Timber Sale Appraisal
Fireworks

Sale TL-341-2017-14-

District: Tillamook

Date: September 01, 2016

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$2,066,189.25	$66,675.00	$2,132,864.25
		Project Work:	($625,550.00)
		Advertised Value:	$1,507,314.25

Timber Description

Location: Portions of Sections 31, 32, and 33, T1S, R6W, W.M., Washington County, Oregon and portions of Section 36, T1S, R7W, portions of Section 1, T2S, R7W, and portions of Section 6, T2S, R6W, W.M., Tillamook County, Oregon.

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	16	0	95
Alder (Red)	13	0	93

Volume by Grade	2S	3S	4S	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	3,216	2,787	1,190	0	0	0	0	7,193
Alder (Red)	0	0	0	49	36	27	188	300
Total	3,216	2,787	1,190	49	36	27	188	7,493

Comments: Pond Values Used: 2nd Quarter Calendar Year 2016.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
$882/MBF = $1,175/MBF - $293/MBF

Western Hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:
$142/MBF = $435/MBF - $293/MBF

Pulp (Conifer and Hardwood) Price = $25/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):
Snag Creation: 200 snags at $10/tree = $2,000
TOTAL Other Costs (with Profit & Risk to be added) = $2,000

Other Costs (No Profit & Risk added):
Machine Cleaning: $1,000/machine x 2 machines = $2,000
Cover Materials for Piles: $5/pile x 10 piles = $50
Slash Piling and Sorting (Cable Ground): $5/acre x 165 acres = $825
Heliport Slash Sorting: 1 heliport x $500/heliport = $500
Non-Project Road #1 Construction: 10 Stations x $200/Station = $2,000
Temporary Crossing on Non-Project Road #1 (install and remove): 4 hours @95/hour = $380
Vacate 2nd Crossing of Road Segment G to H, Return Culvert to ODF: 4 hours @95/hour = $380
OHV Filter Installation: 2 filters x $75/filter = $150
Ditch Cleaning and Bank Sluff Removal:
Mobilization: two times – dump truck w/tilt bed & small excavator: $890 x 2 = $1,780
Small Excavator (Cat 312 or equivalent): 40 hrs. @ $95/hr = $3,800
Dump Truck: 40 hrs. @ $70/hr = $2,800

TOTAL Other Costs (No Profit & Risk added) = $ 14,665

ROAD MAINTENANCE:

Spot rocking: 20cy/mmbf/mile x 7.4MMBF x $9.00/cy x 15 miles/ 7493MBF = $2.67/ MBF

Interim Grading: $250/ mile x 15 miles x 3 times/ 7493 MBF = $1.50/ MBF

Final Maintenance Grading: $500 x 15 miles/7493 MBF = $1.00/ MBF

Final Maintenance Compaction: $950/mile x 8 miles/7493 MBF = $1.01/MBF

Total Road Maintenance: $6.18/ MBF

Logging Conditions

Combination#: 1

Douglas - Fir	28.42%
Alder (Red)	25.30%

Logging System: Cable: Small Tower <=40 **Process:** Stroke Delimber
yarding distance: Short (400 ft) **downhill yarding:** No
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 9 **bd. ft / load:** 3500
cost / mbf: $177.78
machines: Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Small)

Combination#: 2

Douglas - Fir	13.08%
Alder (Red)	23.35%

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: 8 **bd. ft / load:** 3500
cost / mbf: $200.00
machines: Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Small)

Combination#: 3

Douglas - Fir	51.76%
Alder (Red)	33.15%

Logging System: Shovel **Process:** Stroke Delimber
yarding distance: Short (400 ft) **downhill yarding:** No
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 8 **bd. ft / load:** 3500
cost / mbf: $113.28
machines: Stroke Delimber (B)

Combination#: 4

Douglas - Fir	6.74%
Alder (Red)	18.20%

Logging System: Cable: Small Tower <=40 **Process:** Stroke Delimber
yarding distance: Long (1,500 ft) **downhill yarding:** No
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF

loads / day: 6 **bd. ft / load:** 3500
cost / mbf: $266.67
machines: Log Loader (A)
Stroke Delimber (A)
Tower Yarder (Small)

Logging Costs

Operating Seasons: 2.00

Profit Risk: 10%

Project Costs: $625,550.00

Other Costs (P/R): $2,000.00

Slash Disposal: $0.00

Other Costs: $14,665.00

Miles of Road

Road Maintenance: $6.18

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	2.0	3.8
Alder (Red)	$0.00	3.0	3.8

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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									
$153.29	$6.49	$1.17	$107.76	$0.27	$26.90	$0.00	$7.00	$1.96	$304.84
Alder (Red)									
$177.76	$6.61	$1.17	$73.21	$0.27	$25.90	$0.00	$7.00	$1.96	$293.88

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$592.09	$287.25	$0.00
Alder (Red)	$0.00	$516.13	$222.25	$0.00

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Amortized

Specie	**MBF**	**Value**	**Total**
Douglas - Fir	0	$0.00	$0.00
Alder (Red)	0	$0.00	$0.00

Unamortized

Specie	**MBF**	**Value**	**Total**
Douglas - Fir	7,193	$287.25	$2,066,189.25
Alder (Red)	300	$222.25	$66,675.00

Gross Timber Sale Value

Recovery: $2,132,864.25

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OREGON DEPARTMENT OF FORESTRY

"STEWARDSHIP IN FORESTRY"

PROJECT SUMMARY SHEET

Sale: Fireworks

CONSTRUCTION

Point	G to H	4+05	stations =	$6,205.22
Point	K to L	4+25	stations =	$1,708.46
Point	M to N	16+90	stations =	$30,113.01
Point	Q to R	10+90	stations =	$4,356.03
			SUBTOTAL CONSTRUCTION	**$42,382.72**

IMPROVEMENT

Point	A to B	171+35	stations =	$87,612.40
Point	C to D	237+70	stations =	$163,756.56
Point	E to F	404+00	stations =	$166,655.15
Point	G to H	31+00	stations =	$40,223.03
Point	I to J	35+00	stations =	$36,294.10
Point	K to L	12+65	stations =	$7,324.57
Point	M to N	8+90	stations =	$8,642.60
Point	O to P	37+85	stations =	$9,646.65
			SUBTOTAL IMPROVEMENT	**$520,155.06**

SPECIAL PROJECTS

Brush 27.0 miles of road (Project 6)	$25,650.00
Rock Quarry Test Drilling & Exploration (Project 7)	$5,000.00
Construct 1,500 CY Stockpile of 2"-0" Rock (Project 3)	$24,735.00
SUBTOTAL SPECIAL PROJECTS	**$55,385.00**

MOVE IN	**$7,627.22**
GRAND TOTAL	**$625,550.00**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **A to B**

Construction -	0+00	stations	Improvement -	171+35	stations	Reconstruction -	0+00	stations
	0.00	miles		3.25	miles		0.00	miles

IMPROVEMENT: EXCAVATION -

Road Ditching (End haul)	7+30	to	9+70	2.40	sta. @	$150.00	per sta. =	$360.00	
Road Ditching (End haul)	33+50	to	39+40	5.90	sta. @	$100.00	per sta. =	$590.00	
Road Ditching (End haul)	41+40	to	45+10	3.70	sta. @	$100.00	per sta. =	$370.00	
Road Ditching (End haul)	47+30	to	62+50	15.20	sta. @	$100.00	per sta. =	$1,520.00	
Road Ditch Ripping (End haul	62+50	to	65+20	2.70	sta. @	$150.00	per sta. =	$405.00	
								TOTAL EXCAVATION	**$3,245.00**

IMPROVEMENT: ENDHAUL -

Spread & compact	400	cy. @	$0.25	per c.y.=	$100.00	
					TOTAL ENDHAUL	**$100.00**

CULVERTS - MATERIALS & INSTALLATION

Culverts				
60	LF of 18"	$1,193.40		
		$1,193.40		
Culvert Stakes & Markers				
2	markers	$16.00		
		$16.00	**TOTAL CULVERTS**	**$1,209.40**

ROCK

0+00	to	171+35	3,830	cy. of	Crushed	@	$20.17	per c.y.=	$77,251.10
Culvert Backfill/Bedding		60+30 65+20	20	cy. of	Crushed	@	$17.70	per c.y.=	$354.00
Energy Dissipator		60+30 65+20	15	cy. of	Riprap	@	$12.65	per c.y.=	$189.75
								TOTAL ROCK	**$77,794.85**

SPECIAL PROJECTS

Grade and shape road -	171.35	stations @	$15.50	per station	$2,655.93	
Roll subgrade w/ vibratory roller prior to rocking -	171.35	stations @	$13.20	per station	$2,261.82	
Grass seed and fertilize -	1.57	acres @	$220.00	per acre	$345.40	
					TOTAL SPECIAL PROJECTS	**$5,263.15**

GRAND TOTAL **$87,612.40**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **C to D**

