

# Pre-Operations Report

**Operation Name:** McKnob  
**County:** Clatsop  
**Management Basin:** Gnat Basin

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

Area	Type of Operation	Gross Acres	Net Acres
1	PC-M	109	98
2	MC	55	50
3	PC-M	87	78
4	MC	47	42
5	MC	27	23
6	MC	60	55
7	PC-M	242	209
8	PC-M	415	360
Total	Modified Clearcut	189	170
Total	Partial Cut	853	745
Total		1,042	915

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

These sale areas are located within the Gnat Basin, about nine miles southeast of the town of Knappa, south of State Highway 30, and about six miles from the Columbia River. The Gnat Basin drains in a northerly direction towards the Columbia River. It is in the "hemlock zone" and is generally characterized by Douglas-fir and hemlock as the dominant tree species, with understory of salal, huckleberry, and ferns. Well maintained mainline roads and secondary rocked roads on ODF property provide primary access to all of the sale areas. Soil types in these sale areas are mostly Gnat and Aldrich types, moderately deep, well-drained, moderately fine textured soils developing from siltstones and basalt, with site index ranging from 110 to 120 feet for Douglas-fir, and averaging 100 feet for hemlock. Elevations range from 2,000 to 2,400 feet.

The landforms are gentle to moderate slopes with a few scattered steep slopes in the headwaters of Gnat Creek and McNary Creek. The underlying rock is igneous origin rock of the Frenchman Springs member of Wanapum Basalt, and the Grande Ronde Basalt of the Yakima Basalt Subgroup, of the Columbia River Basalt Group. Subaerial basalt flows with associated breccias.

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

All of the sale areas were railroad logged during the 1940's and 1950's. None of the sale areas have a complex current condition.

Areas 1 and 3 – The current stands are generally 35 to 69 year old, and are moderate sized mixed conifer stands, composed of Douglas-fir, hemlock, Sitka spruce, and noble fir, with some stringers and patches of alder. The understory vegetation is generally light under the conifer, primarily composed of sword ferns and salal, with some salmonberry within the alder patches.

Area 2 – This area is composed of two different stands of extremely dense, hemlock dominated mixed conifer, approximately 51 and 66 years old. These stands have stand densities of 85% and 81% of the maximum stand density, with poor crown ratios and minimal understory vegetation.

Area 4 – This area is composed of a stand of hemlock and spruce, approximately 52 years old.

Area 5 – This area is primarily an alder stand with some spruce, approximately 41 years old.

Area 6 – This area is composed of three different stands, ranging from 41 to 52 years of age. The majority of the acreage are hemlock dominated, mixed conifer stands.

Area 7 – The current stands are approximately 35 to 70 year old mixed conifer stands. The current stocking of these stands is clumpy, with patches of conifer growing in dense pockets and other portions developing with very little competition. Natural scattered pockets of brush, bear damage, and elk beds add to the horizontal and vertical diversity within the stand.

Area 8 – The current stands are approximately 35 to 73 year old, dense conifer stands, composed primarily of western hemlock, with Douglas-fir, Sitka spruce, and some noble fir. These stands compose a somewhat simple uniform cover across the landscape. There is minimal understory vegetation, and is limited to the northern portion of the sale area.

The existing amount of snags is not known at this time. Evaluation of existing snags will be conducted during actual sale layout. Further evaluation of downed woody debris will be conducted during actual sale layout.

**Table 2. Stand Inventory Information**

Area	Prescription	Stand ID <sup>1</sup>	Species	Age	DBH	BA	TPA	SDI	Acres <sup>2</sup>
1	PC-M	23325	SS, RA	41	11	208	387	68	14
1	PC-M	23358	WH	66	15	221	149	68	14
1	PC-M	23359	WH, SF	51	15	206	356	85	42
1	PC-M	23367	WH, DF	66	13	256	253	81	28
		Target <sup>3</sup>	WH, DF		17	140	100	35	98
2	MC	23359	WH, SF	51	15	206	356	85	44
2	MC	23367	WH, DF	66	13	256	253	81	6
		Target <sup>3</sup>	WH, DF				7		50
3	PC-M	23359	WH, SF	51	15	206	356	85	20
3	PC-M	23363	WH, SS	52	17	175	148	43	58
		Target <sup>3</sup>	DF, WH		19	140	90	35	78
4	MC	23363	WH, SS	52	17	175	148	43	42
		Target <sup>3</sup>	DF, WH				7		42
5	MC	23325	SS, RA	41	11	208	387	68	22
5	MC	23363	WH, SS	52	17	175	148	43	1
		Target <sup>3</sup>	DF, WH				5		23
6	MC	23319	WH, DF	46	13	192	198	52	40
6	MC	23325	SS, RA	41	11	208	387	68	3
6	MC	23363	WH, SS	52	17	175	148	43	12
		Target <sup>3</sup>	DF, WH				7		55
7	PC-M	23319	WH, DF	46	13	192	198	52	113
7	PC-M	23363	WH, SS	52	17	175	148	43	96
		Target <sup>3</sup>	WH, DF, SS		18	120	96	30	209
8	PC-M	23381	WH, SS, DF	54	11	224	316	66	360
		Target <sup>3</sup>	WH, DF, NF		17	140	90	30	360

