NORTH CASCADE DISTRICT

"STEWARDSHIP IN FORESTRY"

2019 ANNUAL OPERATIONS PLAN

NORTH CASCADE DISTRICT

APPROVED 2019 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 2019 (July 1, 2018 – June 30, 2019).

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 forest 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 revenue 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, find new challenges and explore new 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 gone through a 45 day public comment period. During this time we requested comments on our plans. This AOP will be reviewed by the Forest Trust Land Advisory Committee (representing the counties that deeded land to ODF), the State Forests Advisory Committee (SFAC - composed of Oregonians representing many interests), and Wildlife, the US Fish and Wildlife Service and Oregonians in general. The public comment period for the FY2019 Annual Operations Plans ran from March 19, 2018 – May 4, 2018. No comments were received that were specific to North Cascade's AOP or IP major modifications.

A short summary of activities planned for the coming year:

- Initial planting of 176,000 trees on 403 acres, inter-planting of 20,000 trees on 150 acres, and conducting vegetation and animal management activities on an additional 2,350 acres to ensure the survival and growth of plantations
- Maintaining a 390 mile road network that provides access to timber harvest as well as various recreational opportunities
- Northern Spotted Owl density surveys for large blocks of ownership, and 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 22 million board feet of timber volume, generating net revenue of an estimated $12,091,870
- Operating and maintaining the following developed facilities in a safe, clean, and responsible manner:
    - 5 campgrounds
    - 7 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

NORTH CASCADE DISTRICT

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INTRODUCTION

This annual operations plan (AOP) outlines state-owned forestland managed by the North Cascade District for Fiscal Year 2019 (FY19), which begins July 1, 2018 and ends June 30, 2019. This document describes how the activities and projects undertaken by the district will achieve the goals, strategies, and objectives of the *NW Oregon State 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; Public Information and Education; Administration and Appendices.

The proposed operations and activities are planned to be designed, engineered, and submitted for processing during the FY19 time period. Actual on-the-ground operations will likely not occur during FY19 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 FY19.

A Public Comment period ran from March 19, 2018 – May 4, 2018.

In addition to describing forest management activities for FY19, Appendix F and G of this AOP also describe the modifications being recommended to the District's Forest Land Management Classification System and Landscape Design.

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 them here: http://www.oregon.gov/ODF/Pages/Reports.aspx

INTEGRATED FOREST MANAGEMENT

Timber Harvest Operations

Overview of Timber Harvest Operations

The objective is to achieve the average of the Annual Harvest Objective (AHO) over the expected duration for the IP. Under normal circumstances, the volume proposed in an AOP will be near the AHO target; however, some events may result in an AOP volume that is farther from the AHO target. These events may consist of, but are not limited to, storm damage, insect and/or disease outbreaks, timber market conditions or other significant events. Alternate timber sales included in this AOP may be sold as primary operations in repose to any of these circumstances.

The following planned commercial forest management activities are within the guidelines and objectives outlined in the North Cascade District's 2012 Implementation Plan. The FY19 AOP is estimated to produce 22 million board feet (MMBF) in volume, generate gross revenues of approximately $12,803,250 and net revenues of $12,091,870. The district has also included 7 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. 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 726 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 - 1, 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 Harvest Objectives identified in the North Cascade District Implementation Plan. All values are acres, except for Volume.

Annual Harvest Objectives	IP Annual Objective		2019 AOP
	Low	High	
Volume (MMBF)	19		22
Partial Cut Harvest	0	800	312
Regeneration Harvest	240	700	414

Table 2. Accomplishment of AOP Harvest Volume Compared to IP Annual Objective (MMBF)

Fiscal Year	IP Annual Objective	AOP Planned Volume	AOP Sold Volume	Cumulative Difference from Objective[1]
2013	19	19.1	25.270	6.270
2014	19	20.6	23.161	10.431
2015	19	18.8	13.833	5.264
2016	19	19.6	17.991	4.255
2017	19	19.9	18.784	4.039
2018 (Current AOP)[2]	19	19.5	12.736	
2019 (Draft AOP)	19	22		

1. IP Harvest Objective versus Sold Volume
2. Estimated Volume based on completion (prepared and sold volume) of 67% of the planned volume from the current AOP

The regeneration harvests proposed in this operations plan comprise approximately 0.9% of the total acres within the Santiam State Forest. 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 Desired Future Condition (DFC) of General (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 DFC 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 Habitat 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 FY19 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 Abiqua Triangle and Brass Knuckles.

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 (decay 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 Anchor Sites 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 3 and 4 summarize cumulative harvest operations in TAS and AA since the strategy was adopted (AOPs 2012 through 2019). Currently, no operations are scheduled within the TAS for the FY19.

Table 3. Summary of Harvest Operations within TAS (Acres and Percent)

Terrestrial Anchor Site (TAS)	Current AOP (FY 2019) 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%	20.5%
All TAS	0	0	3	278
% of Acres	0%	0%	0.2%	20.5%
Entire District	414	312	2,899	2,746
% of Acres	0.9%	0.7%	6.1%	5.8%

Table 3 summarizes proposed harvest operations within the TAS for FY19 and the cumulative operational acreage since the strategy was adopted (AOPs 2012 through 2019). 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 1,354 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 4. Summary of Harvest Operations within AA (acres and percent)

Aquatic Anchors (AA)	Current AOP (FY 2019) Planned Harvest		Cumulative Harvest (FY 2012 AOP to Present)	
	Clearcut	Partial Cut	Clearcut	Partial Cut
Rock Creek AA	64	0	149	1197
% of Acres	0.5%	0.0%	1.2%	9.8%
Sardine Creek AA	0	0	0	0
% of Acres	0.0%	0.0%	0.0%	0.0%
All AA	64	0	149	1197
% of Acres	0.5%	0.0%	1.2%	9.8%
Entire District	414	312	2549	2434
% of Acres	0.9%	0.7%	6.1%	5.8%

Table 4 summarizes proposed harvest operations within the AA's for FY19 and the cumulative operational acreage since the strategy was adopted (AOPs 2012 through 2019). Cumulative clearcut harvest rates within the Aquatic Anchors remain significantly lower than partial cuts. 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 2019 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 - 2. Forest Resource Summary. 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 5. Summary of Primary Timber Harvest Operations in each Management Basin. All values are in net acres.

Management Basin	Partial Cut	Clearcut
Butte Creek	0	0
Cedar Creek	0	166
Mad Creek	312	182
Crabtree	0	0
Scattered	0	0
Green	0	0
Rock Creek	0	66
Totals	**312**	**414**

Butte Creek Basin

Gawley Wanna Cracker (Alternate) – Proposed 1 unit modified clearcut across 81 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 1.51 miles of existing road will be improved along the proposed haul route and existing spurs. There are no streams currently mapped within the proposed unit boundary, if found during layout, they will receive protection according to the specifications in the FMP. Gawley Creek, a small fish bearing stream, is located west of the proposed unit.

Cedar Creek Basin

Abiqua Triangle- Proposed 1 unit modified clearcut across 60 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.2 miles of new road will be constructed to facilitate harvest operations. Approximately 1.25 miles of existing road will be improved along the proposed haul route. Streams within this unit are all non-fish perennial streams and in the headwaters of Little Abiqua Creek and Abiqua Creek.

Brass Knuckles- Proposed 1 unit modified clearcut across 106 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.4 miles of new road will be constructed to facilitate harvest operations. Approximately 0.86 miles of existing road will be improved along the proposed haul route. There are no mapped streams within this unit, if found during layout, they will receive protection according to the specifications in the FMP. This operation is in the Crooked Finger OHV designated recreation area.

Silver Dollar (Alternate) – Proposed 2 unit modified clearcut across 71 net acres. The DFC for these units are General. The future pathway of these stands will be regenerated with primarily Douglas-fir. Approximately 0.08 miles of new road will be constructed to facilitate harvest operations. Approximately 1.7 miles of existing road will be improved along the proposed haul route. There are no streams currently mapped within the proposed unit boundaries, if found during layout, they will receive protection according to the specifications in the FMP.

Mad Creek Basin

Pole Vault- Proposed 1 area moderate partial cut across 312 acres. The DFC of this stand is OFS. 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 DWD. An upper and lower diameter limit will be used to create and maintain canopy layering. This unit has a high percentage of high value transmission poles which will be targeted in the prescription. Approximately 2.05 miles of new road will be constructed to facilitate harvest operations. Approximately 0.72 miles of existing road will be improved along the proposed haul route. Streams in this unit are all non-fish perennial streams in the headwaters of Little Rock Creek and Mad Creek.

Mad Hatter- Proposed 2 unit modified clearcut across 136 net acres. The DFC for both units is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.51 miles of new road will be constructed to facilitate harvest operations. Approximately 5.46 miles of existing road will be improved along the proposed haul route.

Streams within this unit are all non-fish perennial streams and in the headwaters of Sevenmile Creek.

Twin Peaks- Proposed 1 unit modified clearcut across 102 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.37 miles of new road will be constructed to facilitate harvest operations. Approximately 12.76 miles of existing road will be improved along the proposed haul routes for both this sale and Pole Vault. Streams within this unit are all non-fish perennial streams and in the headwaters of Rock Creek. This unit is split between both the Mad Creek and Rock Creek Management Basins.

Crabtree Basin

Last West (Alternate) – Proposed 1 unit modified clearcut across 71 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.24 miles of new road will be constructed to facilitate harvest operations. Streams within this unit are all non-fish perennial streams and are in the headwaters of Hamilton Creek and Green Mountain Creek.

Scattered Basin

Ayers Acres (Alternate) – Proposed 1 unit modified clearcut across 91 net acres. The DFC for this unit is currently Layered but being proposed as a landscape design change to General in this AOP. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.38 miles of new road will be constructed to facilitate harvest operations. Approximately 1.75 miles of existing road will be improved along the proposed haul route. Streams within this unit are all non-fish perennial streams and are in the headwaters of Ayers Creek. The fish bearing portions of Ayers Creek and Stout Creek are outside of the proposed unit boundary.

Elk Hoof (Alternate) – Proposed 1 unit modified clearcut across 30 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.27 miles of new road will be constructed to facilitate harvest operations. Approximately 0.78 miles of existing road will be improved along the proposed haul route. Streams within this unit are all non-fish perennial streams and are in the headwaters of the Little North Santiam River.

Green Basin

No operations are planned in this basin during FY19.

Rock Creek Basin

Twin Peaks- (see above under Mad Creek Basin)

Jake the Snake (Alternate) – Proposed 1 unit modified clearcut across 97 net acres. The DFC for this unit is General. The future pathway will be regenerated with primarily Douglas-fir. Approximately 0.23 miles of new road will be constructed to facilitate harvest operations. Approximately 1.09 miles of existing road will be improved along the proposed haul route. Most of the streams within this unit are non-fish perennial streams and are in the headwaters of Manis Creek and Snake Creek. A fish bearing portion of Snake Creek flows along the eastern boundary of the unit. This area will be used as a Green Tree Retention Area.

