

# Pre-Operations Report

**Operation Name:** Rogers Break

**County:** Washington

**Management Basin:** Rogers

**Table 1. Operation Areas, Types and Acres**

Area	Type of Operation	Gross Acres	Net Acres
1	Moderate Partial Cut	321	306
2	Moderate Partial Cut	58	55
<b>Total</b>	<b>Partial Cut Harvest</b>	<b>379</b>	<b>361</b>
3	Modified Clearcut	70	57
<b>Total</b>	<b>Regeneration Harvest</b>	<b>70</b>	<b>57</b>

## **I. PHYSICAL DESCRIPTION OF OPERATION AREA:**

Slopes are typically less than 40% with a range of 5% to 65%. Elevation ranges from 1,100 feet to 2,000 feet. Aspect is variable from north to east. The entire area was burned in the 1933 Tillamook Burn and again in the 1945 fire.

The landform is a gentle to moderate sloping small ridge that divides Devils Lake Fork, South Fork Gales Creek, Gales Creek and Low Divide Creek. The underlying rocks are mostly sedimentary of the Yamhill formation with intrusive igneous origin rock in both Area 1 and Area 2.

## **II. CURRENT STAND CONDITION:**

The sale area has been inventoried using the Stand Level Inventory (SLI) procedure. The stands in Area 1 and Area 3 are classified as UDS. Area 2 is 67% CSC and 33% UDS.

The overstory of all the stands is comprised almost entirely of Douglas-fir, with minor amounts of hemlock, redcedar, and hardwoods. In areas highly infected with *Phellinus*, there is more species diversity, and a higher abundance of snags and down woody debris. The understory across all areas is comprised mostly of dwarf Oregon grape, salal, vine maple, bracken fern, and sword fern. Average ground cover is estimated to be 75%.

Stand Level Inventory (SLI) cruise data indicates that there is approximately 10 snags per acre, averaged across the sale area. An average of 2 snags  $\geq$  24 inches per acre, and 1 hard snag, exists across the sale area. SLI also indicates that approximately 5000 cubic feet per acre of down woody material exists. Approximately 90 percent is of decay class 3-5.

The entire sale area has been surveyed for *Phellinus weirii*. The results indicate severe infection throughout the sale area, and a particularly high amount in Area 3.

**Table 2. Stand Inventory Information**

Area	Prescription	Stand ID <sup>1</sup>	Species	Age <sup>4</sup>	DBH	BA	TPA	SDI	Net Acres <sup>2</sup>
1	PC-M <sup>5</sup>	7694	DF	41-44	16	246	169	62	69
		7710	DF	39-44	15	193	159	50	211
		7750	DF	36-43	17	174	115	43	20
		8286	DF	47-57	19	214	114	51	6
		Target <sup>3</sup>	DF		19	140	75	34	306
2	PC-M	7725	DF	36-45	17	196	132	49	27
		7751	DF	41, 48-55	15	215	170	55	10
		7760	DF	39-41, 48-50	15	226	176	58	18
		Target <sup>3</sup>	DF		19	140	75	34	55
3	MC	7750	DF	36-43	17	174	115		57

<sup>1</sup> The source of stand inventory information is from SLI inventory grown to 2005.

<sup>2</sup> The acres are based on GIS and exclude existing and planned roads, stream buffers, green tree retention areas, and non-thinnable areas.

<sup>3</sup> The Target identifies expected stand characteristics (DBH, BA, TPA and SDI) after harvesting has been completed.

<sup>4</sup> Actual measured breast height ages are shown unless labeled "est."

<sup>5</sup>PC-M is Moderate Partial Cut, MC is Modified Clearcut

### **III. DESIRED FUTURE CONDITION/VISION:**

According to the Forest Grove district's landscape design, the desired future condition (DFC) for Area 1 is 28% OFS and 72% GEN. Area 2 is 100% GEN, and Area 3 is 100% GEN.

The ground vegetation across the sale area will be dominated by salal, dwarf Oregon grape, sword fern, huckleberry, and vine maple. Leave trees (mostly Douglas-fir), snags and DWD components will be consistent with FMP strategies. However, in portions of Areas 1 and 2, higher than normal accumulations of snags and DWD is expected. These areas have severe *Phellinus* and will not be treated in the next entry.

In portions of Areas 1 and 2 with DFC-GEN, final harvest of the stand could likely occur approximately 15-20 years post harvest. The condition of the stand at that time will be UDS. The understory will be well developed because of the numerous gaps in the overstory from naturally occurring *Phellinus* pockets and the previous thinning. It will be comprised mostly of cedar, western hemlock, minor amounts of noble fir, and other tree

species. Many of the understory trees will become the future stands overstory. Hemlock, and noble fir will have a more dominant presence than the once Douglas-fir dominated stand. The largest pockets of *Phellinus* will likely be planted with alder.

In portions of Area 1 with DFC-OFS, management begins by thinning the overstory. A well established understory will be created with the opening of the canopy after thinning and the naturally occurring *Phellinus* pockets. 15-20 years later another entry may be prudent to keep the stand on its path to OFS. An entry at this time will maintain a healthy understory and the continued vigor of the overstory. Treatment of *Phellinus* will be evaluated again and may be dependent on the occupancy of the currently existing owl circle.

Area 3 will have a final harvest age of 45-55 years. The stand will be in a UDS condition with an overstory dominated by alder and a minor component of Douglas-fir and other species. After the alder is harvested (45-50 years post-harvest), the site will be capable of supporting Douglas fir and other conifer species and will be free from *Phellinus*.

**Table 3. Stand Structure Information**

Area	Stand ID	Current	Post Harvest <sup>1</sup>	Desired Future	Net Acres
1	7694	UDS	UDS	GEN	9
				OFS	60
	7710	UDS	UDS	GEN	205
				OFS	6
	7750	UDS	UDS	GEN	8
				OFS	12
	8286	UDS	UDS	OFS	6
2	7725	CSC	UDS	GEN	27
	7751	CSC	UDS	GEN	10
	7760	UDS	UDS	GEN	18
3	7750	UDS	UDS	GEN	57

<sup>1</sup> The stand is expected to develop into this condition in the five to ten years after this operation is completed, except in REG stands which occur after harvest.

**IV. PROPOSED MANAGEMENT PRESCRIPTION AND PATHWAY:**

Areas 1 and 2 will be a Moderate Partial Cut to a SDI of 34. Area 1 will have a target residual stand of 140 ft<sup>2</sup> of basal area and average diameter of 19 inches.

Area 3 is a modified clearcut. Only Douglas-fir will be selected for harvest. Leave trees will be scattered and in clumps. Selected leave trees will be the most dominant trees and in areas with no evidence of *Phellinus*.

An application of herbicide prior to planting will kill the heavy component of brush which existed prior to harvest. This will ensure a successful establishment of alder. The alder will then be pruned and thinned as deemed necessary until final harvest.

Average estimated additions of down wood through normal logging slash accumulations will be approximately 100 ft<sup>3</sup> per acre.

**V. ESTIMATED TIMBER AND REVENUE OUTPUTS:**

**Table 4. Timber and Revenue**

Ownership		Sale Type	
BOF	CSL	Cash	Recovery
100%	0%		X
Planned Quarter:		1-4	

	Conifer	Hardwood	Total
Net Volume (MBF)	5,200		5,200
Stumpage Value (\$/MBF)	\$425.00		
Estimated Gross Value	\$2,210,000		\$2,210,000
		Project Costs:	\$295,000
		Estimated Net Value:	\$1,915,000

**VI. HARVESTING AND ACCESS CONSIDERATIONS:**

The sale areas can be accessed via Rogers Camp Road, Beaver Dam Road and Firebreak One Road. These are currently all weather, crushed rock roads. Most of the timber will have a designated hauled route out the Rogers Camp Road. This should minimize any impacts and increase safety to the heavy recreational users in the area.

To allow for sale access 3.3 miles of spur roads will be constructed and surfaced at an estimated cost of \$198,000. Improve 0.8 miles of road at an estimated cost of \$32,000. Rock will be mined from the Browns Camp Pit. Total project costs, including recreation project costs, are estimated to be \$295,000.

Roads will be predominately ridge top and gentle slope locations, and no stream crossings. The roads are necessary to access the ridge tops and timber in all parts of the sale area. The 0.8 miles of improved road will be on parts of the Rogers Camp Road and Firebreak One Road.

All sale spurs will be blocked at the conclusion of the sale.

Logging is estimated: 20% ground based and 80% cable.

**Table 5. Transportation Management Summary (Miles)**

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construction	0	0	3.3	0
Improvement	0	0	0.8	0
Maintenance	0	4.5	4.1	0
Vacation	0	0	4.1	0

**VII. AQUATIC RESOURCES AND WATER QUALITY:**

Several small seasonal and perennial Type N streams, tributaries of Gales Creek, occur within the sale boundaries. Vegetation along these streams varies from purely conifer to hardwood/conifer mix. All streams are within the Forest Practices Act Interior Zone. The FMP riparian strategies will be applied.

Seasonal hauling restrictions will be applied in order to protect the water quality on all streams along the haul route. Restrictions may include limiting the number of loads hauled per day, not hauling during periods of heavy moisture, or having an alternate haul route.

