

NORTH CASCADE DISTRICT



“STEWARDSHIP IN FORESTRY”

FY 2017 ANNUAL OPERATIONS PLAN

NORTH CASCADE DISTRICT 2017 ANNUAL OPERATIONS PLAN

OVERVIEW

This plan describes the activities and outcomes that Oregonians can expect to see on the Santiam State Forest for Fiscal Year 2017 (July 1, 2016 – June 30, 2017). We welcome your comments, and will use them to improve this plan within the scope of the Department's authority, in alignment with the longer term overarching plans, budget, and staff resources.

The Santiam State Forest is an actively managed forest, valued by many Oregonians for its mixture of environmental, economic, and social benefits. This plan supports this mixture and provides a balance of these benefits as required by Oregon Administrative Rule (OAR 629-035-0020). We strive to manage the forest sustainably, so that the benefits from the forest can be delivered into perpetuity. The forest harvesting is planned at a sustainable level; a level that our computer models suggest can be harvested year after year without reduction.

Managing a large public forest has its challenges. In addition to the challenges of providing the opportunities described above, the forest is expected to be financially self-supporting. About two-thirds of the revenues from state forest timber sales go to local counties. ODF uses the remaining one-third of the revenue to manage the forests through activities including fire protection, tree planting, thinning, research and monitoring, recreation services, road maintenance and stream improvement. Current financial constraints are limiting some activities and you will see this theme throughout this year's plan.

Every year in the Santiam State Forest, we learn new things and find new challenges and opportunities. In preparing this plan, we have consulted with geotechnical specialists, wildlife biologists, fish biologists, aquatic specialists, engineers, adjacent landowners, and a variety of interest groups.

This AOP has been reviewed by the Forest Trust Land Advisory Committee (representing the counties which deeded land to ODF), the State Forests Advisory Committee (SFAC - composed of Oregonians representing many interests), Oregon Department of Fish and Wildlife, the US Fish and Wildlife Service, motorized and non-motorized recreation users, hunters, fishermen, and wildlife advocates, as well as Oregonians in general. The public comment period for the FY2017 Annual Operations Plans ran from April 4th, 2016 – May 20th, 2016. A summary of the comments received is within Appendix D of this plan.



A short summary of activities planned for the coming year:

- Initial planting of 167,860 trees on 385 acres, inter-planting of 34,250 trees on 100 acres, and conducting vegetation and animal management activities on an additional 423 acres to ensure the survival and growth of these plantations.
- Maintaining a 390 mile road network that provides access to timber harvest as well as various recreational opportunities.
- Implement a new Northern Spotted Owl survey design utilizing density surveys for large blocks of ownership, and continuing Operational Surveys for scattered tracts of ownership.
- Protecting streams and water resources through a series of buffers, aquatic anchors, and seasonal restriction activities.
- Habitat development projects such as retaining green trees in clearcut areas, leaving down wood, and stream habitat improvement projects all for wildlife benefits in recreation areas and harvest areas.
- Improving and maintaining forest roads to ensure ditch water is dispersed and filtered through the forest floor.
- Beginning the planning cycle to harvest approximately 20 million board feet of timber volume, through modified clearcut and partial cut harvest, generating net revenue of an estimated \$7,073,805. This harvest level is in alignment with longer term plans and modeling to ensure it is sustainable and promotes the development of a mixture of habitat types across the landscape.
- Operating and maintaining the following developed facilities in a safe, clean, and responsible manner:
 - 5 campgrounds
 - 6 trailhead facilities
- Providing a safe and clean environment for the numerous dispersed activities which occur across the forest – hunting, camping, angling, sight-seeing, target shooting, swimming, mushroom picking, etc.
- Maintaining, managing, and patrolling the 6 miles of motorized and 25 miles of non-motorized trail networks, striving to protect the trail investments, provide for user safety, address developing trail issues, and protect water quality.
- Supporting the important volunteer network that assists in recreation management including the following programs:
 - Adopt a Trail
 - Trail Maintenance and Construction Work Parties
- Supporting the pre-planned 2 to 5 organized recreation events.
- Providing a firewood cutting program as timber sales are completed.
- Supporting ongoing research on the district, in partnership with research cooperatives and universities.

TABLE OF CONTENTS

NORTH CASCADE DISTRICT 2017 ANNUAL OPERATIONS PLAN	2
INTRODUCTION	6
INTEGRATED FOREST MANAGEMENT OPERATIONS	7
Timber Harvest Operations.....	7
Structural Components.....	9
Harvest Operations within Terrestrial and Aquatic Anchors.....	10
Summary of Timber Harvest Operations by Basin	13
Butte Creek Basin.....	13
Cedar Creek Basin.....	13
Crabtree Basin	14
Green Basin	14
Mad Creek Basin.....	14
Rock Creek Basin.....	15
Scattered Basin.....	15
Firewood.....	16
Miscellaneous Forest Products.....	16
Forest Roads Management	17
Road Construction.....	18
Road Improvement.....	18
Road Access Management.....	18
Road Maintenance.....	18
Land Surveying.....	19
Young Stand Management.....	20
Site Preparation	20
Planting.....	21
Vegetation Management	22
Tree Protection.....	22
Pre-commercial Thinning.....	22
Fertilization.....	22

Noxious Weeds.....	22
Pruning.....	23
Recreation Management.....	24
Overview.....	24
Recreation Planning.....	24
Facilities Improvements.....	25
Volunteer Contributions.....	26
Inmate Work Crews.....	27
Trails (Non-Motorized and Motorized).....	27
Planning (and Information Systems).....	28
Stand Level Inventory and Other Vegetation Inventories.....	28
Wildlife Surveys.....	28
Aquatic and Riparian Resources.....	29
Research and Monitoring.....	30
Land Exchange.....	30
Other Planning Operations.....	30
Public Information and Education.....	31
Public Education.....	31
Administration.....	32
Appendices.....	33
Appendix A.....	34
Appendix B.....	40
Appendix C.....	41
Appendix D.....	42
Appendix E.....	43
Appendix F.....	44
Appendix G.....	47

INTRODUCTION

This annual operations plan (AOP) outlines state-owned forestland managed by the North Cascade District for Fiscal Year 2017 (FY17), which begins July 1, 2016 and ends June 30, 2017. This document describes how the activities and projects undertaken by the district will achieve the goals, strategies, and objectives of the *NW Oregon Forests Management Plan (FMP)*, *Santiam State Forest Recreation Action Plan*, and the *North Cascade District Implementation Plan (IP)*. Please refer to the district IP for more specific information on physical characteristics and other district resource information.

The AOP document is divided into five major categories: Integrated Forest Management Operations; Planning and Information Systems; Public Information and Education; Administration and Appendices. A short summary of proposed activities are listed within this introduction.

The proposed operations and activities are planned to be designed, engineered, and submitted for processing during the FY17 time period. Actual on-the-ground operations will likely not occur during FY17 due to the time-lag associated with contract duration, which could be one to three years after auction. In contrast, reforestation, young stand management, recreation management, and planning activities will be carried out during FY17.

A Public Comment period ran from April 4th – May 20th. A summary of this public comment period can be found in Appendix D.

In addition to describing forest management activities for FY17, Appendix F and G of this AOP also describe minor modifications being recommended to the District's Desired Future Condition (DFC) classification as well as the District's Implementation Plan. At the close of the public comment period, the District Forester will forward these changes with any public comments to the Area Director and State Forester for review and approval.

Accomplishments of forest management activities that occurred under previous AOPs can be found in several reports, including the *State Forester's Annual Report for the Association of Oregon Counties*, the *Common School Forest Lands Annual Report*, and individual district annual reports (these reports also cover the accomplishments of the Fire Protection and Private Forests Programs). These reports are available through the local district office or online.**

**The State Forests' individual district annual reports are available on the Oregon Dept. of Forestry website under "Reports." You can access here: <http://www.oregon.gov/ODF/Pages/Reports.aspx>

INTEGRATED FOREST MANAGEMENT OPERATIONS

Timber Harvest Operations

The following planned commercial forest management activities are within the guidelines and objectives outlined in the North Cascade Districts 2012 Implementation Plan. The FY17 AOP is estimated to produce 20 million board feet (MMBF) in volume, generate gross revenues of approximately \$8,018,493 and net revenues of \$7,073,805. The District has also included 8 Alternate Operations in this Annual Operations Plan. These alternate operations may be used to replace primary sales that cannot be completed as planned. The district anticipates 1-3 small negotiated salvage sales (342 or 343 contracts) in this sale plan. All activity will remain within the expected volume target for the AOP. Some smaller additional operations targeting infrastructure maintenance will also produce timber volume during FY17. These small operations are not included as part of the AOP because they affect a very small area, produce little volume or revenue, and do not require significant effort to develop and execute. These sales will be less than \$100,000 in value and comply with all policies and plans.

Table 1 compares the proposed acres by harvest type in this AOP to the harvest acre ranges specified in the North Cascade District 2012 Implementation Plan. Total planned acres in this AOP are 773 net acres. The anticipated harvest acres, volume, and revenue for each proposed operation in this AOP are listed in the "Harvest Operations – Financial Summary" table in Appendix A, while a vicinity map of these harvest operations can be found in Appendix B. Individual pre-operations reports are available upon request.

Table 1. Annual Operations Plan objectives compared to annual objectives identified in the North Cascade District 2012 Implementation Plan. All values are in acres.

Silvicultural Activity	IP Annual Objective		2017 AOP Objective
	Low	High	
Partial Cut Harvest	290	1170	337
Regeneration Harvest	110	450	436

The district is proposing a minor modification to the Implementation Plan annual objective acre ranges. Details of this minor modification can be found in Appendix G.

The partial harvests and regeneration harvests proposed in this operations plan comprise approximately 1.6% of the total acres within the Santiam State Forest. Approximately 44% of the planned harvest acres are in partial cuts, while the remaining 56% are in regeneration harvests. An active and integrated forest management approach on the Santiam State Forest will provide for high levels of sustainable and predictable timber revenue while concurrently providing key habitat for native fish and wildlife species. The following is a summary of Harvest type definitions:

Regeneration Harvest –The intent of a Regeneration Harvest is to develop a new stand. In general, residual trees left after a Regeneration Harvest are intended to remain on the site through the life of the new stand/cohort.

Modified Clearcut: Clearcuts are modified to leave residual green trees, snags, or trees destined to become snags specifically for their biological or environmental values. In this harvest type, good regeneration results are attained and structural components (green trees, snags, and down wood) are retained that provide value to other resources. A Modified Clearcut resembles a seed tree harvest, but the intent is different. The residual trees from the existing cohort may be distributed across the harvest unit, grouped together in patches, or left along the edge of the harvest unit. Sometimes the residual trees will be grouped along the edges of a harvest unit, in which case, it will look like a Clearcut.