Winterfelled (Alternate) – Proposed 2 unit modified clearcut across 121 net acres. The DFC for these units are General. The future pathway of these stands will be regenerated with primarily Douglas-fir. Approximately 0.27 miles of new road will be constructed to facilitate harvest operations. Approximately 5.83 miles of existing road will be improved along the proposed haul route and adjacent collector roads. Streams within these units are all non-fish perennial streams and are in the headwaters of Rock Creek.

Forest Roads Management

Overview

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 FY19 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 appropriately 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 determine where additional culverts will be installed. Stream crossing structures will be analyzed on haul routes and the connecting spur roads to verify 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 2019 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 activities which occur in the winter months.

Total cost of project work for FY19 is estimated at $711,380 or 5.6% 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 Appendix A - 3. Forest Roads Management Summary.

Road Construction

The district will construct approximately 3.6 miles of rocked 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 20.1 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, 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 19.6 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 will be maintained by work order contracts. 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. Work order contracts will also be utilized to respond 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.

Management of Rock Source / Supply

Rock quarry development and/or rock crushing is necessary to provide sufficient quantities of the road rock for planned road construction, road improvement, and road maintenance activities. Quarry developments are planned for the following operations:

- Twin Peaks (Monument Peak Pit)
- Brass Knuckles (CF340 Pit)
- Mad Hatter (MC500 Pit)

Land Surveying

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. Brass Knuckles is anticipated to be the only primary operation requiring re-establishment of property lines for the FY19 AOP. In total, approximately 1 mile 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 $3,000. This amount will be included in the FY19 budget to account for these needs.

Young Stand Management

Young stand management operations occur in forest stands prior to 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.

Appendix A - 4. Reforestation and Young Stand Management Summary 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 ODF Staff, inmate crews as well as contracted crews. 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. Fertilization and Pruning 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 a necessary tool used to establish 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 inmate crews
- Slash Burning - ODF staff and inmate crews

The following units will undergo site preparation activities in FY 19: Slick Rick, Family Camp 2, Tuer's Pick Up, Zip-Up 2, and Crabby Patty. 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 FY19.

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.

Seedlings / Nurseries

A wide variety of seedlings are grown at forest nurseries throughout the Pacific Northwest to meet the reforestation needs. Seedlings are grown in three different stock types, 1) plug seedlings or one year old container grown seedlings, 2) plug ones which are grown one year in a container followed by a second year in a bare root bed, and 3) straight bare root seedlings grown from seed in a bare root bed and then transplanted to a lower stocking bare root bed. The budget accounts for a string of growing costs over several years rather than just those costs of the trees being grown and planted in the winter of 2019. The budget for seedlings includes portions of the costs for growing seedlings for the planting years of 2019, 2020, and 2021. Additionally there are costs associated with the seed that is used for growing the seedlings, estimated transportation costs and various costs associated with the packaging and freezer and/or cooler storage.

The individual species mixture and stock type used for a particular reforestation unit is determined after the final inventory from the forest nursery. For North Cascade, 141,000 or 80%

of the seedlings for 2019 are bare root grown Douglas-fir. The remaining 35,000 or 20% of the 2019 seedlings are minor species including western red cedar and noble fir. The seedlings are grown in nurseries in Oregon and Washington to avoid a catastrophic loss at any one nursery along with a concern towards keeping transportation costs as low as possible.

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 95% of our planted trees are Douglas-fir, and about 5% are western redcedar. Because it is root rot resistant, the western redcedar is planted in areas where root rot is present. Western redcedar is scheduled to be planted in FY19.

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 scheduled to be planted in FY19.

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 FY19, the units that will be planted should be the same as the units that will be site prepped. These units include: Slick Rick, Family Camp 2, Tuer's Pick Up, Zip-Up 2, and Crabby Patty.

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 (aerial), Private Contractors (backpack) occasionally Mill Creek Crews (hand), and ODF staff (hand)
- Mechanical Hand Release—Mill Creek Crews
- Chemical Hack and Squirt—Mostly Mill Creek Crews, occasionally Private Contractors

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 two 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 FY19 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 FY19. An estimated 250-350 acres are in need of PCT, but a lack of funding in recent years has stopped the district from planning PCT projects.

Pruning

No pruning projects have been planned for FY19.

Invasive Species

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 prior to working on the State Forest.

Roadside Spraying

Reforestation employees work with the forest roads employees on the management of vegetation on the district's forest roads. Vegetation management protects the investment by preventing damage from unchecked vegetation growth, helps to maintain a safe driving environment by maintaining clear sight distance, controls noxious weeds, and reduces fire hazards. Roadside spraying using herbicides is one of the tools used to manage unwanted vegetation along road ways. During the spring of 2018, roadside vegetation surveys will be conducted to determine roadside treatment needs for FY19. The current estimate is 120 miles based on historical averages.

Stocking Surveys

Stocking surveys will be conducted on young conifer stands to determine stocking levels in the two year old and four year old stands. Approximately 750 acres of stocking surveys will be conducted by district staff in FY2019.

Recreation Management

Overview of Recreation Management

Currently, the district manages four fee campgrounds, one OHV staging area, seven trailheads and parking areas, 25 miles of non-motorized trails, and six miles of OHV trails. 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 have been focusing on ways

to best manage the increased usage while preserving the features and assets visitors have come to experience.

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, ATV use, 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 FY19 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 FY19 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.

Within this operation plan, the district plans to newly designate two recreation areas: Crooked Finger OHV Area and Rock Creek Camping Area. These recreation areas have been used in the past but not officially designated as recreation areas through OAR's 629-025-0000 – 629-025-0099. Officially designating these areas will allow the district to adopt rules necessary for the management, protection, utilization, and conservation of the areas.

Facilities (Campgrounds, View Points, Trail Heads, etc.)

A summary of the costs can be found in Appendix A – 5. Recreation Management Summary.

- 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

<u>Rock Creek Camping Area</u>

- Rebuild informational kiosk at fee station
- Complete campsite relocation from FY17 AOP
- Spot rock roads and campsite parking areas
- Replace signage and campsite posts as needed due to weather damage
- Remove hazard trees in and around camp sites

<u>Shellburg Falls Campground</u>

- Paint restroom
- Rebuild campground informational kiosk
- Continue adding rock to depressed trails, and improving trail drainages

- 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
- Explore potential opportunities to increase number of parking spaces
- Refinish wood on covered shelter

Butte Creek Campground

- Reconfigure and add boulders to define campsites and parking locations
- Remove hazard trees near and around campground
- Rebuild campground informational kiosk and relocate iron ranger
- GPS survey historical trail leaving from Butte Creek Campground and leading towards Butte Creek Falls Trailhead

Santiam Horse Camp

- Trail maintenance throughout entire trail system
- Install new trail way-finding signage along Monument Peak Trail system
- Remove hazard trees in and around campground
- Refinish wood on covered shelter

Rhody Lake Recreation Area

- Conduct fuels reduction around camping sites
- Install metal fire pits
- Repair restroom floor and walls damaged by vandalism
- Remove hazard trees near and around campground

Butte Creek Falls Trailhead

- Replace trailhead informational kiosk and signage
- Decommission "user made" trails off of designated trails
- Increase number of parking spaces
- Remove hazard trees near and around trailhead

Crooked Finger ATV Staging Area

- Install informational kiosk with updated trail map and OHV information
- Conduct trail assessment and update GIS layer accuracy
- Install way-finding signage and no shooting placards
- Continue coordination with Adopt-a-Trail group on improving ATV trail system and safety

Natural Arch Trailhead

- Replace trailhead kiosk and way-finding signage
- Repair steps on steep trail sections

Rocky Top Trailhead

- Replace trailhead kiosk and way-finding signage

Sardine Creek Trail

- GPS survey historical trail system

Trails

Motorized (OHV) 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 called Crooked Finger OHV Area, and receives moderate to high use. Trail maintenance will be conducted by volunteer groups and overseen by ODF staff.

Non-Motorized Trails

The district will seek to maintain the over 25 miles of non-motorized trails on the Santiam State Forest. Trail systems provide opportunities for hiking, 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.

Volunteer Program

Volunteers contribute labor, supplies and expertise to the district recreation program. Our volunteers have partnered with ODF to construct new trails, 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. 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 mountain bike trails in the Shellburg Falls Recreation Area. The Chemeketans Trail Crew have contributed considerable amounts of hours maintaining trails in the Shellburg Falls Recreation Area. We are reaching out to partner with a new volunteer group called the Crooked Finger Trail Riders in the maintenance of the Crooked Finger OHV Trail Area in FY19.

Event Management

Annually ODF partners with Run Wild Adventures to host a trail run at the Shellburg Falls Recreation Area which brings approximately 250 participants. ODF also partners with National Association of the Deaf to provide a 1-week long camping and outdoor activity experience for approximately 100 youth in the Rock Creek Camping Area.

Grants

Potential grant funding will be sought in FY19 for restoration efforts in the Sardine Road area. Staff has been working with a newly formed "Partners of the North Santiam" with the intent "To identify and prioritize restoration projects for implementation that will significantly improve aquatic habitat in the North Santiam Watershed." Through this process, a potential project to improve water quality and to provide recreation opportunities in Sardine Creek was developed. The proposed project is intended to decommission the road that is a constant maintenance issue while providing for recreation access to an area that currently has no improvements or facilities. The road is not currently conducive to modern logging equipment and techniques, so by decommissioning the road it will not hinder potential future forest management operations in the area.

Other Integrated Forest Management Projects

Aquatic Habitat Improvement

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 FY19 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.

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 FY19. As future budgets allow, acquisition and exchange plans will be revisited.

Law Enforcement and Public Safety

Currently the district participates in a Cooperative Law Enforcement program in Linn County with other private timber companies. The district is currently seeking opportunities

to partner with Marion County Law Enforcement to address a variety of public misuse activities from vandalism on State Forest structures at recreation sites, garbage dumping, illegal off-road ATV use, and firewood theft.

Firewood Cutting Program

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.

Non-Timber 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 FY19.

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.

Planning

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 FY19. In the past year, through private contracts and Salem Staff, the district acquired 25 stands of new inventory cruises totaling approximately 3,395 acres. In the 2018 calendar year, approximately 3,127 acres across 30 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.

Fish and 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 2018 field season. Density surveys will be conducted on major tracts of ownership which will cover all the primary and most of the alternate operations in this plan, with the exception of two alternate timber sales called Elk Hoof and Gawley Wanna Cracker. Monitoring surveys for known spotted owl sites will also continue in order to determine site occupancy, nesting, and reproductive status of resident owls.