Construction -	0+00	stations	Improvement -	237+70	stations	Reconstruction -	0+00	stations
	0.00	miles		4.50	miles		0.00	miles

IMPROVEMENT: EXCAVATION -

Road Ditching (End haul)	13+70	to	54+55	40.85	sta. @	$100.00	per sta. =	$4,085.00
Pullback	55+50	to	57+00	250	cy. @	$1.50	per c.y.=	$375.00
Road Ditching (End haul)	58+15	to	98+80	40.65	sta. @	$100.00	per sta. =	$4,065.00
Widening	84+30			100	cy. @	$1.50	per c.y.=	$150.00
Road Ditching (End haul)	104+50	to	121+00	16.50	sta. @	$100.00	per sta. =	$1,650.00
Widening	110+00			100	cy. @	$1.50	per c.y.=	$150.00
Road Ditching	121+00	to	128+50	7.50	sta. @	$80.00	per sta. =	$600.00
Road Ditching (End haul)	128+50	to	130+60	2.10	sta. @	$100.00	per sta. =	$210.00
Road Ditching	130+60	to	145+30	14.70	sta. @	$80.00	per sta. =	$1,176.00
Road Ditching (End haul)	145+30	to	170+50	25.20	sta. @	$100.00	per sta. =	$2,520.00
Road Ditching	177+25	to	198+85	21.60	sta. @	$80.00	per sta. =	$1,728.00
Road Ditching (End haul)	198+85	to	208+00	9.15	sta. @	$100.00	per sta. =	$915.00
Road Ditching	208+00	to	237+70	29.70	sta. @	$80.00	per sta. =	$2,376.00
							TOTAL EXCAVATION	**$20,000.00**

IMPROVEMENT: ENDHAUL -

Pullback	55+50	to	57+00	250	cy. @	$3.01	per c.y.=	$752.50
Widening	84+30			100	cy. @	$3.91	per c.y.=	$391.00
Widening	110+00			100	cy. @	$3.60	per c.y.=	$360.00
Spread & compact				1450	cy. @	$0.25	per c.y.=	$362.50
							TOTAL ENDHAUL	**$1,866.00**

CULVERTS - MATERIALS & INSTALLATION

Culverts						
500	LF of 18"	$9,945.00	35	LF of 24"	$881.65	
			50	LF of 36"	$2,030.32	
		$9,945.00			$2,911.97	
Culvert Stakes & Markers						
17	markers	$136.00				
		$136.00			**TOTAL CULVERTS**	**$12,992.97**

ROCK

13+70 to	237+70	7,790	cy. of	Crushed	@	$14.80	per c.y.=	$115,292.00
Culvert Backfill/Bedding	Culv. In Exhibit G	200	cy. of	Crushed	@	$14.82	per c.y.=	$2,964.00
Energy Dissipator	Culv. In Exhibit G	100	cy. of	Riprap	@	$8.97	per c.y.=	$897.00
Leveling	36+70, 55+50	50	cy. of	Crushed	@	$16.43	per c.y.=	$821.50
Backfill (Culv. Removal)	110+00, 130+60	20	cy. of	Pit-Run	@	$7.86	per c.y.=	$157.20
							TOTAL ROCK	**$120,131.70**

SPECIAL PROJECTS

Construct waste areas -	3.00	hours @	$130.00	per hour	$390.00	
Grade and shape road -	237.70	stations @	$15.50	per station	$3,684.35	
Roll subgrade w/ vibratory roller prior to rocking -	237.70	stations @	$13.20	per station	$3,137.64	
Remove culverts from state lands	2.00	@	$472.50	total	$472.50	
Grass seed and fertilize -	4.37	acres @	$220.00	per acre	$961.40	
Mulching -	0.200	acres @	$600.00	per acre	$120.00	
					TOTAL SPECIAL PROJECTS	**$8,765.89**

GRAND TOTAL **$163,756.56**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **E to F**

Construction -	0+00	stations	Improvement -	404+00	stations	Reconstruction -	0+00	stations
	0.00	miles		7.65	miles		0.00	miles

IMPROVEMENT: EXCAVATION -

Road Ditching	2+30	to	16+00	13.70	sta. @	$80.00	per sta. =	$1,096.00	
Road Ditching (End-haul)	20+70	to	24+10	3.40	sta. @	$100.00	per sta. =	$340.00	
Road Ditching (End-haul)	25+60	to	27+35	1.75	sta. @	$100.00	per sta. =	$175.00	
Road Ditching	33+90	to	37+20	3.30	sta. @	$80.00	per sta. =	$264.00	
Road Ditching	39+20	to	47+60	8.40	sta. @	$80.00	per sta. =	$672.00	
Road Ditching	51+55	to	56+30	4.75	sta. @	$80.00	per sta. =	$380.00	
Road Ditching	58+40	to	64+25	5.85	sta. @	$80.00	per sta. =	$468.00	
Road Ditching	75+10	to	83+00	7.90	sta. @	$80.00	per sta. =	$632.00	
Road Ditching	90+80	to	97+05	6.25	sta. @	$80.00	per sta. =	$500.00	
Road Ditching	101+10	to	111+50	10.40	sta. @	$80.00	per sta. =	$832.00	
Road Ditching (End-haul)	119+05	to	126+20	7.15	sta. @	$100.00	per sta. =	$715.00	
Road Ditching	130+00	to	134+70	4.70	sta. @	$80.00	per sta. =	$376.00	
Road Ditching	135+50	to	146+70	11.20	sta. @	$80.00	per sta. =	$896.00	
Road Ditching (End-haul)	147+75	to	159+85	12.10	sta. @	$100.00	per sta. =	$1,210.00	
Widening (End-haul)	166+85	to	168+00	120	c.y. @	$1.40	per c.y.=	$168.00	
Road Ditching	169+45	to	178+20	8.75	sta @	$80.00	per sta. =	$700.00	
Road Ditching (End-haul)	182+35	to	186+00	3.65	sta @	$100.00	per sta. =	$365.00	
Road Ditching	186+00	to	197+05	11.05	sta @	$80.00	per sta. =	$884.00	
Widening (End-haul)	197+70	to	199+40	170	c.y. @	$1.40	per c.y.=	$238.00	
Road Ditching (End-haul)	200+90	to	202+55	1.65	sta @	$100.00	per sta. =	$165.00	
Road Ditching	202+55	to	216+90	14.35	sta @	$80.00	per sta. =	$1,148.00	
Road Ditching (End-haul)	217+75	to	254+00	36.25	sta @	$100.00	per sta. =	$3,625.00	
Road Ditching	254+00	to	258+15	4.15	sta @	$80.00	per sta. =	$332.00	
Road Ditching	259+80	to	266+50	6.70	sta @	$80.00	per sta. =	$536.00	
Road Ditching	268+40	to	284+85	16.45	sta @	$80.00	per sta. =	$1,316.00	
Widening (End-haul)	289+40	to	294+65	500	c.y. @	$1.40	per c.y.=	$700.00	
Road Ditching (End-haul)	294+65	to	314+75	20.10	sta @	$100.00	per sta. =	$2,010.00	
Widening (End-haul)	317+15	to	321+70	450	c.y. @	$1.40	per c.y.=	$630.00	
Road Ditching	321+70	to	364+00	42.30	sta. @	$80.00	per sta. =	$3,384.00	
								TOTAL EXCAVATION	**$24,757.00**

IMPROVEMENT: ENDHAUL -

Widening	166+85	to	168+00	120	cy. @	$1.41	per c.y.=	$169.20	
Widening	197+70	to	199+40	170	cy. @	$2.38	per c.y.=	$404.60	
Widening	289+40	to	294+65	500	cy. @	$1.73	per c.y.=	$865.00	
Widening	317+15	to	321+70	450	cy. @	$1.88	per c.y.=	$846.00	
Spread & compact				3040	cy. @	$0.25	per c.y.=	$760.00	
								TOTAL ENDHAUL	**$3,044.80**

CULVERTS - MATERIALS & INSTALLATION

Culverts							
	435	LF of 18"	$8,652.15	60	LF of 24"	$1,511.40	
			$8,652.15			$1,511.40	
Culvert Stakes & Markers							
	14	markers	$112.00				
			$112.00			**TOTAL CULVERTS**	**$10,275.55**

ROCK

0+00 to	288+55	6,450	cy. of	Crushed	@	$15.38	per c.y.=	$99,201.00	
Culvert Bedding/Backfill	Culv. In Exhibit G	200	cy. of	Crushed	@	$14.73	per c.y.=	$2,946.00	
Leveling	159+85 to 168+00	100	cy. of	Crushed	@	$13.34	per c.y.=	$1,334.00	
Leveling	169+45 to 182+35	120	cy. of	Crushed	@	$13.40	per c.y.=	$1,608.00	
Spot Rocking	288+55 to 404+00	500	cy. of	Crushed	@	$17.29	per c.y.=	$8,645.00	
Energy Dissipator	Culv. In Exhibit G	70	cy. of	Riprap	@	$10.24	per c.y.=	$716.80	
								TOTAL ROCK	**$114,450.80**

