biological Evaluations for Sensitive Species
Biological Evaluations were prepared to assess potential effects to sensitive species as identified by the Regional Forester. This evaluation for aquatic species and terrestrial wildlife determined that while there may be impacts to individual sensitive species, those effects are not likely to contribute to a trend toward federal listing or loss of viability of the population or species.

League of Wilderness Defenders v. Allen
No. 09-35004 archived on September 1, 2010

1995 Davis Late-Successional Reserve Assessment and 1999 Odell Watershed Analysis
The Deschutes National Forest Land and Resource Management Plan, as amended, provided the framework for the development of all the alternatives for this project. I have reviewed the updated Davis Late Successional Reserve Assessment and the Odell Watershed Analysis and both are cited for principle and direction throughout the EIS document. I find the activities planned in Alternative C to be consistent with both documents. The Regional Ecosystem Office (REO) interagency Late-Successional Reserve (LSR) Work Group has reviewed the April 2007 revision of the Davis Late Successional Reserve Assessment (LSRA). The REO found the April 2007 Davis LSRA provides a sufficient framework and context for future projects and activities within the LSR. This LSRA replaces the 1996 Davis LSRA.

As a result of the Davis Fire and other wide-scale disturbance events in LSRs on the Forest, the Davis LSRA includes a strategy for altering fire behavior in key places on the landscape, using SPOTS (strategic placement of treatments). "*Where*" management activities are located on the landscape is more important than "*how much*" acreage is treated. This allows northern spotted owl Nesting, Roosting, and Foraging habitat (which is most vulnerable on eastside forests), as well as other species' habitat that depends on dense forest conditions, to be cycled and retained on the landscape over time. This strategy recognizes these conditions will shift around the landscape as some areas fade out due to disturbance events, and as other areas grow back into conditions that will support species that are dependent upon late-successional habitat.

The overall goal of the Five Buttes Project is to reduce risk and to promote and retain the largest trees on the landscape; the project achieves this by implementing the strategy identified in the LSRA. Some areas in the drier sites are better suited to be managed for species such as the white-headed woodpecker, which requires large ponderosa pine-dominated stands. These drier sites are the strategic areas that were selected to reduce risk on a landscape scale of a wildfire burning into multiple northern spotted owl home ranges.

The Five Buttes Project would not appreciably change the current snag recruitment process or down logs with the exception of Unit 370 where some salvage of down lodgepole would reduce wildfire risk to Maklaks Mountain and an occupied spotted owl territory; and as necessary for occupational safety. All down logs in advanced stages of decay would be retained during harvest operations and post-sale fuels activities. The Davis Fire of 2003 created tens of thousands of new snags of varying species as well as diameter and decay classes in the area.

Also, based on the interagency REO LSR Work Group's review and conclusions, the REO concurs with the Deschutes National Forest's conclusion that vegetation management activities in the Five Buttes Project area on the Crescent Ranger District are consistent with the Northwest Forest Plan. The basis for the review was: silviculture, risk reduction, and salvage treatments in LSRs are subject to REO review under the NWFP S&Gs (C-12-15). As required by the NWFP S&Gs (C-11), the Forest prepared a Late-Successional Reserve Assessment (LSRA). The Davis LSRA, which encompasses much of the Five Buttes Project, was recently revised, reviewed, and found to be consistent under the NWFP S&Gs (C-11).

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Survey and Manage
Alternative C is consistent with the January 2001, Record of Decision for Amendments to the Survey and Manage, Protection Buffer and other Mitigation Measures Standards and Guidelines (Appendix A of the FEIS). Survey protocols are specified in the FEIS and all have been met.

M15: Old Growth (Deschutes LRMP, p 4-149)
The project area overlaps two Old Growth Management Areas (OGMAs). In Unit 810, the prescription calls for a "light thin" maintaining the largest trees, with a goal to maintain uneven-aged condition where it exists on 144 acres. This has been identified as a strategic area for modifying fire behavior to reduce the risk to an adjacent northern spotted owl home range. The active management planned in this area would collectively reduce the risk of wildfire severely impacting the connected late-successional forested stands from above Odell Lake easterly along the southern flanks of Maklaks Mountain then running north parallel to the Maiden Peak Inventoried Roadless Area. Advanced harvest systems such as skyline or helicopter would be utilized. This area is within a Management Strategy Areas K and J within the Davis Late-Successional Reserve where the emphasis species are spotted owls and eagles. The Deschutes Forest Plan designates this area for the pine marten and, based on a similar prescription on an adjacent harvest unit from the Royal timber sale (Seven Buttes EA, 1996), marten habitat capability would be retained. Although not a focal species for the MSAs, American marten benefit from habitat provided for the black-backed woodpecker, riparian

associated species, and connectivity corridors for northern spotted owls, all of which are selected species in the two Management Strategy Areas.