**VIII. WILDLIFE AND T&E SPECIES CONSIDERATIONS:**

The sale areas have been reviewed with the ODF Northwest Oregon Area Biologist (Area Biologist).

Rogers Break is being surveyed for spotted owls due to the presence of potentially suitable spotted owl habitat within and adjacent to the timber sale area. Suitable habitat within 1.5 miles of Rogers Break has been surveyed in 2002, 2003, and 2004 in association with this sale and other proposed timber sales in the vicinity.

There were no responses detected during the 2002 surveys.

In 2003, a female spotted owl was heard during two separate nighttime surveys. The owl was not located during the daytime follow-up visits, and there were no further responses during the three additional surveys conducted in 2003. The response locations were approximately two miles apart and were considered too distant for a resident activity pattern. Therefore, the status of the observation was classified as "non-territorial single" in 2003.

In 2004, a female spotted owl was heard between the 2003 response locations. The owl was not located during the daytime follow-up visits, and there were no further responses during the three subsequent surveys conducted in 2004. Three spotted owl observations in that area within two years of survey resulted in the establishment of an activity center and "resident single" site status.

A portion of Rogers Break is within the 1.5-mile radius circle around the spotted owl activity center. Approximately 166 acres of Area 1 and 54 acres of Area 2 are within the circle. A Biological Assessment (BA) is being prepared by the Area Biologist and will be reviewed by the U.S. Fish and Wildlife Service (USFWS) in accordance with the Agreement for the Conservation of Northern Spotted Owls (2001).

The owl circle and the 1.5-mile survey area around Rogers Break were surveyed in 2005. There were no spotted owl responses. The area will be surveyed again in 2006.

Surveys for marbled murrelets are not required, due to the absence of potentially suitable habitat within the sale area. The ODF wildlife biologist for the NW Oregon Area made the determination that the sale area is non-suitable habitat for marbled murrelets.

This operation does not involve an activity that is listed in the National Marine Fisheries Service (NMFS) adopted rules under Section 4(d) of the Endangered Species Act. Neither the sale area nor the haul route is in close proximity to a stream with listed fish.

The sale areas were checked against the Oregon Natural Heritage Program (ONHP) database of known listed plant locations, as well as against local records in the Land Management Classification System (LMCS). No listed plant records were identified within or adjacent to the sale areas.

#### **IX. SLOPE STABILITY AND GEOTECHNICAL ISSUES:**

There are nearly no steep slopes in the sale area. The initial hazard and risk assessment from the geotechnical specialist is low. If during field work high landslide hazard locations are identified the geotechnical specialist will be consulted to determine if a field visit is needed.

#### **X. RECREATION RESOURCES:**

The sale area is designated as Motorized in the Tillamook State Forest Comprehensive Recreation Plan (1993). The District Recreation Coordinator has reviewed this sale, and suggests:

The sale is within a focused recreation use area and is surrounded by various hiking trails and OHV trails, specifically the Rogers Camp Road, Firebreak One, Mark's Trail and the Crooked Bridge Trail. A certain amount of impact to the trail system is inevitable. However, much consideration will be given in order to minimize this impact as much as is deemed appropriate. Examples of steps taken may include; breaking the sale into smaller areas which have timing restrictions, designating specific haul routes, rehabilitating trails, etc..

Much of the portion of the Rogers Camp Road Trail on the southeastern edge of Area 1 will be posted outside the sale area. A spur road will be constructed along a small section of this trail. The road will be built to minimum specs and will improve the existing

condition of the affected portion. The current condition of the said portion is very wet and highly prone to erosion and contributing to stream sedimentation. There is no concentrated trail but a series of trails that weave in and out of each other. Trails that stray from the main trail and or road will be closed.

Trail improvement along portions of the Rogers Camp Road Trail will be included in the project work. Work may include grade relocation, establishing drainage features, and rocking. Improvement is estimated to be 0.5 miles at \$20,000 per mile. Estimated cost is \$10,000.

Project work will also include the crushing and stockpiling of 3,000 cubic yards of 6" minus, pit run, trail quality rock. Rock will be stockpiled at the Browns Camp stockpile location. Estimated cost is \$30,000.

Portions of Firebreak One road are designated as OHV trail. Because portions will be improved along this road, a new trail around the existing road will be included in project work. Work may include grade construction, culvert or drainage feature installation, and rocking. New trail construction is estimated to be 0.75 miles at \$20,000 per mile. Estimated cost is \$15,000.

There are some trails that currently exist, but are not designated as trails. Many of these types of trails will be blocked at points where they intersect logging roads. Some may need to be evaluated by the recreation department to determine their value and if portions need to be maintained or kept open for use. Project work will allow 60 hrs of equipment time to block, rehabilitate, or improve designated sections of these trails. Estimated cost is \$10,000.

Total Project Costs for Recreation is estimated to be \$65,000.

## **XI. CULTURAL RESOURCES:**

The sale area and proposed road construction right-of-way were checked against the Tillamook State Forest Cultural Resource Inventory Database (GIS format). No cultural resource records were identified within or adjacent\* to the operation areas. If any significant cultural resources are located during sale preparation, the Public Use Coordinator (ODF Salem Staff) will be consulted regarding potential protection measures.

*\*Adjacent refers to approximately one tree length from an operation area. For the purpose of this screen, a 200 foot buffer around the sale boundary and proposed road construction right-of-way was assessed for cultural resource locations.*

**XII. SCENIC RESOURCES:**

The sale area is in a landscape of Moderate Visual Sensitivity (Level 2). Visual management considerations have been taken. The prescription will leave a residual stand which will have no negative visual impacts from the Highway.

**XIII. OTHER RESOURCE CONSIDERATIONS:**

None of significance.

**XIV. LAND MANAGEMENT CLASSIFICATION SUMMARY:**

Areas 1, 2, and 3 contain Focused and Special Stewardship, Aquatic and Riparian Habitat Subclass, due to the presence of perennial streams within the sale areas. See Section VII, Aquatic Resources and Water Quality, for the management guidelines to be utilized. The three sale areas are Focused Stewardship, Recreation Subclass. See Section X, Recreation Resources, for the strategies that will be implemented to minimize impacts to trail resource. Area 1 contains Focused Stewardship, Visual Subclass. See Section XII, Scenic Resources, for a discussion of scenic considerations. Areas 1 and 2 contain Special Stewardship, Operationally Limited Subclass. The Geotechnical Specialist will conduct an onsite evaluation of the sale areas for slope stability. See Section IX, Slope Stability and Geotechnical Issues for further discussion.

# Preliminary Biological Assessment of the Rogers Break Timber Sale: Potential Impacts to the Gales Creek Northern Spotted Owl Site

**Prepared by:** Clint Smith

**Date:** 3 February 2006

## INTRODUCTION

### Purpose

Forest Grove District is including a sale (Rogers Break) that is partially located within 1.5 miles of the Gales Creek northern spotted owl activity center (owl circle) (see Figure 1). The purpose of this Biological Assessment (B.A.) is to describe habitat conditions within the Gales Creek owl circle and within the sale area. This B.A. includes a discussion on the biological risks of proceeding with this sale on the Gales Creek site, and a discussion on compliance with the "Agreement for the Conservation of Northern Spotted Owls."

Thanks to Laurie O'Nion for her assistance in performing the suitable habitat analyses, for providing historic harvest areas and other essential information, and to Marcia Humes for her careful edits and input.

### Policy Direction

Agreement for the Conservation of Northern Spotted Owls. On 5 September 2001, ODF signed an "Agreement for the Conservation of Northern Spotted Owls" with the U.S. Fish & Wildlife Service.

Requirements of this Agreement relevant to this Biological Assessment include:

- Where information is lacking on actual home ranges, the Department agrees to use a circle with a 1.5 mile radius around an active spotted owl site to represent the home range.
- For Pair sites without telemetry information, a 250 acre core use area may be designated...All owl (pair) sites which do not have a core use area determined...shall have core use areas consisting of a 600 meter radius around the center of each owl site.
- The Department agrees not to log or authorize logging on current and future state lands when the logging results in less than 500 acres of suitable owl habitat within a 0.7 mile radius of an owl site; or that results in less than 40 percent coverage of suitable owl habitat within the home ranges of owls in the North Coast.
- Additionally, the Department agrees not to log medium and high quality habitat within a .7 mile radius of an owl site when these habitats constitute less than 500 acres within the .7 mile radius.
- And, the Department agrees not to log medium or high quality habitat within a northern spotted owl home range when these habitats constitute less than 40% of the acreage within the home range. (Note: 40% of a 1.5 mile radius circle is 1809 acres.)
- Suitable northern spotted owl habitat is defined for purposes of this Agreement as low, medium and high quality habitat the Department identified as suitable owl habitat in its 1998 mapping of State Forest lands (Exhibit 3 in the Agreement), provided the area in question has not been logged since the mapping. Areas within an owl home range which do not occur on State Forest lands shall be evaluated for suitability on the same method used to generate the 1998 maps... (Note: Although the Agreement defines suitable habitat slightly differently, Exhibit 3 has been updated using 2001 grow forward OSCUR data and using the following criteria (Mike Wilson, ODF, pers. comm.):
  - Non-habitat <12" DBH
  - Low Quality Habitat 12-17" DBH

- Medium Quality Habitat 18-25" DBH
- High Quality Habitat 26"+ DBH)
- Areas within an owl home range which do not occur on State Forest lands shall be evaluated for suitability on the same method used to generate the 1998 maps

State Forests Program Spotted Owl Strategies for Annual Operation Plan development (General File # 3-2-1-333.1). states "the agreement includes standards for defining suitable habitat for northern spotted owls in Astoria, Forest Grove and Tillamook. The definitions in the agreement have been adjusted to make them more operational. ODF biologists may review an area of "low quality" and determine that it is not suitable and does not require survey. This same consideration of "low quality habitat" will be taken when the areas are considered for inclusion in the acreage required for protection under the ODF/USFWS agreement. This protection measure provision has been applied as of the 04 AOP. General criteria for applying the "low quality" habitat screening process has been developed, and is found in Attachment A of "Northern Spotted Owl Surveying on State Forest Lands (11-02)." This BA includes this suggested review of "low quality" habitat.