SPECIAL PROJECTS

Construct waste areas -	3.00	hours @	$130.00	per hour	$390.00	
Construct ditchouts -	4.00	@	$60.00	each	$240.00	
Fill ditch for outslope drainage -	6.00	hours @	$150.00	per hour	$900.00	
Construct waterbars on skidtrail (28+30)	1.00	hours @	$150.00	per hour	$150.00	
Grade and shape road -	404.00	stations @	$15.50	per station	$6,262.00	
Roll subgrade w/ vibratory roller prior to rocking -	404.00	stations @	$13.20	per station	$5,332.80	
Grass seed and fertilize -	1.85	acres @	$220.00	per acre	$407.00	
Mulching -	0.742	acres @	$600.00	per acre	$445.20	
					TOTAL SPECIAL PROJECTS	**$14,127.00**

GRAND TOTAL **$166,655.15**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **G to H**

Construction -	4+05	stations	Improvement -	31+00	stations	Reconstruction -	0+00	stations
	0.08	miles		0.59	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope or Activity	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
31+00		34+40	45%		Outslope	$269	=	$914.60	
34+40		35+05	Land. Const.		Outslope	$500	=	$325.00	
								TOTAL	$1,239.60

IMPROVEMENT: CLEARING AND GRUBBING -

Scattering	1.420	acres @	$980.00	per acre =	$1,391.60	
				TOTAL CLEARING AND GRUBBING		$1,391.60

IMPROVEMENT: EXCAVATION -

Widening	0+00	to	1+00	100	cy. @	$1.40	per c.y.=	$140.00	
Fill Widening	2+00	to	4+00	400	cy. @	$1.40	per c.y.=	$560.00	
								TOTAL EXCAVATION	$700.00

IMPROVEMENT: ENDHAUL -

Widening	0+00	to	1+00	100	cy. @	$1.23	per c.y.=	$123.00	
								TOTAL ENDHAUL	$123.00

CULVERTS - MATERIALS & INSTALLATION

Culverts

40	LF of 18"	$795.60	115	LF of 24"	$2,896.85	
50	LF of 30"	$1,591.00	50	LF of 36"	$1,981.86	
		$2,386.60			$4,878.71	

Culvert Stakes & Markers

6	markers	$48.00		
		$48.00	TOTAL CULVERTS	$7,313.31

ROCK

0+00 to	35+05	1,850	cy. of	Crushed	@	$16.27	per c.y.=	$30,099.50	
Culvert Bedding/Backfill	Culv. In Exhibit G	100	cy. of	Crushed	@	$14.42	per c.y.=	$1,442.00	
Landing Rock	34+70	70	cy. of	Crushed	@	$16.54	per c.y.=	$1,157.80	
Junction Rock	0+00	20	cy. of	Crushed	@	$16.12	per c.y.=	$322.40	
Energy Dissipator	Culv. In Exhibit G	30	cy. of	Riprap	@	$9.93	per c.y.=	$297.90	
								TOTAL ROCK	$33,319.60

SPECIAL PROJECTS

Construct waste areas -	1.00	hours @	$130.00	per hour	$130.00	
Remove log cribbing/punch-in @ 9+30, 11+40, & 20+45 -	4.00	hours @	$170.00	per hour	$680.00	
Grade and shape road -	35.05	stations @	$15.50	per station	$543.28	
Roll subgrade w/ vibratory roller prior to rocking -	35.05	stations @	$13.20	per station	$462.66	
Grass seed and fertilize -	1.61	acres @	$220.00	per acre	$354.20	
Mulching -	0.285	acres @	$600.00	per acre	$171.00	
				TOTAL SPECIAL PROJECTS		$2,341.14

GRAND TOTAL **$46,428.25**

SUMMARY OF CONSTRUCTION COST

Sale:	**Fireworks**	Road:	**I to J**

Construction -	0+00	stations	Improvement -	35+00	stations	Reconstruction -	0+00	stations
	0.00	miles		0.66	miles		0.00	miles

IMPROVEMENT: CLEARING AND GRUBBING -

Scattering	1.610	acres @	$1,500.00	per acre =	$2,415.00	
				TOTAL CLEARING AND GRUBBING		**$2,415.00**

IMPROVEMENT: EXCAVATION -

Road Earthwork				35.00	sta. @	$150.00	per sta. =	$5,250.00	
Road Ditching	0+00	to	5+50	5.50	sta. @	$80.00	per sta. =	$440.00	
Widening	20+40	to	35+00	1000	cy. @	$1.40	per c.y.=	$1,400.00	
							TOTAL EXCAVATION		**$7,090.00**

IMPROVEMENT: ENDHAUL -

Widening	20+40	to	35+00	1000	cy. @	$1.73	per c.y.=	$1,730.00	
Spread & compact				1000	cy. @	$0.25	per c.y.=	$250.00	
							TOTAL ENDHAUL		**$1,980.00**

CULVERTS - MATERIALS & INSTALLATION

Culverts							
			40	LF of 24"	$1,007.60		
40	LF of 30"	$1,272.80					
		$1,272.80			$1,007.60		
Culvert Stakes & Markers							
2	markers	$16.00					
		$16.00				**TOTAL CULVERTS**	**$2,296.40**

ROCK

0+00 to	35+00	2,540	cy. of	Pit-Run	@	$7.88	per c.y.=	$20,015.20		
Culvert Backfill/Bedding	Culv. In Exhibit G	30	cy. of	Crushed	@	$15.52	per c.y.=	$465.60		
Energy Dissipator	Culv. In Exhibit G	10	cy. of	Riprap	@	$11.03	per c.y.=	$110.30		
									TOTAL ROCK	**$20,591.10**

SPECIAL PROJECTS

Construct waste areas -	1.00	hours @	$130.00	per hour	$130.00	
Grade and shape road -	35.00	stations @	$15.50	per station	$542.50	
Roll subgrade w/ vibratory roller prior to rocking -	35.00	stations @	$13.20	per station	$462.00	
Remove culverts from state lands	1.00	@	$432.90	total	$432.90	
Grass seed and fertilize -	1.61	acres @	$220.00	per acre	$354.20	
				TOTAL SPECIAL PROJECTS		**$1,921.60**
				GRAND TOTAL		**$36,294.10**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **K to L**

Construction -	4+25	stations	Improvement -	12+65	stations	Reconstruction -	0+00	stations
	0.08	miles		0.24	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope or Activity	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
12+65		16+25	40%		Outslope	$243	=	$874.80	
16+25		16+90	Land. Const.		Outslope	$700	=	$455.00	
								TOTAL	**$1,329.80**

IMPROVEMENT: CLEARING AND GRUBBING -

Scattering/End-Haul	0.580	acres @	$1,500.00	per acre =	$870.00	
					TOTAL CLEARING AND GRUBBING	**$870.00**

IMPROVEMENT: EXCAVATION -

Road Earthwork				12.65	sta. @	$50.00	per sta. =	$632.50	
Widening	7+00	to	12+65	1500	cy. @	$1.40	per c.y.=	$2,100.00	
								TOTAL EXCAVATION	**$2,732.50**

IMPROVEMENT: ENDHAUL -

Widening	7+00	to	12+65	1500	cy. @	$1.48	per c.y.=	$2,220.00	
Spread & compact				1500	cy. @	$0.25	per c.y.=	$375.00	
								TOTAL ENDHAUL	**$2,595.00**

ROCK

0+00 to	1+00	70	cy. of	Pit-Run	@	$7.99	per c.y.=	$559.30	
Junction Rock	0+00	20	cy. of	Pit-Run	@	$7.99	per c.y.=	$159.80	
								TOTAL ROCK	**$719.10**

SPECIAL PROJECTS

Construct waste areas -	1.00	hours @	$130.00	per hour	$130.00	
Grade and shape road -	16.90	stations @	$15.50	per station	$261.95	
Roll subgrade w/ vibratory roller prior to rocking -	16.90	stations @	$13.20	per station	$223.08	
Grass seed and fertilize -	0.78	acres @	$220.00	per acre	$171.60	
					TOTAL SPECIAL PROJECTS	**$786.63**

GRAND TOTAL	**$9,033.03**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **M to N**

Construction -	16+90	stations	Improvement -	8+90	stations	Reconstruction	0+00	stations
	0.32	miles		0.17	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope or Activity	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
8+90		11+50	25%		Outslope	$165	=	$429.00	
11+50		13+90	50%		Outslope	$459	=	$1,101.60	
13+90		16+00	40%		Outslope	$243	=	$510.30	
16+00		19+00	65%	0.2	Outslope	$2,001	=	$6,003.00	
19+00		20+90	40%		Outslope	$243	=	$461.70	
20+90		21+45	Fill Const.		Outslope	$2,000	=	$1,100.00	
21+45		23+65	65%	0.3	Outslope	$2,071	=	$4,556.20	
23+65		25+20	45%		Outslope	$269	=	$416.95	
25+20		25+80	Land. Const.		Outslope	$1,500	=	$900.00	
								TOTAL	**$15,478.75**