Unit 690 also overlaps a 970-acre Old Growth Management Area on 10 acres along Crescent Creek. The prescriptions for this stand are for commercial thinning with a single-story objective. Although a short segment of temporary road construction is potentially needed, it would be outside the Old Growth boundary. Ground-based harvest systems would be utilized. Goshawk is the focal species identified for this area. There are no known goshawk nests in the area. The FEIS discloses the effects of the Five Buttes project and removal of 8 percent of the potential nesting goshawk habitat. Proposed activities would likely have little long-term effect on goshawks. Nesting habitat would remain well-distributed across the entire project area with the exception of the Davis Fire area. Nesting and foraging habitat is provided in this 970 acre OGMA and thinning as well as post-sale activities would not affect the ability of the OGMA to function as designated for goshawks.

Unit 692 is prescribed for "fuels only" activities that include small-diameter thinning with an upper diameter limit of 6 inches on 85 acres. Utilization of wood products is also prescribed and the existing road system is adequate to facilitate this. Prescribed underburning would be utilized. The effects to the goshawk are as discussed for Unit 690.

Planned activities in Old Growth Management Areas are consistent with the Forest Plan (MA 15) because they provide habitat for the species for which they were designated (i.e. American marten and northern goshawk). They represent landscape ecology by maintaining diversity and existing plant associations throughout and contributing to the biodiversity on the forest. The focus is to keep the largest trees on site. Vegetative removal intended to maintain or enhance old-growth characteristics is appropriate in this MA (LRMP M15-4, p. 4-150). Prescribed fire (in ponderosa pine and mixed conifer stands) is an acceptable method of fuel reduction in this MA, and other methods may be considered (LRMP M15-19 and 15-20, p. 4-151).

League of Wilderness Defenders v. Allen
No. 09-35091 archived on September 1, 2010

Old Growth Management Plans have been prepared and are available at the Crescent Ranger District.

The Environmentally Preferable Alternative

Under the National Environmental Policy Act, the agency is required to identify the environmentally preferable alternative (40 CFR 1505.2(b)). This is interpreted to mean the alternative that would cause the least damage to the biological and physical components of the environment, and which bests protects, preserves, and enhances, historic, cultural, and natural resources (Council on Environmental Quality, *Forty Most Asked Question Concerning CEQ's National Environmental Policy Act Regulations*, 46 FR 18026). Factors considered in identifying this alternative include: (1) fulfilling the responsibility of this generation as trustee of the environment for future generations, (2) providing for a productive and aesthetically pleasing environment, (3) attaining the widest range of beneficial uses of the environment without degradation, (4) preserving important natural components of the environment, including biodiversity, (5) balancing population needs and resource use, and (6) enhancing the quality of renewable resources. An agency may discuss preferences among alternatives based

on relevant factors, including economic and technical considerations and statutory missions {40 CFR 1505.2(b)}.

I have determined that the environmentally preferable alternative is Alternative C for the short- and long-term. Alternative C implements a strategy that adjusts the existing vegetative conditions within the LSR to a more sustainable balance and maintains suitable habitat for old-growth dependent species that utilize high-risk stands. The 2003 Davis Fire prompted action to reduce risk of additional wide-scale disturbance agents in the Five Buttes area. In Alternative C, stands were strategically selected for vegetation management using the best available science and modeling tools combined with professional judgment to locate the sites most effective on the fire landscape. Vegetation management activities focus on retaining options for the most important habitat for late- and old-forest associated species while maintaining large trees across the planning area.

Alternative C attains the widest range of beneficial uses of the environment by preserving the most important feature on the landscape (e.g. large trees) without degradation. While commercial thinning would occur, the primary emphasis would be removing some of the understory trees to reduce ladder fuels and stand density competition. The largest diameter trees would be retained to maintain late- and old-structured forests. In addition, no snags or dead and down wood would be removed except in Unit 370 where some salvage of down lodgepole is proposed to reduce wildfire risk to Maklaks Mountain and an occupied spotted owl territory; and where snag removal is necessary for occupational safety. Soil quality is maintained to regional standards; effects to water quality and quantity are benign because of the limited activity in proximity to water resources. Risk of spread of existing or new invasive plant populations in the project area has been minimized.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Alternative C has been designed to maintain the full range of native species that are present on the landscape to contribute to the ecosystem's adaptability to changing climatic conditions. By cycling dense vegetation around the landscape, Alternative C maintains habitat favored by the northern spotted owl and other dependent late- and old-growth associated species. Also, Alternative C incorporates drier sites as strategic locations for risk reduction by maintaining these sites in an open condition, benefiting bald eagles and white-headed woodpeckers. Alternative C would maintain NRF habitat for northern spotted owls over time while reducing threats from wide-scale disturbance processes.