Partial Cut Harvest –The intent of a Partial Cut Harvest is to manage the growth and density of an existing stand. A prescription for a Partial Cut may be designed to increase the structural complexity of a stand, maximize volume growth, or capture tree mortality. A stand may be Partial Cut many times throughout its life. All Partial Cut harvest types retain at least 80 square feet of basal area per acre of trees greater than 11 inches DBH. There are three types of partial cuts:

Heavy Partial Cut: A Heavy Thinning approaches the harvest intensity of a Retention Cut, and the management focus may be on the existing cohort, new cohort, or both. A heavy thinning results in the fast growth of individual trees, but reduces the total volume growth of the stand.

Moderate Partial Cut: Moderate Thinning provides for optimal stand growth and allows vigorous growth of the individual trees. Stand structure will continue to develop with a Moderate Thinning, and depending on species composition and site index, a new cohort of trees may be initiated.

Light Partial Cut: A Light Thinning focuses on maintaining stand growth and health, however in order to achieve these goals, it must occur more frequently than a Heavy or Moderate Thinning in the same stand. More complex stand structure will not be developed with a Light Thinning and a new cohort of trees will not be initiated.

A Stand Structure summary of the acres within this AOP can be found in Table 12 within Appendix A. Overall, this sale plan will reduce the district percentage of stands classified as Closed Single Canopy (CSC) and Understory Development (UDS), moving some of the proposed sales toward the eventual development of more complex stand structures. Layered stands (LYR) are in a more developed stage than UDS. A stand reaches Older Forest Structure (OFS) when a LYR stand attains several structural characteristics that are normally associated with older forest conditions. Throughout this plan the term General Forest Management (GEN) will be used to describe the DFC of stands that are not planned for OFS or LYR in the North Cascade District's landscape design for Complex structures.

A Desired Future Condition of GEN places an emphasis on timber production as well as occupying the full growth potential for the site. Partial cuts are intended to reduce the density of the overstory trees and to maintain or further encourage the understory growth within these stands. Partial cutting will also allow the residual trees within a stand to increase their diameter growth and enhance stand volume and value. Regeneration harvests are typically reserved for

DFC General Forest Management areas but may be used in a DFC Complex area as needed but tend to be rare and warrant justification for doing so.

A Desired Future Condition of Complex places an emphasis on increasing or enhancing the biodiversity of a stand. Partial cutting a stand tends to move the stand along the trajectory towards the DFC. Stand structure begins to develop later when the stands reach 10-15 years of age or pre-commercial thinning age. At the time of pre-commercial thinning, the DFC for the stand is re-evaluated since some young stands change dramatically within the first 15 years. The primary management objective for these stands is to enhance stand volume production and value while maintaining or developing structural components important to habitat diversity.

All of the Primary and Alternate harvest operations and many of the other forest management activities have been reviewed by ODF's wildlife biologists, aquatic specialist, geotechnical engineer, road engineer, and operations coordinator, as well as fish and wildlife biologists from the Oregon Department of Fish and Wildlife. Information on operations that occur within the provincial circle of a northern spotted owl have been provided to the US Fish and Wildlife Service.

Structural Components

The process of producing an array of forest stand structures across the landscape is a gradual one. A variety of sound silvicultural practices will be used to actively move the forest towards the desired range of stand structures outlined in the Implementation Plan.

The guidelines for managing structural habitat components listed under Landscape Management Strategy 3 in the NWO State Forests Management Plan (pg. 4-52) will be followed for the FY17 Annual Operations Plan. In proposed commercial forest management operations, existing down wood, snags, and remnant old growth trees or patches of old growth will be retained. The landscape management goal is to have an average of two snags per acre retained across the landscape. Residual live trees retained in conjunction with regeneration harvests will serve as a source of future snags and down wood as well as provide legacy trees for the new stand being regenerated. Retained trees will include a component of hardwood trees when available. The snags and down wood left in all operations also support future forest needs. The snags provide habitat for cavity-nesting species and provide a future source of down wood. The down wood provides habitat for wildlife species and enables other key functions such as nutrient cycling.

The FMP strategy for hard snags is to manage for at least two per acre on average across the landscape. The need for snag creation for regeneration sales is evaluated on a sale by sale basis. The wind events of December 2006, November 2007 and December 2007 made significant contributions to snag and down woody debris levels despite the salvage of some large concentrations. The residual decadence in turn led to scattered bark beetle outbreaks resulting in additional tree mortality during 2009-2011. The majority of beetle caused mortality is located within the Mad Creek and Rock Creek Basins. Based on these observations (and evaluation of upcoming timber sale areas), snag creation will only be considered on planned sales in the Butte Creek, Cedar Creek, and Scattered Basins. Planned sales in these basins include CF 331 and Zip-Up 2. No snag creation is planned for sales in the Mad Creek, Rock Creek, Green Basin and Crabtree Basin.

In order to protect water quality during active operations, a variety of options will be used to prevent sediment from entering live streams. These methods include (but are not limited to) maintaining or improving existing culverts and ditch lines along active haul routes, adding additional ditch relief culverts when needed to ensure disconnect from live streams, use of sediment control devices in road ditches as necessary during active hauling, and use of seasonal restrictions for logging and hauling operations during wet weather conditions. New culvert installments or culvert replacements in live streams will be conducted during the in-stream work period which occurs generally between July 1 and August 31. Operations outside of this period will be reviewed with the local ODFW fish biologist. Riparian management areas include leave trees and other stream associated vegetation adjacent to the stream which protect stream temperature, provide nutrients, protect stream banks, and eventually provide large wood debris to improve fish habitat.

The FMP strategy for Down Woody Debris (DWD) is to retain an average of 600 to 900 cubic feet of hard conifer logs (class 1 & 2) per acre during regeneration harvest. Methods used to ensure targets are met in this sale plan include utilization of residual logging slash, modified bucking practices, and contract required DWD creation. Specific methods will be assigned during the sale preparation phase.

Another opportunity for natural recruitment of snags and DWD is created by laminated root rot disease (*Phellinus weirii*). In severe cases of root rot, we attempt to hinder the spread of the disease by cutting out the infected trees. In other cases we do not cut out the infected trees. This allows the disease to spread at a rate of approximately one foot per year, slowly adding snags and DWD to the stand. Whether laminated root rot is treated or untreated, we know from experience that additional trees will be infected by the disease, creating snags and eventually DWD.

Harvest Operations within Terrestrial and Aquatic Anchors

The Implementation Plan has incorporated the State Forests' Species of Concern Strategies which specifically identifies fish and wildlife species of concern on the Santiam State Forest. Two of these strategies include Terrestrial Anchor Sites (TAS) and Aquatic Anchor (AA) sites.

- TAS are intended to benefit terrestrial wildlife species of concern, especially those associated with older forest or interior habitat conditions, sensitive to forest fragmentation, or do not readily disperse across younger forest conditions. Management within a TAS is intended to be limited, to emulate natural small-scale disturbance patterns, and to minimize short-term negative impacts to complex habitat and to promote long-term improvements to habitat conditions through management. Areas which were designated as TAS include stands designated for the development of complex structure in the Landscape Design.
- AA sites are watersheds where salmon and aquatic amphibian conservation is of concern. Riparian management strategies beyond those described in the FMP will be applied within AAs. In addition, areas designated for the development of complex structure in the Landscape Design are clustered around streams important to fish in the AA.

The Species of Concern Strategies provide long term goals for TAS and AA sites, with the management activities within those areas designed to achieve those goals. These strategies have not identified specific limits to the total area that can be harvested within these areas; however, the District and resource specialists will be tracking the harvest trends within these areas to ensure the harvest prescriptions and rate is consistent with the goals of these strategies. Table 2 and 3 summarize cumulative harvest operations in TAS and AA since the strategy was adopted (AOPs 2012 through 2017). Currently, no operations are scheduled within the TAS for the FY17.

Table 2. Summary of Timber Harvest Operations within TAS (Acres and Percent)

Terrestrial Anchor Site (TAS)	Current AOP (FY 2017) Planned Harvest		Cumulative Harvest (FY 2012 AOP to Present)	
	Clearcut	Partial Cut	Clearcut	Partial Cut
High Lakes TAS	0	0	3	278
% of Acres	0	0	0.2%	20.2%
All TAS	0	0	3	278
% of Acres	0	0	0.2%	20.2%
Entire District	436	337	1929	2434
% of Acres	0.9%	0.7%	4.1%	5.1%

Table 2 summarizes proposed harvest operations within the TAS for FY17 and the cumulative operational acreage since the strategy was adopted (AOPs 2012 through 2017). Although the High Lakes TAS cumulative harvest rate is significantly higher when compared to cumulative district harvest rates, it is important to recognize that the TAS is comprised of a comparatively smaller overall land base of 1,376 acres. Because of this, standard harvest operations of equal acreage (when compared to averages across the district land base) will carry a significantly greater percentage weight when applied to the significantly lower land base acreage of the High Lakes TAS.

Table 3. Summary of Timber Harvest Operations within AA's (Acres and Percent)

Aquatic Anchor (AA)	Current AOP (FY 2017) Planned Harvest		Cumulative Harvest (FY 2012 AOP to Present)	
	Clearcut	Partial Cut	Clearcut	Partial Cut
Rock Creek	9	209	46	1197
% of Acres	0.1%	1.7%	0.4%	9.8%
Sardine Creek	0	0	0	0
% of Acres	0%	0%	0%	0%
All Aquatic Anchors	9	209	46	1197
% of Acres	0.06%	1.3%	0.3%	7.6%
Entire District	436	337	1929	2434
% of Acres	0.9%	0.7%	4.1%	5.1%

Table 3 summarizes proposed harvest operations within the AA's for FY17 and the cumulative operational acreage since the strategy was adopted (AOPs 2012 through 2017). Cumulative partial-cut harvest rates for the AA's remain similar to that of the entire district. However, cumulative Clearcut harvest rates remain significantly lower. The difference between the two rates stem primarily from the higher proportion of LYR and OFS stands within the AA's.

Summary of Timber Harvest Operations by Basin

In the following section, the harvest operations planned for FY 2017 will be summarized in the context of the seven management basins located within the North Cascade District. A summary of the resources within each sale is located in Appendix A, Table 11. Individual pre-operation reports include information regarding riparian protection and structural components such as snags, down wood, and green tree retention. Road projects and standards are discussed in the Roads and Engineering section.

Table 4. Summary of Timber Harvest Operations Acreage by Basin

Management Basin	2017 AOP	
	Partial Cut	Clearcut
Butte Creek	0	0
Cedar Creek	38	172
Crabtree	0	113
Green	0	0
Mad Creek	90	123
Rock Creek	209	28
Scattered	0	0
Total	337	436

Butte Creek Basin

No harvest operations have been scheduled for the FY17 sale plan.

Cedar Creek Basin

CF331: Proposed 2 area moderate partial cut comprised of approximately 16 acres in Area 1 and 22 acres in Area 2. The DFC for Area 1 and 2 are both OFS. Both areas are planned with the intent of facilitating structural characteristics consistent with Older Forest Structure. A prescription with a lower and upper diameter limit will be used to promote structural characteristics. The stands will be evaluated for snag creation during the sale layout process.

