



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Rector Quad
Sale AT-341-2017-11-

District: Astoria

Date: October 17, 2016

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$1,156,589.93	\$76,959.27	\$1,233,549.20
		Project Work:	(\$222,228.00)
		Advertised Value:	\$1,011,321.20



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District: Astoria

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Timber Description

Location: Portions of Sections 29, 30, 31, and 32, T4N, R8W, W.M., Clatsop County, Oregon and portions of Section 4, T3N, R8W, W.M., Tillamook County, Oregon.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	21	0	97
Western Hemlock / Fir	16	0	95
Sitka Spruce	43	0	95
Alder (Red)	14	0	95

Volume by Grade	2S	3S	4S	Other	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	193	22	19	0	0	0	0	0	234
Western Hemlock / Fir	1,947	1,353	208	0	0	0	0	0	3,508
Sitka Spruce	0	18	0	187	0	0	0	0	205
Alder (Red)	0	0	0	0	43	29	48	79	199
Total	2,140	1,393	227	187	43	29	48	79	4,146

Comments: Pond Values Used: 3rd Quarter Calendar Year 2016 + Local Pond Values from August.

Expected Log Markets: Warrenton, Tillamook, Garibaldi, Forest Grove, Clatskanie, Mist and Springfield, OR; Morton and Longview, WA.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$1,067.06/\text{MBF} = \$1,264.66/\text{MBF} - \$197.60/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = \$2.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):

Slash and Landing Piling (includes move-in and piling materials) = \$9,427

TOTAL Other Costs (with Profit & Risk to be added) = \$9,427

Other Costs (No Profit & Risk added):

Weed Washing of 2 machines = \$2,000

TOTAL Other Costs (No Profit & Risk added) = \$2,000

ROAD MAINTENANCE

(see attached Road Maintenance Cost Summary sheet)

TOTAL Road Maintenance: $\$24,189/4,146 \text{ MBF} = \$5.83/\text{MBF}$



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Logging Conditions

Combination#: 1

Douglas - Fir	60.00%
Western Hemlock / Fir	60.00%
Sitka Spruce	60.00%
Alder (Red)	60.00%

Logging System: Shovel **Process:** Stroke Delimber

yarding distance: Medium (800 ft) **downhill yarding:** No

tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 10 **bd. ft / load:** 4000

cost / mbf: \$79.30

machines: Stroke Delimber (B)

Combination#: 2

Douglas - Fir	40.00%
Western Hemlock / Fir	40.00%
Sitka Spruce	40.00%
Alder (Red)	40.00%

Logging System: Cable: Small Tower <=40 **Process:** Stroke Delimber

yarding distance: Medium (800 ft) **downhill yarding:** No

tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 10 **bd. ft / load:** 4600

cost / mbf: \$121.74

machines: Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Small)



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Logging Costs

Operating Seasons: 3.00	Profit Risk: 10%
Project Costs: \$222,228.00	Other Costs (P/R): \$9,427.00
Slash Disposal: \$0.00	Other Costs: \$2,000.00

Miles of Road

Road Maintenance: \$5.83

Dirt	Rock (Contractor)	Rock (State)	Paved
0.0	0.0	0.0	0.0

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.8
Western Hemlock / Fir	\$0.00	3.0	4.2
Sitka Spruce	\$0.00	3.0	3.8
Alder (Red)	\$0.00	3.0	2.8



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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
\$96.28	\$6.00	\$3.17	\$55.80	\$2.27	\$16.35	\$0.00	\$7.00	\$0.48	\$187.35
Western Hemlock / Fir									
\$96.28	\$6.12	\$3.17	\$65.00	\$2.27	\$17.28	\$0.00	\$7.00	\$0.48	\$197.60
Sitka Spruce									
\$96.28	\$6.12	\$3.17	\$71.84	\$2.27	\$17.97	\$0.00	\$7.00	\$0.48	\$205.13
Alder (Red)									
\$96.28	\$6.12	\$3.17	\$97.50	\$2.27	\$20.53	\$0.00	\$7.00	\$0.48	\$233.35

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$617.15	\$429.80	\$0.00
Western Hemlock / Fir	\$0.00	\$494.86	\$297.26	\$0.00
Sitka Spruce	\$0.00	\$269.66	\$64.53	\$0.00
Alder (Red)	\$0.00	\$620.08	\$386.73	\$0.00



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Summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	\$0.00	\$0.00
Western Hemlock / Fir	0	\$0.00	\$0.00
Sitka Spruce	0	\$0.00	\$0.00
Alder (Red)	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	234	\$429.80	\$100,573.20
Western Hemlock / Fir	3,508	\$297.26	\$1,042,788.08
Sitka Spruce	205	\$64.53	\$13,228.65
Alder (Red)	199	\$386.73	\$76,959.27

Gross Timber Sale Value

Recovery: \$1,233,549.20

Prepared By: Bryce Rodgers

Phone: 503-325-5451

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Rector Quad
Date: July 13, 2116
By: Bryce Rodgers

MBF: 4,146
\$/MBF: \$5.83

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations Entries: 1	Grader 14G	\$778	1	20	\$100	\$2,778
	Dump Truck 12CY	\$163	1	10	\$79	\$953
	FE Loader C966	\$778	1	5	\$77	\$1,163
Final Road Maintenance	Grader 14G	\$778	1	63	\$100	\$7,078
	Dump Truck 12CY	\$163	2	8	\$79	\$958
	FE Loader C966	\$778	1	4	\$83	\$1,110
	Vibratory Roller	\$778	1	60	\$77	\$5,398
	Rubber tired backhoe	\$321	1	10	\$77	\$1,091
	Water Truck 2,500 gallon	\$190	1	30	\$89	\$2,860
	Labor			20	\$40	\$800
Total						\$24,189

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.5	5.00	2.0	20

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	1.5	9.5	6.3	63
Vibratory Roller	1.5	9.0	6.0	60

Maintenance calculations were determined as follows:

Northfork, Sweethome, Fry Creek, Lost Creek, and New Construction = 9.5 miles

Pit-run New Road Construction = .5 miles.

Pit run roads, Grade and shape only

Sale Number: 341-17-11
Sale Name: Rector Quad
Date: 07/13/2016

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.5
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	4.5
Whole Tree Yarding	F	0.5	0.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area	
2	MC	F	49.0	25	\$129.00	\$3,160.50	
3	MC	F	7.0	4	\$129.00	\$451.50	
					In-unit Piling	Sub Total =	\$3,612.00
Sale Area	Number of Landings to be Piled	Cost/Landing Pile	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area	
2	10	\$220.00	\$2,200.00	24.5	\$5.00	\$122.50	
3	7	\$220.00	\$1,540.00	3.5	\$5.00	\$17.50	
3							
*Cost includes separating firewood					Materials	Sub Total =	\$140.00
					Landing Piling	Sub Total =	\$3,740.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance			Move-In	Sub Total =	\$1,935.00
\$1,290.00	1.5	\$1,935.00					
Grand Total =							\$9,427.00

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Rector Quad

ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
1A-1B	115.35	\$98,500
2A-2B, 2C-2D, 2E-2F		
3A-3B, 3C-3D, 3E-3F		
TOTALS	115.35	\$98,500

2.18 miles

ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
11-12, 13-14	8.4	\$14,171
TOTALS		\$14,171

0.16 miles

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
Project No. 3	Rector Ridge Jaw-Run Development	\$77,209
Project No. 4	Road Vacating (0.93 miles)	\$14,677
	Project Road Maintenance	\$9,127
	TOTAL	\$101,013