Design Measures/Mitigation Measures

Design measures and mitigation actions are site-specific management activities designed to avoid or reduce the adverse impacts of timber harvest and associated activities. These measures will be implemented through project design and layout, contract specifications, contract administration, and monitoring by Forest Service officers. I have decided to implement all design and mitigation measures specified in the FEIS for Alternative C (FEIS Chapter 2).

These selected measures will adequately prevent adverse effects for the following reasons: 1) the selected mitigation measures are practices we have used successfully in the past; 2) they are State-recognized best management practices for protecting water quality; and 3) they are

based on current research (e.g., the snag management approach). I have decided to monitor the implementation of these measures and, in some instances, to monitor their effectiveness, as described in the following section.

Monitoring

Monitoring of the Five Buttes Project is designed to accomplish three purposes: 1) to assure that all aspects of the project are implemented as intended; 2) to determine, for certain critical activities, that the effects of the activities are consistent with the intent; and 3) to allow adaptation if it is found that activities are not being implemented correctly or are not having the desired effects. Additional details of the monitoring items are found in the FEIS in Chapter 2.

Consistency with the Deschutes National Forest Land and Resource Management Plan and the Northwest Forest Plan

Alternative C was found to be consistent with long term management objectives as discussed in the Deschutes National Forest Plan, as amended. The Regional Ecosystem office has concurred with this finding. Appendix A of the FEIS details these conclusions.

Implementation

I have reviewed the Five Buttes Project FEIS and associated appendices. I believe there is adequate information within these documents to provide a reasoned choice of action. I am fully aware of the possible adverse environmental effects that cannot be avoided, and the irreversible/irretrievable commitment of resources associated with the Selected Alternative. I have determined that these risks will be outweighed by the likely benefits. Implementing the Selected Alternative will cause no unacceptable cumulative impact to any resource. There will be no significant impact to cultural resources, consumers, civil rights, minority groups, or women. The FEIS adequately documents how compliance with these requirements is achieved (FEIS, Chapter 3).

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Procedure for Change during Implementation

Minor changes may be needed during implementation to better meet on-site resource management and protection objectives.

In determining whether and what kind of further NEPA action is required, the Responsible Official will consider the criteria for whether to supplement an existing Environmental Impact Statement in 40 CFR 1502.9(c) and FSH 1909.15, sec. 18, and in particular, whether the proposed change is a substantial change to the intent of the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. The cumulative impacts of these changes will also be considered.

The intent of field verification prior to my decision was to confirm inventory data and to determine the feasibility and general design and location of a road or unit, not to locate the final boundaries or road locations. For example, salvage unit prescriptions may be modified if site conditions dictate and if other resource objectives can be met. Minor adjustments to

unit boundaries may be needed during final layout for resource protection, to improve logging system efficiency, and to better meet the intent of my decision. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws.

Appeal Rights

The 45-day appeal period begins the day following the date the legal notice of this decision is published in *The Bulletin*, Bend, Oregon, the official newspaper of record. The Notice of Appeal must be filed with the Reviewing Officer at:

Appeal Deciding Officer, Pacific Northwest Region, USDA Forest Service
Attn. 1570 Appeals, 333 S.W. First Avenue, PO Box 3623, Portland, OR 97208-3623

Appeals can also be filed electronically at: appeals-pacificnorthwest-regional-office@fs.fed.us or hand-delivered to the above address between 7:45 AM and 4:30 PM, Monday through Friday except legal holidays. The appeal must be postmarked or delivered within 45 days of the date the legal notice for this decision appears in the Bend Bulletin newspaper. The publication date of the legal notice in the Bend Bulletin newspaper is the exclusive means for calculating the time to file an appeal and those wishing to appeal should not rely on dates or timeframes provided by any other source.

Electronic appeals must be submitted as part of the actual e-mail message or as an attachment in Microsoft Word (.doc), rich text format (.rtf) or portable document format (.pdf) only. E-mails submitted to e-mail addresses other than the one listed above or in other formats than those listed or containing viruses will be rejected.

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

It is the responsibility of those who expressed an interest during the comment period and wish to appeal a decision to provide the Regional Forester sufficient written evidence and rationale to show why my decision should be changed or reversed. The appeal must be filed with the Appeal Deciding Officer (§ 215.8) in writing. At a minimum, an appeal must include the following:

1. Appellant's name and address (§ 215.2), with a telephone number, if available;
2. Signature or other verification of authorship upon request (a scanned\ signature for electronic mail may be filed with the appeal);
3. When multiple names are listed on an appeal, identification of the lead appellant (§ 215.2) and verification of the identity of the lead appellant upon request;
4. The name of the project or activity for which the decision was made, the name and title of the Responsible Official, and the date of the decision;
5. The regulation under which the appeal is being filed, when there is an option to appeal under either this part or part 251, subpart C (§ 215.11(d));
6. Any specific change(s) in the decision that the appellant seeks and rationale for those changes;
7. Any portion(s) of the decision with which the appellant disagrees, and explanation for the disagreement;

8. Why the appellant believes the Responsible Official's decision failed to consider the comments and;
9. How the appellant believes the decision specifically violates law, regulation, or policy.