Zip-Up 2: Proposed 3 area modified clearcut across 172 acres. The DFC of these stands is GEN. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.8 mile of new road will be constructed in order to facilitate harvesting operations. Roughly 1.1 miles of existing road will be improved along the proposed haul route. There are 3 fish bearing streams (Homestead Creek, Bridge Creek, and North Fork Silver Creek) near the sale areas ranging from 250 – 700 feet away from the proposed boundaries. Small non-fish perennial streams from Homestead Creek and North Fork Silver Creek are within the sale areas and will be protected following the riparian guidelines layed out in the FMP.

Crabtree Basin

Crabby Patty: Proposed 1 area modified clearcut across 113 acres. The DFC of this stand is GEN. The future pathway of this stand will be regenerated with primarily Douglas-fir with the exception of Western redcedar where root rot pockets have been identified. Approximately 0.7 mile of new road will be constructed to facilitate harvesting operations. Roughly 2 miles of existing road will be improved along the proposed haul route. The timber sale is adjacent to 2 fish bearing streams (Bald Peter Creek and Cruiser Creek). Tributaries from both stream systems are identified within the sale boundary and will be protected accordingly. There is a high potential for a stream enhancement project to be done within this timber sale contract on Cruiser Creek.

Green Basin

No harvest operations have been scheduled for the FY17 sale plan.

Mad Creek Basin

Horse Camp Thin: Proposed 3 area moderate partial cut comprised of approximately 34 acres in Area 1, 29 acres in Area 2, and 27 acres in Area 3. The DFC for all areas is GEN. The main purpose for Area 1 and 2 is a stand management first entry commercial thin to enhance stand growth for optimal volume when the time comes for regeneration harvest. The intent of management on Area 3 is not only to enhance stand growth through commercial thinning, but also remove hazardous trees near one of the District's designated campgrounds, Santiam Horse Camp.

P200: Proposed 1 area modified clearcut across 81 acres. The DFC of this stand is GEN. The future pathway of this stand will be regenerated with primarily Douglas-fir. Approximately 0.5 mile of new road will be constructed to facilitate harvesting operations. Roughly 4.4 miles of existing road will be improved along the proposed haul route. Mad Creek, a large fish bearing stream is near the sale area. Timber sale boundaries will be posted at a distance far enough away to meet the riparian management guidelines set forth in the FMP. Small non-fish tributaries from Mad Creek are located within the sale area and will be protected accordingly. There are portions of this sale where the timber is heavily affected by heart rot, which will in turn affect net volume, but will also increase DWD opportunities.

Slick Rick: Proposed 1 area modified clearcut across 42 acres. The DFC of this stand is GEN. The future pathway of this stand will be regenerated with primarily Douglas-fir. Approximately 0.1 mile of new road will be constructed to facilitate harvesting operations. Roughly 2.6 miles of existing road will be improved along the proposed haul route. There are two small non-fish tributaries from Sevenmile Creek within the sale area. They will be buffered with boundary tags according to the riparian management guidelines listed in the FMP.

Rock Creek Basin

1100 Tom: Proposed 1 area moderate partial cut across 209 acres. The DFC of this stand is LYR. The proposed operation will be the first entry into the stand and will have a prescription which facilitates structural characteristics consistent with an older stand type. Emphasis will be placed on retaining snags and creating DWD. An upper and lower diameter limit will be used to create and maintain canopy layering. This sale is within the Under Rock 1.2 mile provincial Northern Spotted Owl circle and has a preliminary Biological Assessment stating that the sale is a low risk for incidental take.

Tuers Pick Up: Proposed 1 area modified clearcut across 18 acres. The DFC of this stand is GEN. The future pathway of this stand will be regenerated with primarily Douglas-fir. Approximately 0.3 mile of new road will be constructed to facilitate harvesting operations. Snake Creek, a small fish bearing stream is located within the sale area and will be protected according to the riparian management guidelines within the FMP.

Scattered Basin

No harvest operations have been scheduled for the FY17 sale plan.

Firewood

The North Cascade District will continue to issue personal firewood cutting permits in the coming year for areas within completed timber sales.

The public will be notified of firewood cutting permits through the district's telephone recording and posting at both the Santiam and Molalla offices. The permit fee for personal firewood cutting is \$20 for 2 cords. Permits will be issued for 3 week periods, during the months outside of fire season.

A limited number of personal firewood cutting permits will be issued, on a first come-first served basis, with a limit of 2 permits per individual or household within a 12 month period. Oregon Department of Forestry does not guarantee the quality or availability of wood when issuing firewood cutting permits.

Designated firewood cutting areas will be marked on the permit map, which excludes active and sold timber sales, recreation sites, and planned operations. Active timber sales will be posted with no firewood cutting signs.

Miscellaneous Forest Products

The North Cascade District has suspended its commercial Miscellaneous Forest Products permit program due to lack of staffing resources. Previously, forest products such as mushrooms, vine maple, and salal were available for commercial permit. Many of these products are available throughout the forest landscape, and can be found in the different stand structures on the forest. Other products require specific stand types and growing conditions to be most productive. The most popular products requested in the past are salal and mushrooms. Salal can be found over most of the Santiam State Forest, while mushrooms grow best at lower elevations and in younger, dense stands of timber, usually in the under 40-year old closed single canopy stands. The permit program policy will be re-evaluated in FY17.

The District does issue personal use permits, consistent with Northwest Oregon Area policy. Gathering of these products is allowed provided that the products and quantities are not removed or exceeded as outlined in ORS 164.813.

Forest Roads Management

The primary transportation focus is to provide access for forest management activities. This involves constructing new roads where needed and maintaining or upgrading existing road systems. Other resource management needs and other users are considered in the transportation planning. A well-managed transportation system provides access for timber removal, recreation, fire control and removal of other forest products as well as other uses. The District transportation system is managed to provide efficient and effective access.

The transportation activities planned in FY17 will be to maintain and improve current access which minimizes resource impacts to water quality while also meeting the District's access needs. An over-arching goal for new road construction and road maintenance is to protect or improve water quality. Over the last 20 years much effort has been made in removing barriers to fish passage and improving road drainage which minimize impacts to water quality. The planned activities within this AOP will help meet transportation objectives.

This AOP includes project work with each proposed primary sale. Roads surfaced with crushed rock make it possible to create and maintain a road surface shape that will drain well and allow for safe and efficient travel of our forest road system. Good surface drainage is critical to minimizing sedimentation from roads and for protecting the subgrade to allow winter hauling where appropriate. Along with good surface drainage, once the water is off the road the water needs to be directed in a way to minimize impacts to water quality.

Cross drainage structures will be reviewed on all proposed haul routes. Connecting spur roads will be upgraded where necessary. The guidelines found in the Oregon Department of Forestry Roads Manual are followed to decide where additional culverts will be installed. Stream crossings will be analyzed on haul routes and the connecting spur roads to make sure culvert sizing meets 50-year flow event minimums. Roadside brushing and roadside spraying will be conducted to control encroaching vegetation and maintain safe sight distance.

Some new spur roads will be constructed to provide access for commercial forest management operations planned within the 2017 fiscal year. All new road construction for this Annual Operations Plan falls into the spur road category. Spur roads needed for future management activities, but not for immediate use, may be put in a restricted status by partially vacating or simply closing the road. This will reduce maintenance costs and reduce water quality impacts from those roads. All new road construction will be designed, reviewed and administered by foresters with forest engineering experience. Roads will be rocked if winter use is anticipated. It is also desirable to rock roads for reforestation access that must occur in the winter months.

Total cost of project work for FY17 is estimated at \$944,688 or 11.8% of the total gross timber sale value (value excludes alternate sales). Rationale for project work includes elevation of the sale, condition of the existing surface along the haul route and primary logging method of the timber sale area. Additional information regarding roads and engineering can be found in Table 13 located in Appendix A.

Road Construction

The district will construct approximately 4.1 miles of rocky spur road for timber sale access. All road construction for the planned commercial forest management operations described within this Annual Operations Plan will be designed as spur roads. Spur roads are short, generally less than 0.5 mile in length and will be built to standards that minimize the road footprint within a harvest area. Road sub-grade widths will be 14 to 16 feet wide and either ditched or outsloped. Where partial cut harvests are planned, the roads will be kept on the landscape and utilized for future management activities. Some of the roads built on other operations will be closed (not vacated) when the operation has been completed. Closed roads will be put in a condition that will require minimal or no maintenance until needed again. This may involve grass seeding and the installation of water bars, tank traps or other road barriers to keep vehicles off the road. If a spur road is vacated, stream crossing structures will be removed to eliminate the possibility of a stream restriction or maintenance problems. In some cases the access will not be vacated to assist with the reforestation effort.

Road Improvement

Approximately 15.6 miles of road will be improved for the purpose of hauling logs. Road improvement in this plan will consist of culvert replacements with some culvert additions, ditch-line maintenance, spreading lifts of rock along major haul routes, some spot rocking and road brushing as needed on collectors and spurs.

Road Access Management

Access to the Santiam State Forest generally is not restricted. However, roads that pose a high risk of damage to water quality are candidates for closure. Closing and vacating roads reduces the District's maintenance cost and helps to minimize impacts to the environment from roads. Not only do these roads cause a maintenance liability; some of these roads become opportunities or locations for dumping of trash. Roads will be assessed for potential closure and vacating during the sale preparation phase.

Road Maintenance

The maintenance for roads being used for timber sale access becomes the responsibility of the timber sale purchaser once sale activity has begun. Timber sale purchasers during this operating plan will maintain approximately 26 miles of road. Road grading, ditch cleaning, culvert inlet/outlet cleaning and spreading rock as needed during log haul will all be completed by timber sale purchasers.

District roads not under timber sale contracts are maintained by District personnel using a grader, front end loader, lowboy and a dump truck. Road grading over much of the District is covered once during the year with some roads graded more frequently due to heavy public use. Small rocking projects will also take place to reinforce weak subgrades. The District road crew also responds to emergencies such as plugged culverts, removing small slides, clearing slough from ditch lines and blocking roads when necessary. It is the district's goal to maintain approximately 75 miles of road per year. There is a great need for a district owned excavator to take care of these road maintenance emergencies and projects which require this type of equipment.

Land Surveying

The District does not currently have an active land survey program. Property line surveys are conducted on a case-by-case basis and in a variety of fashions. Contracting out the work with the use of PLS licensed contractors, cost sharing with adjacent landowners, and utilizing the Salem Staff licensed surveyor are three examples. P200, Tuers Pick Up, and Zip-Up 2 are anticipated to be the primary operations requiring re-establishment of property lines for the FY17 AOP. In total, approximately 3 miles of property line will need to be surveyed. If the district had to expend the full cost of contracting the work out, an estimate for this work is \$15,000. This amount will be included in the FY17 budget to account for these needs.

Young Stand Management

Young stand management operations occur in forest stands prior to the first harvest. These operations do not produce revenue, but are essential in maintaining a healthy forest. The objectives of young stand management are to achieve reforestation, stand structure development, and future revenue generation. The current fiscal year budget constraints limit young stand management to activities that are essential to the establishment of new stands.