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Excavator (C330)	\$1,406
Dozer (D8)	\$1,406
Rubber Tired Skidder (C518)	\$717
Loader (966)	\$778
Excavator (C315)	\$805
Large Grader (14G)	\$778
Vibratory Roller (@778)	\$778
10-12 yd³ dump truck (@ \$163 x 8)	\$1,304
20 yd³ Hwy dump w/pup (@ \$191 x 2)	\$382
Water Truck (2,500 gal)	\$190
TOTAL	\$8,544.00

GRAND TOTAL **\$222,228**

Compiled By: Kraig Kirkpatrick

Date: 06/28/2016

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Rector Quad
 ROAD: 1A-1B(22.85), 2A-2B(23.0), 2C-2D(19.5), 2E-2F(2.0), 3A-3B(33.25)
 POINTS: 3E-3F(11.25), 3C-3D(3.5)

NEW CONSTRUCTION: 115.35 STATIONS
 IMPROVEMENT: STATIONS 2.18 MILES

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Scatter outside of R/W	2	x	\$ 1,337.00	=	\$2,674.00
Grub and Scatter Only (R/W already logged)	4	x	\$ 667.00	=	\$2,668.00
		x		=	
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING

\$5,342

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
1A-1B	Balanced-Drift up to 200', \$/sta.	22.85	x	\$190.00	=	\$4,341.50
	Embankment Compaction, \$/cy	1,500	x	\$0.70	=	\$1,050.00
	Cutslope Rounding, \$/sta.	12	x	\$43.00	=	\$516.00
2A-2B	Common Drift \$/cy	3,218	x	\$1.80	=	\$5,792.40
	Embankment Compaction, \$/cy	2,976	x	\$0.70	=	\$2,083.20
	Balanced-Drift up to 200', \$/sta.	1.20	x	\$190.00	=	\$228.00
2C-2D	Cutslope Rounding, \$/sta.	11	x	\$43.00	=	\$473.00
	Balanced-Drift up to 200', \$/sta.	19.50	x	\$190.00	=	\$3,705.00
	Landing Construction \$/Landing	1.00	x	\$389.00	=	\$389.00
2E-2F	Balanced Construction \$/sta	2.00	x	\$122.00	=	\$244.00
	Landing Construction \$/Landing	1.00	x	\$389.00	=	\$389.00
3A-3B	Common Drift \$/cy	3,645	x	\$1.80	=	\$6,561.00
	Embankment Compaction, \$/cy	3,220	x	\$0.70	=	\$2,254.00
	Balanced Construction, \$/sta.	9.70	x	\$122.00	=	\$1,183.40
3C-3D	Cutslope Rounding, \$/sta.	10	x	\$43.00	=	\$430.00
	Balanced Construction \$/sta	3.50	x	\$122.00	=	\$427.00
	Landing Construction \$/Landing	1.00	x	\$389.00	=	\$389.00
3E-3F	Balanced-Drift up to 200', \$/sta.	11.25	x	\$190.00	=	\$2,137.50
	Landing Construction \$/Landing	2.00	x	\$389.00	=	\$778.00

\$19,211

SUB TOTAL FOR EXCAVATION

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
					19+25	18" CPP	30	\$19.53	\$585.90
1A-1B					26+55	18" CPP	30	\$19.53	\$585.90
2+40	18" CPP	30	\$19.53	\$585.90	33+25	18" CPP	40	\$19.53	\$781.20
5+95	18" CPP	30	\$19.53	\$585.90	3C-3D				
13+65	18" CPP	30	\$19.53	\$585.90	2+00	18" CPP	30	\$19.53	\$585.90
19+00	18" CPP	40	\$19.53	\$781.20	3E-3F				
2A-2B					1+00	18" CPP	30	\$19.53	\$585.90
0+50	18" CPP	40	\$19.53	\$781.20					
13+80	18" CPP	30	\$19.53	\$585.90					
20+00	18" CPP	40	\$19.53	\$781.20					
23+00	18" CPP	30	\$19.53	\$585.90					
2C-2D									
1+00	18" CPP	30	\$19.53	\$585.90					
7+00	18" CPP	30	\$19.53	\$585.90					
10+00	18" CPP	30	\$19.53	\$585.90					
16+00	18" CPP	30	\$19.53	\$585.90					
3A-3B									
12+00	18" CPP	30	\$19.53	\$585.90					

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	Installation o 6'X2 1/2" fiberglass posts	18	\$20.00	\$360.00

\$11,687

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

Subtotal of Clearing, Exc., Culv.

\$36,241

SURFACING				Stations/amount		x	Rate/sta/amt	Cost
Subgrade prep:				Description				
				Grade, Shape and Ditch 16'		115.35	\$24.83	\$2,864.14
				Subgrade Compaction		115.35	\$20.19	\$2,328.92

ROAD SEGMENT 1A to 1B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B Volume (CY) per	0+00 to 22+85 Number of				
Base Rock	jaw run	0+00 - 22+85	8	station 50	stations 22.85		1,143	\$5.72	\$6,535
Junctions	jaw run	0+00, 22+85	8	junction 22	junctions 2		44	\$5.72	\$252
Turnouts	jaw run	0+80, 7+20, 14+50, 21+50	8	TO 22	TO's 4		88	\$5.72	\$503
Curve Widening	jaw run	13+85-15+85	8	curve 44	curves 1		44	\$5.72	\$252
Surface Rock	1 1/2"-0" crushed	0+00 - 22+85	3	station 19	stations 23		434	\$4.36	\$1,893
Turnouts	1 1/2"-0" crushed	0+80, 7+20, 14+50, 21+50	3	turnout 11	turnouts 4		44	\$4.36	\$192
Junctions	1 1/2"-0" crushed	0+00, 22+85	3	junction 11	junctions 2		22	\$4.36	\$96
Curve Widening	1 1/2"-0" crushed	13+85-15+85	3	curve 11	curves 1		11	\$4.36	\$48
Total Rock for Road Segment: 1A to 1B							1,830		

\$9,770

ROAD SEGMENT 2A to 2B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B Volume (CY) per	0+00 to 23+00 Number of				
Base Rock	jaw run	0+00 - 23+00	8	station 50	station 23.00		1,150	\$5.72	\$6,578
Junctions	jaw run	0+00, 7+45(X2), 23+00	8	junction 22	junction 4		88	\$5.72	\$503
Turnouts	jaw run	7+25, 10+60, 16+20	8	TO 22	TO 3.00		66	\$5.72	\$378
Curve Widening	jaw run		8	curve 22	curve 2		44	\$5.72	\$252
Surface Rock	1 1/2"-0" crushed	0+00 - 23+00	3	station 19	station 23.00		437	\$4.36	\$1,905
Turnouts	1 1/2"-0" crushed	7+25, 10+60, 16+20	3	turnout 11	turnout 3		33	\$4.36	\$144
Junctions	1 1/2"-0" crushed	0+00, 7+45(X2), 23+00	3	junction 11	junction 4		44	\$4.36	\$192
Curve Widening	1 1/2"-0" crushed		3	curve 11	curve 2		22	\$4.36	\$96
Total Rock for Road Segment: 2A to 2B							1,884		

\$10,048

ROAD SEGMENT 2C to 2D			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D Volume (CY) per	0+00 to 19+50 Number of				
Base Rock	jaw run	0+00 - 19+50	8	station 50	stations 19.50		975	\$5.72	\$5,577
Junctions	jaw run	0+00	8	junction 22	junction 1		22	\$5.72	\$126
Turnouts	jaw run	5+00, 8+00	8	turnout 22	turnouts 2		44	\$5.72	\$252
Turnaround	jaw run	18+00	8	turnaround 22	turnarounds 1		22	\$5.72	\$126
Traction Rock	1 1/2"-0" crushed		2	station 13	stations 4		52	\$4.36	\$227
Landings	6"-0" pit-run	19+50	N/A	Landing 88	Landings 1		88	\$5.72	\$503
Total Rock for Road Segment: 2C to 2D							1,203		