## **BACKGROUND**

### **Survey History and Site Information**

This site was originally called Roger's Neighborhood. In 2003, there were two female night responses, along with an unknown-sex response. The first two responses occurred about 2 miles away from each other. This was considered too distant for a resident activity pattern, so the site was designated non-territorial single. In 2004, a nighttime female response was located between the 2003 response locations. The 2003 and 2004 responses were combined, and site status was changed to resident single. The name was changed to Gales Creek, and the AC was placed near the 2004 response. There were no responses in 2005 (Kingfisher 2005).

The true identity of this female spotted owl is unknown. It has not yet been possible to determine if the bird is banded. There is a possibility that the observations represent the female that formerly occupied the Little Beaver site. This female was last observed at the Little Beaver site (determined Historic in 2003) in 1999, then was confirmed at the Iler Creek site (upgraded to Pair in 2005) in 2003 and 2005 (not surveyed in 2004). It is possible that the Gales Creek site represents part of this female's home range, especially during non-nesting years, or potentially an alternate territory. Locations of the Little Beaver and Iler Creek sites in relation to the Gales Creek site are shown in Figure 2.

Another possible hypothesis is that this site is occupied by a different owl (or pair of owls) and that this (these) owl(s) normally reside in an area that is not well covered by road-based surveys. There is a large stand on the hillside directly above the activity center with many large, scattered residual trees. It is possible that a bird within the center or upper portions of this stand would not be readily detected by road-based surveys.

### **Sale Area Information**

The following discussion is from Forest Grove District's Preliminary Pre-Operations Report. Note that Area 3 of the proposed sale is not located within the owl circle, so I have omitted portions of this discussion referring only to Area 3.

"The sale has been inventoried using the Stand Level Inventory (SLI) procedure. The stands in Area 1...are classified as UDS. Area 2 is 67% CSC and 33% UDS.

The overstory of... all the stands are almost entirely Douglas-fir, with minor amounts of hemlock, redcedar, and hardwoods. In areas highly infected with *Phellinus*, there is more

species diversity, and a higher abundance of snags and down woody debris. The understory across all areas is comprised mostly of dwarf Oregon grape, salal, vine maple, bracken fern, and sword fern. Average ground cover is estimated to be 75%.

Stand Level Inventory (SLI) cruise data indicate...that there...(are) approximately 10 snags per acre, averaged across the sale area. An average of 2 snags  $\geq 24$  inches per acre, and 1 hard snag, exist...across the sale area. SLI also indicates that approximately 5000 cubic feet per acre of down woody material exists. Approximately 90 percent is of decay class 3-5.

The entire sale area has been surveyed for *Phellinus weirii*. The results indicate severe infection throughout the sale area..."

### **Sale Prescription**

The following discussion is from Forest Grove District's Preliminary Pre-Operations Report. Note that Area 3 of the proposed sale is not located within the owl circle, so I have omitted portions of this discussion referring only to Area 3.

"Areas 1 and 2 will be a Moderate Partial Cut to a SDI of 34. Area 1 will have a target residual stand of 140 ft<sup>2</sup> of basal area and average diameter of 19 inches.

...(Discussion specific to Area 3 was not included)...

Average estimated additions of down wood through normal logging slash accumulations will be approximately 100 ft<sup>3</sup> per acre."

## **ASSUMPTIONS AND METHODS**

### **Defining the home range**

The home ranges and habitat use of the bird using the Gales Creek site are not known. Known owl locations are plotted in Figure 1, but this represents incomplete information. The Activity Center is based on survey locations, rather than on an actual nest location. If spotted owls are found nesting in this landscape in the future, the activity center location could shift significantly, so the habitat analyses presented in this report should be considered tentative based upon existing owl information.

Anthony et al. (1999) found that spotted owls in 2<sup>nd</sup> growth forests in the northern Oregon Coast Range frequently have very large home ranges, extending well beyond 1.5 miles. In the absence of better information on the home ranges of any birds using the site, the following discussion on the habitat situation will describe stand conditions within a 1.5 mile radius around the established activity centers, as required by the Agreement for the Conservation of Northern Spotted Owls

### **Defining Suitable Habitat**

It is difficult to define suitable habitat for spotted owls in younger forests. Documentation provided with the "Procedures Leading to Endangered Species Compliance for the Northern Spotted Owl" (U.S. Fish & Wildlife Service, 1990) describes spotted owl suitable habitat as stands that exhibit:

"...moderate to high canopy closure; a multilayered, multispecies canopy dominated by large overstory trees; a high incidence of large trees with large cavities, broken tops, and other indications of decadence; numerous large snags; heavy accumulations of logs and other woody debris on the forest floor; and considerable open space within and beneath

the canopy. These attributes are usually found in old growth, but they are sometimes found in younger forests, especially those that contain remnant large trees or patches of large trees from earlier stands...It is important to note that the age of forests is not as important a factor in determining habitat suitability as are vegetational and structural components..."

The majority of stands used by spotted owls on ODF ownership do not meet the above definition of suitable habitat.

ODF has some data on the use of younger forest types from North Coast spotted owl sites on ODF lands. An attempt to create a habitat suitability index (HSI) for spotted owls was conducted by Islam et al. (1997). Although this investigation was limited by various factors, the major finding was a positive correlation between owl site occupancy and the acreage of stands averaging 18 inches or greater in DBH (according to ODF's OSCUR timber inventory database) within ¼ and ½ mile of the owl site activity center.

A telemetry study of several owls on the Clatsop State Forest (Anthony et al. 1999) found many spotted owl foraging locations in smaller diameter stands averaging 12-13 inches and greater. The investigators in the HSI study noted that many owl responses had occurred in stands ranging from 12-17 inches in average DBH, but that there was no correlation between this size class and owl occupancy. They thought that some stands less than 18 inches DBH probably were suitable to some degree, but the attributes that determine that suitability were not apparent. The telemetry study and a concurrent study of habitat in areas where owls were located (Tappeiner et al. 1999) have found that hardwoods, especially hardwood/conifer edges, are an important component of spotted owl foraging habitat in both the Clatsop and Elliott State Forests. The habitat study also found that spotted owl nesting and foraging sites had larger average DBH and fewer trees per acre than non-use areas. So, other factors in addition to DBH that contribute to spotted owl habitat quality likely include hardwoods (especially hardwood/conifer edges), stand age, snags, down wood, and horizontal diversity.

My observation is that within many of the younger stands used by spotted owls on ODF ownership, suitable habitat occurs at the patch rather than at the stand level. This may help explain why spotted owls living in landscapes on ODF ownership, with amounts of 'habitat' that greatly exceed the minimum recommendations of the Incidental Take Guidelines, have such poor demographic performance (Anthony et al. 2000). It may take many more acres of younger stands to provide the number of suitable habitat patches that would be contained in a much lesser acreage of old-growth forest. The energetics of a bird moving between the more sparsely distributed habitat patches also may reduce viability. Therefore, retaining 2<sup>nd</sup> growth 'habitat' at or near the minimum standards could result in negative impacts to individual spotted owl sites.

Because of the correlation between acreage of 18"+ DBH stands to spotted owl occupancy (Islam et al. 1997), it may be reasonable to assume that these stands provide suitable habitat for spotted owls. However, the majority of the 18"+ DBH stands on ODF ownership do not contain all the structural components described in the earlier paragraph. From a biological perspective, not all stands averaging 12"+ DBH provide suitable habitat for spotted owls. Indeed, I routinely make determinations that 12-17" DBH stands within and adjacent to proposed sale areas do not provide suitable spotted owl habitat based upon stand density, structural diversity, and tree diversity (State Forests Program Spotted Owl Strategies for Annual Operation Plan development, General File # 3-2-1-333.1).