During the 2016 calling season and for future surveying, the district switched 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 6. Summary of Surveys for Northern Spotted Owls

Operation*	Survey Years[1]	BA[2] Required	Special Considerations
Abiqua Triangle	2017, 2018	No	Density Coverage
Brass Knuckles	2017, 2018	No	Density Coverage
Mad Hatter	2017, 2018	No	Density Coverage
Pole Vault	2017, 2018	No	Density Coverage
Twin Peaks	2017, 2018	No	Density Coverage
Ayers Acres	2017, 2018	No	Density Coverage
Elk Hoof	2016, 2017, 2018	No	Operational Surveys w/Spot Checks
Gawley Wanna Cracker	2016, 2017, 2018	No	Operational Surveys w/Spot Checks
Jake the Snake	2017, 2018	No	Density Coverage
Last West	2017, 2018	No	Density Coverage
Silver Dollar	2017, 2018	No	Density Coverage
Winterfelled	2017, 2018	No	Density Coverage

* Indicates operations surveyed using the Density Survey Protocols
[1]Years that surveys have been completed or are planned.
[2]A Biologic Assessment is required for this operation due to the presence of NSO in the vicinity of the operation.

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 cooperates with Weyerhaeuser and Oregon State University on a study to help determine the abundance of the Oregon Slender Salamander on the Western slopes 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. FY19 will be year five of five.

The district is also conducting a cooperative research project with Oregon State University on the study of black bear and tree peeling.

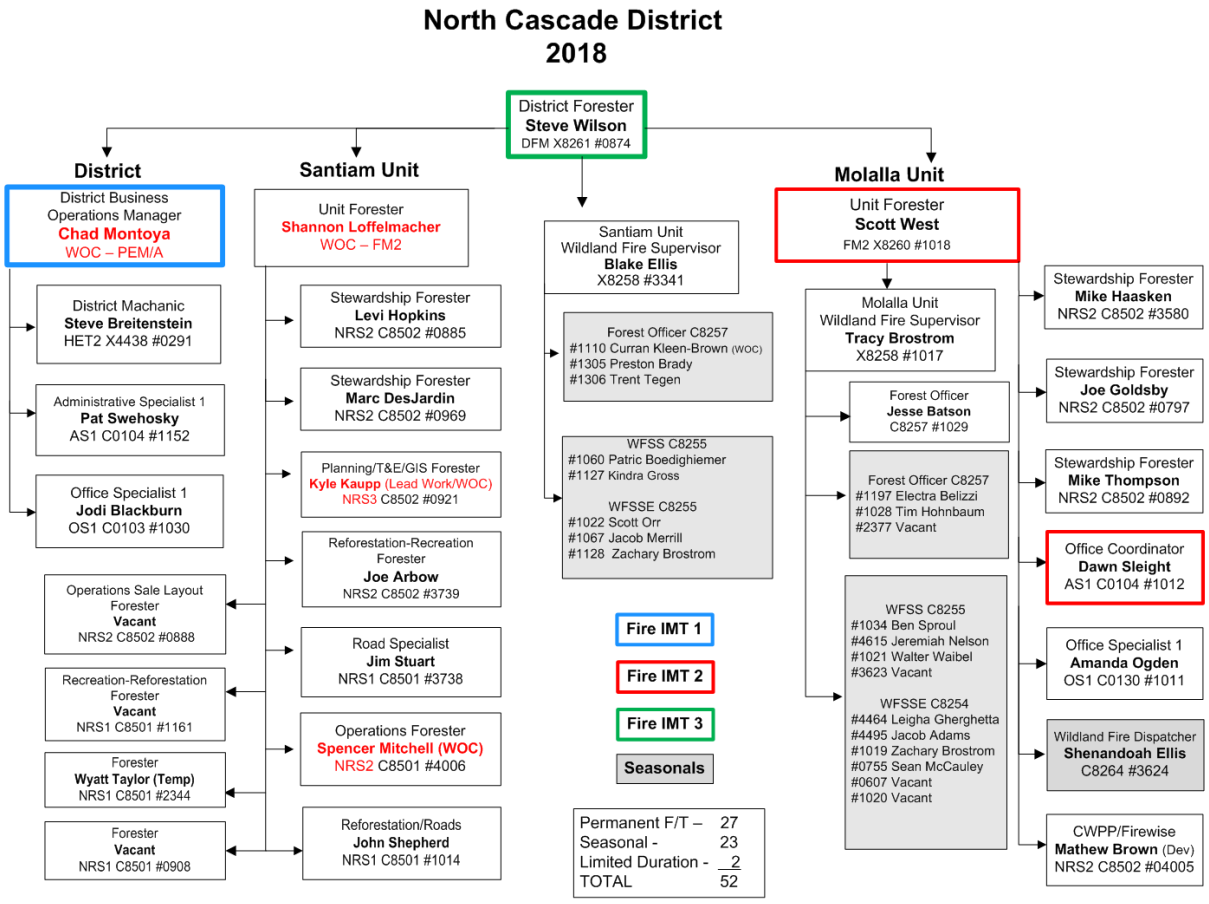
Public Information and Education

Public information and involvement activities will include review and input regarding the FY19 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.

Administration

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



APPENDICES

A. Summary Tables
   1. Harvest Operations – Financial Summary
   2. Harvest Operations – Forest Resource Summary
   3. Forest Road Management Summary
   4. Reforestation and Young Stand Management Summary
   5. Recreation Management Summary

B. Map Section
   a. Harvest Operations Vicinity Map
   b. FLMC Maps

C. Consultations with Other State Agencies

   This appendix summarizes the results of consultations with the Oregon Department of Fish and Wildlife and other agencies, as appropriate. This appendix contains any written comments that we received from state agencies.

D. Public Involvement

   This appendix describes the results of the public involvement process of this AOP and will be added prior to its approval.

E. Pre-Operations Reports

   Pre-Operations Reports are available from the district upon request.

F. Implementation Plan Modifications

   This section describes any minor/major modifications to the district implementation plans, including changes to the landscape design.

G. Forest Land Management Classification Changes

   This appendix describes changes to the State Forests' Forest Land Management Classification System.

Appendix A – Summary Tables

1. Harvest Operations - Financial Summary

TIMBER HARVEST OPERATIONS - FINANCIAL SUMMARY

District: North Cascade **Fiscal Year:** 2019 **Date:** 10/06/2017

Primary Operation	Fund % BOF	Fund % CSL	County	Sale Quarter	Net Acres Partial Cut	Net Acres Clear-cut	Volume (MMBF) Con-ifer	Volume (MMBF) Hard-woods	Volume (MMBF) Total	Value Gross	Value Projects	Value Net
Abiqua Triangle	100%		Marion (100.0%)	3	0	60	2.5	0.0	2.5	$1,351,350	$35,805	$1,315,545
Brass Knuckles	100%		Marion (100.0%)	2	0	106	3.1	0.0	3.1	$1,686,300	$90,456	$1,595,844
Mad Hatter	100%		Linn (100.0%)	3	0	136	5.2	0.0	5.2	$2,611,500	$189,362	$2,422,138
Pole Vault	100%		Linn (100.0%)	4	312	10	6.5	0.0	6.5	$4,572,400	$139,283	$4,433,117
Twin Peaks	100%		Linn (100.0%)	1	0	102	4.7	0.0	4.7	$2,581,700	$256,474	$2,325,226
				Total:	312	414	22.0	0.0	22.0	$ 12,803,250.00	$ 711,380.00	$ 12,091,870.00
Alternate Operations												
Ayers Acres	100%		Marion (100.0%)		0	91	4.4	0.1	4.5	$2,457,950	$132,039	$2,325,911
Elk Hoof	100%		Marion (100.0%)		0	30	0.9	0	0.9	$508,200	$68,515	$439,685
Gawley Wanna Cracker	100%		Clackamas (100.0%)		0	81	1.9	0.2	2.1	$1,158,300	$117,480	$1,040,820
Jake the Snake	100%		Linn (100.0%)		0	97	2.9	0.1	3	$1,707,750	$82,711	$1,625,039
Last West	100%		Linn (100.0%)		0	72	2.4	0.1	2.5	$1,366,750	$27,199	$1,339,551
Silver Dollar	100%		Marion (100.0%)		0	71	2.4	0	2.4	$1,313,400	$80,554	$1,232,846
Winterfelled	100%		Linn (100.0%)		0	121	3.5	0	3.5	$1,780,000	$227,331	$1,552,669
				Total:	0	563	18.4	0.5	18.9	$ 10,292,350.00	$ 735,829.00	$ 9,556,521.00

2. Harvest Operations – Forest Resource Summary

PRIMARY HARVEST OPERATIONS - FOREST RESOURCE SUMMARY

District: North Cascade **Fiscal Year** 2019 **Date:** 10/03/2017

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 (BA Required)	Operating within a MMMA (BA Required)	Murrelet Timber Sale Screening Process Required (MM Policy 2.27)	T&E Fish Adjacent to Harvest Unit / Haul Route [5]	T&E Plants	Geotechnical Issues Needing Field Review	Recreation Sites	Cultural Resources	Scenic Resources	Other Resources or Issues
Abiqua Triangle			x	x				x													
Brass Knuckles			x															x			
Mad Hatter			x														x				
Pole Vault			x	x	x	x												x			Permanent Inventory Plot
Twin Peaks			x							x											

[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 inconsultation 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.

2. Harvest Operations – Forest Resource Summary (continued)

ALTERNATE HARVEST OPERATIONS - FOREST RESOURCE SUMMARY

This table lists Forest Resources and other issues addressed within Pre-Operations Report due to their presence within or near harvest operations

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	Operating within a MMMA (BA Required)	Murrelet Timber Sale Screening Process Required (MM Policy 2.27)	T&E Fish Adjacent to Harvest Unit / Haul Route [5]	T&E Plants	Geotechnical Issues Needing Field Review	Recreation Sites	Cultural Resources	Scenic Resources	Other Resources or Issues
Ayers Acres			x			x		x													
Elk Hoof			x			x									x						
Gawley Wanna Cracker			x																		
Jake the Snake			x	x																	
Last West			x																		
Silver Dollar			x																		
Winterfelled			x							x											

[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 inconsultation 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.