\$6,810

ROAD SEGMENT 2E to 2F			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F Volume (CY) per	0+00 to 2+00 Number of				
Base Rock	jaw run	0+00 - 2+00	8	station 50	stations 2.00		100	\$5.72	\$572
Junctions	jaw run	0+00	8	junction 22	junction 1		22	\$5.72	\$126
Landings	6"-0" pit-run	2+00	N/A	Landing 88	Landings 1		88	\$5.72	\$503
Total Rock for Road Segment: 2E to 2F							210		

\$1,201

ROAD SEGMENT 3A to 3B			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B Volume (CY) per	0+00 to 33+25 Number of				
Base Rock	jaw run	0+00 - 33+25	8	station 50	station 33.25		1,663	\$5.72	\$9,510
Junctions	jaw run	0+00, 33+25	8	junction 22	junction 2		44	\$5.72	\$252
Turnouts	jaw run	2+50, 5+50, 9+90, 13+50, 17+30-18+95, 20+25-22+20	8	TO 22	TO 6.00		132	\$5.72	\$755
Curve Widening	jaw run	5+80-6+55, 7+00-7+70, 11+15-13+50, 17+30-18+95, 20+25-22+20	8	curve n/a	curve 143		143	\$5.72	\$818
Dissipator	24" 6" Rip-rap	26+55	N/A	diss. 11	diss. 1		11	\$5.71	\$63
Surface Rock	1 1/2"-0" crushed	0+00 - 33+25	3	station 19	station 33.25		632	\$4.36	\$2,754
Turnouts	1 1/2"-0" crushed	2+50, 5+50, 9+90, 13+50, 21+10, 27+10	3	turnout 11	turnout 6		66	\$4.36	\$288
Junctions	1 1/2"-0" crushed	0+00, 33+25	3	junction 11	junction 2		22	\$4.36	\$96
Curve Widening	1 1/2"-0" crushed	5+80-6+55, 7+00-7+70, 11+15-13+50, 17+30-18+95, 20+25-22+20	3	curve n/a	curve 66		66	\$4.36	\$288
Total Rock for Road Segment: 3A to 3B							2,778		

\$14,823

ROAD SEGMENT 3C to 3D			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3C to 3D Volume (CY) per	0+00 to 3+50 Number of				
Base Rock	jaw run	0+00 - 3+50	8	station 50	stations 3.50		175	\$5.72	\$1,001
Junctions	jaw run	0+00	8	junction 22	junction 1		22	\$5.72	\$126
Landings	6"-0" pit-run	3+50	N/A	Landing 88	Landings 1		88	\$5.72	\$503
Traction Rock	1 1/2"-0" crushed		2	station 13	stations 2		26	\$4.36	\$113
Total Rock for Road Segment: 3C to 3D							311		

\$1,744

ROAD SEGMENT 3E to 3F			POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F Volume (CY) per	0+00 to 11+25 Number of				
Base Rock	jaw run	0+00 - 11+25	8	station 50	stations 11.25		563	\$5.72	\$3,218
Junctions	jaw run	0+00	8	junction 22	junction 1		22	\$5.72	\$126
Turnouts	jaw run	6+15	8	turnout 22	turnouts 1		22	\$5.72	\$126
Turnaround	jaw run	8+30	8	turnaround 22	turnarounds 1		22	\$5.72	\$126
Traction Rock	1 1/2"-0" crushed		2	station 13	stations 4		52	\$4.36	\$227
Landings	6"-0" pit-run	2+50, 11+25	N/A	Landing 88	Landings 2		176	\$5.72	\$1,007
Total Rock for Road Segment: 3E to 3F							857		

\$4,828

Processing:		Description	No. sta	Rate/sta	Cost
		Process and Compact jaw run	115.35	\$24.28	\$2,801
		Water, Process & Compact: Surface Rock	89.25	\$56.48	\$5,041

SUB TOTAL FOR SURFACING	24"-6" rr	jr	6"-0"pr	1 1/2"-0"	Total	9,072	\$62,259
	11	6,659	440	1,963			
SPECIAL PROJECTS							
Description					Cost		
SUB TOTAL FOR SPECIAL PROJECTS						\$0	
						Subtotal of Surfacing & Spec. Proj.	\$62,259
						Subtotal of Clearing, Exc., Culv.	\$36,241
GRAND TOTAL							\$98,500

Compiled By: Kraig Kirkpatrick

Date: 06/20/2016

SALE NAME: Small Fry
ROAD: I1 - I2 (2.9), I3 - I4 (5.5)
POINTS: _____

NEW CONSTRUCTION: _____ STATIONS
IMPROVEMENT: 8.40 STATIONS

_____ MILES
 _____ MILES

	Method	Acres/amount	x	Rate	=	Cost
11 to 12	Scatter outside of right of way	0.25	x	\$ 1,337	=	\$334.25
			x		=	
			x		=	
			x		=	

\$334

[illegible]

\$6,880

[illegible]

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:				

Subtotal of Clearing, Exc., Culv.

\$2,486

\$9,700

ROAD SEGMENT I1 to I2				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 2+90				
				Volume (CY) per	Number of					
Culvert Bedding/Backfill	1 1/2"-0" Crushed	0+75	N/A	culvert	88	culverts	1.00	88	\$4.36	\$384
Dissipator	24"-6" Rip-Rap	0+75	N/A	dissipator	22	dissipator	1.00	22	\$5.71	\$126
Fill Armor	24"-6" Rip-Rap	0+75	N/A	fill	100	fills	1	100	\$5.71	\$571
Ditch Filter	jaw-run	0+75	N/A	filter	11	filters	n/a	11	\$5.72	\$63
Base Rock at Fill	jaw-run	0+75	4	station	n/a	stations	n/a	55	\$5.72	\$315
Base Rock	jaw-run	0+00 to 2+90	8	station	50	stations	2.9	145	\$5.72	\$829
Turnouts	jaw-run	1+95	8	TO	22	TO's	1	22	\$5.72	\$126
Curve Widening	jaw-run	0+75	8	curve	11	curves	1	11	\$5.72	\$63
Surface Rock	1 1/2"-0" Crushed	0+00 to 2+90	3	station	19	stations	2.9	55	\$4.36	\$240
Turnouts	1 1/2"-0" Crushed	1+95	3	TO	11	TO's	1	11	\$4.36	\$48
Curve Widening	1 1/2"-0" Crushed	0+75	3	curve	11	curves	2	11	\$4.36	\$48

Processing:		Description	No.sta	Rate/sta	Cost
		Process and Compact jaw run	8.40	\$24.28	\$204
		Water, Process & Compact: Surface Rock	2.90	\$56.48	\$164
SUB TOTAL FOR SURFACING		24"-6"rr	jr	1 1/2"-0"	Total
		122	404	165	691

	Subtotal of Surfacing & Spec. Proj.	\$4,470
	Subtotal of Clearing, Exc., Culv.	\$9,700

Compiled By: Kraig Kirkpatrick Date: 06/23/2016

Date: 06/23/2016

CRUSHED ROCK COST

SALE NAME:	Rector Quad
PROJECT:	No. 1 and 2
QUARRY:	Sweethome Stockpile

MATERIAL: 1 1/2"-0" Crushed

DATE: 06/20/2016
BY: Kraig Kirkpatrick

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>2</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$3.10	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>4</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

Truck type: D10 No. trucks:
 Delay min.: 5 Efficiency: 85%

Production: cy/day = 1,331

CRUSHED ROCK HAUL COSTS 2,128 cy @ \$4.36 /cy

PIT RUN ROCK COST

SALE NAME:	Rector Quad
PROJECT:	No. 1 and 2
QUARRY:	Rector Ridge

MATERIAL: Jaw-Run & Pit-Run

DATE: 06/20/2016
BY: Kraig Kirkpatrick

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks:
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$4.46	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>8</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