Table 14 within Appendix A outlines the costs needed to perform management activities on young stands. These young stands are not associated with the sales described in the pre-operations reports.

Reforestation projects will be completed through the use of inmate crews from Mill Creek as well as contracted crews. Mill Creek is a correctional facility in Salem and has joined in a cooperative effort between the Department of Corrections and Oregon Department of Forestry. Prior planning is needed to schedule any inmate crew for these projects; although some emergency situations can be accommodated.

The planned operations necessary to meet landscape and stand structure targets include: site preparation, planting, and vegetation management. Pre-commercial thinning, and fertilization are not funded in this plan due to budget constraints. The following is a brief summary of each individual activity.

Site Preparation

Site preparation is an important tool used in establishing a stand. Site preparation can affect seedling establishment and survival. Prescribed fire (burning of logging slash), mechanical piling of slash, and use of herbicides are just a few tools used in site preparation. Burning or piling logging slash eliminates or manipulates logging debris in order to create plantable areas. Herbicide site preparation is used to control undesirable vegetation that would otherwise compete with planted seedlings. Planting spot development is used when burning is not a viable option. Only heavy concentrations of logging slash are treated, while the majority of the slash is not removed from the site and will be left to decompose on site over time.

Generally, on the North Cascade District the site preparation activities are completed by different entities. The following list outlines who completes which projects:

Mechanical - Timber Sale Contract Project Work

Chemical (aerial and hand) - Private Contractors, occasionally Mill Creek Crews

Slash Burning - ODF staff and Mill Creek Crews

The following units will undergo site preparation activities in FY 17: See You Tom A1, Shepherd's Pie A3, Dirty Dozen, and NoMoPo. Additional units that may require site preparation activities include: Lawhead, Around Gates Hill, and Green Heights. Due to ongoing harvesting and 2-3 year contract terms, it is not possible at this time to be completely sure which units will be treated in FY17.

A summary of the costs and acres to be treated can be found in Table 14 - Reforestation and Young Stand Management Activities within Appendix A.

To protect air quality, all burning is planned in accordance with the Oregon Smoke Management Plan. The Smoke Management Plan is designed to reduce emissions from prescribed burning in western Oregon and to minimize smoke intrusions into designated population areas.

When using herbicides on State Forests for site preparation, the District will adhere to Environmental Protection Agency, approved herbicide product labels, and the Oregon Forest Practices Act.

Any mechanical site preparation will also be monitored to ensure that the Oregon Forest Practices Act requirements are met.

Planting

Reforestation is the planting of tree seedlings following regeneration harvests, patch cuts, root disease removal, and severe blow down events. Initial planting and inter-planting a variety of tree species provide different outcomes.

Initial planting establishes the seedlings to begin a regeneration stand. The species of seedlings planted and the density at which they are planted will influence future management activities within the stand.

Inter-planting is used when initial reforestation has been less successful than desired. Planting additional trees within an area will continue the stand along its desired management path.

Generally, each year about 90% of our planted trees are Douglas-fir, and about 10% are western redcedar. Because it is root rot resistant, the western redcedar is planted in areas where root rot is present. In the past, some root rot areas have been planted with western white pine, alder, western hemlock, and ponderosa pine. These species are not scheduled to be planted in FY17.

Occasionally in the past, noble fir was planted at high elevations where it naturally occurs and where our Douglas-fir seed is not appropriate. Noble fir is not scheduled to be planted in FY17.

Generally the units that will be planted in a fiscal year are the same as the units scheduled for site preparation that year. Often there will be slight variances as some units may be site prepped, but not planted due to stock types and availability. During FY17, the units that will be planted should be the same as the units that will be site prepped. These units include: See You Tom A1, Shepherd's Pie A3, Dirty Dozen, and NoMoPo. Additional units that may require site preparation activities include: Lawhead, Around Gates Hill, and Green Heights.

A summary of the costs and acres to be treated can be found in Table 14 - Reforestation and Young Stand Management Activities within Appendix A.

Vegetation Management

Chemical and manual release treatments including hand spray, aerial spray, hack and squirt and mechanical release will be conducted in plantations in danger of failure due to brush or grass competition.

Generally, on the North Cascade District vegetation management activities are completed by different entities. The following list outlines who completes which projects:

Chemical (aerial and hand)—Private Contractors, occasionally Mill Creek Crews

Mechanical Hand Release—Mill Creek Crews

Chemical Hack and Squirt—Mostly Mill Creek Crews, occasionally Private Contractors

A summary of the costs and acres to be treated can be found in Table 14 - Reforestation and Young Stand Management Activities within Appendix A.

Tree Protection

Tree protection is used in areas where animal damage (from deer and elk) is expected to reduce the number of seedlings below desired stocking levels. A Vexar tube is placed over a newly planted seedling and the tube is supported with bamboo stakes. Vexar tubes are generally reserved for tree species such as western redcedar that are severely damaged by animal browsing. Approximately 10,000 western redcedar seedlings are scheduled to be planted and protected during FY17 in an effort to mitigate root disease areas identified within recently completed timber harvest operations and to maintain tree species diversity.

Pre-commercial Thinning

No PCT projects have been planned for FY17. An estimated 250-350 acres are in need of PCT, but budget instructions in recent years have been to not include PCT projects.

Fertilization

No fertilization projects have been planned for FY17.

Noxious Weeds

Noxious weed and invasive species treatment will occur in areas that can easily be treated and controlled. Smaller treatments are done on a county wide basis; these smaller treatments tend to be less than an acre in size. The goal is to treat smaller populations before they have an opportunity to spread. Individual scotch broom plants found along a road or in a plantation are examples of these smaller treatments.

Our timber sale contracts require road construction and timber harvest equipment washing to help control the spread of noxious weeds. The operators are required to wash equipment prior to working on the State Forest and/or prior to moving from a known infested area to an uninfested area on the State Forest.

Pruning

No pruning projects have been planned for FY17.

Recreation Management

Overview

At present, the district manages 4 fee campgrounds, 1 OHV staging area, 7 trailheads and parking areas, 2 day use areas, 25 miles of non-motorized trails, and 6 miles of OHV trails. During the 2016 camping season, the Santiam State Forest had 1,850 registered overnight campers and campground revenue was \$5,267. Both overnight and day-use visitation on the Santiam State Forest has continued to increase in recent years. In anticipation that this trend will continue, staff has been focusing on ways to best manage the increased usage while preserving the features and assets visitors have come to experience.

The Department has adopted new OAR's which will change our current fee structure. The North Cascades District will focus on educating the public of the new fees by advertising the change on the district website, creating educational handouts and kiosk displays, and providing information through staff contacts.

The most concentrated recreation visitation on the Santiam State Forest occurs in the Shellburg Falls, Rock Creek, Butte Creek Falls and Santiam Horse Camp Recreational Areas.

There is significant use in the Santiam State Forest outside of the designated recreation areas. This includes, dispersed camping, hunting, target shooting, foraging, four wheeling, and other activities.

The Recreation Program on the Santiam State Forest is managed in accordance with the Recreation Management Plan approved in September 2000, the North Cascade District Implementation Plan approved in June 2012 and the approved 2010 Northwest Oregon State Forests Management Plan. This section of the FY17 AOP is designed to provide information about the types of recreation opportunities and activities that are currently in demand on the Santiam State Forest, the developments and opportunities currently available, and the planned projects for the FY17 AOP period. Given the current budget constraints, the focus of the recreation program will be on maintaining existing infrastructure, providing for public safety and sanitation, and mitigating damage to natural resources

Recreation Planning

At this time long range recreation planning is being focused on maintenance and safety. Short range FY 2017 planning work includes:

- Review FY2018 proposed timber sales and provide comments and recommendations to mitigate impacts on recreation facilities.
- Create educational handouts and kiosk displays to advise and educate recreation users on the new recreation OAR's and the adopted fee changes.
- Implement the new fee guidelines in all fee collection camping areas.
- Continue coordination with current volunteers, and continue outreach to recruit new volunteers.

Facilities Improvements

A summary of the costs can be found in Table 15 - Recreation Management Summary within Appendix A.

- Update and improve or replace existing informational kiosks.
- Continue trail maintenance and repair.
- Continue facilities maintenance and repair.
- Update and improve informational and interpretive/educational signage.

Rock Creek Camping Area

- Decommission campsite #1 and do streamside restoration.
- Relocate campsite #1 to new location behind newly installed gate.
- Relocate campground informational kiosk and iron ranger behind newly installed gate.
- Replace signage and campsite posts as needed due to weather damage.

Shellburg Falls Campground

- Expand middle parking lot.
- Paint restroom.
- Rebuild campground informational kiosk.
- Continue adding rock to depressed trails, and improving trail drainages.
- Reroute Shellburg Loop Trail above the stairs to more sustainable location.
- Rebuild 12 ft. section of stairs above Shellburg Falls.
- Improve spatial accuracy of GIS trail layer.
- Continue coordination with Adopt-a-Trail group on improving the mountain bike trail system.
- Remove hazard trees in and around campground.
- Install wooden fencing around trailhead parking area to deter visitors from entering private property.

Butte Creek Campground

- Reconfigure boulders to define campsites and parking locations.
- Add a designated campsite between sites 2 and 3, add fire pit and picnic table.
- Remove hazard trees near and around campground.
- Rebuild campground informational kiosk and relocate iron ranger.
- Rebuild stairway to restroom.

Santiam Horse Camp

- Replace interpretive signs on the campground educational trail system.
- Replace deteriorating posts on horse stalls.
- Trail maintenance throughout entire trail system.
- Install external water filter on hand pump to reduce iron content of water.
- Install new trail way-finding signage along Monument Peak Trail system.

Rhody Lake Recreation Area

- Build and install new informational kiosk.
- Conduct fuels reduction around camping sites.
- Install metal fire pits.
- Repair restroom floor and walls damaged by vandalism.

Butte Creek Falls Trailhead

- Replace trailhead informational kiosk and signage.
- Decommission “user made” trails off of main trails.
- Expand parking area.
- Replace campsite posts.

Crooked Finger ATV Staging Area

- Install informational kiosk with updated trail map and OHV information.
- Conduct trail assessment and update GIS layer accuracy.

Natural Arch Trailhead

- Replace trailhead and way-finding signage.

Volunteer Contributions

Volunteers contribute labor, supplies and expertise to the District recreation program. Our volunteers have partnered with ODF to construct trail, maintain infrastructure, and preserve natural resources. Oregon Equestrian Trails, Silver Falls Chapter, has volunteered time and resources toward maintaining trails within the Monument Peak trail system. Boy Scouts of America have accomplished a variety of projects, primarily within the Shellburg Falls Recreation Area. These projects include trail maintenance, litter cleanup and invasive species removal. In 2015, the Cascadia Trail Crew, a local non-profit mountain biking association entered into an Adopt-a-trail agreement with ODF. This group has been an integral partner in reconstructing and maintaining the freeride mountain biking trails in the Shellburg Falls Recreation Area.