IMPROVEMENT: CLEARING AND GRUBBING -

Scattering	0.410	acres @	$980.00	per acre =	$401.80
				TOTAL CLEARING AND GRUBBING	**$401.80**

IMPROVEMENT: EXCAVATION -

Road Earthwork	0+00	to	8+90	8.90	sta. @	$60.00	per sta. =	$534.00
							TOTAL EXCAVATION	**$534.00**

CULVERTS - MATERIALS & INSTALLATION

Culverts

90	LF of 30"	$2,863.80	
		$2,863.80	

Culvert Stakes & Markers

2	markers	$16.00	
		$16.00	
		TOTAL CULVERTS	**$2,879.80**

ROCK

0+00 to	25+80	1,880	cy. of	Pit-run	@	$8.64	per c.y.=	$16,243.20	
Culvert Backfill/Bedding	Culv. In Exhibit G	40	cy. of	Crushed	@	$17.89	per c.y.=	$715.60	
Landing Rock	25+50	120	cy. of	Pit-Run	@	$8.89	per c.y.=	$1,066.80	
Junction Rock	0+00	20	cy. of	Pit-Run	@	$8.44	per c.y.=	$168.80	
Energy Dissipator	Culv. In Exhibit G	10	cy. of	Riprap	@	$13.40	per c.y.=	$134.00	
								TOTAL ROCK	**$18,328.40**

SPECIAL PROJECTS

Construct waste areas -	1.00	hours @	$130.00	per hour	$130.00	
Grade and shape road -	25.80	stations @	$15.50	per station	$399.90	
Roll subgrade w/ vibratory roller prior to rocking -	25.80	stations @	$13.20	per station	$340.56	
Grass seed and fertilize -	0.98	acres @	$220.00	per acre	$215.60	
Mulching -	0.078	acres @	$600.00	per acre	$46.80	
					TOTAL SPECIAL PROJECTS	**$1,132.86**

GRAND TOTAL **$38,755.61**

SUMMARY OF CONSTRUCTION COST

Sale:	**Fireworks**	Road:	**O to P**

Construction -	0+00	stations	Improvement -	37+85	stations	Reconstruction -	0+00	stations
	0.00	miles		0.72	miles		0.00	miles

IMPROVEMENT: CLEARING AND GRUBBING -

Scattering	0.430	acres @	$980.00	per acre =	$421.40	
				TOTAL CLEARING AND GRUBBING		**$421.40**

IMPROVEMENT: EXCAVATION -

Road Earthwork				37.85	sta. @	$30.00	per sta. =	$1,135.50	
Widening	4+65	to	5+70	200	cy. @	$2.00	per c.y.=	$400.00	
							TOTAL EXCAVATION		**$1,535.50**

IMPROVEMENT: ENDHAUL -

Widening	4+65	to	5+70	200	cy. @	$1.41	per c.y.=	$282.00	
Spread & compact				200	cy. @	$0.25	per c.y.=	$50.00	
							TOTAL ENDHAUL		**$332.00**

CULVERTS - MATERIALS & INSTALLATION

Culverts		35	LF of 24"	$881.65	
				$881.65	
Culvert Stakes & Markers					
1 markers	$8.00				
	$8.00		**TOTAL CULVERTS**		**$889.65**

ROCK

Culvert Backfill	4+05	10	cy. of	Crushed	@	$15.54	per c.y.=	$155.40	
Spot Rock	0+00 to 8+00	160	cy. of	Crushed	@	$17.06	per c.y.=	$2,729.60	
Fill Slope Const.	4+05	200	cy. of	Pit-Run	@	$7.44	per c.y.=	$1,488.00	
Energy Dissipator	4+05	10	cy. of	Riprap	@	$11.05	per c.y.=	$110.50	
							TOTAL ROCK		**$4,483.50**

SPECIAL PROJECTS

Construct waste areas -	1.00	hours @	$130.00	per hour	$130.00	
Grade and shape road -	37.85	stations @	$15.50	per station	$586.68	
Roll subgrade w/ vibratory roller prior to rocking -	37.85	stations @	$13.20	per station	$499.62	
Remove culverts from state lands	2.00	@	$472.50	total	$472.50	
Grass seed and fertilize -	0.87	acres @	$220.00	per acre	$191.40	
Mulching -	0.174	acres @	$600.00	per acre	$104.40	
				TOTAL SPECIAL PROJECTS		**$1,984.60**

GRAND TOTAL	**$9,646.65**

SUMMARY OF CONSTRUCTION COST

Sale: **Fireworks** Road: **Q to R**

Construction -	10+90	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.21	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope or Activity	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		10+30	45%		Outslope	$269	=	$2,770.70	
10+30		10+90	Land. Const.		Outslope	$700	=	$420.00	
								TOTAL	**$3,190.70**

ROCK

0+00	to	1+00	50	cy. of	Crushed	@	$14.85 per c.y.=	$742.50	
								TOTAL ROCK	**$742.50**

SPECIAL PROJECTS

Grade and shape road -	10.90	stations @	$15.50	per station	$168.95	
Roll subgrade w/ vibratory roller prior to rocking -	10.90	stations @	$13.20	per station	$143.88	
Grass seed and fertilize -	0.50	acres @	$220.00	per acre	$110.00	
					TOTAL SPECIAL PROJECTS	**$422.83**

GRAND TOTAL **$4,356.03**

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Pit_Run	Location:	Sec. 31 & 32, T1S, R6W, W.M.
Sale:	**Fireworks**	Road:	4850 c.y.
Swell:	1.40	Stockpile:	c.y.
Shirinkage	1.16	Total Truck Loads:	4850 c.y.
Drill Pct.:	25%	In Place Total:	3464 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact.							$2,000.00
Drill & Shoot:	$2.50	/cu.yd.	x	866	cu.yds.	=	$2,165.00
Rip Rock:	$1.90	/cu.yd.	x	2598	cu.yds.	=	$4,936.20
Load Dump Truck:	$0.70	/cu.yd.	x	4850	cu.yds.	=	$3,395.00
						Subtotal	$12,496.20

Move in Roller and Compactor	1	@	$937.25	=	$937.25
Move in D-8	1	@	$1,360.29	=	$1,360.29
Move in Excavator	1	@	$1,502.23	=	$1,502.23
Move in Trucks	3	@	$317.57	=	$952.71
				Subtotal	$4,752.48

TOTAL PRODUCTION COSTS $17,248.68

Base Cost= $3.56 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
I to J 0 3500 (Pit-Run)	3.22	1.10	3.56	7.88	2540		$20,015.20
K to L 0 100 (Pit-Run)	3.33	1.10	3.56	7.99	70		$559.30
K to L Junction Rock (Pit-Run)	3.33	1.10	3.56	7.99	20		$159.80
M to N 0 2580 (Pit-run)	3.98	1.10	3.56	8.64	1880		$16,243.20
M to N Landing Rock (Pit-Run)	4.23	1.10	3.56	8.89	120		$1,066.80
M to N Junction Rock (Pit-Run)	3.78	1.10	3.56	8.44	20		$168.80
O to P Fill Slope Const. (Pit-Run)	1.88	2.00	3.56	7.44	200		$1,488.00
				Total C.Y.	4850	Sub Total	$39,701.10

TOTAL ROCKING COSTS $39,701.10

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Cruiser_Creek	Location:	SW 1/4 SE 1/4 Sec. 1, T2S, R7W, W.M.	
Sale:	**Fireworks**		Road & Stockpile:	15160 c.y.
Swell:	1.40			
Shirinkage	1.16		Total Truck Loads:	15160 c.y.
Drill Pct.:	100%		In Place Total:	10829 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact.							$17,200.00
Drill & Shoot:	$2.50	/cu.yd.	x	10829	cu.yds.	=	$27,072.50
Push Rock:	$0.70	/cu.yd.	x	15160	cu.yds.	=	$10,612.00
Load Crusher:	$0.70	/cu.yd.	x	15160	cu.yds.	=	$10,612.00
Crush 2"- 0" Rock:	$3.00	/cu.yd.	x	12610	cu.yds.	=	$37,830.00
Crush 3"- 0" Jaw-Run Rock:	$2.60	/cu.yd.	x	2550	cu.yds.	=	$6,630.00
Load Dump Truck:	$0.70	/cu.yd.	x	15160	cu.yds.	=	$10,612.00
Oversize Reduction:	$4.50	/cu.yd.	x	541	cu.yds.	=	$2,434.50
						Subtotal	$123,003.00