### **Habitat on Private Ownership**

Habitat acreages on private industrial and non-industrial ownership within this owl circle were estimated using aerial photo analysis combined with ground-truthing. Because I do not have access to timber inventory data for the private ownership, the habitat information is not directly comparable to the ODF OSCUR data. For the private ownership, I evaluated habitat using the criterion: "If ODF were proposing a timber sale in a comparable stand, would I recommend spotted owl surveys?" I ground-truthed habitat quality within portions of the owl circle. I used the knowledge gained from on-site visits to calibrate my

interpretation of the aerial photos. Harvest units on private ownership were obtained from the local ODF Forest Practices Forester. Laurie O'Nion mapped more recent private harvest activities after analyzing recent Forest Practices notifications.

All stands were digitized and acreages were calculated using ArcView.

### **Assessment of Habitat on ODF Ownership**

As directed by current policy (State Forests Program Spotted Owl Strategies for Annual Operation Plan development General File # 3-2-1-333.1), I have conducted a site-specific assessment of habitat suitability on the 11-17" DBH stands on ODF ownership. I conducted the majority of this assessment using recent stereo aerial photograph. I ground-truthed a limited number of stands that, from aerial photo interpretation, appeared to be denser and simpler than most of the 12-17" DBH stands within the owl circle. The standard for habitat suitability was the same as that used for the private ownership analysis: "If ODF were proposing a timber sale in a comparable stand, would I recommend spotted owl surveys?"

My intent in this exercise was to categorize stands by OSCUR type, not to re-draw types. So, stands where 'suitable habitat' predominated within the OSCUR type were classified as 'suitable', and stands where unsuitable habitat predominated was classified as 'unsuitable'. The majority of the 12-17" stands within this landscape are characterized by relatively high amounts of horizontal diversity, largely due to *Phellinus* infection. There are many patches of small, simple Douglas-fir that on their own might be classified as unsuitable. However, within most of the types, there also are scattered *Phellinus* patches, hardwood patches and stringers, and patches of wider spaced trees. A few types also contained some patches of large, residual trees. These stands were classified as 'suitable', although various sized patches of 'unsuitable' habitat were scattered throughout many of the types.

There has been a fairly large amount of recent harvest activity within the Gales Creek owl circle over the past 10 years. Units harvested since 1998 were not classified as 'suitable' habitat as per the Agreement. There also are two areas that were harvested in 1997 (Figure 1), which under the Agreement can be considered suitable for spotted owls. One harvest area in the extreme southeastern portion of the owl circle has an average DBH of >17" according to OSCUR. However, much of this area has <70% canopy closure due to the *Phellinus* treatment prescription, so I have classified areas with <70% canopy closure (ID'd on aerial photos with some ground truthing) as 'non-suitable' as specified in the Agreement. In the southwestern portion of the owl circle, is another area harvested in 1997 that ranges between 12-17" DBH according to OSCUR. This all would be classified as 'suitable' under the Agreement; however, I have typed out areas having low canopy cover due to the *Phellinus* treatment, and summarized these areas as 'non-habitat' in Tables 1-2 and 4-5.

## **IMPACTS ASSESSMENT AND DISCUSSION**

### **Landscape Analysis**

Figure 1 shows the spotted owl activity center, spotted owl observations, timber sale location, and average stand ages and diameters (based on ODF's OSCUR timber inventory database – Stand02) on ODF ownership within the Gales Creek owl circle

Average stand DBH on ODF ownership and suitable habitat on private ownerships within 0.7 miles of the Gales Creek A.C. are summarized in Tables 1 and 2; stand age on ODF is summarized in Table 3. Acreages reported in these tables are approximate.

Average stand DBH on ODF ownership and suitable habitat on private ownerships within 1.5 miles of the Gales Creek A.C. are summarized in Tables 4 and 5; stand age on ODF is summarized in Table 6. Acreages reported in these tables are approximate.

Currently there are 835 acres of ODF stands averaging at least 12" DBH within 0.7 miles of the Gales Creek A.C. that I would consider suitable spotted owl habitat (Tables 1&2). Within the 0.7-mile radius circle, 0 acres are aged >60 years, 807 acres are aged 50-59, and 46 acres are aged 40-49 years, and 1 acre is <40 years old (Table 3). 41 acres of suitable habitat stands 12" and greater DBH are within recently harvested sales, reducing acreage of potential habitat on ODF within the 0.7 mile circle to 794 acres (Tables 1&2). I have identified 4 acres of suitable habitat on private ownerships within the 0.7 mile circle, increasing habitat acres to 798 acres. Rogers Break will not modify habitat within the 0.7-mile circle.

Currently there are 3080 acres of ODF stands averaging at least 12" DBH within 1.5 miles of the Gales Creek A.C. that I would consider suitable spotted owl habitat (Tables 4-5). Within the 1.5-mile radius circle, 17 acres are aged >60 years, 2873 50-59, and 704 acres are aged 40-49 years (Table 6). 432 acres of suitable habitat stands 12" and greater DBH are within recently harvested sales, reducing acreage of ODF potential habitat within the owl circle to 2648 acres (Tables 1-2). I have identified 217 acres of suitable habitat on private ownerships within the owl circle, increasing habitat to 2865 acres. Rogers Break will modify 226 acres of suitable habitat stands averaging 12-17" DBH and aged 50 to 69 years, reducing habitat acres to 2639 acres. So, amount of suitable spotted owl habitat within the Gales Creek owl circle is well in excess of the standards outlined in the Agreement.

### Cumulative Impacts

There have been several recent sales within the Gales Creek spotted owl circle:

<u>Sale Name</u>	<u>Acres within Owl Circle</u>	<u>% of Circle</u>	<u>Year Harvested</u>
Storey Burn Road Thin #2	517	11.5	1997
Fire Break One Thin	81	1.8	1997
BLT Deluxe	2	0	1999
Wil Rogers Thin	79	1.8	1999
Storey Burn Combo	124	2.8	2001
Parkview	220	4.9	2001
Upper Drift	30	0.7	2002
<b>Acres harvested since 1997</b>	<b>1053</b>	<b>23.5</b>	
Rogers Break	232	5.2	
	1285	28.7	

As directed by the Agreement, sales harvested in 1998 or later are not considered to provide suitable spotted owl habitat. Under the Agreement, areas harvested before 1998 are considered suitable. However, the 1997 sales included *Phellinus* treatment which resulted in many patch clearcuts within the units. So when I conducted my suitability review of the 12-17" DBH types, I typed out the areas with high-density of patch cuts as 'non-suitable,' and included the more traditional thinning areas as 'suitable' habitat. In stands >17" DBH, I also typed out areas with <70% canopy closure as 'non-suitable.'

Most of the sales harvested after 1998 also included *Phellinus* treatments. Therefore, I anticipate that large portions of these sale areas will not recover to the point of providing suitable spotted owl habitat for many years.

### Discussion

Habitat Suitability. The Gales Creek spotted owl circle is predominately forested by young stands aged 47-52 years old and averaging 13-16" DBH (in 2002). Normally, it would be unusual to find a resident spotted owl site within a landscape supporting such young stands. However, there are two exceptional circumstances that may pre-dispose this area to spotted owl occupancy:

- There is a 154 acre type that contains numerous (3 per acre according to OSCUR) scattered residual old-growth Douglas-fir trees. There have been no spotted owl responses within this type; however, it is a large type with poor road survey access. It is possible that a spotted owl deep

- within this type would not be detected by road-based surveys. The OSCUR comments field within this type also reads "*Phellinus* pockets numerous throughout."
- Most of the stands within this owl circle are heavily infected with *Phellinus* root rot. This root disease results in increased fine-scale patch diversity within a stand and causes steady recruitment of snags and down wood within the stands. In my opinion, the prevalent *Phellinus* infection within this landscape has resulted in stands that have higher habitat capacity for spotted owls than is indicated by age and DBH alone.

Due to small tree size and dense stocking, many of the stands of 'suitable' habitat within this owl circle (especially within the western and northwestern portions of the circle) would be best described as 'barely suitable' or 'marginally suitable.' What this means is that without the *Phellinus* infection, I likely would have classified more stands as '12-17" non-habitat' based on dense stocking and low structural diversity. Still, rather than 'stands of suitable habitat,' most of these stands should be considered to be 'stands where patches of suitable habitat are present.' In my opinion, the density of suitable habitat patches within these stands is correlated with the severity of the *Phellinus* infection.

Because of the prevalence of low quality habitat in this landscape, it is likely that a spotted owl living within this landscape would range beyond 1.5 miles. This is supported by the relatively large home range sizes observed during the recently completed radio-telemetry study conducted on ODF lands in Clatsop County (Anthony et al. 1999).

#### **Anticipated Impacts of the Harvest Prescription.**

*Short Term.* The short-term impacts of the proposed harvest prescription are difficult to assess. My experience has been that logging activity results in the loss of decadence within the managed stands, especially within the more decayed down logs and snags. The harvest activity also likely will result in a short-term simplification of understory structure due to mechanical damage.

The moderate thinning prescription should not render suitable habitat unusable for spotted owls; however, recent thinning in this landscape tend to have a 'disturbed' look for several years after thinning. In the late '90s ODF sponsored a case study looking at spotted owl habitat use before and immediately after a commercial thinning that was designed to be non-detrimental in the short term (Meiman, et al. 2003). In this case study, spotted owls shifted their habitat use away from the recent commercial thinning immediately after harvest. We do not have information on if or when the owls would again use the area as they did prior to harvest.