3. Forest Roads Management Summary

FOREST ROADS SUMMARY

District: North Cascade **Fiscal Year:** 2019 **Date:** 10/06/2017

Primary Operations	Construction Miles	Construction Cost	Improvement Miles	Improvement Cost	Other Projects	Total Project Costs	Gross Value of Operation	Total Cost as a percent of Gross Value	Comments
Abiqua Triangle	0.2	$ 22,700	0.3	$ 5,305	$ 7,800	$ 35,805	$ 1,351,350	3.0%	
Brass Knuckles	0.4	$ 44,062	0.9	$ 33,282	$ 13,112	$ 90,456	$ 1,686,300	5.0%	
Mad Hatter	0.5	$ 77,180	5.5	$ 92,782	$ 19,400	$ 189,362	$ 2,611,500	7.0%	
Pole Vault	2.1	$ 129,111	0.7	$ 10,172		$ 139,283	$ 4,572,400	3.0%	
Twin Peaks	0.4	$ 27,914	12.8	$ 179,168	$ 49,392	$ 256,474	$ 2,581,700	10.0%	
Total	3.6	$300,967	20.1	$320,710	$89,704	**$711,381**	**$12,803,250**	**5.6%**	

Alternate Operations

Ayers Acres	0.38	$ 42,960	1.75	$ 89,079		$ 132,039	$ 2,457,950	5.0%	
Elk Hoof	0.27	$ 36,340	0.78	$ 27,675	$ 4,500	$ 68,515	$ 508,200	13.0%	
Gawley Wanna Cracker	0	$ -	1.51	$ 48,480	$ 69,000	$ 117,480	$ 1,158,300	10.0%	
Jake the Snake	0.23	$ 41,224	1.09	$ 41,487		$ 82,711	$ 1,707,750	5.0%	
Last West	0.24	$ 27,199	0	$ -		$ 27,199	$ 1,366,750	2.0%	
Silver Dollar	0.08	$ 18,904	1.7	$ 61,650		$ 80,554	$ 1,313,400	6.0%	
Winterfelled	0.27	$ 52,643	5.83	$ 174,688		$ 227,331	$ 1,780,000	13%	
Total	1.5	$219,270	12.7	$443,059	$73,500	**$735,829**	**$10,292,350**	**7.1%**	

Road Projects Not Associated with Harvest Operations in this AOP

Operation	Construction Miles	Construction Cost	Improvement Miles	Improvement Cost	Other Projects	Total Project Costs	Funding Source	Comments
North Block Grade		$ -	49.2	$ 27,795.55	$ 20,000.00	$ 47,795.55	FDF	Road Maintenance (Grading, Culvert Cleaning, Gates)
		$ -		$ -		$ -		
		$ -		$ -		$ -		
Total	0.0	$ -	0.0	$ 27,795.55	0.0	$ 47,795.55		

4. Reforestation and Young Stand Management Summary

REFORESTATION AND YOUNG STAND MANAGEMENT SUMMARY

District: North Cascade **Fiscal Year:** 2019 **Date:** 10/03/2017

Projects Conducted by ODF Staff or Contractors	Board of Forestry			Common School Forest Lands			District	
	Acres Planned	Average Cost*/Acre	BOF Cost	Acres Planned	Average Cost*/Acre	CSL Cost	Total Acres	Total Cost
Seedling / Nursery Costs			$90,000.00			$0.00	0	$90,000.00
Initial Planting	403	$150.00	$60,450.00	0	$150.00	$0.00	403	$60,450.00
Interplanting	150	$130.00	$19,500.00	0	$130.00	$0.00	150	$19,500.00
Underplanting	0	$150.00	$0.00	0	$150.00	$0.00	0	$0.00
Tree Protection - Barriers	20	$220.00	$4,400.00	0	$220.00	$0.00	20	$4,400.00
Tree Protection - Direct Control	25	$200.00	$5,000.00	0	$200.00	$0.00	25	$5,000.00
Site Prep - Chemical - Aerial	600	$75.00	$45,000.00	0	$75.00	$0.00	600	$45,000.00
Site Prep - Chemical - Hand	160	$125.00	$20,000.00	0	$125.00	$0.00	160	$20,000.00
Site Prep - Broadcast Burning	0	$420.00	$0.00	0	$420.00	$0.00	0	$0.00
Site Prep - Piling Burning	250	$5.00	$1,250.00	0	$5.00	$0.00	250	$1,250.00
Site Prep - Mechanical	0	$250.00	$0.00	0	$250.00	$0.00	0	$0.00
Release - Chemical - Aerial	550	$40.00	$22,000.00	0	$40.00	$0.00	550	$22,000.00
Release - Chemical - Hand	50	$125.00	$6,250.00	0	$125.00	$0.00	50	$6,250.00
Release - Mechanical - Hand	0	$250.00	$0.00	0	$250.00	$0.00	0	$0.00
Precommercial Thinning	0	$100.00	$0.00	0	$100.00	$0.00	0	$0.00
Pruning	0	$250.00	$0.00	0	$250.00	$0.00	0	$0.00
Invasive Species	0	$200.00	$0.00	0	$200.00	$0.00	0	$0.00
Road Side Spraying	120	$100.00	$12,000.00	10	$100.00	$1,000.00	130	$13,000.00
Stocking Surveys	650	$20.00	$13,000.00	100	$20.00	$2,000.00	750	$15,000.00
Other		$200.00	$0.00		$200.00	$0.00	0	$0.00
Totals	**2,978**	**--**	**$298,850.00**	**110**	**--**	**$3,000.00**	**3,088**	**$301,850.00**

* Work to be completed by ODF staff; cost are for materials only

4. Reforestation and Young Stand Management Summary (continued)

Projects Conducted by Inmates	Board of Forestry			Common School Forest Lands			District	
	Acres Planned	Average Cost*/Acre	BOF Cost	Acres Planned	Average Cost*/Acre	CSL Cost	Total Acres	Total Cost
Initial Planting	0	$150.00	$0.00	0	$150.00	$0.00	0	$0.00
Interplanting	0	$130.00	$0.00	0	$130.00	$0.00	0	$0.00
Underplanting	0	$150.00	$0.00	0	$150.00	$0.00	0	$0.00
Tree Protection - Barriers	0	$220.00	$0.00	0	$220.00	$0.00	0	$0.00
Tree Protection - Direct Control	800	$89.00	$71,200.00	0	$89.00	$0.00	800	$71,200.00
Site Prep. - Chemical Aerial	0	$75.00	$0.00	0	$75.00	$0.00	0	$0.00
Site Prep - Chemical - Hand	0	$125.00	$0.00	0	$125.00	$0.00	0	$0.00
Site Prep - Broadcast Burning	0	$420.00	$0.00	0	$420.00	$0.00	0	$0.00
Site Prep - Piling Burning	250	$5.00	$1,250.00	0	$5.00	$0.00	250	$1,250.00
Site Prep - Mechanical	0	$250.00	$0.00	0	$250.00	$0.00	0	$0.00
Release - Chemical - Hand	0	$125.00	$0.00	0	$125.00	$0.00	0	$0.00
Release - Mechanical - Hand	50	$250.00	$12,500.00	0	$250.00	$0.00	50	$12,500.00
Precommercial Thinning	0	$100.00	$0.00	0	$100.00	$0.00	0	$0.00
Pruning	0	$250.00	$0.00	0	$250.00	$0.00	0	$0.00
Invasive Species	0	$200.00	$0.00	0	$200.00	$0.00	0	$0.00
Other	0	$200.00	$0.00	0	$200.00	$0.00	0	$0.00
Totals	**1,100**	**--**	**$84,950.00**	**0**	**--**	**$0.00**	**1,100**	**$84,950.00**

Grant Funded Activities	Board of Forestry			Common School Forest Lands			District		Funding
Project	Acres Planned	Average Cost*/Acre	Cost	Acres Planned	Average Cost*/Acre	Cost	Total Acres	Total Cost	
			$0.00			$0.00	0	$0.00	
			$0.00			$0.00	0	$0.00	
			$0.00			$0.00	0	$0.00	
			$0.00			$0.00	0	$0.00	

5. Recreation Management Summary

RECREATION SITE MANAGEMENT SUMMARY

District: North Cascade **Fiscal Year:** 2019 **Date :** 11/28/2017

Project	Construction Cost (Funding)		Improvement Cost (Funding)		Operations/Maint. (Funding)		Total Costs	Comments
	ODF ($)	Other ($)	ODF ($)	Other ($)	ODF ($)	Other ($)		
Campgrounds								
Butte Creek					$1,043		$1,043	2 vault toilets - pumped twice/year
Shellburg					$522		$522	1 vault toilet - pumped twice/year
Shellburg					$354		$354	Chemical toilet maintenance
Horse Camp					$1,043		$1,043	2 vault toilets - pumped twice/year
Designated Dispersed Campsites								
Rock Creek					$948		$948	Chemical toilet maintenance
Rhody Lake			$ 500		$261		$761	1 vault toilet - pumped once/year
Day Use Areas								
							$0	
							$0	
							$0	
Trailheads								
Monument Peak			$ 735		$0		$735	Picnic table
Shellburg			$ 248		$0		$248	Kiosk/Signage Repair/Replace
Rocky Top			$ 248		$0		$248	Kiosk/Signage Repair/Replace
Crooked Finger OHV			$ 1,000		$0		$1,000	Kiosk/Signage Repair/Replace
Natural Arch			$ 248		$0		$248	Kiosk/Signage Repair/Replace
Interpretive Sites								
							$0	
							$0	
							$0	
Other Operations								
Brochures/Fee Envelope Printing					$100		$100	
Law Enforcement					$30,000		$30,000	
Water Testing					$180		$180	Well water analysis
Maintenance Supplies					$2,000		$2,000	Cleaning supplies, toiletries, hardware, paint/sealer, misc. building materials, vandalism repair/cleaning supplies, etc.
					District Total		$39,430	
					Other Total		$0	
						TOTAL	**$39,430**	

5. Recreation Management Summary (continued)

RECREATION TRAIL MANAGEMENT SUMMARY

District: North Cascade **Fiscal Year:** 2019 **Date :** 11/28/2017

Project	Construction Projects			Improvement Projects			Operations & Maintenance Projects			Total Costs	Comments
	Miles	ODF ($)	Other ($)	Miles	ODF ($)	Other ($)	Miles	ODF ($)	Other ($)		
Non-Motorized											
Maintenance							26.0	$2,500		$2,500	
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
Motorized											
Maintenance							6.0	$0		$0	Volunteer Maintained
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
										$0	
								District Total		$2,500	
								Other Total		$0	
									TOTAL	**$2,500**	