Inmate Work Crews

The recreation staff utilizes 10-person inmate crews from the Mill Creek Correctional Facility for facility and trail maintenance and recreation improvement projects.

Trails (Non-Motorized and Motorized)

Non-motorized Trails

The district will seek to maintain the over 25 miles of non-motorized trails on the Santiam State Forest. Trail systems provides opportunities for hiking, mountain biking, free-ride mountain biking and horseback riding. Annual trail maintenance includes bridge inspection, brushing, tread repair and drainage repair. Trail maintenance will be done by staff, volunteers and inmate crews.

Motorized Trails

Motorized vehicles, including ATVs and dirt bikes, are allowed to ride on maintained gravel roads throughout the Santiam State Forest. A 6 mile designated ATV trail system is located in the north block of the forest, and receives moderate to high use. Trail maintenance will be conducted by staff and inmate crews.

Stand Level Inventory and Other Vegetation Inventories

Due to continued budget constraints, the Stand Level Inventory program maintains a utilization rate less than the capacity of its original intent. However, recent budget allocation will ensure that some stands within the District are scheduled for contract inventory during FY17. In the past year, through private contracts and Salem Staff, the district acquired 22 stands of new inventory cruises totaling over 1,300 acres. In the 2016 calendar year, approximately 2,000 acres across 20 stands are scheduled to be inventoried. District personnel will continue to focus inventory efforts on post-harvest thinning units – time permitting, in an effort to ensure that silvicultural information is available for current stand conditions, harvest scheduling and prescription design.

Wildlife Surveys

In order to remain consistent with the State Forest Management Plan, comply with federal and state Endangered Species Acts, surveys for the Northern Spotted Owl (*Strix occidentalis*) will continue during the 2016 field season. Surveys will be specifically conducted on a portion of active operations identified for the FY16 plan, 8 proposed FY17 primary operations, and 8 FY17 alternate operations. Monitoring surveys for known spotted owl sites will also continue in order to determine site occupancy, nesting, and reproductive status of resident owls.

During FY17, the district will be primarily switching from operational surveys to density surveys. Where operational surveys focused on the proposed timber sale operational area, density surveys are based on strategically placed calling stations throughout the District ownership which allows for complete coverage of all suitable habitat.

Density surveys will cover large ownership parcels in the Mad Creek, Rock Creek, Butte Creek, Cedar Creek, Crabtree and Green Basin management areas. For tracts of ownership within the Scattered Management basin, operational surveys will still be utilized.

Within the operational survey protocol previously used and still being used on scattered parcels, spot check surveys were conducted during the life of the timber sale contract, usually 2 years after operational surveys. During spot checks, many timber sale contracts also had to have seasonal restrictions placed in them to ensure that certain aspects of the operation would not cause a disturbance during breeding season. With density surveys, no seasonal restrictions are required in timber sale contracts and spot checks are not needed because all suitable habitat is being surveyed every year regardless of the location of a certain operation.

Table 5. Summary of Surveys for Threatened and Endangered Species

Primary Operations	Species¹ (NSO/MM)	Survey Years²	BA³ Required	Special Considerations
1100 Tom	NSO	2013, 2014, 2015, 2016, 2017	Yes	
CF 331	NSO	2013, 2014, 2015, 2016, 2017	No	
Crabby Patty	NSO	2014, 2015, 2016, 2017	No	
Horse Camp Thin	NSO	2014, 2015, 2016, 2017	No	
P200	NSO	2013, 2014, 2015, 2016, 2017	No	
Slick Rick	NSO	2014, 2015, 2016, 2017	No	
Tuers Pick Up	NSO	2013, 2014, 2015, 2016, 2017	No	
Zip-Up 2	NSO	2013, 2014, 2015, 2016, 2017	No	
<u>Alternate Operations</u>				
Family Camp 2	NSO	2014, 2015, 2016, 2017	No	
Gravy Train	NSO	2014, 2015, 2016, 2017	No	
Green 30	NSO	2013, 2014, 2015, 2016, 2017	No	
Higher Rock	NSO	2013, 2014, 2015, 2016, 2017	Yes	
Radio Flyer	NSO	2015, 2016, 2017, 2018	No	
Spike Only	NSO	2015, 2016, 2017, 2018	No	
Tom Rock Top	NSO	2013, 2014, 2015, 2016, 2017	No	
West 7 Mile	NSO	Survey Waiver - Non-Habitat	No	

1. Surveys are conducted according to accepted protocols when habitat for the specific species is determined to be present. NSO – northern spotted owl.
2. Years that surveys have been completed or are planned. Mixture of Operational Surveys and Density Surveys in future years.
3. A Biologic Assessment is required for this operation due to the presence of NSO in the vicinity of the operation.

Aquatic and Riparian Resources

The North Cascade District is comprised of a variety of habitat types that support many native species found in forests of the Oregon Cascade Range. Appendix E [of the FMP] and the *North Cascade District 2012 Implementation Plan*, “Species of Concern”, page 14, contain a list of native fish that are currently known or are likely to exist within the North Cascade District. The streams, rivers, lakes, and other water bodies of the area provide habitat for a variety of fish species. There are approximately 67 miles of known fish bearing streams within the Santiam State Forest.

Rock Creek and Sardine Creek Watersheds are designated as AAs and were selected through a collaborative effort with ODFW District Fish Biologists, the State Forests Aquatic Specialist, District Forester, and district staff. The Rock Creek and Sardine Creek watersheds meet the landscape design principles described under the Landscape Design section of the *2012 North Cascade District Implementation Plan*. Fish are well distributed throughout the Rock Creek Watershed and Sardine Creek presents a unique opportunity for an aquatic anchor with amphibian emphasis.

A relatively high percentage of ODF ownership in each watershed means that management actions have a higher likelihood of influencing watershed processes. The proposed forest operations for FY17 follow the FMP's riparian management guidelines as well as incorporate the additional Species of Concern Strategies that are applied within AA's. The intended purpose of these management strategies are to lower short term risk to various salmonids and amphibian species while fostering the development of properly functioning aquatic systems and suitable habitat.

Research and Monitoring

The District is actively evaluating past timber sales for compliance with the Oregon Forest Practices Act. Several past sales were surveyed in 2013. The North Cascade District will use the information to assess and improve compliance.

Additionally, the District cooperated with Weyerhaeuser and Oregon State University on a study to help determine the abundance of the Oregon Slender Salamander on the Western slope of the Cascade Range. The study will also help to determine if there is a significant difference in the amount of down-woody debris, the Oregon Slender Salamander's primary habitat, pre and post-harvest. This cooperative study is proposed to last 5 years.

The District is also exploring an opportunity to conduct a cooperative research project with Oregon State University on the study of black bear and tree peeling.

Land Exchange

The North Cascade District has an approved land exchange plan, but due to budget constraints, all ongoing land acquisition and exchanges have been suspended in FY2017. As future budgets allow, acquisition and exchange plans will be revisited.

Other Planning Operations

Planning activities will include road inventory updates throughout the ownership to assess and map locations of all stream crossing and ditch relief pipes.

Timber sale planning will begin in the spring of 2016 for the fiscal year 2017 Annual Operations Plan. This Annual Operations Plan will be completed in the spring of 2017. The Annual Operations Plan will provide specific details on the harvest operations that will be set up and auctioned in the 2017 fiscal year. The plan will also provide an overview of the roads and engineering projects, non-commercial forest management operations, recreation management, planning, public information and education and administrative activities that will take place during fiscal year 2017. This plan is developed according to guidance and standards found in the *NWO State Forests Management Plan*, *North Cascade District Implementation Plan*, *Santiam State Forest Recreation Plan* and the *Oregon Forest Practices Act*.

Public Information and Education

Public information and involvement activities will include review and input regarding the FY17 Annual Operations Plan. Following that review, a public involvement summary will be added as an Appendix to this document.

The District often receives requests for job shadowing opportunities. Job shadowing usually involves a high school student or occasionally a college student who is interested in natural resources. The District arranges for these students to spend a work day with a district employee in a position they may be interested in. The District has also conducted school to work tours in cooperation with the Human Resources Department.

Public Education

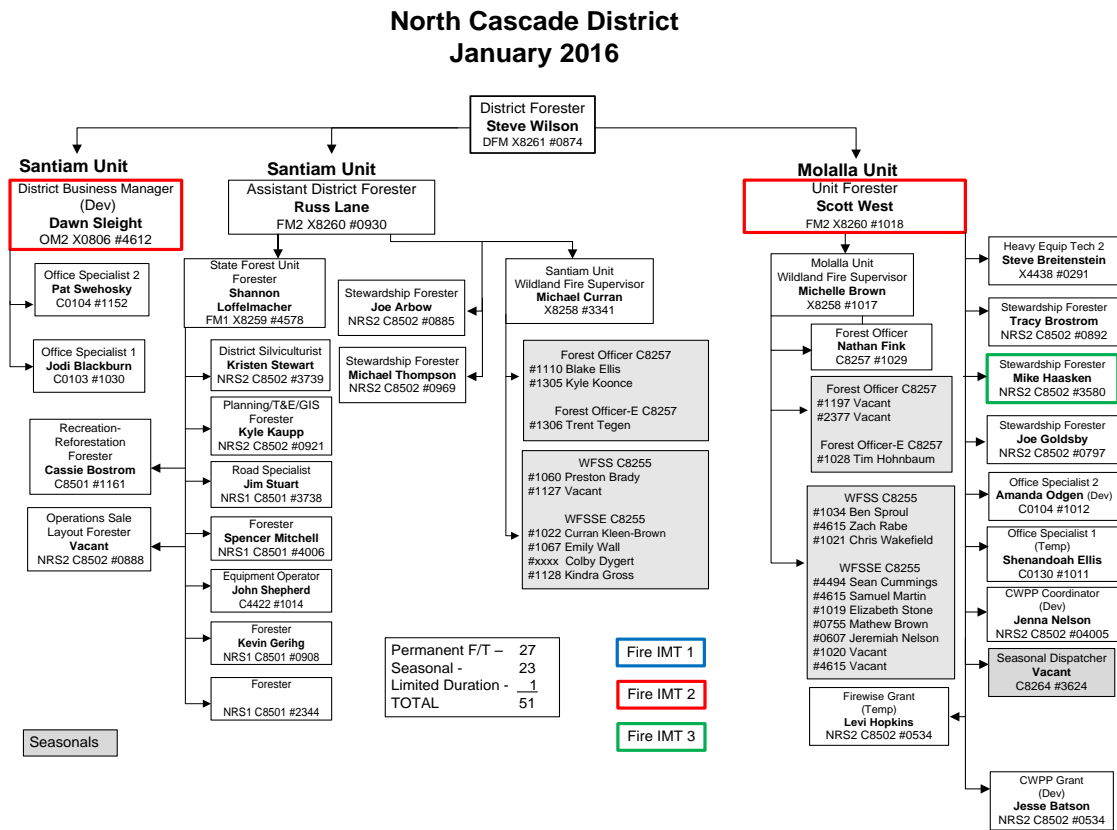
The District is involved in a variety of projects focused on informing and educating the public and interpreting the natural and cultural history of the Santiam State Forest.