*Long Term.* The thinning prescription will allow more light to reach the forest floor, so in addition to increasing stand diameter growth, over the long term the thinning should also increase understory growth and potentially lead toward stand layering. Over time, progression of the *Phellinus* infection should result in continued recruitment of decadence, as well as enhancement of fine-scale patch diversity. So, over the long term, careful implementation of the proposed management prescription likely will lead to higher quality spotted owl habitat.

## **CONCLUSIONS AND RISK ASSESSMENT**

### **Biological Risk**

Over the past 10 years, spotted owls have been pioneering developing habitats within the Forest Grove District. Some sites have been ephemeral, and other sites have been more stable. There is not sufficient information at this time to determine whether or not the Gales Creek site will be one of the more stable, long-term sites. However, current habitat conditions are such that I believe that this site could support a stable resident spotted owl site over the near term:

- There is a large stand near the A.C. with many scattered residual trees that makes a likely core area,
- *Phellinus* is prevalent throughout the owl circle, increasing decadence and horizontal diversity within the stands
- There is a fairly large amount of suitable (albeit low quality) owl habitat within the circle that should continue to improve over time with careful management.

A large number of acres of suitable habitat on ODF ownership within this owl circle (almost 25% of the circle) has been managed since 1997. Most of these management prescriptions have included aggressive *Phellinus* treatment, which I believe has reduced the short- and long-term ability of the treated stands to function as suitable spotted owl habitat.

To date, there have been very few spotted owl observations within this owl circle. One of the four observations to date was within the Rogers Break sale area (Figure 1). Another observation was located near the sale boundary.

Harvest of this sale will impact some of the last remaining un-managed stands within and outside the southeastern portion of the owl circle (Figure 1). If the Gales Creek owl circle is being used by the Iler Creek female (see Survey History and Site Information), this area likely provides important connectivity with the Iler Creek circle to the southeast. Note that the amount of suitable habitat within the Iler Creek site is below the requirements of the Agreement ("Updated Final Biological Assessment of the Schmidlin Timber Sale: Potential Impacts to the Iler Creek Northern Spotted Owl Site, Prepared by Clint Smith, 16 November 2005).

If this owl circle is being used by a separate resident bird (or pair), it seems reasonable, based on past observations, to conclude that the Rogers Break sale area will impact an important part of this bird's home range (Figure 1).

Because of distance from the activity center and surplus of habitat acres above that required by the Agreement, harvest of Rogers Break does not currently pose a 'High' risk to the Gales Creek site.

When I originally drafted this BA, the harvest prescription called for *Phellinus* treatment, similar to the previous sales within this owl circle. With the proposed *Phellinus* treatment, I anticipated harvest of the Rogers Break sale would pose a 'Moderate' risk to viability of the Gales Creek spotted owl site. This determination was largely based on the cumulative impacts of almost 30% of the owl circle being operated upon in less than 10 years (plus additional operations on non-ODF ownership), combined with the detrimental habitat impacts of the *Phellinus* prescription.

Since the original draft of this BA, the District has changed the management prescription to moderate thinning without *Phellinus* treatment. I believe this prescription change significantly reduces the short- and long-term impacts on spotted owl habitat quality, and so reduces the risk to the owl site. However, I still think this is not a 'no-risk' activity because of:

- large amount of recent activity, especially in northeastern, eastern, southeastern, and southwestern portions of the owl circle, and
- One of four total spotted owl observations is located within the Rogers Break sale area and another is located very near the boundary.

If a similar activity were proposed within this owl circle in the next several years, I anticipate it would have a higher biological risk. Factors to consider for future operations that may have lower risk include:

- Target lower quality habitat (smaller and denser stands) for operation.
- Target smaller harvest units, maximizing edge between thinned and un-thinned units.
- Target light-moderate thinnings without *Phellinus* treatment to minimize short-term impacts.
- Focus on areas away from recent harvest units and away from spotted owl observations.

In conclusion, I anticipate that harvest of the Rogers Break sale, as currently proposed, would pose a 'low' risk to viability of the Gales Creek spotted owl site

## **Compliance with the Agreement for the Conservation of Northern Spotted Owls**

Habitat acreages within the Gales Creek owl circle are well above the standard required by the Agreement. Therefore, proceeding with this sale is consistent with the requirements of the Agreement.

## **CONSULTATION**

Herman Biederbeck, District Wildlife Biologist with Oregon Department of Fish & Wildlife has reviewed the final draft of this BA. His comments are included as Attachment 1.

## **LITERATURE CITED**

- Anthony, R.G., B. Glenn, K. Swindle, & M. Hansen. 1999. Home range and habitat use of northern spotted owls on state forest lands in the Oregon Coast Range. Final research report to the Oregon Department of Forestry. 114 pp.
- Anthony, R.G., M.C. Hansen, K. Swindle, & A. Ellingson. 2000. Effects of forest stand manipulations on spotted owl home range and use patterns: a case study. Final draft report to the Oregon Department of Forestry, November 2000. 16 pp.
- Bureau of Land Management (BLM). 2000. Delineation and management of reserve pair areas within Oregon's Northern Coast Range Adaptive Management Area. (This document is intended to be used as supplemental management guidance to the *Northern Coast Range Adaptive Management Guide* (January, 1997) and the *Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area* (January, 1998).) June 1, 2000. 12 pp. Plus 2 Appendices.
- Islam, K., R. Anthony, M. Hansen, and E. Forsman. 1997. Habitat Suitability Index for the northern spotted owl on Oregon Department of Forestry lands. Report to the Oregon Department of Forestry. April 1997.
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- U.S. Fish & Wildlife Service. 1990. Procedures leading to endangered species compliance for the northern spotted owl. U.S. Fish and Wildlife Service, Region 1, July 1990. 15 pp.
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Bob Gustavson, Forest Grove  
Marcia Humes, Salem  
Herman Biederbeck, ODFW, Tillamook  
Jodi Kroon, Salem
- Mitch Taylor, Forest Grove  
Laurie O'Nion, Forest Grove  
Mike Cafferata, Forest Grove  
Rob Nall, Salem

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Table 1. Average Stand DBH (according to ODF's OSCUR timber inventory database -- 'Stand02' and photo/ground review on non-ODF) within 0.7 miles of the Gales Creek Northern Spotted Owl Activity Center.

Note: On non-ODF ownerships, this table assumes that all 'non-suitable' is <12" DBH and 'suitable habitat is 12-17" DBH.

DBH	ODF Ownership								Private Ownership		Total Habitat after ODF timber sales
	Total ODF Acres		Recent Harvests		Rogers Break Sale		Acres Outside Sales		Suitable	Non-Suitable	
	Suitable	Non-suitable	Suitable	Non-suitable	Suitable	Non-suitable	Suitable	Non-suitable			
0-11	--	16	--	4	--	0	--	12	--	77	--
12-17	796	48	41	--	0	0	755	48	4	--	759
18-25	39	--	0	--	0	--	39	--	--	--	39
26"+	0	--	0	--	0	--	0	--	--	--	0
<b>Total</b>	<b>835</b>	<b>64</b>	<b>41</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>794</b>	<b>60</b>	<b>4</b>	<b>77</b>	<b>798</b>

Table 2. Suitable Spotted Owl habitat within 0.7 miles of the Gales Creek Northern Spotted Owl Activity Center.

	Suitable	Non-Suitable
ODF	835	64
Private	4	77
<b>Total</b>	<b>839</b>	<b>141</b>
Recent Harvests	41	4
Rogers Break	0	0
<b>Remaining</b>	<b>798</b>	

Table 3. Stand age (according to ODF's OSCUR timber inventory database -- 'Stand02') on ODF ownership within 0.7 miles of the Gales Creek Northern Spotted Owl Activity Center.

Age	ODF Acres	Recently Harvested	Acres within Rogers Break	ODF Acres Outside Sales
0-39	1	0	0	1
40-49	46	1	0	45
50-59	851	44	0	807
60-69	0	0	0	0
70-99	0	0	0	0
100+	0	0	0	0
<b>Totals</b>	<b>898</b>	<b>45</b>	<b>0</b>	<b>853</b>

Table 4. Average Stand DBH (according to ODF's OSCUR timber inventory database -- 'Stand02' and photo/ground review) within 1.5 miles of the Gales Creek Northern Spotted Owl Activity Center.

Note: On non-ODF ownerships, this table assumes that all 'non-suitable' is <12" DBH and 'suitable habitat is 12-17" DBH.