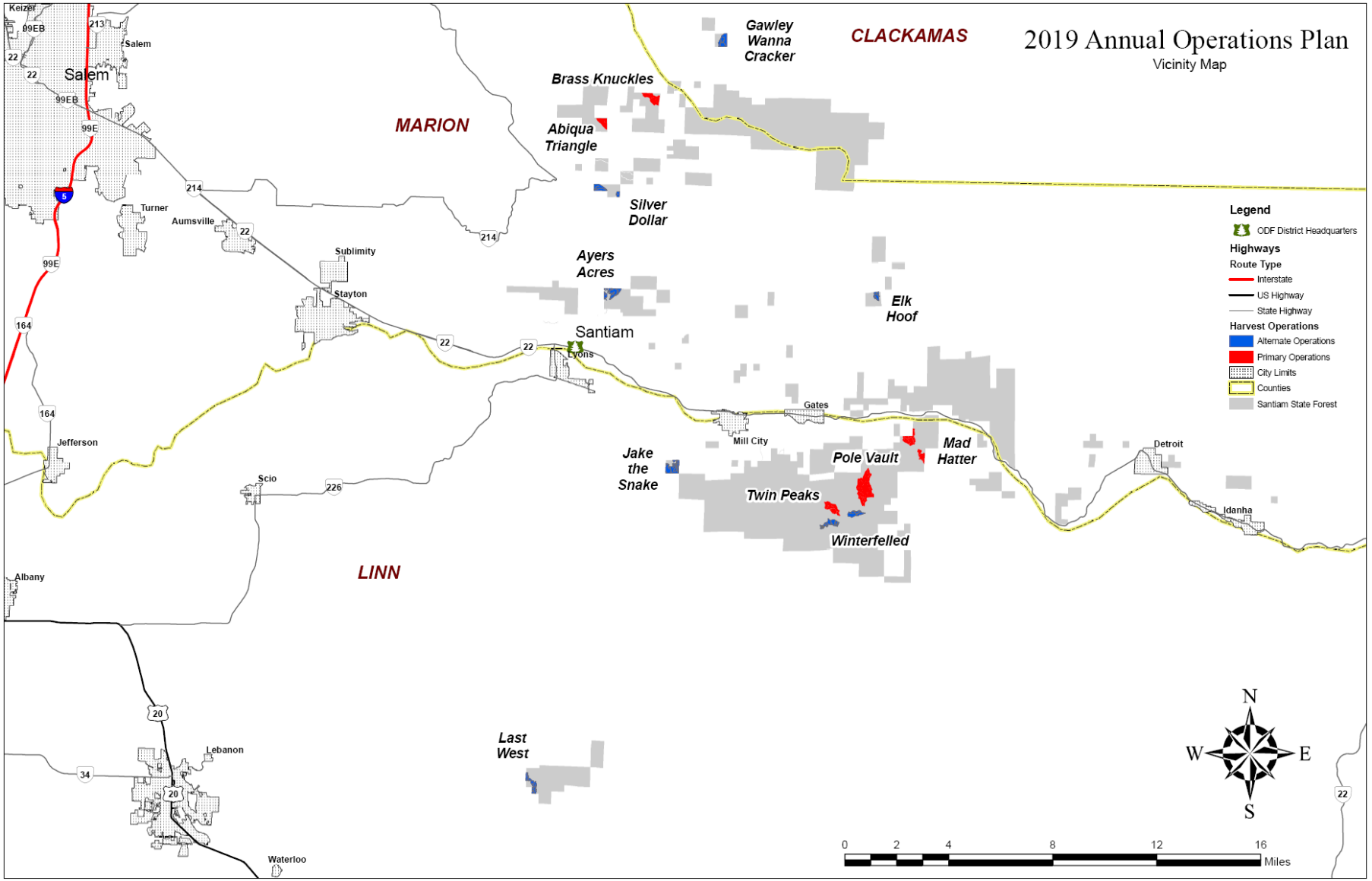
5. Recreation Management Summary (continued)

RECREATION GRANT MANAGEMENT SUMMARY

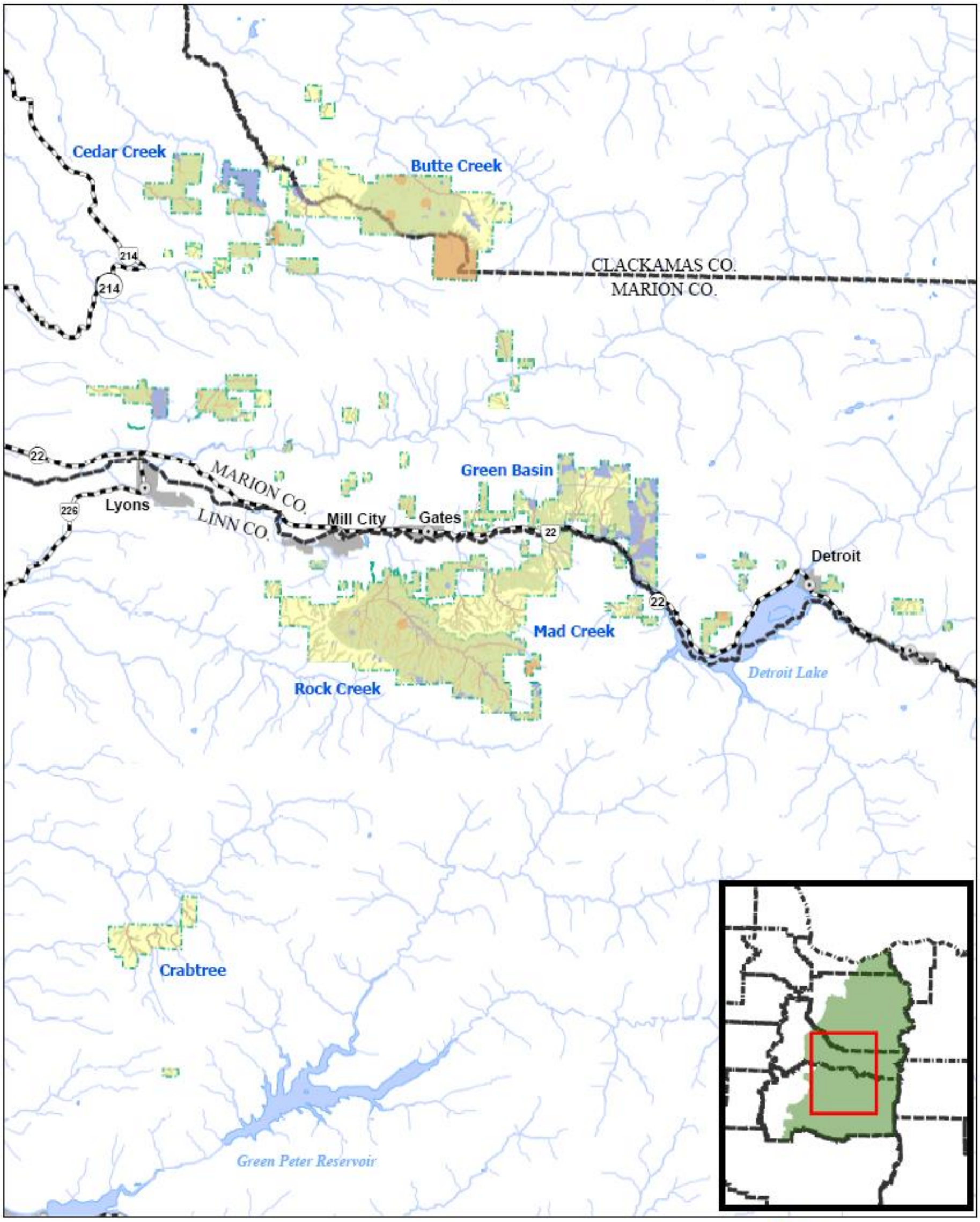
District: North Cascade **Fiscal Year:** 2019 **Date :** 11/28/2017

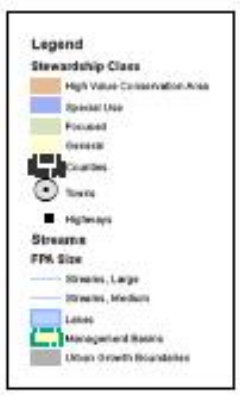
Grant	Status	Award Date (actual or anticipated)	Recreation Leadership Approval	Goals/Purpose	Funding		Project Total	Comments
					Grant ($)	Match ($)		
Sardine Creek Recreation Area	Researching	2018 or 2019	No	To control recreational use in the Sardine Creek area	$8,000	$0	$8,000	Currently exploring grant oppurtunities through OWEB and other sources, working with the Partners of the North Santiam. Funding and projects scope may change.
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
							$0	
					Grants Total		$8,000	
					Match Total		$0	
						TOTAL	**$8,000**	

Appendix B – Map Section



North Cascade District
Stewardship Classifications





1:200,000
1 in = 3 miles

N

0 2 4 8 12 16
Miles

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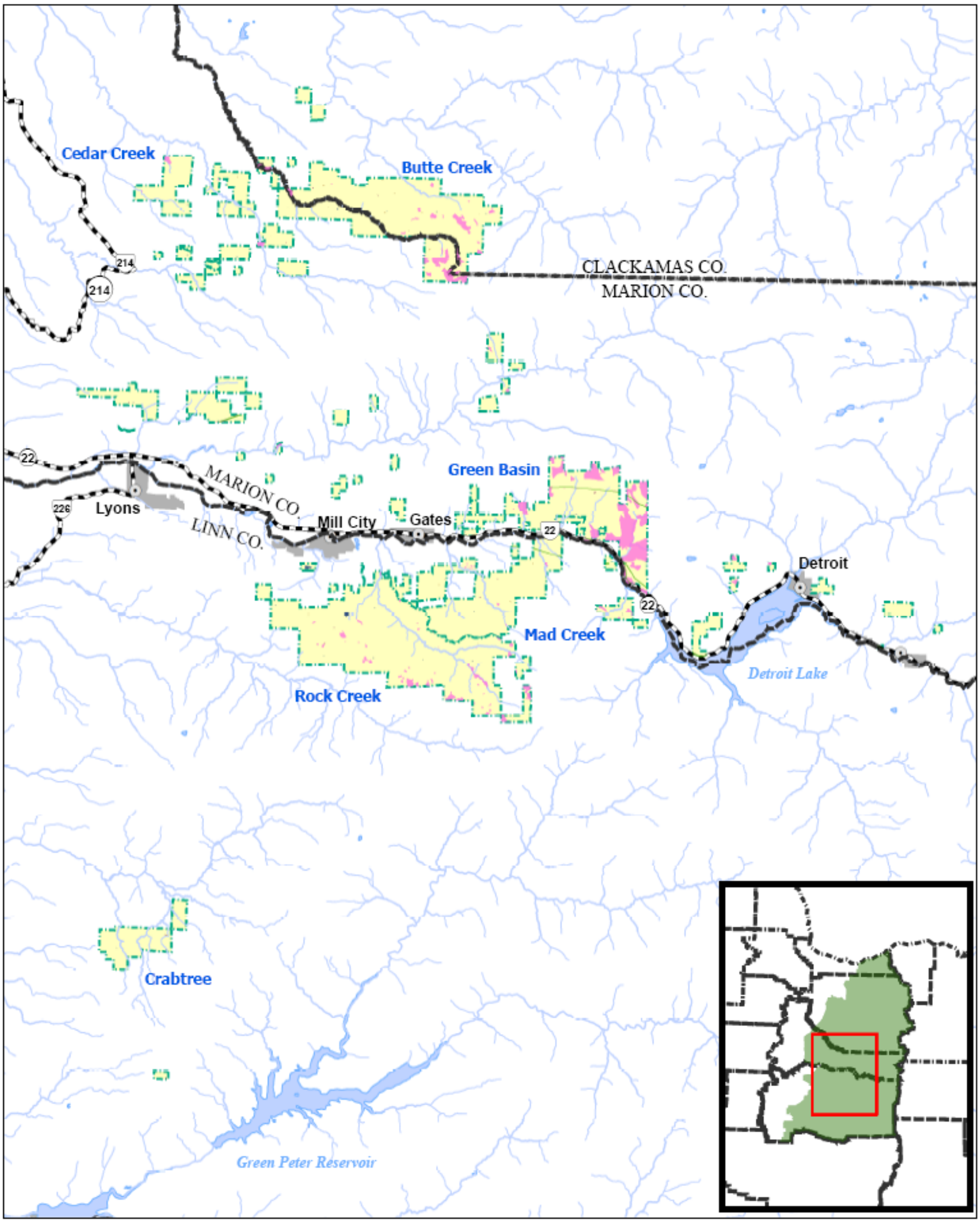
Created By: Kyle Kaupp
Date: 1/3/2018