1 The source of stand inventory information is SLI.

2 The acres are based on GIS and exclude roads, streams buffers, reserve areas, etc.

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

### **III. DESIRED STAND CONDITION:**

The desired future condition for Areas 1 through 6 is "General", as they are not planned for development of more complex stand structures. The desired future condition for Areas 7 and 8 is LYR and OFS.

**Table 3. Stand Structure Information**

Area	Stand ID	Current	Post Harvest <sup>2</sup>	Desired Future	Acres
1	23325	UDS	UDS	General	14
1	23358	UDS	UDS	General	14
1	23359	UDS	UDS	General	42
1	23367	CSC	UDS	General	28
2	23359	UDS	REG	General	44
2	23367	CSC	REG	General	6
3	23359	UDS	LYR	General	20
3	23363	UDS	LYR	General	58
4	23363	UDS	REG	General	42
5	23325	UDS	REG	General	22
5	23363	UDS	REG	General	1
6	23319	UDS	REG	General	40
6	23325	UDS	REG	General	3
6	23363	UDS	REG	General	12
7	23319	UDS	LYR	OFS	113
7	23363	UDS	LYR	General	16
7	23363	UDS	LYR	LYR	40
7	23363	UDS	LYR	OFS	40
8	23381	UDS	LYR	LYR	360

<sup>2</sup> The stand is expected to develop into this condition in the five to ten years after this operation is completed.

#### **IV. PROPOSED MANAGEMENT PRESCRIPTION:**

Area 1 is a “first entry” thinning, with removal of the alder. The conifer portions of the stands will be thinned to a stand density range of 30-35. The combination of the conifer thinning and the resulting gaps from the harvested alder clumps will allow increased growth to individual trees, and the development of conifer and deciduous understory species as the more open tree canopy allows light to reach the forest floor.

Areas 2, 4, 5, and 6 are planned for regeneration harvest (modified clearcut) and will be replanted with a mixture of conifer species. Areas 4, 5, and 6 contain understocked, low volume stands of low quality spruce and alder. These stands, although far from mature, are good candidates for conversion to fully stocked conifer plantations. The harvesting of Areas 4, 5, and 6 will provide a structural diversity across the landscape over time, as they are currently surrounded by a large expanse of similar timber types.

Area 3 is “first entry” thinning units and will be thinned to an approximate stand density range of 30-35, which will balance individual tree growth and stand growth. There are stringers of hardwoods scattered through portions of these area. In order to preserve some of the existing species diversity, the “biggest and best” trees will be retained regardless of species, including alder.

Area 7 is a “first entry” thinning into structurally diverse stands. These stands will be thinned to a SDI of 25%-30%. Reconnaissance plots indicate that an auto-mark thinning to approximately 120 square feet of basal area would open up the portions of the stand that are in CSC condition, and maintain/improve the portions in a UDS condition. There are small patches of non-merchantable trees scattered throughout the sale area. No harvesting activities would take place in these undersized patches. It is anticipated that this harvesting prescription will quickly move these young stands into a complex stand condition.

Area 8 is also a “first entry” thinning and will be auto-mark thinned to a SDI range of 25%-30%. In order to diversify these simplistic CSC stands, additional strategies to create varied stand densities will be employed within the southwest portion of the sale area. These strategies may include the use of marking individual trees and removing all other trees within 75 feet. These marked trees may be individuals, or in small clumps of 2 to 10 trees, and would be scattered across the lower slopes of the sale area to minimize windfall, and maximize stand density diversity.

*Snags:* In all areas, all existing snags will be retained unless deemed to be safety hazards. In MC areas, where pre-sale activities determine that fewer than two hard snags per acre exist, opportunities for snag creation or leaving additional live green trees will be implemented to supplement landscape snag levels as defined by the Forest Management Plan. In PC areas, it is anticipated that additional snags will develop during yarding activities by leaving, topping, or girdling damaged rub trees, tail trees, lift trees, and/or intermediate support trees.

*Green Trees:* In MC Areas 2, 4, 5, and 6, an average of 5 green trees per acre will be scattered and/or clumped throughout the areas, and not solely located in riparian areas. In addition, individual and small clumps of non-merchantable alder may be left in operationally feasible areas to provide short term snag recruitment for cavity nesting birds. In all sale areas minor species such as red cedar may be reserved from cutting, and any existing larger remnant trees will be reserved from cutting.