DBH	-----ODF Ownership-----								Private Ownership		Total Habitat after ODF timber sales
	Total ODF Acres		Recently Harvested		Rogers Break Sale		Acres Outside Sales		Suitable	Non-Suitable	
	Suitable	Non-suitable	Suitable	Non-suitable	Suitable	Non-suitable	Suitable	Non-suitable			
0-11	--	352	--	20	--	6	--	326	--	495	--
12-17	2785	296	257	--	224	0	2304	296	217	--	2521
18-25	295	54	175	--	2	--	118	--	--	--	118
26"+	0	--	0	--	0	--	0	--	--	--	0
<b>Total</b>	<b>3080</b>	<b>702</b>	<b>432</b>	<b>20</b>	<b>226</b>	<b>6</b>	<b>2422</b>	<b>622</b>	<b>217</b>	<b>495</b>	<b>2639</b>

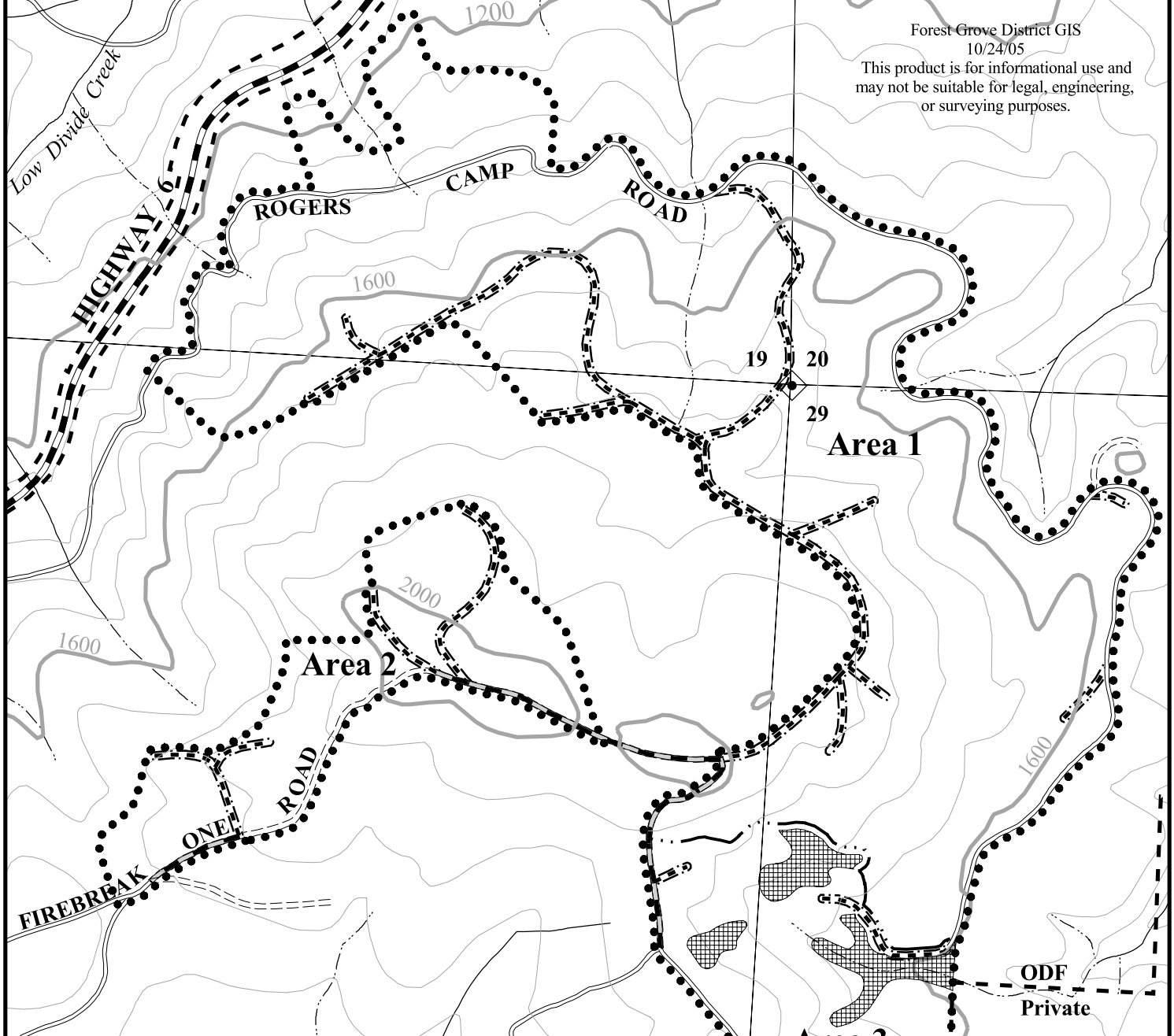
Table 5. Suitable Spotted Owl habitat within 1.5 miles of the Gales Creek Northern Spotted Owl Activity Center.

	<b>Suitable</b>	<b>Non-Suitable</b>
<b>ODF</b>	3080	702
<b>Private</b>	217	495
<b>Total</b>	3297	1197
<b>Recent Harvests</b>	432	20
<b>Rogers Break</b>	226	6
<b>Remaining</b>	2639	

Table 6. Stand age (according to ODF's OSCUR timber inventory database -- 'Stand02') on ODF ownership within 1.5 miles of the Gales Creek Northern Spotted Owl Activity Center.

<b>Age</b>	<b>ODF Acres</b>	<b>Recently Harvested</b>	<b>Acres within Rogers Break</b>	<b>ODF Acres Outside Sales</b>
<b>0-39</b>	190	<1	5	185
<b>40-49</b>	704	56	44	604
<b>50-59</b>	2873	396	183	2294
<b>60-69</b>	17	<1	0	17
<b>70-99</b>	0	0	0	0
<b>100+</b>	0	0	0	0
<b>Totals</b>	<b>3784</b>	<b>452</b>	<b>232</b>	<b>3100</b>

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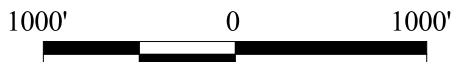


FY 2007  
Rogers Break  
Sec. 19,20,29,30, and 32  
T02N, R05W, W.M.  
Washington County

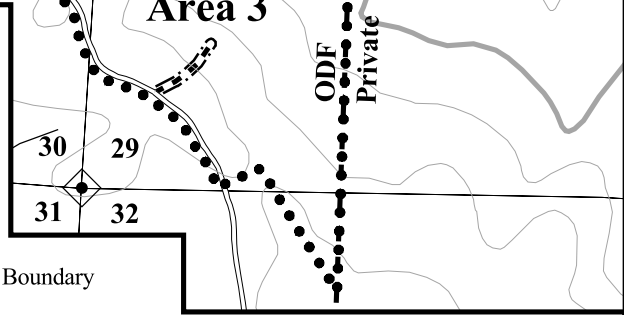
Attachment A: Topography

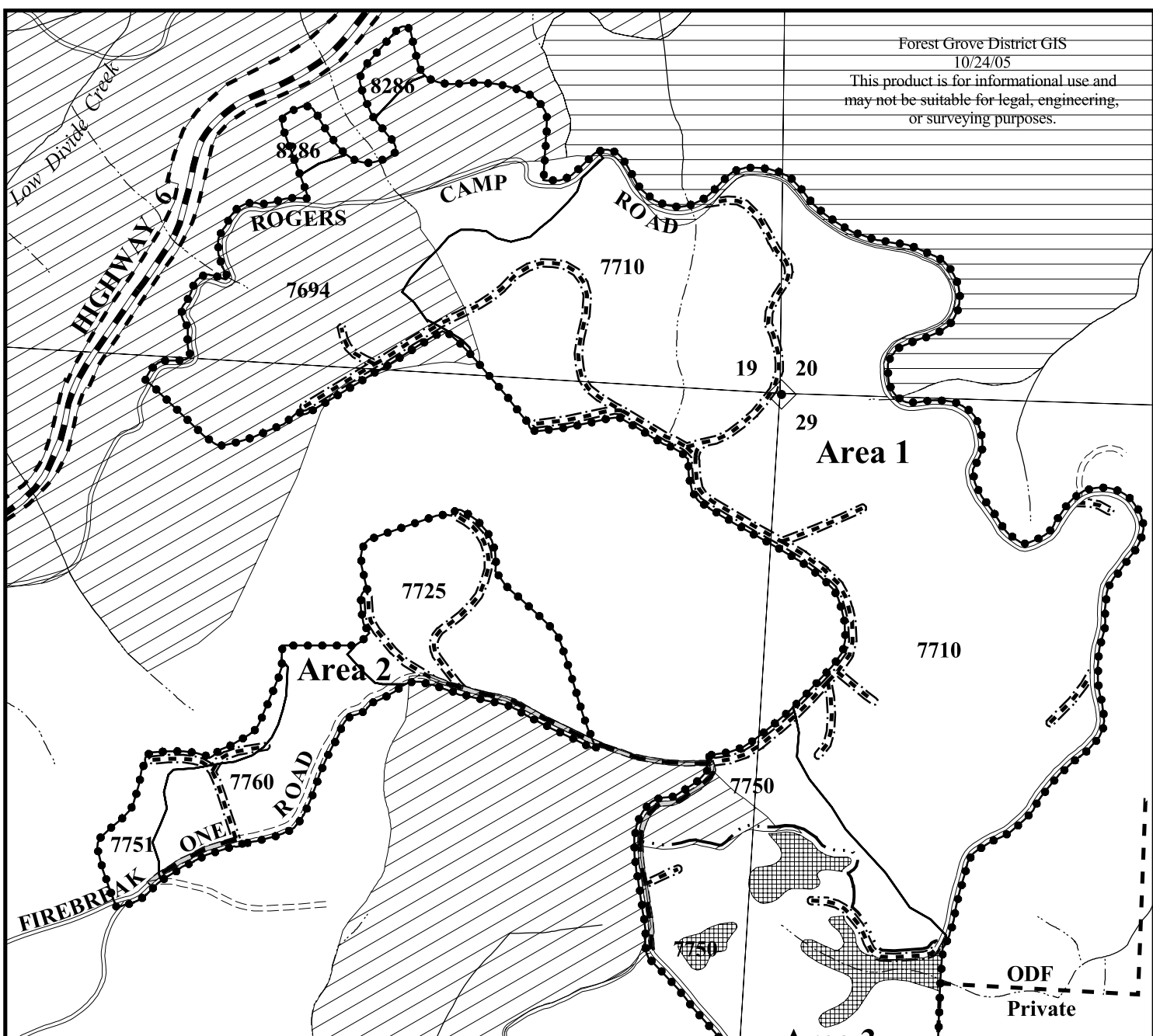
Approximate Net Acreage:  
Area 1: 306 Acres (PC-M)  
Area 2: 55 Acres (PC-M)  
Area 3: 57 Acres (MC)  
TOTAL: 418 Acres