North Cascade District

Stewardship Classifications - Management Subclasses



Legend

Special Use Management Subclasses
- Administrative Sites
- Energy and Minerals
- Operationally Limited - NEF
- Research/Monitoring
- Transmission

Focused Management Subclasses
- Research/Monitoring

- Counties
- Towns
- Highways
- Lakes
- Management Basins
- Urban Growth Boundaries

Streams
FPA Size
- Streams, Large
- Streams, Medium

1:200,000
1 in = 3 miles

N

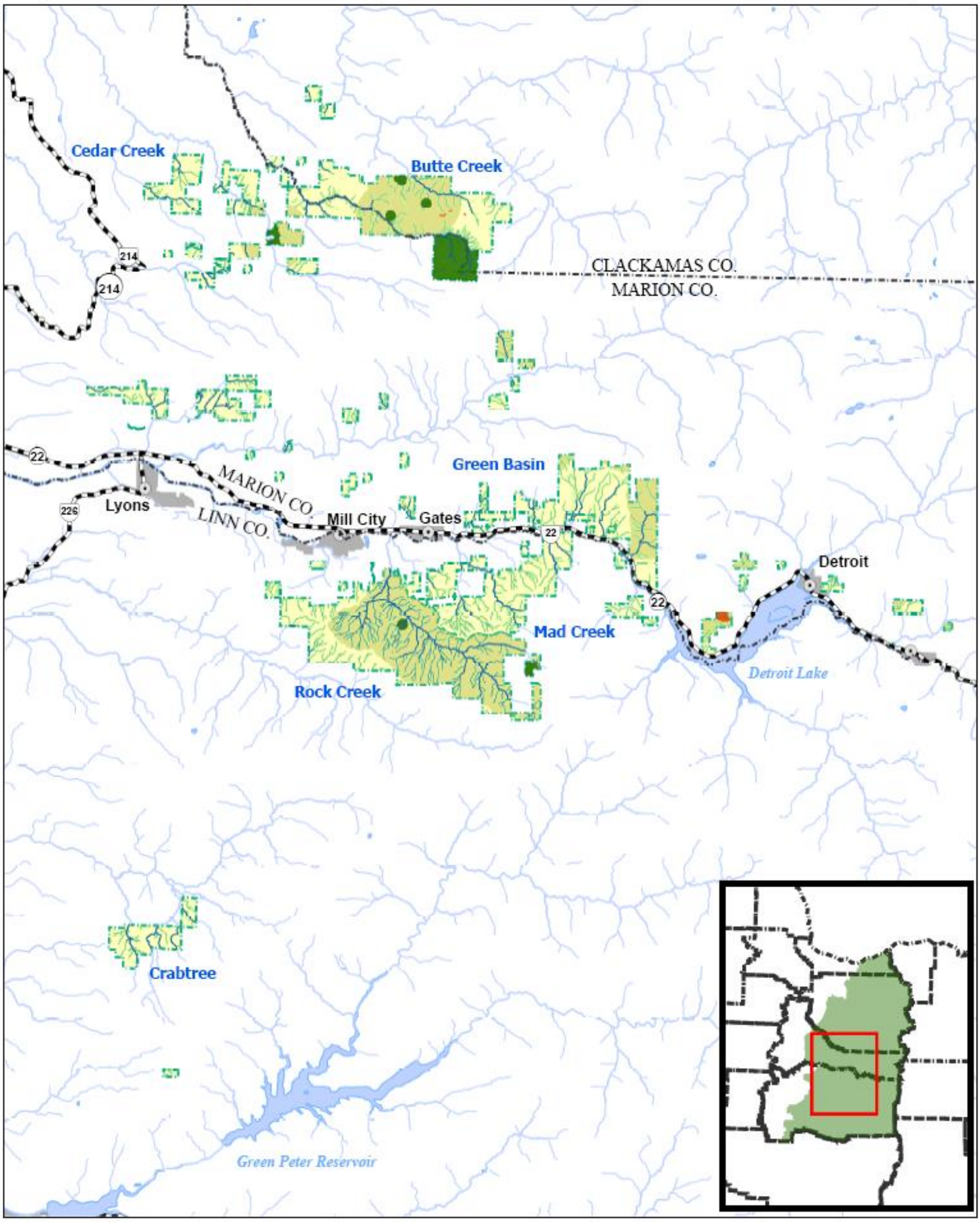
0 2 4 8 12 16
Miles

This product is for informational purposes, and may not be suitable for legal, engineering or surveying purposes. This information or data is provided with the understanding that conclusions drawn from such information are the responsibility of the user.

Created By: Kyle Kaupp
Date: 1/3/2018

North Cascade District

Stewardship Classifications - Biological Subclasses



Legend

High Value Conservation Area

Biological Subclasses

- Aquatic and Riparian Habitat
- Unique, Threatened or Endangered Plants
- Wildlife Habitat

Focused

Biological Subclasses

- Aquatic and Riparian Habitat
- Wildlife Habitat

- Counties
- Towns
- Highways

Streams

FPA Size

- Streams, Large
- Streams, Medium

- Lakes
- Management Basins
- Urban Growth Boundaries

1:200,000

1 in = 3 miles

N

0 2 4 8 12 16

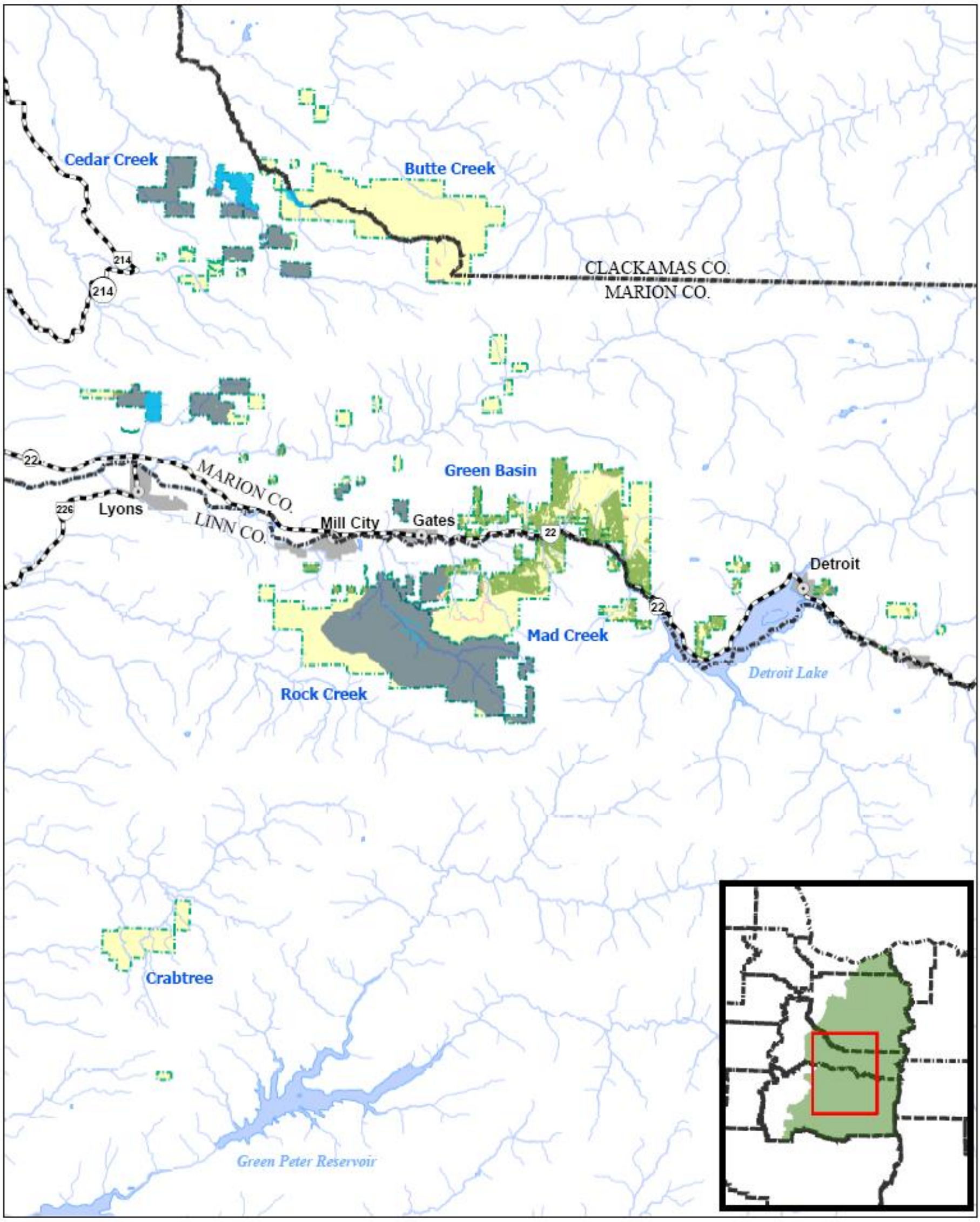
Miles

This product is for informational purposes, and may not be suitable for legal, engineering or surveying purposes. This information or data is provided with the understanding that conclusions drawn from such information are the responsibility of the user.

Created By: Kyle Kaupp
Date: 1/3/2018

North Cascade District

Stewardship Classifications - Social Subclasses



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 for potential impacts to cultural resources. ODOT identified potential archeological resources within or directly adjacent to some of the proposed operations. More specific information can be found in the pre-operation reports.

- Last West and Jake the Snake are proposed harvest operations requiring a thorough field exam to determine if potential cultural resources are present.

Appendix D – Public Involvement

The Oregon Department of Forestry held a formal 45 day public comment period for the 2019 Annual Operations Plans from March 19 through May 4, 2018.

The purpose of the Public Comment Period is 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.

No public comments were received that were specific to the planned operations in this AOP. One comment letter was received from 11 fishing, conservation, and recreation groups that expressed general comments related to all state forests AOPs. No changes were made to the final operations or forest projects in this AOP.

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

Appendix E – Pre-Operation Reports

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

Appendix F – Changes to Landscape Design – Major Modification to the North Cascade District Implementation Plan

The updated Landscape Design for the North Cascade District consists of approximately 35 percent of the land base which is designated to achieve a complex Desired Future Condition (DFC) of either Layered (LYR) or Older Forest Structure (OFS). The initial landscape design was adopted in July of 2012 as part of the North Cascade District Implementation Plan (IP). The IP describes the purpose of the landscape design is to achieve landscape objectives set forth in the Northwest Forest Management Plan (FMP).

In order to adapt to new information such as: updated forest inventory, new threatened and endangered species sites, forest land management classification updates, landscape changes due to storm damage, insect and/or disease or other significant events; the landscape design was anticipated to be modified over time. Modifications of up to 240 acres annually are considered minor modifications and can be approved by the District Forester concurrent with the Annual Operation Planning (AOP) process. Modifications that are greater than 240 acres are considered major and require a public comment period and are approved by the State Forester.

This modification consists of adding 1,003 acres and removing 1,470 acres. The resulting total district acreage within the mapped complex DFC landscape design is 16,453 acres (34.67%). A summary of the current forest condition of the proposed modification is shown in Figure 1 including a comparison of the proposed modification to current landscape design levels shown in Figure 2. A summary of the current stand age of the proposed modification is shown in Figure 3 including a comparison of the proposed modification to current landscape design levels shown in Figure 4. The spatial location of the modification is shown in Figure 5.