Truck type: D10 No. trucks:
 Delay min.: 5 Efficiency: 85%

Production: cy/day = 1,133

PIT RUN ROCK HAUL COSTS	7,504 cy @	\$5.72 /cy
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RIP RAP ROCK COST

SALE NAME:	Rector Quad
PROJECT:	No. 1 and 2
QUARRY:	Rector Ridge

MATERIAL: Rip Rap

DATE: 06/20/2016
BY: Kraig Kirkpatrick

[illegible]

ROCK HAUL:

Truck type:	D12	No. trucks:	3
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul:	\$4.33	/cy
Load:	\$1.38	/cy
Develop:		/cy

Production: cy/day = 438

RIP RAP ROCK HAUL COSTS 133 cy @ \$5.71 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3	Timber Sale Name: Rector Quad
Quarry: Rector Lookout	Swell:
Location: SW 1/4, Sec. 4, T3N, R8W	Shrink: 16%
County: Tillamook	
By: Kraig Kirkpatrick	Loading Hopper: Yes
Date: 06/28/2016	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
6"-4"	2%	CR		2,500	2,500
6"-4"	2%	CR		7,063	7,063
6"-0"		PR		440	440
24"-6"		RR		133	133
36"		RR			
TOTAL CUBIC YARDS OF ROCK:				10,136	10,136

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Dump Trucks		\$163		Off Highway Dump Truck	1	\$553	\$553
Screening Plants		\$553		Screening Plant		\$553	
D8 Cat		\$1,406		Loading Hopper		\$553	
D6 Cat	1	\$778	\$778	Loader	1	\$805	\$805
Drill & Compressor	2	\$1,406	\$2,812				
Powder	2	\$351	\$703	1 Stage Crusher	1	\$1,446	\$1,446
Dump Trucks	1	\$163	\$163				
Excavator	1	\$1,406	\$1,406	Excavator		\$1,406	

SUB TOTAL FOR MOBILIZATION

\$8,665

EQUIPMENT SET UP	TIMES	RATE	COST
1 Stage Crusher	1	\$1,006	\$1,006
Original Calibration	1	\$544	\$544

SUB TOTAL FOR SET UP COSTS

\$1,550

TOTAL MOBILIZATION & SET UP COSTS

\$10,215

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
		hr		
Pile & Burn Slash and Stumps(1 exc)	1.3	ac	\$2,702	\$3,378
Move-in Fire Truck for the burning of the Clearing Debris	1.0	ea	\$190	\$190

TOTAL CLEARING & GRUBBING COSTS

\$3,568

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread)				
330 Excavator	10	hr	\$155.00	\$1,550
10-12cy Dump Truck	10	hr	\$144.00	\$1,440

TOTAL EXCAVATION COSTS	\$2,990
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4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping			\$2.20	
crushed	9,563	94%	Drill & shoot	100%	10,327	\$2.30	\$23,753
pit run	440	4%	Oversize red	2%	200	\$5.80	\$1,160
rip rap	133	1%	Other				
Total	10,136						
reject	191	1.9%					

TOTAL ROCK DEVELOPMENT COSTS	\$24,913
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5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate			
Calibrate			
Test			
Test			

TOTAL CALIBRATION & TESTING COSTS	
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6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	9,754	\$0.78	\$7,594

TOTAL FEEDING & LOADING COSTS	\$7,594
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7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
6"-4"	crushed	2,500	1 stage w/s	140	\$1.07	\$2,679
6"-4"	crushed	7,063	1 stage w/s	140	\$1.07	\$7,568

TOTAL ROCK CRUSHING COSTS	\$10,246
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8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer	4	\$113.00	\$452.00
Compactor		\$72.00	
Grader		\$90.00	
Excavator	4	\$101.00	\$404.00

Rock for Floor (CY)	\$/CY Haul	Total

\$856.00

SUB TOTAL

\$856

HAUL & STOCKPILE

STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1.					
2. Fry Creek	6"-4"	8	2,500	\$6.42	\$16,062
3.					
4.					
5.					
6.					

SUB TOTAL

\$16,062

TOTAL STOCKPILING COSTS

\$16,918

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	\$765
\$4.00 /CY 191 CY	

TOTAL MISCELLANEOUS COSTS

\$765

10) GRAND TOTAL:

\$77,209

\$/Cubic Yard

\$8.07

Footnotes:

Fill Reconstruction Cost Estimate

Kraig Kirkp:

06/23/2016

Segment: 11 to 12

Station: 0+75

Fill: 1

Height: 18

Materials	Quantity		\$	Total
24"x95', 14ga, CMP	95	ft	\$26.17	\$2,486
24"-6" Riprap Dissipator	22	cy	\$5.71	\$126
24"-6" Riprap Fill Armor	100	cy	\$5.71	\$571
1 1/2"-0" Crushed Rock for Bedding/Backfill	88	cy	\$4.39	\$386
Jaw-Run Rock for Road	55	cy	\$5.52	\$304
Jaw-Run Rock for Ditch Filters	11	cy	\$5.52	\$61
			Subtotal	\$3,933

Excavation:	Rate		CY/amount	Total
<i>Excavate Fill, End-Haul to Waste Area</i>	\$4.00		620	\$2,480
<i>Backfill Barrow from Road Realignment</i>	\$4.00		620	\$2,480
Compaction:				
<i>Backfill (barrow & crushed rock)</i>	\$0.70		620	\$434
<i>Waste material compaction</i>	\$0.40		620	\$248
Miscellaneous:				
Fill armor & ditch filter placement w/330, \$/hr	\$155.00		5	\$775
Laborer \$/hr	\$40.00		10	\$400
Erosion Control				
Mulch and seed	0.1	ac	\$628.00	\$63
			Subtotal	\$6,880

Project Total	\$10,813
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Rector Quad

Project No.4 Road Vacating

Location/Description	C330 Excavator	Truck w/Trailer	Labor	Seeding	Straw Mulch	Total
V1 to V2 0+00-13+70		4 hrs	8 hrs	100 lb.	10 bales	
Sidecast Pullback (6.5 sta.)	15 hrs					
Remove culverts (2)	1 hrs					
Waterbar (7)	2 hrs					
V3 to V4 0+00-8+70		2 hrs	3 hrs	65 lb.	0 bales	
Fill removal	1 hrs					
Waterbar (9)	2 hrs					
V5 to V6 0+00-13+70		4 hrs	8 hrs	100 lb.	20 bales	
Sidecast Pullback (10.2 sta.)	24 hrs					
Remove culverts (1)	1 hrs					
Remove/salvage culverts (2)	2 hrs	1 hrs				
Waterbar (3)	0.5 hrs					
V7 to V8 0+00-9+50		4 hrs	3 hrs	65 lb.	5 bales	
Sidecast Pullback (7.7 sta.)	18 hrs					
Remove culverts (1)	1 hrs					
Waterbar (3)	0.5 hrs					
V9 to V10 0+00-3+50		1 hrs	2 hrs	10 lb.	5 bales	
Sidecast Pullback (3.5 sta.)	4 hrs					
Total	72 hrs	16 hr	24 hrs	340 lb	40 Bales	
Rate	\$155 /hr	\$99 /hr	\$40 /hr	\$1.60 /lb	\$10.73 /Bale	
Cost	\$11,160	\$1,584	\$960	\$544	\$429	\$14,677

Prepared by: Kraig Kirkpatrick

Date:

06/28/2016

Project Road Maintenance Cost Summary

Sale: Rector Quad
Date: 06/28/16
By: Kraig Kirkpatrick FL

Type Maintenance	Equipment Utilized	Hours	Rate	Cost
Final Project	Grader 14G	37	\$100	\$3,700
	Dump Truck (12 yd ³)	8	\$79	\$632
	Front End Loader C966	2	\$83	\$166
	Vibratory Roller	37	\$77	\$2,849
	Water Truck (2,500 gallon)	20	\$89	\$1,780
Total				\$9,127

Production Rates	Miles/Day	Miles to maintain	Days
Grader	1.5	7.1	4.73
Vibratory Roller	1.5	7.1	4.73

Segments Maintained: Fry Creek Road, Lost Creek Road to Pt. 2A, Rector Lookout Road (Rock Source to Pt. 3A). Full process and compact.
(Does not include new construction or road improvement sections)

Rector Quad TIMBER CRUISE REPORT FY 2017

1. **Sale Area Location:** Areas 2, and 3 are located in portions of Section 29, 30, 31, 32, T4N, R8W, W.M., Clatsop County, Oregon and portions of Section 4, T3N, R8W, W.M., Tillamook County, Oregon.