Move In/Set-up Crusher					$3,000.00
Move In and set up Drill and Compressor	1	@	$937.25	=	$937.25
Move in Roller and Compactor	1	@	$937.25	=	$937.25
Move in Grader	1	@	$255.50	=	$255.50
Move in D-8	1	@	$1,360.29	=	$1,360.29
Move in Loader	1	@	$1,179.90	=	$1,179.90
Move in Excavator	1	@	$1,502.23	=	$1,502.23
Move in Trucks	3	@	$317.57	=	$952.71
Move in Water Truck	1	@	$373.29	=	$373.29
Change Gradation	1	@	$210.00	=	$210.00
				Subtotal	$10,708.42

TOTAL PRODUCTION COSTS $133,711.42

Base Cost= $8.82 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
A to B 0 17135 (Crushed)	8.90	2.45	8.82	20.17	3830		$77,251.10
E to F 0 28855 (Crushed)	4.11	2.45	8.82	15.38	6450		$99,201.00
E to F Culvert Bedding/Backfill (Crushed)	5.31	0.60	8.82	14.73	200		$2,946.00
E to F Leveling (Crushed)	3.12	1.40	8.82	13.34	100		$1,334.00
E to F Leveling (Crushed)	3.18	1.40	8.82	13.40	120		$1,608.00
E to F Spot Rocking (Crushed)	6.02	2.45	8.82	17.29	500		$8,645.00
E to F Energy Dissipator (Riprap)	5.31	1.40	3.53	10.24	70		$716.80
G to H 0 3505 (Crushed)	5.00	2.45	8.82	16.27	1850		$30,099.50
G to H Culvert Bedding/Backfill (Crushed	5.00	0.60	8.82	14.42	100		$1,442.00
G to H Landing Rock (Crushed)	5.27	2.45	8.82	16.54	70		$1,157.80
G to H Junction Rock (Crushed)	4.85	2.45	8.82	16.12	20		$322.40
G to H Energy Dissipator (Riprap)	5.00	1.40	3.53	9.93	30		$297.90
I to J Culvert Backfill/Bedding (Crushed)	6.10	0.60	8.82	15.52	30		$465.60
I to J Energy Dissipator (Riprap)	6.10	1.40	3.53	11.03	10		$110.30
M to N Culvert Backfill/Bedding (Crushed	8.47	0.60	8.82	17.89	40		$715.60
M to N Energy Dissipator (Riprap)	8.47	1.40	3.53	13.40	10		$134.00
O to P Culvert Backfill (Crushed)	6.12	0.60	8.82	15.54	10		$155.40
O to P Spot Rock (Crushed)	5.79	2.45	8.82	17.06	160		$2,729.60
O to P Energy Dissipator (Riprap)	6.12	1.40	3.53	11.05	10		$110.50
Q to R 0 100 (Crushed)	3.58	2.45	8.82	14.85	50		$742.50
1,500 cy Stockpile	6.57	1.10	8.82	16.49	1500		$24,735.00
				Total C.Y.	15160	Sub Total	$254,920.00

TOTAL ROCKING COSTS $254,920.00

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Murphy_Grade	Location:	C 1/4 Sec. 2, T2S, R7W, W.M.	
Sale:	**Fireworks**		Road	8195 c.y.
Swell:	1.40			
Shirinkage	1.16		Total Truck Loads:	8195 c.y.
Drill Pct.:	100%		In Place Total:	5854 c.y.

Pit Development & Cleanup including Clearing and grubbing of Waste Area @ adjacent to pit, place overburden in Waste Area, spread and compact.							$6,500.00
Drill & Shoot:	$2.50	/cu.yd.	x	5854	cu.yds.	=	$14,635.00
Push Rock:	$0.70	/cu.yd.	x	8195	cu.yds.	=	$5,736.50
Load Crusher:	$0.70	/cu.yd.	x	8195	cu.yds.	=	$5,736.50
Crush 1 1/2" Rock:	$3.00	/cu.yd.	x	8195	cu.yds.	=	$24,585.00
Load Dump Truck:	$0.70	/cu.yd.	x	8195	cu.yds.	=	$5,736.50
Oversize Reduction:	$4.50	/cu.yd.	x	1639	cu.yds.	=	$7,375.50
						Subtotal	$70,305.00

Move In/Set-up Crusher					$2,500.00
Move In and set up Drill and Compressor	1	@	$937.25	=	$937.25
Move in Roller and Compactor	1	@	$937.25	=	$937.25
Move in Grader	1	@	$255.50	=	$255.50
Move in D-8	1	@	$1,360.29	=	$1,360.29
Move in Loader	1	@	$1,179.90	=	$1,179.90
Move in Excavator	1	@	$1,502.23	=	$1,502.23
Move in Trucks	3	@	$317.57	=	$952.71
				Subtotal	$9,625.13

TOTAL PRODUCTION COSTS $79,930.13

Base Cost= $9.75 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
A to B Culvert Backfill/Bedding (Crushed	7.35	0.60	9.75	17.70	20		$354.00
A to B Energy Dissipator (Riprap)	7.35	1.40	3.90	12.65	15		$189.75
C to D 1370 23770 (Crushed)	2.60	2.45	9.75	14.80	7790		$115,292.00
C to D Culvert Backfill/Bedding (Crushec	3.67	1.40	9.75	14.82	200		$2,964.00
C to D Energy Dissipator (Riprap)	3.67	1.40	3.90	8.97	100		$897.00
C to D Leveling (Crushed)	4.23	2.45	9.75	16.43	50		$821.50
C to D Backfill (Culv. Removal) (Pit-Run)	4.23	0.70	2.93	7.86	20		$157.20
				Total C.Y.	8195	Sub Total	$120,675.45

TOTAL ROCKING COSTS $120,675.45

Move-In Calculations for Project Work not Involving Rocking/Pit Work

Sale: **Fireworks**

LOWBOY HAUL (Round Trip)		
DIST. (mi)	ROADWAY	AVE SPEED (mph)
30.0	Pavement	30
26.0	Main Lines	7
6.0	Steep Grades	2

No.	EQUIPMENT DESCRIPTION	Move in Cost	Pilot Cars	Within Area Move ($/mile)	Begin Mileage	End Mileage	Total Miles	Within Area Cost	Total Cost
1	Excavators (Small)	$937.25		$22.00	0.00	5.00	5	$110.00	$1,047.25
1	Excavators (Large)	$1,525.23	1	$44.80	0.00	5.00	5	$224.00	$1,749.23
1	Tractors (D7)	$1,308.70	2	$11.30	0.00	5.00	5	$56.50	$1,365.20
1	Tractor (D8)	$1,406.29	2	$15.10	0.00	0.00	0	$0.00	$1,406.29
1	Dump Truck (10 cy +)	$461.68		$2.85	0.00	0.00	0	$0.00	$461.68
1	Dump Truck (Off Hiway)	$1,242.00	1	$4.75	0.00	5.00	5	$23.75	$1,265.75
1	Water Truck (1500 Gal)	$317.57		$2.85	0.00	5.00	5	$14.25	$331.82

TOTAL MOVE-IN COSTS: $7,627.22

OREGON DEPARTMENT OF FORESTRY
CRUISE REPORT
Fireworks

1. **Type of Sale**

   Regeneration harvest, Recovery

2. **Legal Description**

   Portions of Sections 31, 32, and 33, T1S, R6W, W.M., Washington County, Oregon and Portions of Section 36, T1S, R7W, Portions of Section 1, T2S, R7W, and Portions of Section 6, T2S, R6W, W.M., Tillamook County, Oregon.

3. **Sale Acreage**

   The acreage was determined using GPS and orthophotographs along with GIS.

	ACRES	
	Gross	**Net**
Area 1 (Modified Clearcut)	143	105
Area 2 (Modified Clearcut)	113	98
Area 3 (Modified Clearcut)	130	104

Gross Acres

Area within the Timber Sale Boundary signs

Net acres

Used for calculating the advertised volume.

Gross acres, less green tree retention, roads, Non-required thinning areas, and riparian areas classified as Special Stewardship in LMCS inside the sale boundary.

4. **Cruising Procedures**

A. Cruise Method

The timber sale areas were cruised using variable plot sampling on a 350' by 700' grid. All conifers 8" DBH and greater containing 20 board feet and all hardwoods 8" DBH and greater containing 30 board feet were recorded on all plots. Species were recorded on all trees and measured for merchantable bole height, diameter, and form factor. Merchantable heights were recorded to 6" and 7" outside bark for conifers and hardwoods respectively.

Area	Number of Plots	Acres
1	24	105
2	32	98
3	17	104
Total	**73**	**307**

B. Plot size

BAF for Area 1 and 2 was 33.61 while Area 3 was cruised using a BAF of 46.94. Point of tree observation is 4.5 feet.

C. Grading System

All species were graded using Columbia River Log Scaling and Grading Bureau rules favoring a 40' log.