Activities will include:

- Maintenance of Santiam State Forest web page
- Development of information board messages
- Modifications to and reprints of the OHV and Non-motorized trail guides
- Writing articles for user group newsletters
- Support and participation in NWOA Forestry education and interpretive programs funding allows

Administration

The current Santiam State Forests Unit is comprised of 10 full-time permanent positions. The organization is structured as follows:



The organization has integrated into one functional unit supervised by the Management Unit Forester. Responsibilities of the Forest Management Unit include forest-level planning, (SLI) Stand Level Inventory, commercial and non-commercial forest management operations, young stand management, roads and recreation. The unit produces the AOP, timber sale contracts, reforestation and young growth management contracts, and administers the special forest products and firewood programs. Transportation plans, road maintenance plans and schedules, and other engineering related plans are in progress. The State Forests Unit also produces the plans and contracts needed to develop campgrounds, trails, and associated facilities. The recreation personnel coordinate most of the public information on the district.

The organization fits well within the budget instructions and guidance that is available for next fiscal year at this point in time. The young stand management program is highly cyclical in workload due to the nature of projects such as tree planting, fertilization, and vegetation management.

Appendices

Appendix A: Summary Tables

Table 10: Harvest Operations – Financial Summary	34
Table 11: Harvest Operations – Forest Resource Summary	35
Table 12: Harvest Operations – Forest Structure Summary	36
Table 13: Harvest Operations – Roads Financial Summary	37
Table 14: Reforestation and Young Stand Management Summary	38
Table 15: Recreation Management – Financial Summary	39

Appendix B: Vicinity Map

Harvest Operations Vicinity Map	40
---------------------------------	----

Appendix C: Consultation with other State Agencies

Consultation with other State Agencies	41
--	----

Appendix D: Public Involvement

This appendix will include a summary of the Public Involvement process, including comments received following the completion of the Public Comment Period	42
---	----

Appendix E: Pre-Operations Reports

Pre-Operation Reports and Recreation Project Reports are available upon request	43
---	----

Appendix F: Minor Revision to the Landscape Design

This appendix describes changes to the Landscape Design	44
Table 16: Summary of Changes to the DFC	44

Appendix G: Minor Revision to the IP Harvest Acre Range

This appendix describes changes to the Implementation Plan Harvest Acre Ranges	47
Table 17: Annual Partial Cut and Regeneration Harvest Objectives, by Volume and Acres	47

APPENDIX A

Table 10. Financial Summary

TIMBER HARVEST OPERATIONS - FINANCIAL SUMMARY												
District: North Cascade			Fiscal Year: 2017							Date: 01-Jun-16		
Fund %					Net Acres		Volume (MMBF)			Value		
Primary Operation	BOF	CSL	County	Sale Quarter	Partial Cut	Clear-cut	Conifer	Hard-woods	Total	Gross	Projects	Net
1100 Tom	100%		Linn	1	209	9	3.2	0	3.2	\$1,124,324	\$167,779	\$956,545
CF 331	100%		Marion	2	38	0	1.2	0	1.2	\$739,500	\$116,900	\$622,600
Crabby Patty	100%		Linn	2	0	113	3.4	0	3.4	\$1,361,592	\$134,918	\$1,226,674
Horse Camp Thin	100%		Linn	3	90	1	1.0	0	1.0	\$364,479	\$54,708	\$309,771
P200	100%		Linn	4	0	81	4.5	0.1	4.6	\$1,837,165	\$169,138	\$1,668,027
Slick Rick	100%		Linn	2	0	42	1.5	0	1.5	\$592,960	\$112,435	\$480,525
Tuers Pick Up	100%		Linn	4	0	18	0.6	0	0.6	\$240,218	\$20,219	\$219,999
Zip-Up 2	100%		Marion	3	0	172	4.3	0	4.4	\$1,758,255	\$168,591	\$1,589,664
Total:					337	436	20	0	20	\$8,018,493	\$944,688	\$7,073,805
Range					290-1170	110-450	19-21					

TIMBER HARVEST OPERATIONS - FINANCIAL SUMMARY												
District: North Cascade			Fiscal Year: 2017							Date: 01-Jun-16		
Fund %					Net Acres		Volume (MMBF)			Value		
Alternate Operations	BOF	CSL	County	Sale Quarter	Partial Cut	Clear-cut	Conifer	Hard-woods	Total	Gross	Projects	Net
Family Camp 2	100%		Clackamas	N/A	0	58	1.0	0	1.0	\$407,957	\$200,159	\$207,798
Gravy Train	100%		Marion	N/A	0	95	3.1	0	3.1	\$1,255,452	\$29,839	\$1,225,613
Green 30	100%		Marion	N/A	0	65	1.5	0	1.5	\$592,800	\$165,525	\$427,275
Higher Rock	100%		Linn	N/A	264	0	2.1	0	2.1	\$720,775	\$154,627	\$566,148
Radio Flyer	100%		Linn	N/A	95	1	2.1	0	2.1	\$848,944	\$85,268	\$763,676
Spike Only	100%		Linn	N/A	99	2	0.6	0	0.6	\$214,959	\$50,560	\$164,399
Tom Rock Top	100%		Linn	N/A	0	86	2.1	0	2.1	\$820,992	\$136,433	\$684,559
West 7 Mile	100%		Linn	N/A	99	1	0.7	0	0.7	\$177,795	\$34,608	\$143,187
Total:					557	308	13	0	13	\$5,039,674	\$857,019	\$4,182,655

Table 11. Forest Resource Summary

PRIMARY HARVEST OPERATIONS - FOREST RESOURCE SUMMARY																			
District: North Cascade												Fiscal Year: 2017			1-Jun-16				
This table lists Forest Resources and other issues addressed within Pre-Operations Report due to their presence within or near harvest operations																			
Primary Harvest Operations	Unit (Optional)	Forest Health Issues ¹	Invasive Species	LYR/OFS Structures ²	Landcape Design LYR/OFS ³	Install/Replace Culverts on Fish Bearing / Perennial Streams	Harvesting within 100' of Fish Bearing Stream	Domestic Water Source	Potential Stream Habitat Improvement ⁴	Within Aquatic Anchor	Within Terrestrial Anchor	Operating within a NSO Provincial Circle	Within 1/4 mile of M/MMA	T&E Fish Adjacent to Harvest Unit / Haul Route ⁵	T&E Plants	Geotechnical Issues Needing Field Review	Recreation Sites	Cultural Resources	Scenic Resources
1100 Tom			x	x	x					x			N/A					x	
CF 331			x	x	x								N/A				x		
Crabby Patty		x	x	x					x				N/A						
Horse Camp Thin			x							x			N/A				x	x	x
P200		x	x	x					x				N/A	x		x			x
Slick Rick			x										N/A					x	
Tuers Pick Up			x	x									N/A	x					x
Zip Up 2			x										N/A					x	
ALTERNATE HARVEST OPERATIONS - FOREST RESOURCE SUMMARY																			
Alternate Harvest Operations	Unit (Optional)	Forest Health Issues ¹	Invasive Species	LYR/OFS Structures ²	Landcape Design LYR/OFS ³	Install/Replace Culverts on Fish Bearing / Perennial Streams	Harvesting within 100' of Fish Bearing Stream	Domestic Water Source	Potential Stream Habitat Improvement ⁴	Within Aquatic Anchor	Within Terrestrial Anchor	Operating within a NSO Provincial Circle	Within 1/4 mile of M/MMA	T&E Fish Adjacent to Harvest Unit / Haul Route ⁵	T&E Plants	Geotechnical Issues Needing Field Review	Recreation Sites	Cultural Resources	Scenic Resources
Family Camp 2				x									N/A						
Gravy Train			x					x					N/A	x					
Green 30			x										N/A						
Higher Rock			x	x	x					x		x	N/A					x	
Radio Flyer			x	x	x								N/A				x	x	
Spike Only			x							x			N/A					x	
Tom Rock Top			x	x					x	x			N/A						x
West 7 Mile			x										N/A						

¹ A 'x' (in any column) indicates yes the resource or other issue occurs within or near the harvest operation and is addressed by the Pre-Operations Report

² A 'x' indicates the harvest operation contains stands that are currently in a Layered or Older Forest Stand Structure

³ A 'x' indicate that the operation contains areas that have been designated for the development of complex forest stands (LYR/OFS)

⁴ The final decision on these projects will occur during sale preparation and inconspicuous with ODFW.

⁵ This table lists harvest operations (units or log haul routes) that are adjacent to streams that are known to contain T&E fish. The Pre-Operation Report identifies whether T&E fish are present in the basin.

Table 12. Forest Structure Summary

TIMBER HARVEST OPERATIONS - FOREST STRUCTURE SUMMARY									
District: North Cascade		Fiscal Year: 2017					06/01/2016		
<u>Current Structure</u>		<u>Post Harvest Structure</u>					<u>Desired Future Condition</u>		
	Total	REG	CSC	UDS	LYR	OFS	GEN	LYR	OFS
REG	0								
CSC	83	20		63			83		
UDS	272	204		28	40		232	40	
LYR	380	202			178		202	178	
OFS	38					38			38
Total	773	426	0	91	218	38	517	218	38

Table 13. Forest Roads Summary

FOREST ROADS SUMMARY									
District: North Cascade			Fiscal Year: 2017				Date: 6/1/2016		
Primary Operation	Construction		Improvement		Other Projects	Total Project Costs	Gross Value of Operation	Total Cost as a percent of Gross Value	Comments
	Miles	Cost	Miles	Cost					
1100 Tom	1.44	\$94,876.00	4.6	\$72,903.00	\$0.00	\$167,779.00	\$1,124,324.25	15.0%	Tom Rock Pit (TR500)
CF 331	0.2	\$4,000.00	2.8	\$51,900.00	\$61,000.00	\$116,900.00	\$739,500.00	16.0%	Extra Rock Crushing
Crabby Patty	0.72	\$42,672.00	2.0	\$42,246.00	\$50,000.00	\$134,918.00	\$1,361,592.00	10.0%	Stockpile Crushed Rock
Horse Camp Thin	0.23	\$30,488.00	1.0	\$24,220.00	\$0.00	\$54,708.00	\$364,478.80	15.0%	
P200	0.2	\$23,362.00	1.0	\$48,276.00	\$97,500.00	\$169,138.00	\$1,837,165.20	9.0%	Extra Rock Crushing
Slick Rick	0.1	\$16,961.00	2.6	\$39,774.00	\$55,700.00	\$112,435.00	\$592,960.00	19.0%	Stockpile/Brushing/Drilling
Tuers Pick Up	0.27	\$16,938.00	0.0	\$0.00	\$3,281.00	\$20,219.00	\$240,218.40	8.0%	Brushing
Zip-Up 2	0.9	\$83,485.00	1.6	\$84,306.00	\$800.00	\$168,591.00	\$1,758,254.80	10.0%	Easement
Total:	4.06	\$312,782.00	15.59	\$363,625.00	\$268,281.00	\$944,688.00	\$8,018,493.45	11.8%	