2. **Fund Distribution:** BOF 100%
CSL 0%

Tax Code: 8-01 (99.9%)
56-01 (0.01%)

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Posted Buffers	New R/W	Existing R/W	Net Acres	Survey Method
2	Modified Clearcut	70	3	2	1	64	GIS
3	Modified Clearcut	35	1	2	1	31	GIS
1 (R/W)	Right of Way	2	-	-	-	2	Length x Width
TOTALS		107	4	4	2	97	

4. **Cruisers and Cruise Dates:** Areas 2 and 3 were cruised by Bryce Rodgers and Andrew Arvin in July, 2016.

5. **Cruise Method and Computation:** Data was collected on Juniper Allegro data collectors, and downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria District Office.

Areas 2 and 3 are modified clearcut units and were variable plot cruised using a 54.45 BAF. The plots are located on a 8 chain by 3 chain grid, with every other plot measured and graded. A total of 46 plots were sampled, with 24 measured and graded plots, and 26 count plots.

Area 1 R/W Right-of-way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 2 and 3. Right-of-way totals 2 acres.

AREA	CRUISE	TRACT	TYPE	ACRES
2 and 3	RCTRQUAD	TAKE 23	00MC	95
1 (R/W)	RCTRQUAD	R/W	00MC	2

6. **Timber Description:**

Areas 2 and 3 are modified clearcut units, approximately 64 years old, consisting of western hemlock, Douglas-fir, Sitka spruce and red alder. The average western hemlock tree size to be harvested is approximately 16 inches DBH, with an average height of 59 feet to a merchantable top (6 inch d.i.b./40% fp). The average Douglas-fir tree size to be harvested is approximately 22 inches DBH, with an average height of 88 feet to a merchantable top (6 inch d.i.b./40% fp). The average Sitka spruce tree size to be harvested is approximately 43 inches DBH, with an average height of 107 feet to a merchantable top (6 inch d.i.b./40% fp). The average Red alder tree size to be harvested is approximately 14 inches DBH, with an average height of 36 feet to a merchantable top (6 inch d.i.b./40% fp). The average volume per acre to be harvested (net) is 43 MBF.

Area 1 R/W is similar to the timber description mentioned above in Areas 2 and 3. The average volume (net) is 44 MBF/acre.

7. Statistical Analysis and Stand Summary: (See "Statistics" - Type Reports, attached)

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
2 and 3	45	9	35.7	5.3

8. Take Volumes by Species and Log Grades for All Sale Areas by MBF: (See "Species, Sort Grade-Board Feet Volumes (Project)", "Statistics (Project)", and the "Stand Table Summary" attached). Volumes do not include "in-growth." The majority of defect and breakage was taken out during the cruise.

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	% D & B	% Sale
Western hemlock	16"	3,508	1,947	1,353	208	<1	85
Douglas-fir	22"	234	193	22	19	2.5	5
Sitka spruce*	43"	205	142	63	-	<1	5

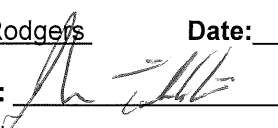
*Approximately 187 MBF of Sitka spruce is greater than 20" on the scaling end.

Species	DBH	Net Vol.	12"+	10"-11"	8"-9"	6"-7"	% D & B	% Sale
Red Alder	14"	199	48	29	43	79	<1	5

TOTAL NET VOLUME	4,146
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9. Approvals:

Prepared by: Bryce Rodgers Date: July 11, 2016

Unit Forester Approval:  Date: 8/23/2016

10. Attachments:

- Cruise Design and Map - 3 pages
- Volume Report - 1 pages
- Statistics Report - 4 pages
- Stand Table Summary - 1 pages
- Log Stock Tables - 2 pages

X:\STATE_FORESTS\UNIT_SUNSET\2017 FY Sales\Rector Quad\Sale Prep\Cruise

CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Rector Quad **Area(s)** 2, and 3

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 95 **Estimated CV%** 45 Net BF/Acre **SE% Objective** 9 Net BF/Acre

Planned Sale Volume : 4.2 MMBF **Estimated Sale Area Value/Acre:** \$15,500/Ac
(40 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer and 10 hardwood trees
(b) Sample 45 cruise plots (1 grade/1 count); (c) Other goals (Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF 54.44 (Full point; Half point) (circle one)
Cruise Line Directions Area 2: 46°/226°
Area 3: 130° / 310°
Cruise Line Spacing 8 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1/1

Take plots as marked on cruise map. All cedar will be reserved. Grade all alder as Camp Run.
Record all snags as SN.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.
- 5. Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each

merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.

6. Species, Sort, and Grade Codes:

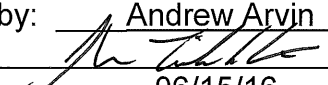
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: Use code "1" (Domestic).
- C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
Hardwoods: Alder Grades: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
All Maple Camp Run = R

7. **Deductions**: Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.

8. **Standard Field Procedures**: Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.

9. **Cruising Equipment**: Relaskop, Rangefinder, Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

10. **Attachments**: A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Andrew Arvin
Approved by: 
Date: 06/15/16

CRUISE MAP

TIMBER SALE CONTRACT NO. 341-17-11

RECTOR QUAD

PORTIONS OF SECTIONS 29, 30,
31, & 32, T4N, R8W, W.M.,
CLATSOP COUNTY, OREGON

N



Area 1 (RW) = 2 Acres

Area 2 (MC) = 64 Acres

Area 3 (MC) = 31 Acres

Total MC Acres = 97 Acres

1 inch = 1,000 feet

0 500 1,000 2,000
Feet

Line Spacing = 8 chains

Plot Spacing = 3 chains

Azimuths:

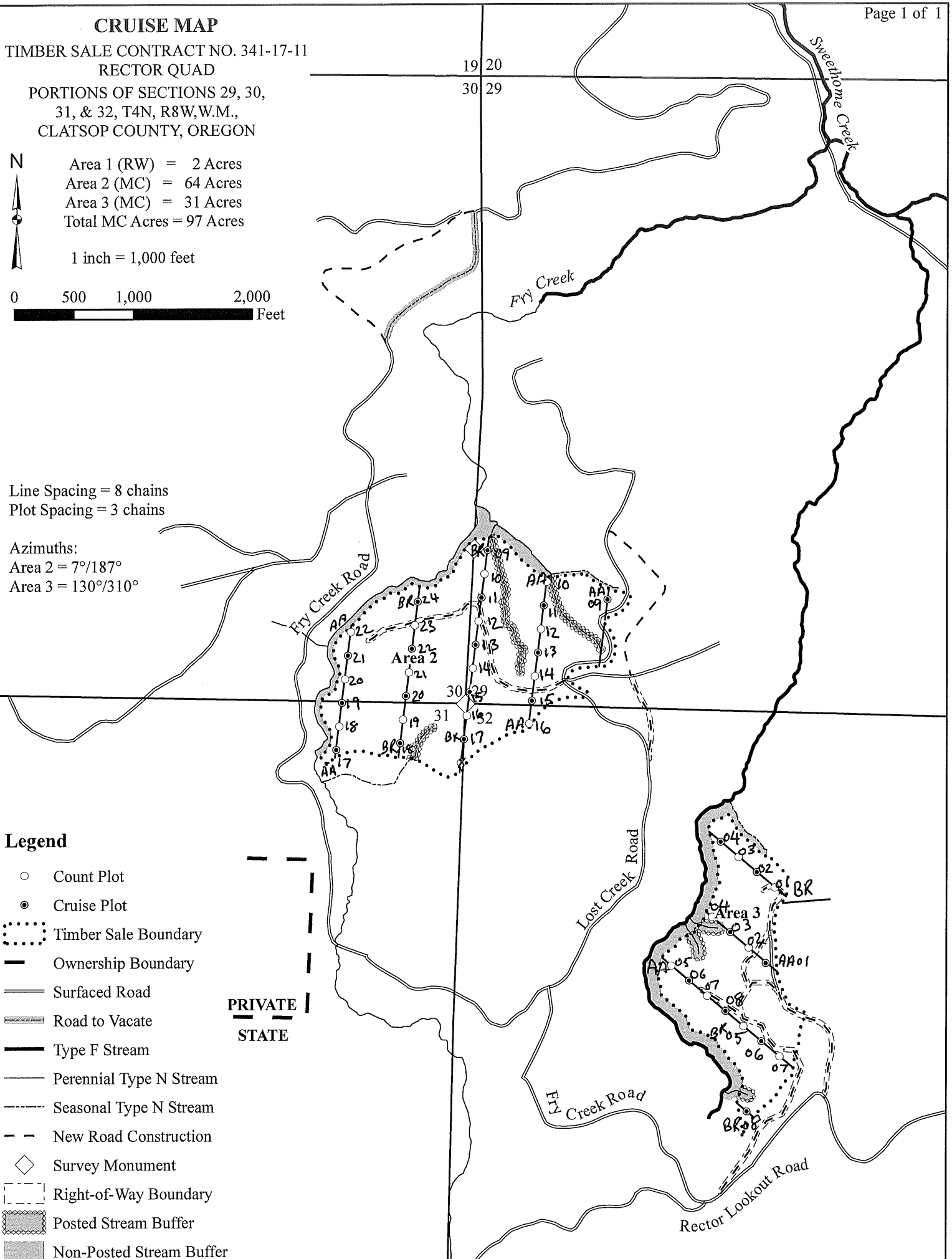
Area 2 = 7°/187°

Area 3 = 130°/310°

Legend

- Count Plot
- Cruise Plot
- ⋯ Timber Sale Boundary
- Ownership Boundary
- Surfaced Road
- Road to Vacate
- Type F Stream
- Perennial Type N Stream
- Seasonal Type N Stream
- - - New Road Construction
- ◇ Survey Monument
- ⋯ Right-of-Way Boundary
- ▨ Posted Stream Buffer
- Non-Posted Stream Buffer

PRIVATE
STATE



Species, Sort Grade - Board Foot Volumes (Project)

T04N R08W S32 Ty00MC 2.00
T04N R08W S32 Ty00MC 95.00

Project: RCTRQUAD

Acres 97.00

Page 1
Date 7/26/2016
Time 1:26:18PM

S Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99							
H	DOCU																14	12		0.00	11.2
H	DO2S	55	.5	20,178	20,075	1,947			71	29			6	94			39	14	311	1.88	64.6
H	DO3S	39	1.0	14,090	13,943	1,353			98	2		1	1	28	70		37	8	94	0.76	147.8
H	DO4S	6		2,147	2,147	208			100			59	41				19	6	25	0.43	85.9
H Totals		85	.7	36,415	36,166	3,508			44	40	16	4	3	14	79		32	9	117	0.98	309.4
A	DOCU																15	10		0.00	6.0
A	DO1S	24		499	499	48			100			32	34		34		29	13	160	1.56	3.1
A	DO2S	14		296	296	29			100			39	61				25	10	90	0.98	3.3
A	DO3S	22		443	443	43			100			14	20	66			24	8	47	0.61	9.5
A	DO4S	40		811	811	79			100			31	46		23		25	6	36	0.62	22.8
A Totals		5		2,049	2,049	199			76	24		29	40	14	17		24	8	46	0.67	44.6
D	DOCU																6	12		0.00	.6
D	DO2S	82	3.0	2,053	1,991	193			11	47	42		4	5	91		38	14	271	1.78	7.4
D	DO3S	10		223	223	22			100					100			32	9	100	0.89	2.2
D	DO4S	8		193	193	19			100			41	13		45		25	7	42	0.51	4.6
D Totals		6	2.5	2,469	2,407	234			26	39	35	3	5	13	79		32	11	163	1.32	14.8
C	DO4S	100		4	4	0			100			100					16	7	30	0.50	.1
C Totals		0		4	4	0			100			100					16	7	30	0.50	.1
S	DO2S	69		1,463	1,463	142				100				100			40	31	1732	8.03	.8
S	DO3S	31		648	648	63			5	24	71		3	9	87		36	18	597	3.60	1.1
S Totals		5		2,111	2,111	205			2	7	91		1	3	96		38	24	1094	5.65	1.9
Totals			0.7	43,049	42,737	4,146			42	38	20	5	5	13	77		31	9	115	1.00	370.9

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT		RCTROUAD		DATE 8/23/2016			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
04N	08W	32	A23	00MC	95.00	46	267	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		46	267	5.8							
CRUISE		24	126	5.3	20,692		.6				
DBH COUNT											
REFOREST											
COUNT		22	141	6.4							
BLANKS											
100 %											
STAND SUMMARY											
		SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
		TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK		95	170.7	16.3	59	61.0	246.2	36,404	36,155	9,610	9,610
R ALDER		17	31.6	14.1	36	9.1	34.3	2,049	2,049	716	716
DOUG FIR		7	5.5	21.7	88	3.0	14.2	2,469	2,407	622	622
S SPRUCE		2	.6	45.0	115	1.1	7.1	2,392	2,392	440	440
SNAG		3	2.7	20.1	39	1.3	5.9				
CEDLEAV		1	6.5	10.0	17	1.1	3.6	195	195	52	52
SPRUCELV		1	.1	39.0	108	0.2	1.2	378	378	71	71
TOTAL		126	217.8	16.2	55	77.6	312.4	43,888	43,577	11,510	11,510
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		72.0	7.4	305	329	353					
R ALDER		85.4	21.3	62	78	95					
DOUG FIR		40.1	16.3	414	494	575					
S SPRUCE				3,720	3,720	3,720					
SNAG											
CEDLEAV											
SPRUCELV											
TOTAL		145.4	12.9	319	367	414	844	211	94		
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		62.2	9.2	155	171	186					
R ALDER		197.4	29.1	22	32	41					
DOUG FIR		261.3	38.5	3	6	8					
S SPRUCE		347.0	51.1	0	1	1					
SNAG		351.0	51.7	1	3	4					
CEDLEAV		382.8	56.4	3	7	10					
SPRUCELV		678.2	99.9	0	0	0					
TOTAL		42.0	6.2	204	218	231	70	18	8		
CL:	68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		51.4	7.6	228	246	265					
R ALDER		196.0	28.9	24	34	44					
DOUG FIR		248.2	36.6	9	14	19					
S SPRUCE		347.0	51.1	3	7	11					
SNAG		348.5	51.3	3	6	9					
CEDLEAV		382.8	56.4	2	4	6					
SPRUCELV		678.2	99.9	0	1	2					
TOTAL		31.9	4.7	298	312	327	41	10	5		
CL:	68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	RCTROUAD			DATE	8/23/2016
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	32	A23	00MC	95.00	46	267	1	W
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.	S.E. %	LOW	AVG	HIGH	5	10	15	
WHEMLOCK	53.5	7.9	33,305	36,155	39,006				
R ALDER	207.7	30.6	1,422	2,049	2,676				
DOUG FIR	242.9	35.8	1,546	2,407	3,269				
S SPRUCE	347.0	51.1	1,169	2,392	3,614				
SNAG									
CEDLEAV	382.8	56.4	85	195	305				
SPRUCELV	678.2	99.9	0	378	756				
TOTAL	39.7	5.8	41,027	43,577	46,126	63	16	7	
CL: 68.1 %	COEFF	TONS/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5	10	15	
WHEMLOCK	53.5	7.9	252	273	295				
R ALDER	207.7	30.6	11	15	20				
DOUG FIR	243.6	35.9	12	19	25				
S SPRUCE	347.0	51.1	7	14	22				
SNAG									
CEDLEAV									
SPRUCELV									
TOTAL	40.6	6.0	302	321	340	66	16	7	