Summary of the basis for stands added to the mapped DFC landscape design:

- Threatened and Endangered Species Sites: Stands with recent NSO and northern goshawk activity

Summary of the basis for stands removed from the mapped DFC landscape design:

- Stands not adjacent or within a Threatened and Endangered Species Site
- Stands meeting the criteria above that also have high revenue generating potential.

Additionally, the Landscape Design Overview section of the IP Narrative (pages 51-53) has been updated to characterize the current landscape design considerations and is included after Figure 5.

This proposed major modifications to the IP requires a 30 day public comment period which will be held in conjunction with the Districts 2019 AOP public comment period. At the close of the public comment period, the Department will consider the public comments and make final decisions on the proposed changes.

Figure 1.

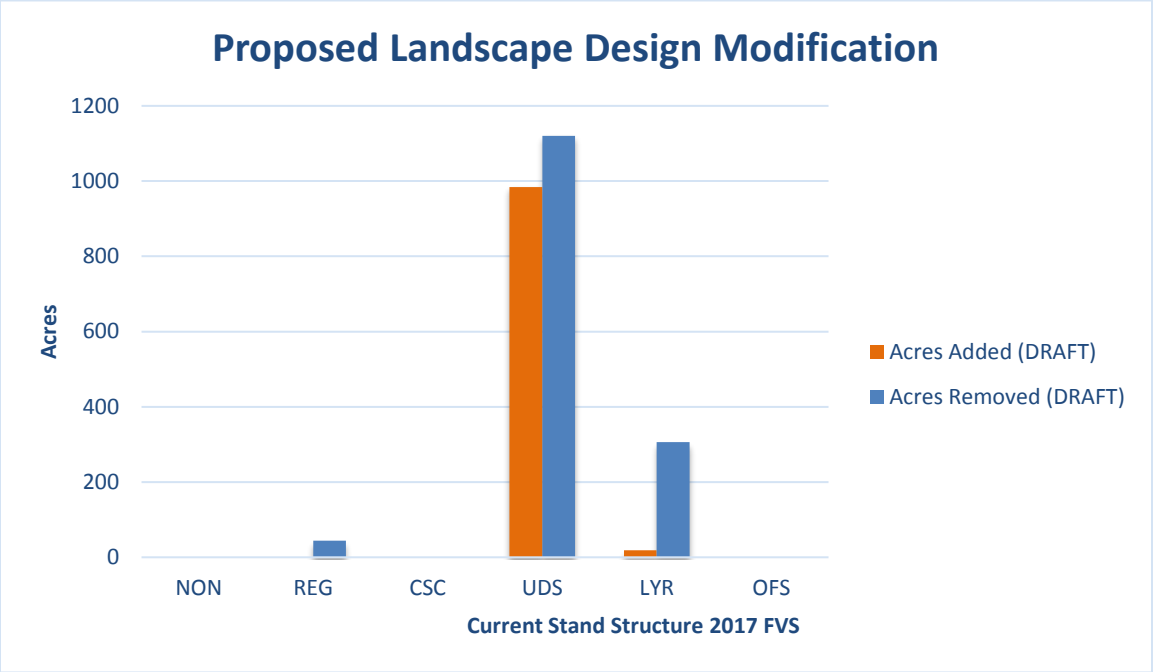


Figure 2.

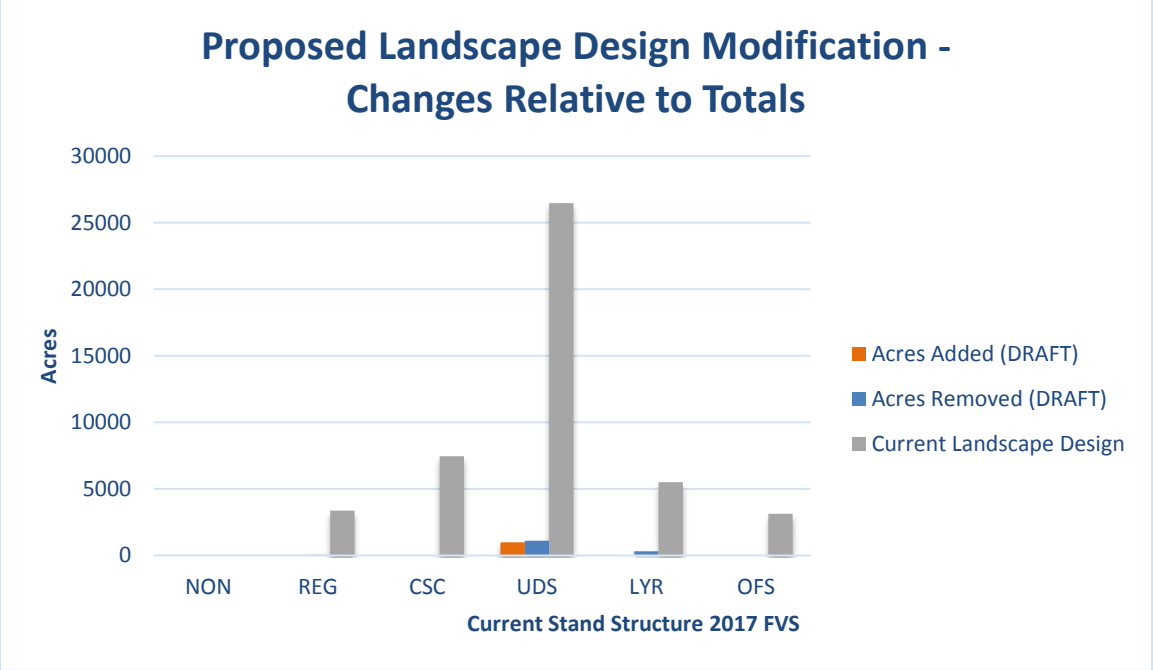


Figure 3.

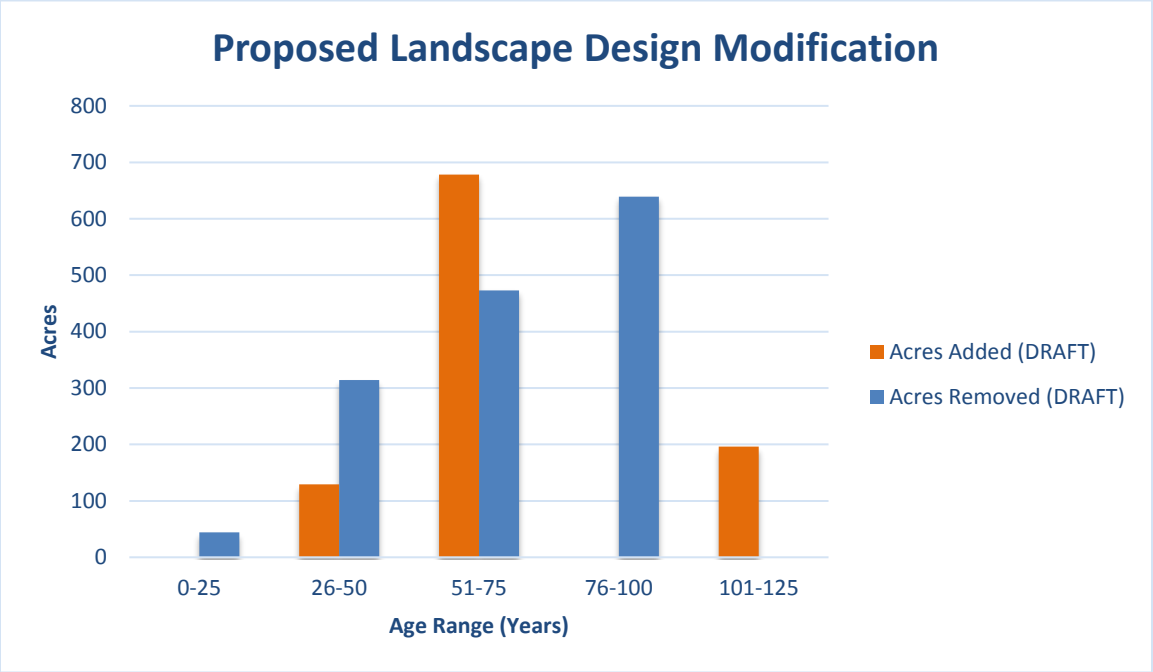


Figure 4.