1 : 12000  
1 Inch = 1000 Feet



- Timber Sale Boundary
- · · — Sale Area Boundary
- · - · - Right-of-Way Boundary
- ▬▬▬ Highway
- ▬▬▬ Existing Roads
- - - - - Construction, Surfaced
- ▬▬▬ Improvement, Surfaced
- ▬▬▬ Perennial - Type F Streams
- · - · - Perennial - Type N Streams
- ▬▬▬ 400' Contour Intervals
- ▬▬▬ 80' Contour Intervals
- ▣▣▣ Green Tree Retention
- - - - - ODF Ownership



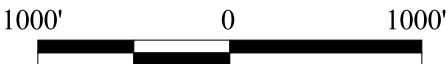


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Rogers Break  
Sec. 19,20,29,30, and 32  
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Washington County

Attachment B: Desired Future Condition

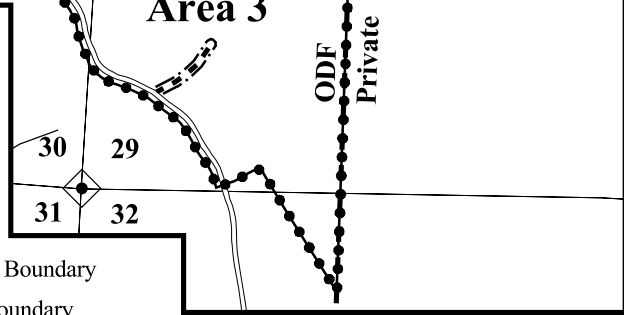
Approximate Net Acreage:  
Area 1: 306 Acres (PC-M)  
Area 2: 55 Acres (PC-M)  
Area 3: 57 Acres (MC)  
TOTAL: 418 Acres

1 : 12000  
1 Inch = 1000 Feet

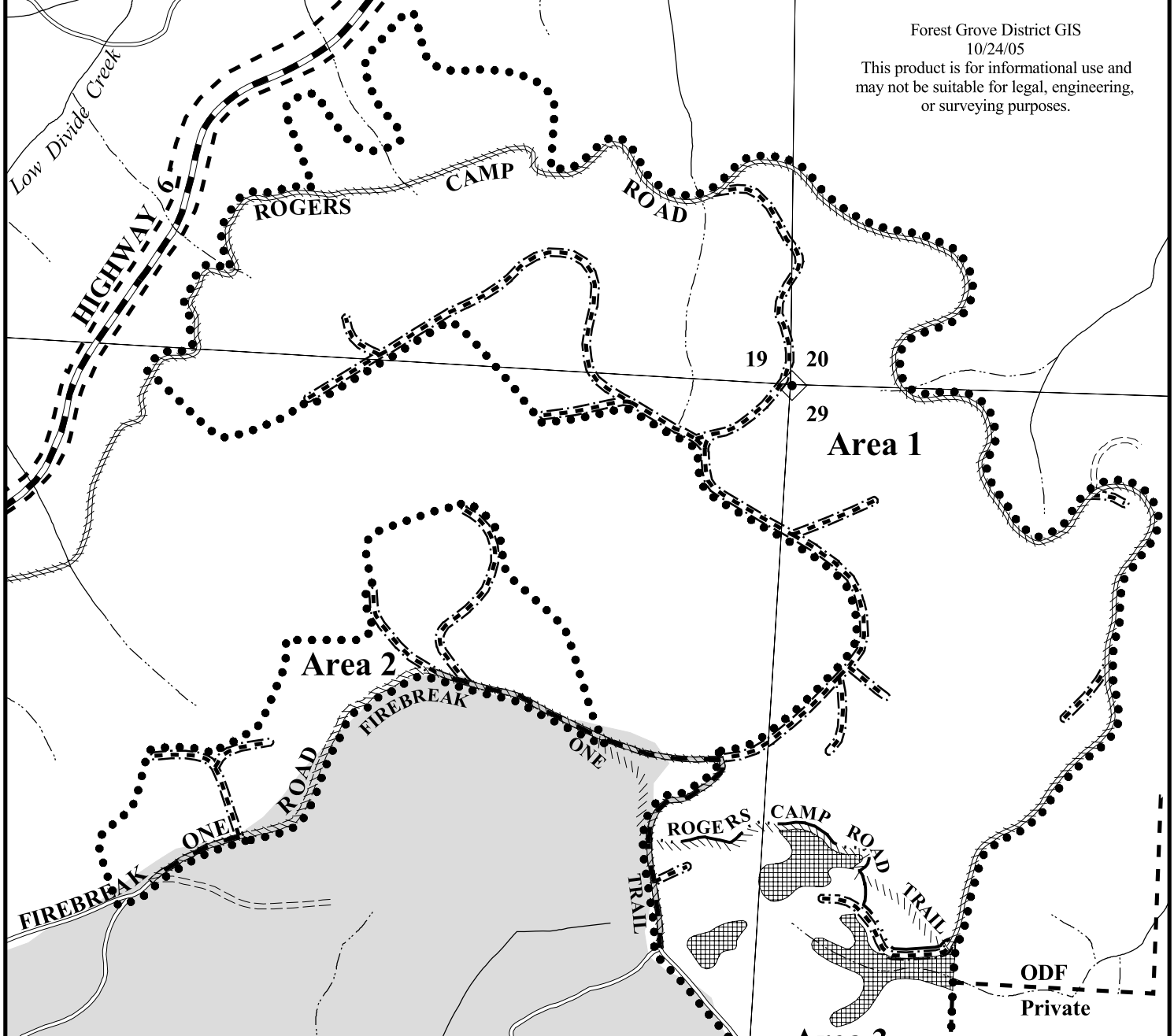


- Timber Sale Boundary
- · · — Sale Area Boundary
- · - · - Right-of-Way Boundary
- ==== Highway
- ==== Existing Roads
- - - - Construction, Surfaced
- ==== Improvement, Surfaced
- ==== Perennial - Type F Streams
- · - · - Perennial - Type N Streams

- Green Tree Retention
- Layered
- Older Forest Structure
- SLI Polygons (Stand ID#)
- ODF Ownership