TC PSTATS			PROJECT STATISTICS						PAGE	1		
			PROJECT		RCTROAD				DATE	7/26/2016		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt		
04N	08	32	TAKE32	00MC		95.00	46	255	1	W		
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL			46	255	5.5							
CRUISE			27	125	4.6	19,811	.6					
DBH COUNT												
REFOREST												
COUNT			19	119	6.3							
BLANKS												
100 %												
STAND SUMMARY												
			SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK			95	170.7	16.3	59	61.0	246.2	36,404	36,155	9,610	9,610
R ALDER			17	31.6	14.1	36	9.1	34.3	2,049	2,049	716	716
DOUG FIR			7	5.5	21.7	88	3.0	14.2	2,469	2,407	622	622
S SPRUCE			6	.7	43.2	107	1.1	7.1	2,103	2,103	411	411
TOTAL			125	208.5	16.3	57	74.8	301.8	43,026	42,715	11,358	11,358
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL	68.1	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK			72.0	7.4	305	329	353					
R ALDER			85.4	21.3	62	78	95					
DOUG FIR			40.1	16.3	414	494	575					
S SPRUCE			31.5	14.0	2,767	3,218	3,670					
TOTAL			157.6	14.1	381	443	505	992	248	110		
CL	68.1	COEFF	SAMPLE TREES - CF					# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK			63.8	6.5	80	86	92					
R ALDER			76.4	19.1	22	28	33					
DOUG FIR			32.5	13.2	109	126	143					
S SPRUCE			26.4	11.8	549	622	695					
TOTAL			125.1	11.2	94	106	118	624	156	69		
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK			62.2	9.2	155	171	186					
R ALDER			197.4	29.1	22	32	41					
DOUG FIR			261.3	38.5	3	6	8					
S SPRUCE			338.7	49.9	0	1	1					
TOTAL			44.6	6.6	195	209	222	79	20	9		
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK			51.4	7.6	228	246	265					
R ALDER			196.0	28.9	24	34	44					
DOUG FIR			248.2	36.6	9	14	19					
S SPRUCE			347.0	51.1	3	7	11					
TOTAL			31.8	4.7	288	302	316	40	10	4		
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK			53.5	7.9	33,305	36,155	39,006					
R ALDER			207.7	30.6	1,422	2,049	2,676					
DOUG FIR			242.9	35.8	1,546	2,407	3,269					
S SPRUCE			368.6	54.3	961	2,103	3,245					

TC PSTATS				PROJECT STATISTICS				PAGE	2	
				PROJECT	RCTROUAD			DATE	7/26/2016	
TWP	RGE	SC	TRACT	TYPE	ACRES		PLOTS	TREES	CuFt	BdFt
04N	08	32	TAKE32	00MC	95.00		46	255	1	W
CL	68.1		COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
TOTAL			35.7	5.3	40,469	42,715	44,961	51	13	6
CL	68.1		COEFF	NET CUFT FT/ACRE				# OF PLOTS REQ.		INF. POP.
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
WHEMLOCK			52.8	7.8	8,863	9,610	10,357			
R ALDER			204.2	30.1	501	716	931			
DOUG FIR			245.6	36.2	397	622	847			
S SPRUCE			359.1	52.9	193	411	628			
TOTAL			34.6	5.1	10,780	11,358	11,937	48	12	5

TC PSTATS				PROJECT STATISTICS				PAGE	1	
				PROJECT	RCTROUAD	DATE				7/26/2016
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	08	32	R/W	00MC	97.00	92	517	1	W	
04N	08W	32	TAKE32	00MC						
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				

PROJECT STATISTICS

PROJECT RCTROUAD

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08	32	R/W	00MC	97.00	92	517	1	W
04N	08W	32	TAKE32	00MC					
CL	68.1		COEFF		NET BF/ACRE			# OF PLOTS REQ.	
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10
WHEMLOCK			121.3	12.6	31,596	36,166	40,736		
R ALDER			302.0	31.5	1,404	2,049	2,694		
DOUG FIR			348.3	36.3	1,534	2,407	3,281		
S SPRUCE			515.0	53.6	979	2,111	3,243		
WR CEDAR			547.7	57.0	2	4	6		
TOTAL			108.1	11.3	37,924	42,737	47,551	467	117
CL	68.1		COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.	
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10
WHEMLOCK			120.7	12.6	8,404	9,613	10,821		
R ALDER			297.4	31.0	494	716	938		
DOUG FIR			351.8	36.6	394	622	850		
S SPRUCE			502.3	52.3	197	412	628		
WR CEDAR			547.7	57.0	0	1	2		
TOTAL			107.4	11.2	10,092	11,364	12,635	461	115