Alternate Operation	Miles	Cost	Miles	Cost	Other Projects	Total Project Costs	Gross Value of Operation	Total Cost as a percent of Gross Value	Comments
Family Camp 2	0.29	\$40,762.00	0.1	\$9,397.00	\$150,000.00	\$200,159.00	\$407,957.20	49.0%	Crush @ 720 Pit/Stockpile
Gravy Train	0	\$0.00	2.5	\$10,000.00	\$19,838.92	\$29,838.92	\$1,255,452.00	2.0%	Easement/Brushing/Spraying
Green 30	0.24	\$22,375.00	0.2	\$13,150.00	\$130,000.00	\$165,525.00	\$592,799.60	28.0%	Develop N70 Pit
Higher Rock	0	\$0.00	2.1	\$154,627.00	\$0.00	\$154,627.00	\$720,774.60	21.0%	
Radio Flyer	0.2	\$24,558.00	1.1	\$30,710.00	\$30,000.00	\$85,268.00	\$848,944.00	10.0%	Brushing Mad Creek Area
Spike Only	0.44	\$41,810.00	0.66	\$8,750.00	\$0.00	\$50,560.00	\$214,959.15	24.0%	
Tom Rock Top	0	\$0.00	0.8	\$22,825.00	\$113,608.00	\$136,433.00	\$820,992.00	17.0%	Stockpile @ Shepherds
West 7 Mile	0.28	\$34,608.00	0	\$0.00	\$0.00	\$34,608.00	\$177,795.00	19.0%	
Total:	1.45	\$164,113.00	7.5	\$249,459.00	\$443,446.92	\$857,018.92	\$5,039,673.55	17.0%	

Table 14. Reforestation and Young Stand Management Summary

REFORESTATION AND YOUNG STAND MANAGEMENT SUMMARY								
District: North Cascade		Fiscal Year: 2017					Date: 06/1/2016	
ODF Funded Activities		Board of Forestry		Common School Forest Lands			District	
Management Activity	Acres Planned	Average Cost*/Acre	BOF Cost	Acres Planned	Average Cost*/Acre	CSL Cost	Total Acres	Total Cost
Initial Planting	385	\$280.00	\$107,800.00				385	\$107,800.00
Interplanting	100	\$290.00	\$29,000.00				100	\$29,000.00
Tree Protection-Barriers	23	\$220.00	\$5,060.00				23	\$5,060.00
Site Prep-Chemical- Aerial	370	\$30.00	\$11,100.00				370	\$11,100.00
Site Prep-Chemical- Hand	15	\$125.00	\$1,875.00				15	\$1,875.00
Site Prep -Slash Burning	135	ODF Staff \$50.00	\$6,750.00				135	\$6,750.00
Site Prep -Mechanical	135	Timber Sale \$329.00	\$44,415.00				135	\$44,415.00
Release-Chemical- Aerial	250	\$35.00	\$8,750.00				250	\$8,750.00
Release.-Chemical-Hand	94	\$125.00	\$11,750.00				94	\$11,750.00
Release-Chemical Hack & Squirt	350	Mill Creek \$110.00	\$38,500.00				350	\$38,500.00
Release-Mechanical-Hand	150	Mill Creek \$350.00	\$52,500.00				150	\$52,500.00
Animal Damage Control	400	Mill Creek \$125.00	\$50,000.00				400	\$50,000.00
Totals	2407	--	\$367,500.00				2,407	\$367,500.00

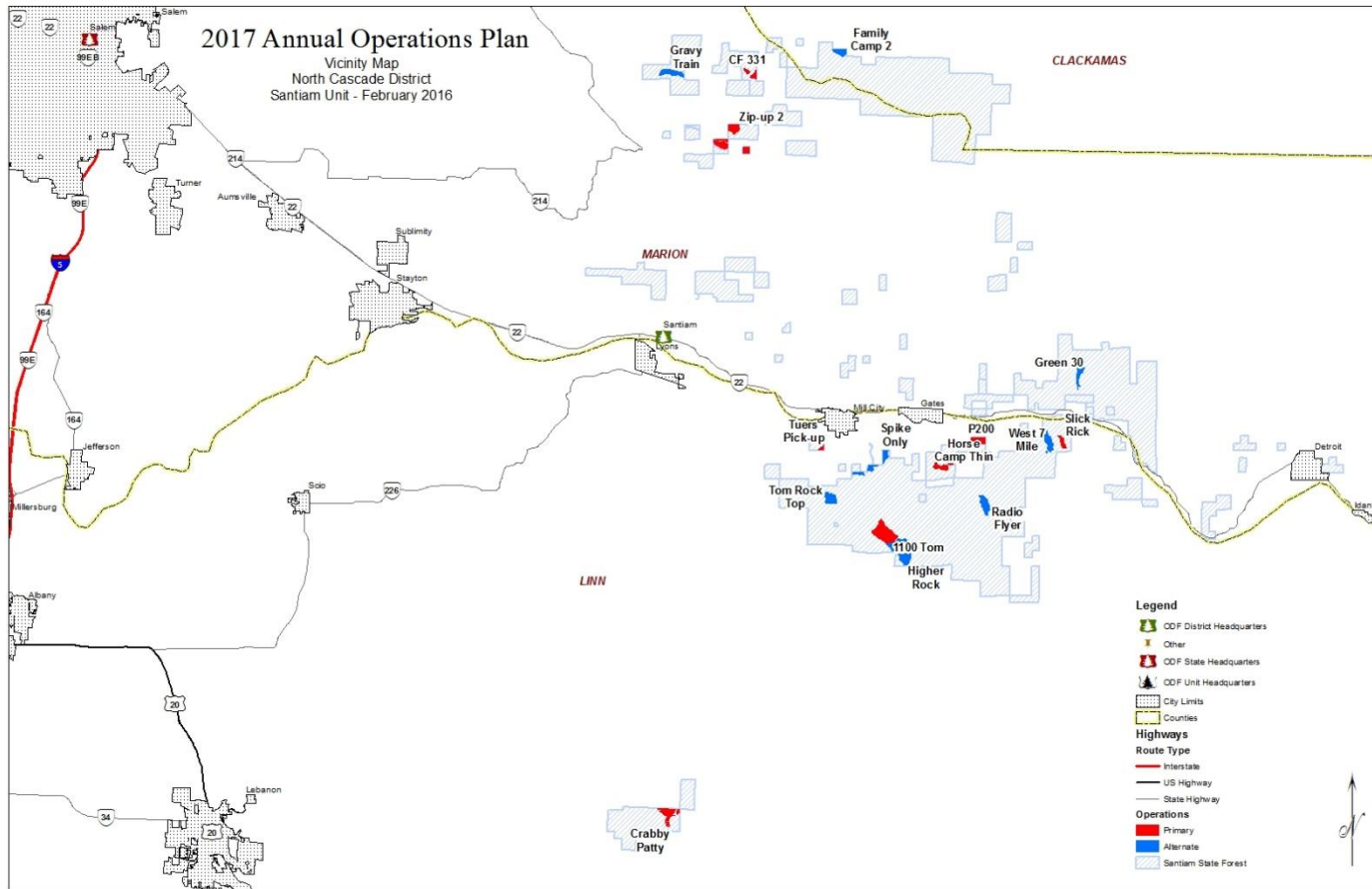
Planting costs include all costs including seedlings*

Table 15. Recreation Management Summary

RECREATION MANAGEMENT SUMMARY										
District: North Cascade			Fiscal Year: 2017					Date: 06/1/2016		
Operation	Unit of Measure	Current	Construction Projects	Cost		Improvement Projects	Cost		Total Cost	Comments
				ODF	Other		ODF	Other		
Facilities										
Campsites	Sites	26				Rock Creek campsite removal and reconstruction			\$ 500.00	ODF Staff
						Install water filtration system at Horse Camp			\$ 3,100.00	Contractor
						Butte Creek Camp Site Addition			\$ 1,500.00	ODF Staff
						Expand Shellburg Parking Area			\$ 4,000.00	ODF Staff/Mill Creek
Day Use Areas		2				Update Kiosks and improve signage.			\$ 1,000.00	ODF/Mill Creek
Trailheads		7				Update signage and maps			\$ 500.00	ODF/Mill Creek
Trails										
Non-Motorized	Miles	25				Install culverts where needed			\$ -	ODF Staff/Mill Creek
						Add rock where needed			\$ -	ODF Staff/Mill Creek
						Update signage along Shellburg Trail system			\$ 150.00	ODF Staff/Mill Creek
Total Costs									\$ 10,750.00	

APPENDIX B

Vicinity Map



APPENDIX C

Consultation with other State Agencies

This appendix summarizes the results of consultations with the Oregon Department of Fish and Wildlife, the Oregon Department of Transportation, and other agencies.

Representatives from ODFW were in attendance with ODF's resource specialists to discuss the activities in this AOP. The district has received verbal comments from ODFW and these comments were considered while developing pre-operation reports.

Archaeologists from the Oregon Department of Transportation (ODOT) have reviewed the proposed timber harvests, road construction, and recreation projects to review potential impacts to cultural resources. When reviewing the recreation projects and proposed timber harvests, ODOT found various archeological resources within or directly adjacent to some of the proposed operations.

- Rock Creek Campground Sites – There is potential for an archaeological resource to be present within $\frac{1}{4}$ mile of the operation. Foresters will explore the project area prior work. If any evidence of artifacts are present, foresters will consult with an archaeologist to help classify the artifacts and assist in developing management strategies for the site.
- Timber Sales
 - 1100 Tom, Horse Camp Thin, Slick Rick, and Zip-Up 2 are proposed operations that will require a thorough field exam to determine if potential cultural resources are present. If any potential artifacts are found, an archaeologist will be consulted with to help classify the artifacts and assist in developing management strategies for the site.
 - CF 331, Crabby Patty, P200, and Tuers Pick Up were all reviewed through the ODOT cultural resource review. No cultural resources were historically present in the operations or within the immediate vicinity. However, if foresters were to find any potential artifacts, the same consultation process would be implemented.

APPENDIX D

Public Involvement

The Oregon Department of Forestry held a formal 45 day public comment period for the 2017 Annual Operations Plans from April 4 through May 20, 2016.

The purpose of the Public Comment Period was to provide an opportunity for the public to review the AOPs, ask questions, make recommendations and offer comments. As a public agency, ODF strives to operate in the best interest of Oregonians. We provide opportunities for public participation to assist us in securing the greatest permanent value from state forests for all Oregonians.

Public comments and the Program's responses are available upon request.

APPENDIX E

Pre-Operations Reports

Pre-Operation Reports and Recreation Project Reports are available upon request.