5. Computation Procedure

Plot data was entered into SuperAce for computation of basal areas, ingrowth, advertised volumes, volume summaries, log stock tables, and stand tables for each species and type. Areas 1, 2, and 3 were cruised in 2014. Area 2 was cruised again in 2016. All areas were grown forward to June of 2016. Net sale acreage was used for volume calculation.

Cruise Statistics (Board Foot Volumes)			
Area	Number of Plots	SE (%)	CV (%)
1	24	6.8	32.8
2	32	8.4	47.5
3	17	5.8	26.1

6. Hidden Defect and Breakage

A 1% reduction was applied to conifers and a 2% reduction to hardwood volumes for hidden defect and breakage.

7. Timber Description

All three areas were burned in the 1933 Tillamook Fire and1939 Saddle Mtn. Fire. The 1951 North Fork Fire again burned all three areas except for the northeastern corner of Area 3. The areas were initially seeded in 1956-1957 and portions of each unit were replanted in 1972-1973. All three areas are Douglas-fir dominated stands with some scattered red alder.

Sale Area – Species	AVG DBH	Merchantable Bole Height	Merchantable Top
Area 1: Douglas-fir	19.2	69	5”
Area 1: Red alder	14.5	41	6”
Area 2: Douglas-fir	15.1	60	5”
Area 2: Red alder	12.8	56	6”
Area 3: Douglas-fir	14.9	56	5”
Area 3: Red alder	12.5	42	6”

Above data derived from Statistics (type) report using SuperAce 2008, developed by Atterbury Consultants, Inc.

8. Cruise Dates

Areas 1, 2, and 3 cruised by contractor in 2014. Additional plots were cruised in Area 2 by district personnel in 2016.

9. Revenue Distribution

FDF: 100%

Tax Code: 9-1 (4%), 9-2 (11%), WA CO (85%)

Deed Numbers: 115, 161, 169, 276

10. Attachments

Stand Table

Volume Summaries

Log Stock Tables

Logging Plan Map

11. Stand and Log Stock Tables Species Key

DF – Douglas-fir Take
DL – Douglas-fir Leave
RA – Red alder
WH – Western hemlock

FI TLOGSTVB

Log Stock Table - MBF

Project: FIREWRK3

T01S R06W S31 T0100 **T01S R06W S31 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees		
01S	06W	31	AREA 1 GROW	0100	105.00	24	127	Page	1
								Date	5/9/2016
								Time	11:21:04AM

Spp	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	20-23	24-29	30-39	40+
DF		CO	2	18	11		11	.5								11				
DF		CO	2	20	10		10	.4						10						
DF		CO	2	28	15	3.1	15	.6								15				
DF		CO	2	32	14	3.4	14	.6						6		7				
DF		CO	2	40	1,382	.7	1,373	55.3						522	580	249	22			
DF		CO	3	20	1		1	.0				1								
DF		CO	3	32	135		135	5.4				58	77							
DF		CO	3	36	3		3	.1			3									
DF		CO	3	37	3		3	.1			3									
DF		CO	3	39	3		3	.1			3									
DF		CO	3	40	569	.6	566	22.8			140	96	330							
DF		CO	4	16	44		44	1.8		19	1	3		9			12			
DF		CO	4	17	6		6	.2		4	1									
DF		CO	4	18	4		4	.2		1	3									
DF		CO	4	19	12		12	.5			3				9					
DF		CO	4	20	19	6.0	18	.7		8				10						
DF		CO	4	21	5		5	.2		5										
DF		CO	4	22	15		15	.6		6				9						
DF		CO	4	24	6		6	.3		6										
DF		CO	4	25	16		16	.7		16										
DF		CO	4	26	3		3	.1		3										
DF		CO	4	27	5		5	.2		5										
DF		CO	4	28	2		2	.1		2										
DF		CO	4	29	12		12	.5		12										
DF		CO	4	30	11		11	.4		11										
DF		CO	4	31	2		2	.1		2										
DF		CO	4	32	27		27	1.1		10						16				
DF		CO	4	33	16		16	.6		16										
DF		CO	4	35	24		24	1.0		24										
DF		CO	4	36	39		39	1.6		39										
DF		CO	4	37	14		14	.6		14										
DF		CO	4	38	10		10	.4		10										
DF		CO	4	39	12		12	.5		12										
DF		CO	4	40	47		47	1.9		35				12						
DF		Totals			2,499		2,484	99.6		261	157	158	407	579	589	299	34			
RA		H	4	40	9		9	100.0			9									
RA		Totals			9		9	.4			9									
Total All Species					2,508		2,493	100.0		261	166	158	407	579	589	299	34			

FI TSTNDSUM

Stand Table Summary

Project **FIREWRK3**

T01S R06W S31 T0100

T01S R06W S31 T0100

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	31	AREA 1 GROW	0100	105.00	24	127

Page: 1
Date: 05/09/201
Time: 11:21:03AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DF		9		80	64	6.284	2.92	6.51	9.1	37.4	1.69	59	243	178	62	26
DF		10		80	78	2.545	1.46	2.64	13.8	42.7	1.03	36	113	108	38	12
DF		11		84	77	4.207	2.92	6.54	11.6	46.3	2.16	76	302	227	80	32
DF		12		84	91	1.767	1.46	3.66	12.6	48.0	1.31	46	176	138	48	18
DF		13		86	85	1.506	1.46	3.12	12.6	48.0	1.12	39	150	117	41	16
DF		14		84	55	1.299	1.46	1.34	21.9	42.7	.84	29	57	88	31	6
DF		15		84	84	4.525	5.85	9.37	17.9	69.4	4.79	168	650	503	177	68
DF		16		86	91	4.971	7.31	11.33	19.7	78.6	6.36	223	890	668	234	93
DF		17		85	90	7.926	13.16	16.42	25.2	96.7	11.79	414	1,587	1,238	434	167
DF		18		86	93	8.641	16.08	17.90	29.2	108.2	14.89	522	1,937	1,563	548	203
DF		19		85	89	8.460	17.54	16.79	32.8	117.9	15.71	551	1,980	1,649	579	208
DF		21		85	99	8.272	19.00	17.79	37.6	134.0	19.06	669	2,385	2,001	702	250
DF		22		85	96	8.657	21.93	17.33	43.0	155.4	21.23	745	2,693	2,229	782	283
DF		23		85	104	8.939	24.85	21.24	43.2	164.8	26.13	917	3,500	2,743	963	368
DF		24		85	100	6.255	19.00	13.45	51.1	192.2	19.59	687	2,585	2,057	722	271
DF		25		86	104	1.326	4.39	2.75	58.7	234.9	4.59	161	645	482	169	68
DF		26		85	108	2.851	10.23	7.17	52.6	218.5	10.75	377	1,567	1,128	396	165
DF		27		84	110	1.506	5.85	3.90	57.4	230.6	6.38	224	899	670	235	94
DF		28		85	113	1.047	4.39	2.53	68.1	280.6	4.91	172	710	516	181	75
DF		30		84	129	.303	1.46	.94	62.3	313.2	1.67	59	294	175	62	31
DF		36		86	118	.208	1.46	.65	93.3	452.0	1.72	60	292	180	63	31
DF		Totals		85	92	91.493	184.20	183.37	34.0	129.0	177.73	6,236	23,658	18,662	6,548	2,484
RA		15		83	59	1.254	1.45	1.28	26.7	65.8	.94	34	84	98	36	9
RA		Totals		83	59	1.254	1.45	1.28	26.7	65.8	0.94	34	84	98	36	9
Totals				85	91	92.748	185.64	184.64	34.0	128.6	178.67	6270	23,742	18,760	6,584	2,493

FI TLOGSTVB

Log Stock Table - MBF

Project: **FIREWRK3**

T01S R06W S32 T0100 **T01S R06W S32 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	32	AREA 2 GROW	0100	98.00	32	136