TC		PSTNDSUM		Stand Table Summary										Page Date:		1 7/26/2016	
T04N R08W S32 Ty00MC2.00 T04N R08W S32 Ty00MC95.00					ProjectRCTRQUAD					Time:1:39:58PM							
					Acres97.00					Grown Year:							
S Spc	T	DBH	Sample Trees	Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
				FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
H		8	2	89	20	7.425	2.59	7.43	5.0	20.0		37	149		36	14	
H		9	4	84	20	11.734	5.18	11.73	5.0	20.0		59	235		57	23	
H		10	10	89	46	23.761	12.96	19.01	11.5	45.0		219	855		212	83	
H		11	2	89	50	3.928	2.59	3.93	14.0	50.0		55	196		53	19	
H		12	2	88	60	3.300	2.59	3.30	19.0	60.0		63	198		61	19	
H		13	12	88	93	16.872	15.55	33.74	19.3	69.2		652	2,334		633	226	
H		14	12	87	79	14.548	15.55	26.67	20.5	71.8		548	1,915		532	186	
H		15	10	89	99	10.561	12.96	23.23	24.3	97.3		564	2,260		547	219	
H		16	10	89	94	9.282	12.96	18.56	28.6	106.0		531	1,968		515	191	
H		17	12	88	91	9.866	15.55	19.73	31.2	110.0		615	2,171		597	211	
H		18	26	89	93	19.068	33.70	39.60	34.9	125.9		1,383	4,987		1,342	484	
H		19	10	90	101	6.582	12.96	14.48	40.4	152.7		584	2,212		567	215	
H		20	6	90	93	3.564	7.78	7.13	44.8	165.0		320	1,176		310	114	
H		21	10	87	93	5.388	12.96	10.78	49.3	173.0		531	1,864		515	181	
H		22	18	86	96	8.837	23.33	19.64	46.7	175.0		918	3,437		891	333	
H		23	8	89	108	3.593	10.37	8.98	55.1	224.0		495	2,012		480	195	
H		24	12	87	100	4.950	15.55	11.55	58.6	229.3		677	2,648		656	257	
H		25	6	86	97	2.281	7.78	5.32	62.1	244.3		331	1,300		321	126	
H		26	2	82	89	.703	2.59	1.41	71.0	235.0		100	330		97	32	
H		27	6	84	110	1.956	7.78	5.22	70.1	290.0		366	1,512		355	147	
H		28	2	88	111	.606	2.59	1.82	69.7	323.3		127	588		123	57	
H		30	4	84	118	1.056	5.18	2.64	86.8	370.0		229	977		222	95	
H		31	2	82	117	.495	2.59	1.48	83.7	370.0		124	549		120	53	
H		33	2	83	74	.436	2.59	.87	98.5	335.0		86	292		83	28	
H		Totals	190	88	77	170.793	246.24	298.26	32.2	121.3		9,613	36,166		9,324	3,508	
D		16	2	85	114	1.453	2.03	2.91	28.0	105.0		81	305		79	30	
D		20	2	83	96	.930	2.03	1.86	41.5	130.0		77	242		75	23	
D		23	2	82	111	.703	2.03	2.11	42.0	140.0		89	295		86	29	
D		24	2	89	137	.646	2.03	1.94	54.7	233.3		106	452		103	44	
D		25	6	84	117	1.785	6.09	5.36	50.2	207.8		269	1,113		261	108	
D		Totals	14	84	114	5.517	14.20	14.17	43.9	169.9		622	2,407		603	234	
S		35	2	86	99	.177	1.18	.35	145.0	595.0		51	211		50	20	
S		39	1	89	132	.003	.02	.01	165.3	883.3		1	8		1	1	
S		45	4	89	141	.214	2.37	.64	228.0	1240.0		147	797		142	77	
S		46	6	86	142	.308	3.55	.92	230.6	1186.7		213	1,095		206	106	
S		Totals	13	87	131	.702	7.13	1.93	213.7	1094.4		412	2,111		400	205	
A		11	4	86	59	6.118	4.04	9.18	10.7	36.7		98	337		95	33	
A		12	2	87	48	2.571	2.02	2.57	16.0	50.0		41	129		40	12	
A		13	6	86	45	6.571	6.06	6.57	14.3	36.7		94	241		91	23	
A		14	6	87	31	5.666	6.06	3.78	14.0	30.0		53	113		51	11	
A		15	6	87	50	4.935	6.06	6.58	21.2	67.5		140	444		136	43	
A		16	2	87	45	1.446	2.02	1.45	27.0	60.0		39	87		38	8	
A		18	6	73	77	3.427	6.06	6.85	27.2	75.0		186	514		181	50	
A		21	2	86	67	.839	2.02	1.68	38.5	110.0		65	185		63	18	
A		Totals	34	85	50	31.573	34.32	38.66	18.5	53.0		716	2,049		694	199	
C		10	1	82	20	.134	.07	.13	8.0	30.0		1	4		1	0	
C		Totals	1	82	20	.134	.07	.13	8.0	30.0		1	4		1	0	
Totals			252	87	74	208.720	301.96	353.15	32.2	121.0		11,364	42,737		11,023	4,146	

Log Stock Table - MBF

T04N R08W S32 Ty00MC 2.00
T04N R08W S32 Ty00MC 95.00

Project: RCTRQUAD
Acres 97.00

Page 1
Date 7/26/2016
Time 1:39:59PM

S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-22	23-27	28-39	40+
H	DO	2S	32	109		109	3.1					53		56					
H	DO	2S	40	1,848		1,838	52.4					618		336	690	194			
H	DO	3S	20	16		16	.5				3	13							
H	DO	3S	24	2		2	.1				2								
H	DO	3S	30	10		10	.3			10									
H	DO	3S	32	373	1.7	367	10.5			103	58	177	12	18					
H	DO	3S	34	7		7	.2					7							
H	DO	3S	36	40	5.9	38	1.1			38									
H	DO	3S	40	919		913	26.0			238	332	343							
H	DO	4S	12	5		5	.2			5									
H	DO	4S	14	4		4	.1			4									
H	DO	4S	16	93		93	2.6			81	12								
H	DO	4S	18	15		15	.4			7	7								
H	DO	4S	20	5		5	.2			5									
H	DO	4S	22	8		8	.2			8									
H	DO	4S	24	23		23	.7			23									
H	DO	4S	26	38		38	1.1			38									
H	DO	4S	28	4		4	.1			4									
H	DO	4S	30	12		12	.4			12									
H	Totals			3,532		3,508	84.6			577	415	539	683	410	690	194			
A	DO	1S	20	16		16	7.8							16					
A	DO	1S	30	17		17	8.4						17						
A	DO	1S	40	16		16	8.2						16						
A	DO	2S	20	11		11	5.6					11							
A	DO	2S	30	18		18	8.8					18							
A	DO	3S	10	6		6	3.0				6								
A	DO	3S	30	8		8	4.3			8									
A	DO	3S	32	29		29	14.4				29								
A	DO	4S	16	4		4	1.9			4									
A	DO	4S	18	4		4	1.8			4									
A	DO	4S	20	17		17	8.6			17									
A	DO	4S	30	36		36	18.1			36									
A	DO	4S	36	18		18	9.1			18									
A	Totals			199		199	4.8			87	34	29	33	16					
D	DO	2S	24	9		9	3.7					9							

Log Stock Table - MBF

T04N R08W S32 Ty00MC 2.00
T04N R08W S32 Ty00MC 95.00

Project: RCTRQUAD
Acres 97.00

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Date 7/26/2016
Time 1:39:59PM

S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-22	23-27	28-39	40+
D	DO	2S	32	9		9	4.0					9							
D	DO	2S	40	181	3.3	175	75.1					21	31	19	104				
D	DO	3S	32	22		22	9.3			5		16							
D	DO	4S	12	1		1	.6			1									
D	DO	4S	16	2		2	.7			2									
D	DO	4S	20	5		5	2.0				5								
D	DO	4S	26	3		3	1.1			3									
D	DO	4S	40	8		8	3.6			8									
D	Totals			240	2.5	234	5.6			19	5	37	48	19	104				
C	DO	4S	16	0		0	100.0			0									
C	Totals			0		0	.0			0									
S	DO	2S	40	142		142	69.3									0	36	106	
S	DO	3S	24	2		2	1.0							2					
S	DO	3S	32	6		6	2.8							6					
S	DO	3S	36	7		7	3.5								7				
S	DO	3S	40	48		48	23.3					3					45		
S	Totals			205		205	4.9					3		8	7	0	81	106	
Total	All Species			4,176		4,146	100.0			684	454	609	765	452	802	194	81	106	

LOGGING PLAN

TIMBER SALE CONTRACT NO. 341-17-11

RECTOR QUAD

PORTIONS OF SECTIONS 29, 30, 31, & 32,
T4N, R8W, W.M., CLATSOP COUNTY, OREGON
AND PORTIONS OF SECTION 4, T3N, R8W,
W.M., TILLAMOOK COUNTY, OREGON

Approximate Net Acreage MC Acres

Area 1 R/W 2

Area 2 (MC) 64

Area 3 (MC) 31

Total Sale Acreage = 97

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

Logging Breakdown	Tractor	Cable
Area 1 R/W -	100%	0%
Area 2 (MC) -	77%	23%
Area 3 (MC) -	23%	77%
Total=	59%	41%

Legend

- Timber Sale Boundary
- Posted Stream Buffer
- Ownership Boundary
- Surfaced Road
- Type F Stream
- Type N Stream
- Road Construction
- Seasonally Restricted Road Construction
- Landing Construction
- Stockpile Site
- Waste Area
- Survey Monument
- Ground Yarding Area
- Cable Yarding Area

STATE
PRIVATE