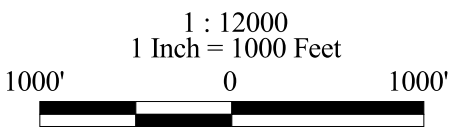
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Sec. 19,20,29,30, and 32  
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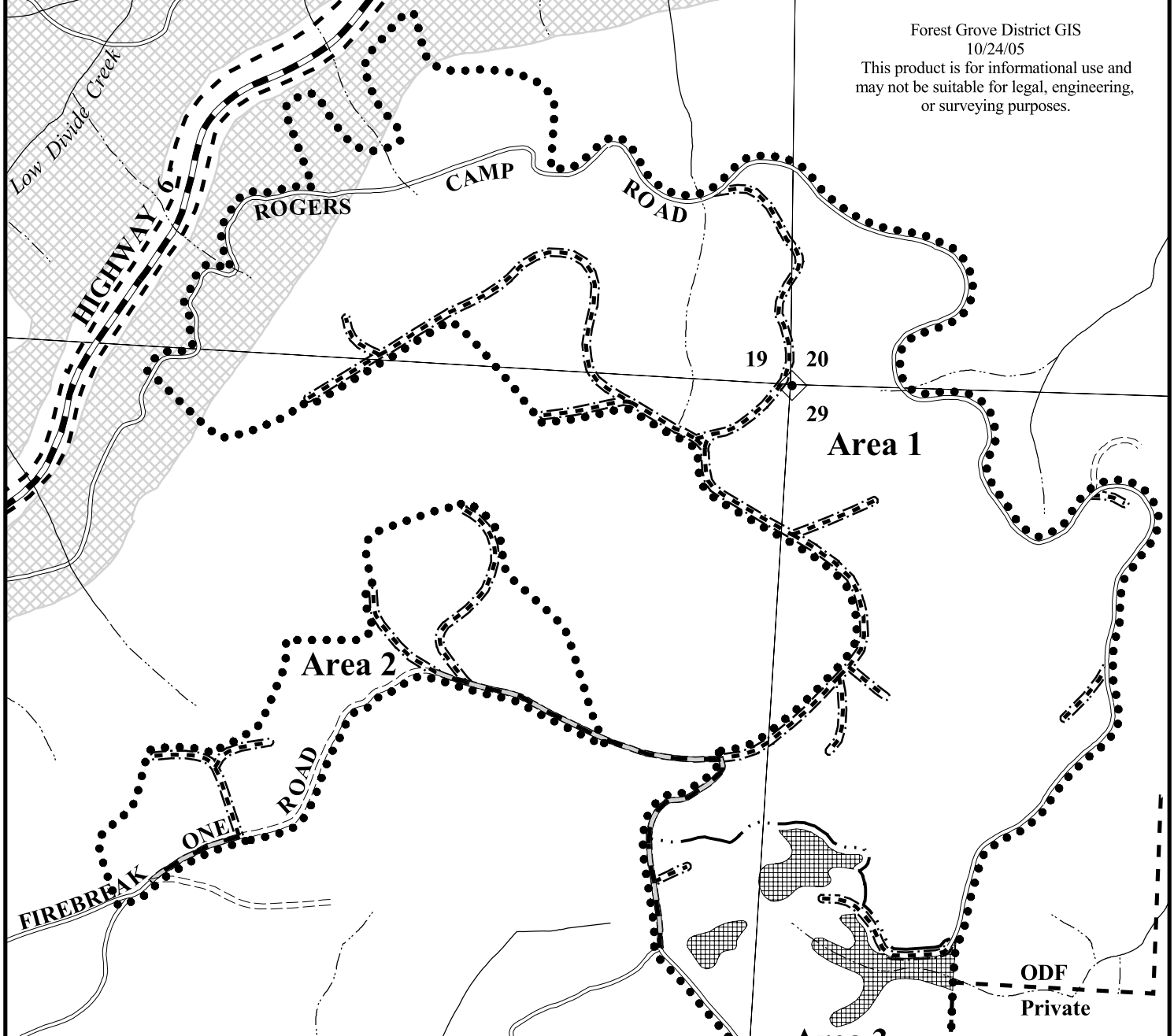
Attachment C-1: Key Resources  
(RECREATION / SAH)

Approximate Net Acreage:  
Area 1: 306 Acres (PC-M)  
Area 2: 55 Acres (PC-M)  
Area 3: 57 Acres (MC)  
TOTAL: 418 Acres



- Timber Sale Boundary
- · · · — Sale Area Boundary
- · - · - · Right-of-Way Boundary
- ▬▬▬ Highway
- ▬▬▬ Existing Roads
- - - - - Construction, Surfaced
- ▬▬▬ Improvement, Surfaced
- ▬▬▬ Perennial - Type F Streams
- · - · - · Perennial - Type N Streams
- ▨▨▨▨ Designated OHV Trail
- Salmon Anchor Habitat (SAH)
- ▨▨▨▨ Green Tree Retention
- - - - - ODF Ownership

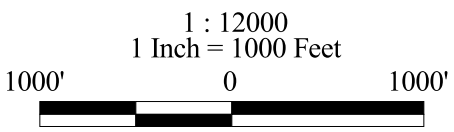
This product is for informational use and  
may not be suitable for legal, engineering,  
or surveying purposes.



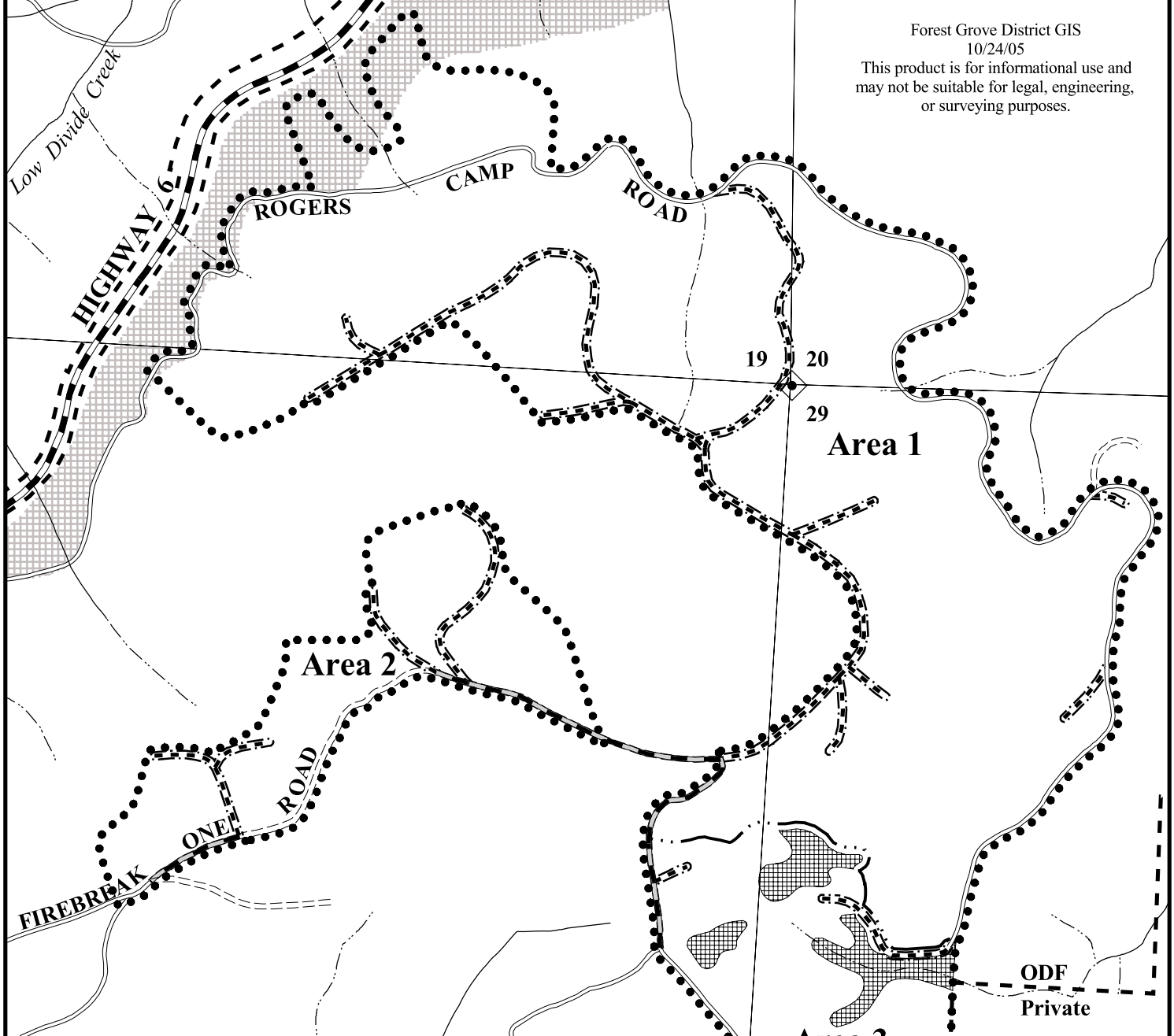
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Rogers Break  
Sec. 19,20,29,30, and 32  
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Washington County

Attachment C-2: Key Resources  
( Focused Stewardship - VISUAL )

Approximate Net Acreage:  
Area 1: 306 Acres (PC-M)  
Area 2: 55 Acres (PC-M)  
Area 3: 57 Acres (MC)  
TOTAL: 418 Acres



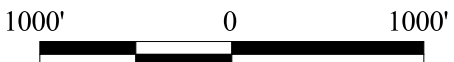
- Timber Sale Boundary
- · · · — Sale Area Boundary
- · - · - · Right-of-Way Boundary
- ▬▬▬ Highway
- ▬▬▬ Existing Roads
- - - - - Construction, Surfaced
- ▬▬▬ Improvement, Surfaced
- ▬▬▬ Perennial - Type F Streams
- · - · - · Perennial - Type N Streams
- ▨ Focused Stewardship - VISUAL
- ▧ Green Tree Retention
- - - - - ODF Ownership



FY 2007  
 Rogers Break  
 Sec. 19,20,29,30, and 32  
 T02N, R05W, W.M.  
 Washington County  
 Attachment C-3: Key Resources  
 ( Special Stewardship -  
 OPERATIONALLY LIMITED )

Approximate Net Acreage:  
 Area 1: 306 Acres (PC-M)  
 Area 2: 55 Acres (PC-M)  
 Area 3: 57 Acres (MC)  
 TOTAL: 418 Acres

1 : 12000  
 1 Inch = 1000 Feet



- Timber Sale Boundary
- · · · — Sale Area Boundary
- · - · - · - Right-of-Way Boundary
- ▬▬▬ Highway
- ▬▬▬ Existing Roads
- - - - - Construction, Surfaced
- ▬▬▬ Improvement, Surfaced
- ▬▬▬ Perennial - Type F Streams
- · - · - · - Perennial - Type N Streams
- ▨▨▨▨▨ Special Stewardship - OPERATIONALLY LIMITED
- ▧▧▧▧▧ Green Tree Retention
- - - - - ODF Ownership