Page 1
Date 5/9/2016
Time 11:23:40AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
									Net Volume by Scaling Diameter in Inches											
DF		CO	2	12	8		8	.3								8				
DF		CO	2	16	11	14.3	10	.4							10					
DF		CO	2	24	12		12	.5						12						
DF		CO	2	28	14	10.7	12	.5								12				
DF		CO	2	30	15		15	.6						15						
DF		CO	2	40	761	1.5	750	32.1					92	380	225	53				
DF		CO	3	20	9	30.0	6	.3								6				
DF		CO	3	22	4		4	.2				4								
DF		CO	3	23	5		5	.2					5							
DF		CO	3	24	1		1	.1			1									
DF		CO	3	28	4		4	.2				4								
DF		CO	3	30	2		2	.1			2									
DF		CO	3	32	77		77	3.3			18	48	11							
DF		CO	3	37	3		3	.1		3										
DF		CO	3	40	1,092	.9	1,082	46.4		11	171	370	491	38						
DF		CO	4	12	2		2	.1		2										
DF		CO	4	14	2		2	.1		2										
DF		CO	4	15	3		3	.1		3										
DF		CO	4	16	13		13	.6		12	1									
DF		CO	4	17	3		3	.1		2		1								
DF		CO	4	18	20		20	.9		20										
DF		CO	4	19	8		8	.4		7	1									
DF		CO	4	20	24		24	1.0		23	1									
DF		CO	4	21	2		2	.1		2										
DF		CO	4	22	13		13	.5		13										
DF		CO	4	23	2		2	.1		2										
DF		CO	4	24	16	6.5	15	.6		15										
DF		CO	4	26	38		38	1.6		38										
DF		CO	4	27	2		2	.1		2										
DF		CO	4	28	10		10	.4		10										
DF		CO	4	30	12		12	.5		12										
DF		CO	4	31	6		6	.3		6										
DF		CO	4	32	13		13	.5		13										
DF		CO	4	33	8		8	.3		8										
DF		CO	4	34	64	6.5	60	2.6		60										
DF		CO	4	35	20		20	.9		20										
DF		CO	4	36	21		21	.9		21										
DF		CO	4	37	3		3	.1		3										
DF		CO	4	38	16		16	.7		16										
DF		CO	4	39	8		8	.3		8										
DF		CO	4	40	20		20	.9		20										
DF			Totals		2,366	1.3	2,334	96.2		354	195	427	599	445	235	79				
DL		CO	3	40	63		63	85.3		3		8	52							
DL		CO	4	18	2		2	2.4		2										
DL		CO	4	30	3		3	3.7		3										
DL		CO	4	35	3		3	4.3		3										
DL		CO	4	40	3		3	4.3		3										
DL			Totals		74		74	3.1		14		8	52							
RA		H	3	32	10		10	51.5					10							

FI TLOGSTVB

Log Stock Table - MBF

Project: **FIREWRK3**

T01S R06W S32 T0100 **T01S R06W S32 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	32	AREA 2 GROW	0100	98.00	32	136

Page 2
Date 5/9/2016
Time 11:23:40AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
RA		H	4	22	2		2	11.0			2									
RA		H	4	40	7		7	37.4				7								
RA		Totals			19		19	.8			2	7	10							
Total All Species					2,459	1.3	2,427	100.0		368	197	442	661	445	235	79				

FI TSTNDSUM

Stand Table Summary

Project **FIREWRK3**

T01S R06W S32 T0100 **T01S R06W S32 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	32	AREA 2 GROW	0100	98.00	32	136

Page: 1
Date: 05/09/201
Time: 11:23:40AM

									Average Log					Totals		
Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Tons	Cunits	MBF
DF		8		84	61	22.979	8.43	23.71	6.8	33.6	4.58	161	798	449	157	78
DF		10		85	71	4.902	2.81	5.06	11.2	42.5	1.61	57	215	158	55	21
DF		11		86	85	2.026	1.41	4.18	8.7	42.5	1.04	36	178	102	36	17
DF		12		88	93	10.213	8.43	19.32	13.1	54.1	7.20	253	1,045	706	248	102
DF		13		88	88	14.504	14.05	28.44	15.0	58.1	12.14	426	1,653	1,190	418	162
DF		14		89	91	12.506	14.05	25.81	17.1	69.6	12.58	441	1,796	1,233	433	176
DF		15		87	94	7.626	9.84	15.74	21.0	83.5	9.40	330	1,313	921	323	129
DF		16		87	102	17.234	25.29	37.55	24.0	95.9	25.73	903	3,600	2,522	885	353
DF		17		87	104	8.481	14.05	18.38	27.8	111.8	14.56	511	2,054	1,427	501	201
DF		18		86	103	12.104	22.48	25.76	29.9	116.5	21.92	769	3,002	2,148	754	294
DF		19		87	104	6.111	12.65	14.01	32.8	125.3	13.11	460	1,756	1,285	451	172
DF		21		89	97	6.741	15.46	14.54	37.9	139.9	15.72	552	2,035	1,541	541	199
DF		22		86	92	3.891	9.84	8.03	41.3	142.6	9.44	331	1,145	925	325	112
DF		23		89	101	3.545	9.84	8.36	40.6	157.3	9.67	339	1,316	948	333	129
DF		24		84	111	.927	2.81	2.87	37.6	146.9	3.07	108	422	301	106	41
DF		25		83	105	2.128	7.03	5.71	43.7	178.9	7.11	249	1,021	696	244	100
DF		27		94	88	.363	1.41	.75	63.8	260.2	1.36	48	195	133	47	19
DF		30		84	132	.291	1.41	.90	69.9	300.9	1.80	63	272	176	62	27
DF		Totals		87	90	136.571	181.28	259.14	23.3	91.9	172.05	6,037	23,815	16,861	5,916	2,334
DL		15		87	89	1.693	2.18	3.49	20.5	77.0	1.97	72	269	193	70	26
DL		16		86	110	2.232	3.28	4.61	26.7	106.2	3.39	123	489	332	121	48
DL		Totals		86	101	3.925	5.46	8.10	24.0	93.6	5.36	195	758	525	191	74
RA		17		84	70	.721	1.08	.73	33.5	97.8	.67	25	72	66	24	7
RA		18		91	77	.639	1.08	1.30	22.5	92.4	.80	29	120	79	29	12
RA		Totals		87	73	1.360	2.16	2.03	26.5	94.4	1.48	54	192	145	53	19
Totals				87	90	141.857	188.90	269.27	23.3	92.0	178.88	6285	24,765	17,530	6,160	2,427

FI TLOGSTVB

Log Stock Table - MBF

Project: **FIREWRK3**

T01S R06W S32 T0100 **T01S R06W S32 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	32	AREA 3 GROW	0100	104.00	21	105

Page 1
Date 5/9/2016
Time 11:28:42AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
									Net Volume by Scaling Diameter in Inches											
DF		CO	2	15	19		19	.8								19				
DF		CO	2	20	19		19	.8							19					
DF		CO	2	30	24		24	1.0						24						
DF		CO	2	32	9		9	.4						9						
DF		CO	2	40	973	2.5	948	38.7						469	263	182	33			
DF		CO	3	18	8		8	.3					8							
DF		CO	3	28	4		4	.2			4									
DF		CO	3	32	50	3.8	48	2.0				26	22							
DF		CO	3	34	4		4	.2			4									
DF		CO	3	36	5		5	.2			5									
DF		CO	3	38	5		5	.2			5									
DF		CO	3	40	855	1.1	846	34.6			267	187	392							
DF		CO	4	12	14		14	.6				1	13							
DF		CO	4	13	6		6	.3		6										
DF		CO	4	14	3		3	.1		3										
DF		CO	4	16	17	15.7	15	.6		11	2	1								
DF		CO	4	18	28		28	1.1		17		11								
DF		CO	4	20	24		24	1.0		24										
DF		CO	4	21	6		6	.2		4	2									
DF		CO	4	22	12		12	.5		12										
DF		CO	4	24	3		3	.1		3										
DF		CO	4	25	20		20	.8		17	3									
DF		CO	4	26	53		53	2.2		53										
DF		CO	4	28	21		21	.9		21										
DF		CO	4	30	15		15	.6		15										
DF		CO	4	32	49		49	2.0		49										
DF		CO	4	33	15		15	.6		15										
DF		CO	4	34	43	2.2	42	1.7		42										
DF		CO	4	36	26		26	1.1		26										
DF		CO	4	38	56		56	2.3		56										
DF		CO	4	40	101		101	4.1		101				1						
DF		Totals			2,487	1.6	2,447	89.8		476	291	226	434	503	282	201	33			
RA		H	2	32	22	6.2	21	7.5						21						
RA		H	3	20	19	14.3	16	5.7					16							
RA		H	3	40	26	6.7	25	8.8					25							
RA		H	4	14	5		5	1.9			5									
RA		H	4	18	6		6	2.3			6									
RA		H	4	28	19	14.3	16	5.7				16								
RA		H	4	31	12		12	4.5			12									
RA		H	4	32	22	20.0	18	6.4			18									
RA		H	4	34	16		16	5.6			16									
RA		H	4	39	16		16	5.7			16									
RA		H	4	40	134	4.3	128	46.0			107	21								
RA		Totals			298	6.3	279	10.2			180	37	40	21						
Total All Species					2,785	2.1	2,726	100.0		476	471	263	475	524	282	201	33			

FI TSTNDSUM

Stand Table Summary

Project FIREWRK3

T01S R06W S32 T0100 **T01S R06W S32 T0100**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01S	06W	32	AREA 3 GROW	0100	104.00	21	105