*Downed Wood:* For all harvesting activities, all existing downed woody debris will be retained. In MC Areas 2, 4, 5, and 6, down wood levels will be assessed during sale layout and if deficiencies are found to exist, then additional conifer trees and/or conifer logs will be retained to meet the landscape targets for down wood as prescribed in the FMP and Implementation Plan. Obvious defect in conifer logs will be bucked out in the unit to enhance downed wood levels. It is unlikely that down wood objective of 600 cubic feet per acre of hard conifer logs can be met in hardwood dominated Area 5. Therefore, those areas which are conifer dominated will have higher levels of down wood left to meet the landscape level objectives. In partial cut areas, to increase down wood levels, operations will be required to top trees prior to yarding and to yard only

merchantable log segments to roadsides. Due to the small size of the trees within the PC areas, additional large downed wood recruitment will be deferred until the stands have increased in size.

Site Preparation treatments for Areas 2, 4, 5, and 6 will be evaluated with the reforestation forester during sale layout.

Replanting will be with a mixture of Western Hemlock and Douglas fir. Natural seeding will be factored into the target trees per acre (Target tree per acre 225 – 300). Harvesting will provide the majority of the site preparation on the steeper ground with excavator slash piling to be evaluate for concentrations of slash that are unplantable. Tree protection is anticipated on all units. Western Red Cedar will be planted in scattered pockets within all the units.

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

**Table 4. Timber and Revenue**

Ownership		Sale Type	
BOF	CSL	Cash	Recovery
100%	0%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned Quarter:		2 <sup>nd</sup>	

	Conifer	Hardwood	Total
Net Volume (MBF)	13,300	700	14,000
Stumpage Value (\$/MBF)	\$175	\$200	
Estimated Gross Value	\$2,327,500	\$140,000	\$2,467,500
		Project Costs:	\$725,000
		Estimated Net Value:	\$1,742,500

**VI. HARVESTING AND ACCESS CONSIDERATIONS:**

The sale can be accessed from State Highway 30 to the Shingle Mill Road near Milepost 76, east of Knappa. Existing routes across State Forest and an adjacent landowner will be used, and an estimated 10.5 miles of new spur roads will be needed to fully access the sale areas for logging. Approximately 15% of the sale area is currently accessed from existing rocked roads. The sale area was originally logged from several different railroad grades which cross the sale areas in various locations.

The majority of the proposed new roads into Areas 1 and 2 are relatively short spurs from existing rocked roads and are generally located along ridge tops. There are no stream crossings associated with the new road construction. The new rocked roads into Area 1 will be needed for future harvesting entries, and will remain open upon completion of harvesting activities. Any additional new spurs into Area 2 will be considered for removal upon completion of harvesting

operations. The existing road infrastructure on ODF and private lands reduced the number of viable options for operational consideration.

A general transportation plan was developed for the entire McNary Creek drainage prior to determining access routes to Areas 3, 4, 5, 6, 7, and 8. This planning was conducted to minimize road density, environmental impact, and construction costs.

The proposed new roads are composed of secondary collector spurs and relatively short “working” spurs from existing rocky roads and are generally located along ridge tops. There is one potential stream crossing (small, Type N) in Area 3. To reduce construction costs, roads into MC Areas 5 and 6 will be unsurfaced roads, and we plan to vacate and replant these roads upon completion of harvesting activities. The new rocky roads into the partial harvest areas will be needed for future harvesting entries, and will remain open upon completion of harvesting activities.

The new roads will provide excellent access to vacating existing fills on the railroad grade across Areas 5, 6, and 7. The majority of the waste material generated vacating the fills could be placed in stable locations along the grade, particularly in the large “through-cuts” and help re-establish positive drainage in those areas. When removing existing puncheon fills in the old grades, large logs from these fills may be placed back in the streams for fish habitat.

Other alternative access routes would require large Type F stream crossings, and were considered environmentally and economically unfeasible. Multi-span cable yarding (long line) systems from the existing roads and helicopter yarding were also analyzed. These alternative harvesting strategies were determined to be economically unfeasible and provided minimal additional resource protection.

Road improvement is needed along the Shingle Mill Road. This work is primarily comprised of adding surface rock to support hauling operations. The road rock needed for road construction and improvement will be crushed and developed at either the Knob Point Rock Quarry or a new rock quarry along the Shingle Mill Road.

The project work for this sale is estimated to cost approximately \$725,000.

Approximately 25% of the sale area will be cable logged, as the slopes are moderate to steep. Ground based harvesting systems will be utilized on the more gentle slopes. Cable yarding can be done with medium size yarders. Tractor logging can be done with shovel loggers, track or wheel skidders.