APPENDIX F

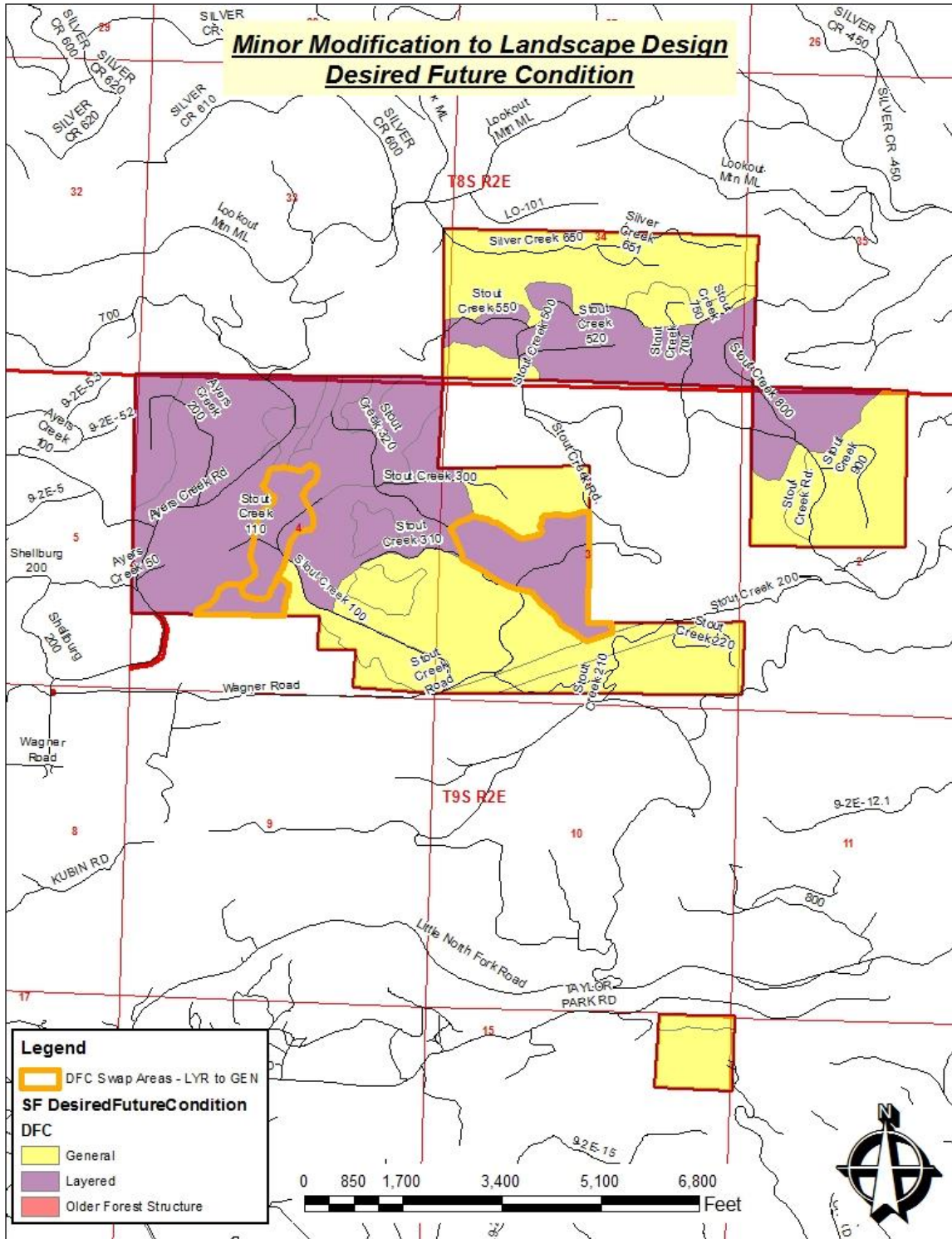
Landscape Design Desired Future Condition - Minor Modification Notification

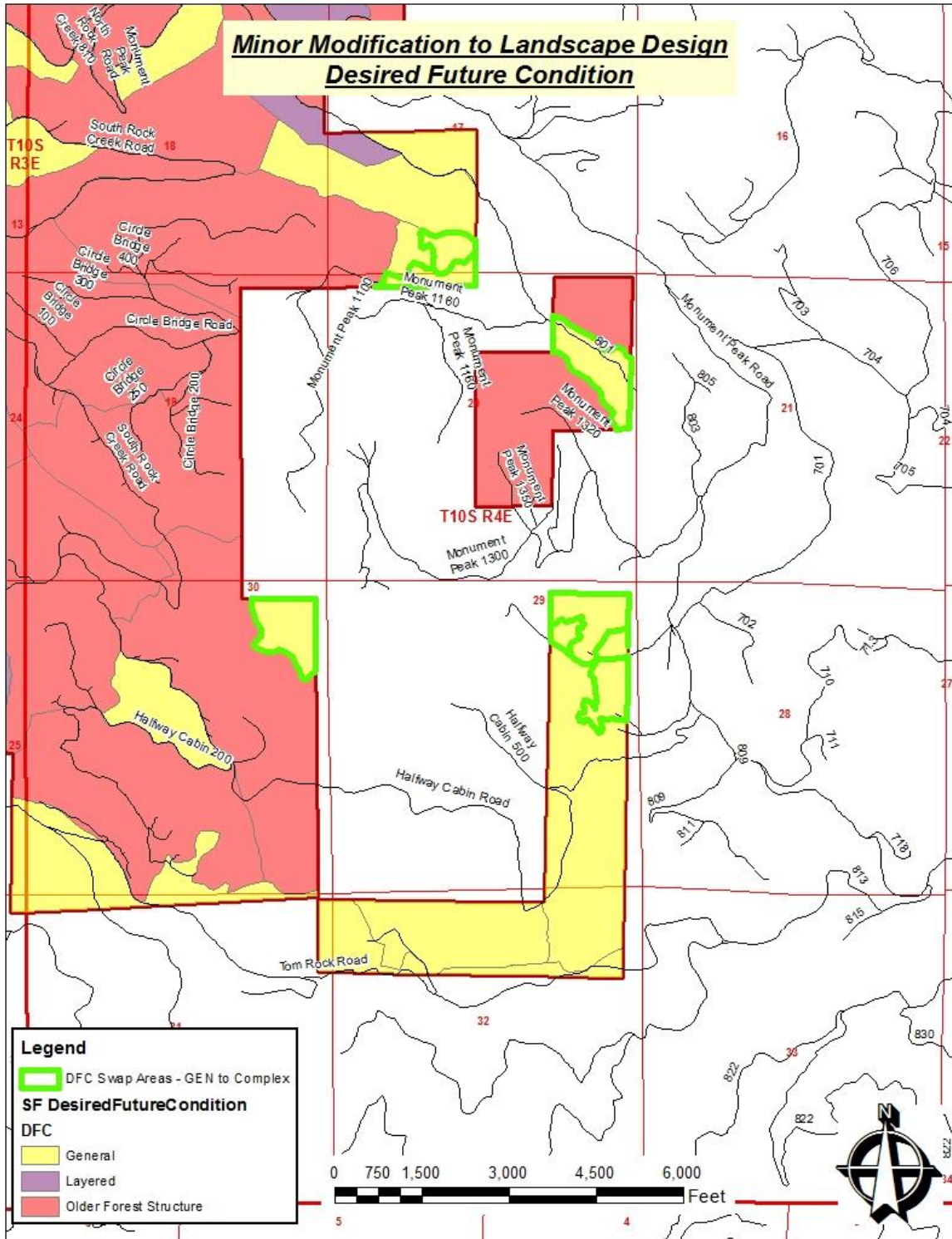
As described in the 2012 North Cascade IP, the district has mapped a Landscape Design that designates 35% of the district acres in a future complex condition, either Layered (LYR) or Older Forest Structure (OFS). The term General management (GEN) or non-complex will be used to describe the desired future condition (DFC) of stands that are not planned for OFS or LYR in the North Cascade District’s landscape design. The DFC landscape design for the North Cascade district was done using a “broad brush” method incorporating a variety of landscape design principles and strategies. The original Landscape Design mapping process used stand types instead of geographical breaks to define the future complex stand boundaries with the intent that the boundaries could be fine-tuned during the planning process. Actual boundaries between complex and general DFC’s are determined on the ground during the sale planning and preparation process.

Since 2012, the district has taken a closer look at the landscape designations on the ground. Minor modifications in the DFC landscape design are being proposed for a variety of reasons. These reasons include; discovering areas where DFC complex would provide more resource protection in a different location such as within or near northern spotted owl sites, along fish bearing streams, designated recreation areas, scenic resources and tied into stands currently designated as complex or provided connectivity between patches of land designated for complex; fitting a stand to a more appropriate or realistic pathway based on additional data collected through Stand Level Inventory (SLI) and field observations during the AOP planning process and refinement of the DFC boundary on the ground. When picking stands to change from non-complex to complex, the district tried to pick stands that were either the same age or older and more complex than the stands they were replacing. The district feels that this adjusted landscape design ties into the Greatest Permanent Value rule. Below is a table summarizing the acres changed and maps displaying the specific areas being proposed for change.

Table 16. Summary of Changes to the DFC

<u>Current DFC Complex Acres</u>	<u>Proposed Removal from DFC Complex</u>	<u>Proposed Addition To DFC Complex</u>	<u>Revised DFC Complex Acres</u>	<u>Revised % of DFC Complex (District Acres 47,630)</u>
16,883	118	121	16,886	35%





APPENDIX G

Implementation Plan Minor Modification Notification

As described in the 2012 North Cascade IP, *Proposed Management Activities – Harvesting* section, the district has an annual harvest objective (AHO) which is the sustainable and predictable production of timber (forest products) from the district and the harvest activities that are necessary to achieve this production. Through a district opportunity analysis completed within the IP, the volume target was set at 19 MMBF with a set of acreage ranges for regeneration harvest and partial cut harvest. These acre ranges describe the types of harvest activities that will occur over time to achieve the volume objective and the desired future condition of stand structures. The following table describes the original and newly proposed annual harvest objective by volume and acres set forth in the district implementation plan.

Table 17. Annual Partial Cut and Regeneration Harvest Objectives, by Volume and Acres

<u>Annual Harvest Objective - Volume (MMBF)</u>		<u>Regeneration Harvest Acres</u>	<u>Partial Cut Harvest Acres</u>
Original 2012 IP	19-21	110-450	290-1170
Proposed Modification	19-21	240-700	0-800

Since 2012, the district has taken a closer look at the AHO, specifically the acreage ranges and how these ranges affect forest management decisions. A minor modification in the implementation plan is being proposed for a variety of reasons. These reasons include; stands selected for harvest, their current condition, desired future condition, and the silvicultural prescription needed to move the current stand to its desired future condition, recent harvest activity at the basin level, results of threatened and endangered species surveys, condition of the transportation system, and current market conditions. The district is proposing to revise the acreage ranges to allow more flexibility when trying to achieve the annual volume objective. The district feels that this adjusted acreage range ties into the Greatest Permanent Value rule.