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					Av				Average Log			Net	Net	Totals		
	S		Sample	FF	Ht	Trees/	BA/	Logs	Net	Net	Tons/	Cu.Ft.	Bd.Ft.			
Spc	T	DBH	Trees	16'	Tot	Acre	Acre	Acre	Cu.Ft.	Bd.Ft.	Acre	Acre	Acre	Tons	Cunits	MBF
DF		8		88	71	18.982	6.85	19.55	6.8	35.3	3.79	133	690	394	138	72
DF		9		86	57	9.999	4.56	10.30	6.6	31.8	1.95	68	327	203	71	34
DF		10		86	60	20.247	11.41	20.85	10.4	38.1	6.17	216	795	642	225	83
DF		11		85	70	13.387	9.13	17.23	12.4	44.5	6.11	214	766	636	223	80
DF		12		88	85	19.685	15.97	40.54	11.4	44.6	13.16	462	1,809	1,368	480	188
DF		13		87	75	7.188	6.85	12.34	12.9	46.6	4.54	159	575	472	166	60
DF		14		92	93	2.066	2.28	4.26	17.9	79.4	2.18	76	338	226	79	35
DF		15		86	89	10.799	13.69	18.53	20.9	78.4	11.05	388	1,452	1,149	403	151
DF		16		87	97	11.073	15.97	22.81	24.1	96.8	15.69	551	2,208	1,632	573	230
DF		17		87	90	14.012	22.82	27.42	27.5	104.2	21.52	755	2,857	2,238	785	297
DF		18		87	94	3.750	6.85	7.72	29.7	111.2	6.54	230	859	680	239	89
DF		19		86	95	3.389	6.89	6.98	29.7	114.8	5.91	207	801	615	216	83
DF		20		85	95	9.111	20.54	18.77	38.2	127.1	20.41	716	2,384	2,123	745	248
DF		21		85	90	6.428	15.97	12.29	41.9	143.3	14.68	515	1,762	1,527	536	183
DF		22		86	87	5.020	13.69	11.20	40.8	154.7	13.02	457	1,733	1,354	475	180
DF		23		87	94	3.062	9.13	6.31	51.9	186.6	9.33	328	1,177	971	341	122
DF		24		87	95	2.109	6.85	4.34	55.8	210.0	6.91	242	912	718	252	95
DF		25		84	87	1.944	6.85	3.34	54.4	190.6	5.18	182	636	538	189	66
DF		27		90	107	.555	2.28	1.14	62.7	291.2	2.05	72	333	213	75	35
DF		28		85	112	.517	2.28	1.60	58.5	247.1	2.66	93	394	277	97	41
DF		29		91	85	.482	2.28	.99	63.2	280.6	1.79	63	278	186	65	29
DF		32		83	124	.421	2.28	1.30	75.9	342.4	2.82	99	446	293	103	46
DF		Totals		87	80	164.225	205.43	269.81	23.1	87.2	177.45	6,226	23,533	18,454	6,475	2,447
RA		10		90	60	3.934	2.26	3.99	10.7	43.3	1.17	43	173	122	44	18
RA		11		85	99	3.251	2.26	3.30	19.4	75.7	1.76	64	250	183	67	26
RA		12		87	70	13.658	11.28	13.85	19.5	62.8	7.42	270	869	772	281	90
RA		13		90	60	11.638	11.28	14.17	17.4	63.1	6.79	247	894	706	257	93
RA		16		93	78	1.537	2.26	3.12	22.0	86.6	1.89	69	270	196	71	28
RA		18		92	64	1.214	2.26	2.46	24.4	92.0	1.65	60	227	172	62	24
RA		Totals		89	68	35.231	31.58	40.89	18.4	65.6	20.68	752	2,682	2,151	782	279
Totals				87	78	199.457	237.01	310.70	22.5	84.4	198.13	6978	26,215	20,605	7,257	2,726

OREGON DEPARTMENT OF FORESTRY

"STEWARDSHIP IN FORESTRY"

Fireworks

Volume Summary

Area 1- Modified Clearcut

105 acres

	Cruised Net	Cruised Net	Hidden	Net Area
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	23.7	2484	1%	2459
Alder	0.1	9	2%	9
TOTAL	23.7	2493		2468

Areas 2-Modified Clearcut

98 acres

	Cruised Net	Cruised Net	Hidden	Net Area
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	23.8	2334	1%	2311
Alder	0.2	19	2%	18
TOTAL	24.0	2353		2329

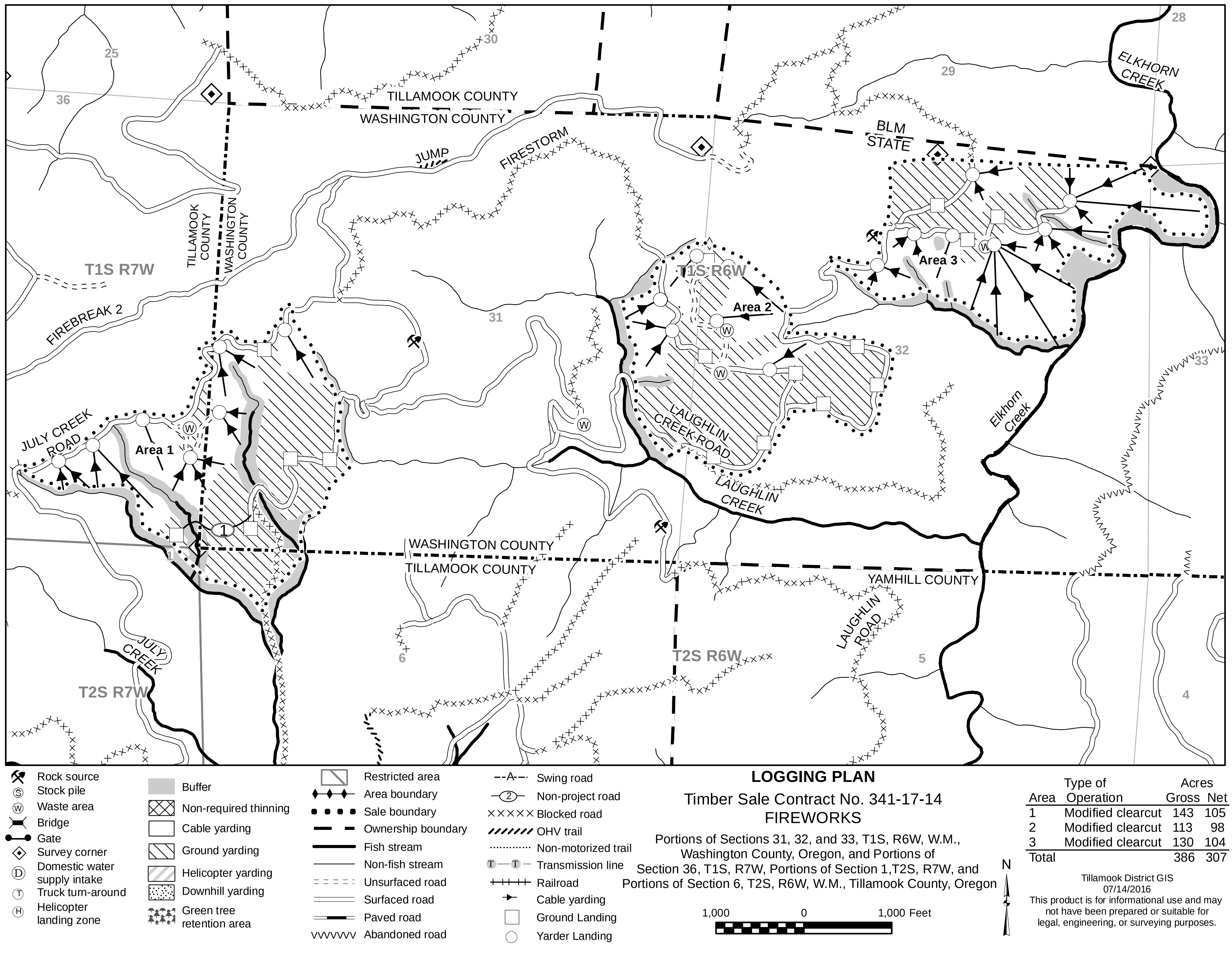
Areas 3-Modified Clearcut

104 acres

	Cruised Net	Cruised Net	Hidden	Net Area
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	23.5	2447	1%	2423
Alder	2.7	279	2%	273
TOTAL	26.2	2726		2696

TOTAL SALE VOLUME 307 acres

SPECIES	Cruised Net (MBF)	Net Sale (MBF)
Douglas-fir	7265	7193
Red alder	307	300
TOTAL	7572	7493



LOGGING PLAN

Timber Sale Contract No. 341-17-14

FIREWORKS

Portions of Sections 31, 32, and 33, T1S, R6W, W.M., Washington County, Oregon, and Portions of Section 36, T1S, R7W, Portions of Section 1,T2S, R7W, and Portions of Section 6, T2S, R6W, W.M., Tillamook County, Oregon

Area	Type of Operation	Acres Gross	Acres Net
1	Modified clearcut	143	105
2	Modified clearcut	113	98
3	Modified clearcut	130	104
Total		386	307

Tillamook District GIS
07/14/2016

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