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

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construct	0.0	4.0	5.0	1.5
Improve	5.0	0.0	0.0	0.0
Maintain	8.0	6.0	7.5	0.0
Close/Block	0.0	0.0	0.0	0.0
Vacate	0.0	0.0	0.0	1.5

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

*Type F Streams:* Gnat Creek (medium, Type F stream) flows along the northeast boundary of Area 8.

An unnamed tributary (small, Type F stream) of McNary Creek flows along the eastern boundary of Area 5 and the western boundary of Area 6.

There are no Type F streams within or adjacent to Areas 1, 2, 3, 4, and 7.

All of the streams flow in a northerly direction towards the Columbia River through the Gnat Basin.

*Type N Streams:* There are small perennial Type N streams in all sale areas. NW Oregon Forest Plan stream riparian strategies will be employed along these streams. The current riparian vegetation is composed of a patchwork of conifer and hardwood overstories. The understory in the conifer dominated reaches is similar to the headlands, with mostly ferns, salal, and some wild rose. The understory within the alder reaches is mostly salmonberry.

All streams will be examined during sale layout to determine stream type and classification. Then, the specific RMA strategies required in the FMP will be implemented. These strategies are found in Appendix J, pages J-1 through J-16.

None of the sale areas are within proximity of streams in which listed fish are present, as barriers to fish migration (waterfalls) restrict upstream fish passage.

*Stream Enhancement Opportunities:* There may be opportunities for stream enhancement on the McNary Creek and the upper reaches of Gnat Creek. Further assessment and collaboration will be done with ODFW biologists and the Sunset Unit Forester.

*Aquatic Resource Protection:* For all areas, full log suspension is required when cable yarding over streams. No ground-based logging equipment operation is allowed within the stream bank zone. Adequate RMA buffers will be left where required on all streams per the FMP standards. To protect water quality during active operations, a variety of methods will be used to prevent sediment from

entering live streams. These methods range from use of hay bales in road ditches, to “ditch-outs” away from streams, to complete shutdown of logging and hauling operations during times of heavy rainfall. There are no known high risk sites within the sale area. Any high-risk sites found will require at least one-end log suspension and cable logging. If any in-stream work is required with the sale, then the in-stream work will be conducted during in-stream periods established by ODFW.

#### **VIII. T&E SPECIES CONSIDERATIONS:**

The sale areas have been surveyed for Northern Spotted Owls in 2003 and 2004, with no responses, and are scheduled to be resurveyed in 2005.

The sale areas have also been surveyed for Marbled Murrelets in 2003 and 2004, with no responses.

The sale area was checked against district knowledge for any listed plant location. The sale area was also checked against the Oregon Natural Heritage Program (ONHP) database of known listed plant locations. No listed plant records were identified within the sale area.

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

The initial assessment from the geotechnical specialist is low for all areas. The geotechnical specialist may be consulted if concerns arise during sale layout.

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

This area receives dispersed recreation, which includes hunting, fishing, camping, target shooting, and driving forest roads. There are no established recreation sites within the operation areas. The planned operations will only temporarily impact recreational road use.

#### **XI. CULTURAL RESOURCES:**

The Clatsop State Forest Recreation and Cultural Resource Inventory and Assessment Report indicates that a logging camp was located adjacent to Area 3 alongside the Shingle Mill Road. These resources were not found to be within the sale area during presale reconnaissance. During actual sale layout, if any of these resources are found, they will be protected.

#### **XII. SCENIC RESOURCES:**

The sale areas are not visible from any county or state highway. All forest roads accessing the sale areas are Level 3 classification.

**XIII. OTHER RESOURCE CONSIDERATIONS:**

None.

**XIV. LAND MANAGEMENT CLASSIFICATION SUMMARY:**

The lands in this timber sale are all classified “general” management. Within this overlay is one acre of “focused” Mineral classification at the Knob Point Rock Quarry.

**Table 6. Land Management Classification Summary**

Area	LMCS Subclass	Focused Stewardship	Special Stewardship
1	Aquatic and Riparian Habitat	35	1
2	Aquatic and Riparian Habitat	14	1
3	Aquatic and Riparian Habitat	21	2
4	Aquatic and Riparian Habitat	11	0
5	Aquatic and Riparian Habitat	14	1
6	Aquatic and Riparian Habitat	16	5
7	Aquatic and Riparian Habitat	98	18
8	Aquatic and Riparian Habitat	91	24
8	Mineral	1	0

This table summarizes the acres of Focused and Special Stewardship within the operations. The acres in each operational area in this table do not necessarily add up to its gross or net acres, because of overlapping classifications under the Land Management Classification System. For example, a particular acre can be classified as Focused Stewardship for Aquatic and Riparian, Recreation, and Scenic resources.