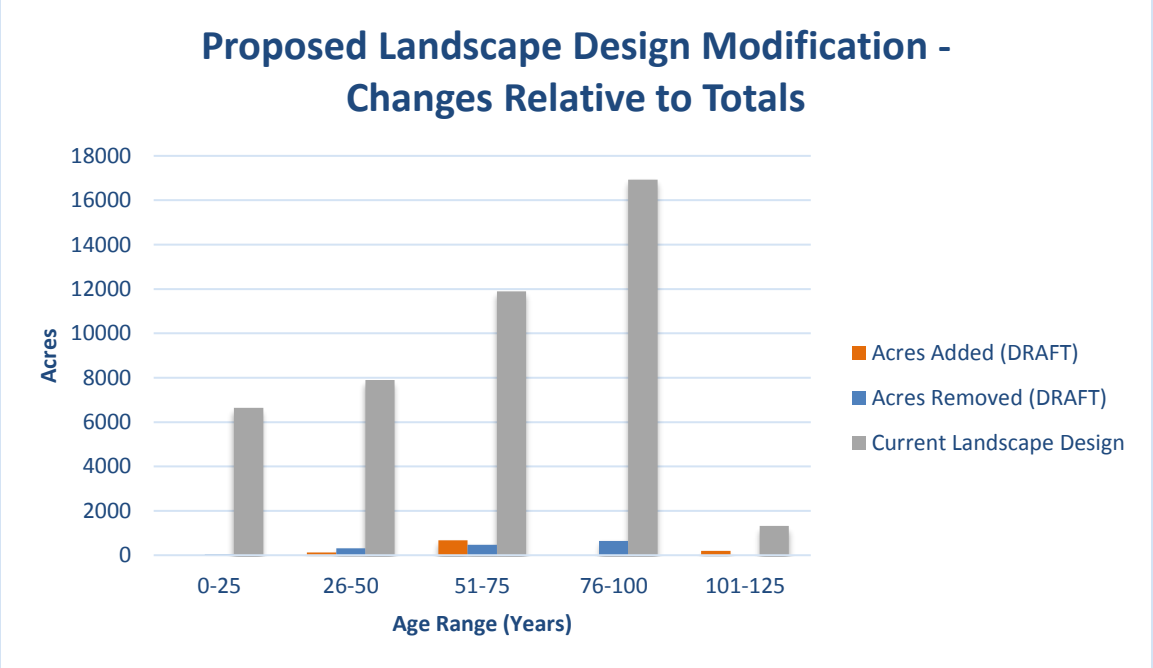
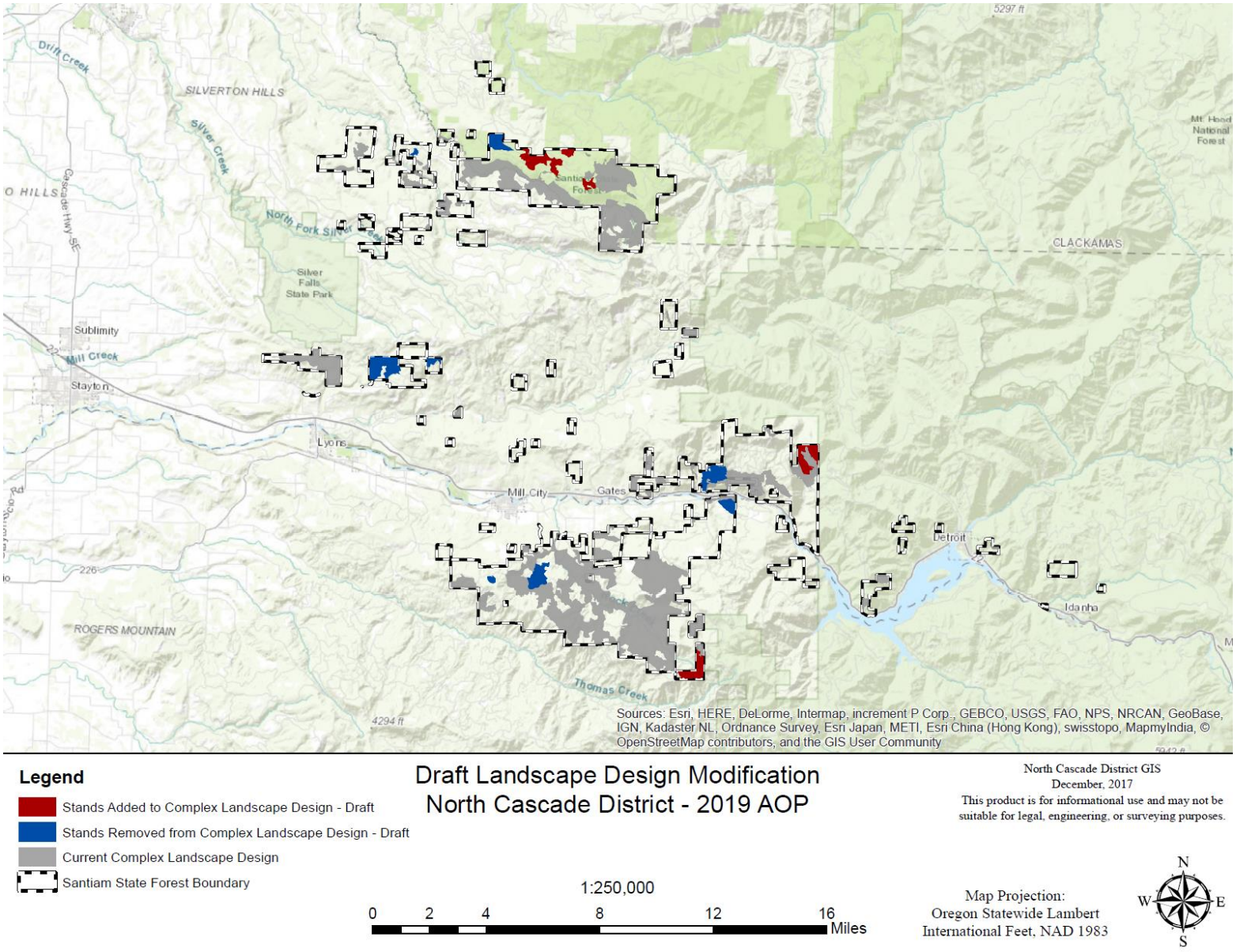


Figure 5.


Drift Creek
SILVERTON HILLS
Silver Creek
Cascade Hwy SE
North Fork Silver
Silver Falls State Park
CLACKAMAS
Mt. Hood National Forest
Sublimity
Mill Creek
Stayton
Lyons
Mill City
Gates
Detroit
Idanha
ROGERS MOUNTAIN
Thomas Creek
5297 ft
4294 ft
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Legend
Stands Added to Complex Landscape Design - Draft
Stands Removed from Complex Landscape Design - Draft
Current Complex Landscape Design
Santiam State Forest Boundary
Draft Landscape Design Modification
North Cascade District - 2019 AOP
1:250,000
0 2 4 8 12 16
Miles
North Cascade District GIS
December, 2017
This product is for informational use and may not be suitable for legal, engineering, or surveying purposes.
Map Projection:
Oregon Statewide Lambert
International Feet, NAD 1983
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Landscape Design Overview

The *Northwest Oregon State Forests Management Plan* establishes that a total of 30-50 percent of the landscape will be composed of complex stand structures over the long term. The landscape design process was a collaborative effort between the district, resource specialists and ODFW biologists. The district intends to achieve the desired future condition of approximately 35 percent complex stands on the district by designating areas for older forest structure (OFS) and layered (LYR) stand structures across the landscape, ensuring a variety of forest patch sizes and shapes that provide connectivity between watersheds, and dispersal habitat for wildlife. The overall design will include habitats for species on the District's Species of Concern (SOC) list, and also include habitats necessary for those species needing more open conditions. The development of the Desired Future Condition Complex (DFCC) and the desired future condition stand structures is a long-term process. A desired future condition map can be found in the attached Map Section

The following criteria were considered when developing the placement of DFCC on the landscape:

- The distribution of habitats for native wildlife;
- The range of habitat patch sizes provided;
- Provision of interior habitat areas for Species of Concern;
- Unique, rare, or sensitive habitats and associated species;
- Connectivity across the landscape including habitats on adjacent federal lands.
- Operational feasibility of active management;
- Current stand age and structure.

The contribution that each selected stand provided to the overall distribution of habitats, and to patch sizes, interior habitat, and connectivity was considered, as well as known or suspected potential to harbor SOCs. Identification and protection of key habitat areas (occupied, suitable, or important for larger landscape connectivity) for SOCs will help maintain existing populations and allow for colonization of new habitat as it develops over the longer term. This landscape design is a foundational strategy for Species of Concern.

For the next 30 to 40 years, areas not designated to be OFS or LYR will provide the pool from which regeneration (REG), closed single canopy (CSC) and understory (UDS) stand structures will be created. These stand structures will be arranged across the rest of the landscape, based on habitat, resources, and logistical and operational needs and constraints.

In the long term these forests are expected to maintain the same general balance of structures over the landscape through time. Therefore, when the desired future condition is achieved, much of the landscape will be a dynamic mosaic of slowly shifting stand types, but with relatively stable quantities of each. This shifting mosaic of forest structures is intended to maintain vigorous timber-producing stands, contribute to the diversity of plant communities and wildlife habitats, and enhance overall biodiversity throughout the forest.

Implementation of Landscape Design Maps

The landscape design map represents the district's current vision of where complex structures will be developed over time. The district will use this map in the planning of harvest operations and the designing of silvicultural prescriptions. Through the course of implementation, however, refinements to the landscape design map are likely to occur due to stand conditions, harvest efficiency and operability concerns, or new information.

In order to adapt to new information such as: updated forest inventory, new threatened and endangered species sites, forest land management classification updates, landscape changes due to storm damage, insect and/or disease or other significant events; the landscape design is anticipated to be modified over time. Modifications of up to 240 acres annually are considered minor modifications and can be approved by the District Forester concurrent with the Annual Operation Planning (AOP) process. Modifications that are greater than 240 acres are considered major and require a public comment period and are approved by the State Forester.

Appendix G – Changes to Forest Land Management Classification

The Forest Land Management Classification (FLMC) is a method of describing the management emphasis of parcels of state forest land. The management emphasis identifies the extent to which a parcel of land can be managed for a variety of forest resources. It also identifies when a particular forest resource may need a more focused approach in its management, or possibly an exclusive priority in its management.

The framework of the FLMC places all state forest land within one of four land management classifications. The classifications are: 1 - General Stewardship, 2 – Focused Stewardship, 3 – Special Use, and 4 – High Value Conservation Area. Subclasses are assigned for the specific forest resources that require a Focused Stewardship, Special Use, or High Value Conservation Area Classification.

This Appendix describes changes to the North Cascade District FLMC. These changes meet the definition of a major modification. A major modification is defined as one that cumulatively exceeds 500 acres within one year. Major modifications require a 30 day public comment period which will be held in conjunction with the Districts 2019 AOP comment period. At the close of the public comment period, the Department will consider the public comments and make final decisions on the proposed changes. The District Forester will forward the draft final changes along with any public comments to the Northwest Oregon Area Director and the State Forester for review and final approval.

The North Cascade District FLMC was last updated in November of 2016. Since that time, the District has had a provincial owl circle become abandoned, made updates to officially designated recreation areas, and a large amount of data clean up resulting from a more accurate ownership boundary layer. These three processes affect the acres of Focused Stewardship, Special Use and High Value Conservation in all Subclasses. No other changes were made to the FLMC during this AOP process. All acres are listed in the tables below.

Tables 2-4, originating in the District Implementation Plan have been updated to reflect these changes. The acreages in Table 2 are the starting acreages after the large amount of data cleanup resulting from the updated ownership boundary. The acreages in Table 3 are the major modifications being proposed as a result of newly designated recreation areas and the abandoning of a Northern Spotted Owl activity center and provincial circle categorized into respective subclasses. Table 4 are the updated acreages by classification and fund resulting from this major modification. As defined in OAR 629-035-0060, major modifications require State Forester approval. Updated FLMC maps are also included in Appendix B.

Table 2. Starting North Cascade District Acres, by Stewardship Class and Fund

Classification	BOF	CSL	Total Acres
High Value Conservation	6,339	93	6,432
Focused Stewardship	57,413	890	58,303
Special Use	3,513	2	3,515
General Stewardship	11,433	191	11,624

Table 3. (Includes overlapping Acres) Forest Land Management Classifications for North Cascade District – Focused and Special Subclasses (Acres)

	Focused	Special Use	High Value Conservation
Administrative Sites	0	14	0
Agriculture, Grazing	0	0	0
Aquatic & Riparian	9,551	0	4,472
Cultural Resource	23	5	0
Domestic Water Use	15,942	0	0
Energy & Minerals	0	38	0
Operationally Limited	0	2,676	0
Plants	0	0	94
Recreation	554	1,229 ~~502~~	0
Research/Monitoring	24	24	0
Transmission	0	196	0
Visual	8,006	61	0
Wildlife Habitat	21,344 ~~24,224~~	0	1,870

Table 4. Updated North Cascade District Acres, by Stewardship Class and Fund

Classification	BOF	CSL	Total Acres
High Value Conservation	6,339	93	6,432
Focused Stewardship	54,609 ~~57,413~~	814 ~~890~~	55,423 ~~58,303~~
Special Use	4,239 ~~3,513~~	3 ~~2~~	4,242 ~~3,515~~
General Stewardship	11,381 ~~11,433~~	215 ~~191~~	11,596 ~~11,624~~