Contact Persons

For additional information concerning the specific activities authorized with my decision, you may contact:

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Christine Frisbee
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Responsible Official

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Leslie A.C. Weldon

June 8, 2007
Date

LESLIE A.C. WELDON
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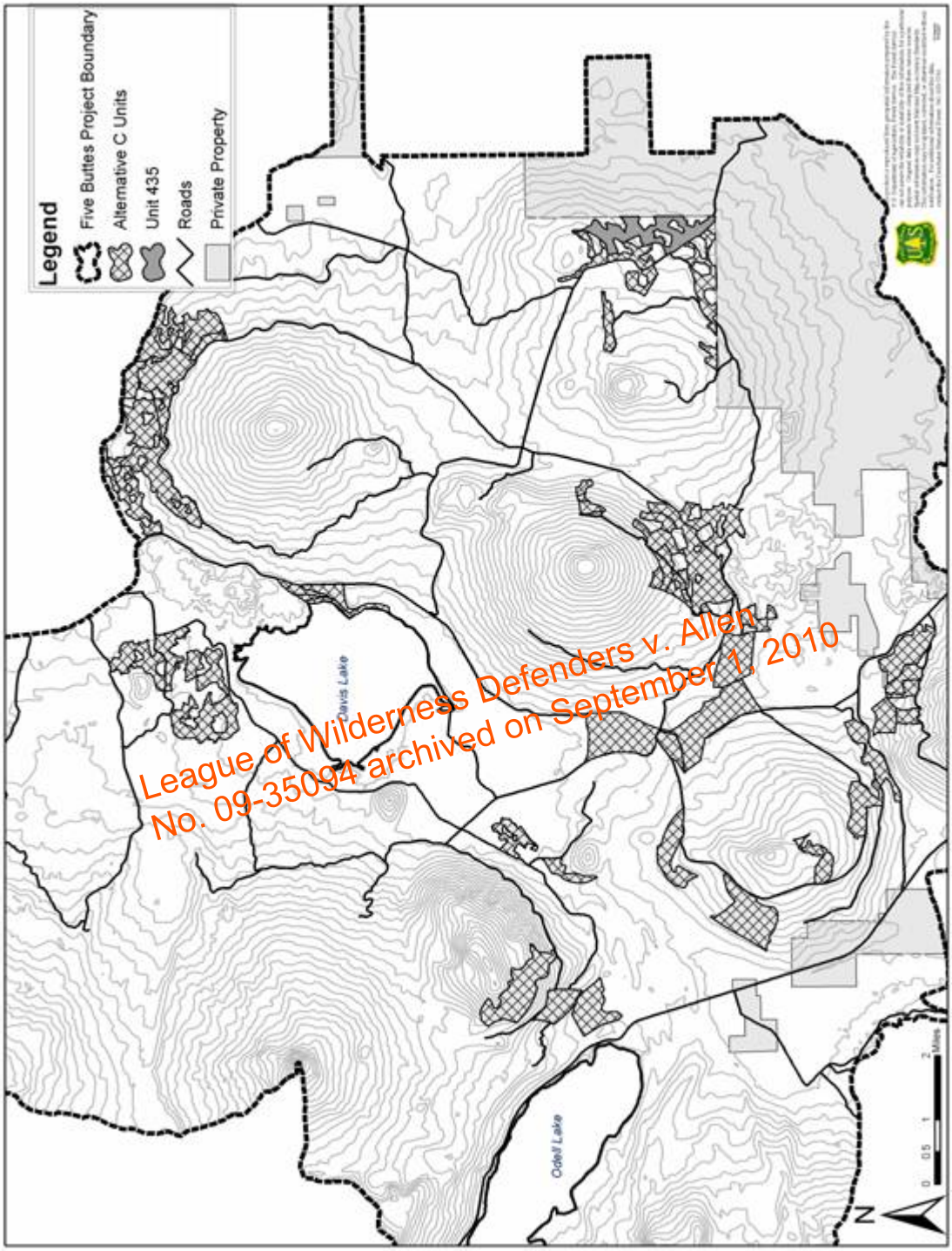
P.O. Box 6010
Bend, OR 97708-6010

League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010



League of Wilderness Defenders v. Allen
No. 09-35094 archived on September 1, 2010

Figure 4. Alternative C Modified.