



Timber Sale Appraisal
Fire and Ice
Sale AT-341-2017-108-

District: Astoria

Date: May 04, 2017

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$531,255.38	\$276,164.70	\$807,420.08
		Project Work:	(\$83,556.00)
		Advertised Value:	\$723,864.08



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District: Astoria

Date: May 04, 2017

Timber Description

Location: Portions of Sections 9, 10, 15, and 16, T4N, R7W, W.M., Clatsop County, Oregon.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	19	0	97
Western Hemlock / Fir	18	0	97
Sitka Spruce	15	0	97
Alder (Red)	17	0	96
Maple	17	0	96

Volume by Grade	2S	3S	4S	1S	Total
Douglas - Fir	937	275	42	0	1,254
Western Hemlock / Fir	83	51	6	0	140
Sitka Spruce	0	1	5	0	6
Alder (Red)	223	81	155	272	731
Maple	0	0	11	4	15
Total	1,243	408	219	276	2,146

Comments: Pond Values Used: 1st Quarter Calendar Year 2017 + Local Pond Values, February, 2017.

Expected Log Markets: Mist, Clatskanie, Tillamook, Forest Grove, Longview (WA), Chehalis (WA), Elma (WA), Raymond (WA), Banks, Warrenton and Garabaldi.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$1,137.94/\text{MBF} = \$1,362.53/\text{MBF} - \$224.59/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = \$2.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE
Hauling is equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):
Log Loader Slash & Landing Piling (includes Move-in and Pile Materials) = \$5,950
TOTAL Other Costs (with Profit & Risk to be added) = \$5,950

Other Costs (No Profit & Risk added):
Machine Washing for Invasive Weed Compliance = \$2,000
TOTAL Other Costs (No Profit & Risk added) = \$2,000



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Logging Conditions

Combination#: 1

Douglas - Fir	47.00%
Western Hemlock / Fir	47.00%
Sitka Spruce	47.00%
Alder (Red)	47.00%
Maple	47.00%

Logging System: Track Skidder **Process:** Feller Buncher

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:** 4500

cost / mbf: \$90.87

machines: Log Loader (B)
Stroke Delimber (B)
Feller Buncher w/ Delimber
Track Skidder

Combination#: 2

Douglas - Fir	53.00%
Western Hemlock / Fir	53.00%
Sitka Spruce	53.00%
Alder (Red)	53.00%
Maple	53.00%

Logging System: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing

yarding distance: Long (1,500 ft) **downhill yarding:** No

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

loads / day: 9 **bd. ft / load:** 3800

cost / mbf: \$192.98

machines: Log Loader (A)
Tower Yarder (Medium)



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Date: May 04, 2017

Logging Costs

Operating Seasons: 2.00	Profit Risk: 10%
Project Costs: \$83,556.00	Other Costs (P/R): \$5,950.00
Slash Disposal: \$0.00	Other Costs: \$2,000.00

Miles of Road

Road Maintenance: \$7.29

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	4.5
Western Hemlock / Fir	\$0.00	5.0	4.0
Sitka Spruce	\$0.00	3.0	4.0
Alder (Red)	\$0.00	2.0	3.0
Maple	\$0.00	2.0	3.0



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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									
\$144.99	\$7.51	\$4.09	\$59.51	\$2.77	\$21.89	\$0.00	\$7.00	\$0.93	\$248.69
Western Hemlock / Fir									
\$144.99	\$7.51	\$4.09	\$40.17	\$2.77	\$19.95	\$0.00	\$7.00	\$0.93	\$227.41
Sitka Spruce									
\$144.99	\$7.51	\$4.09	\$66.95	\$2.77	\$22.63	\$0.00	\$7.00	\$0.93	\$256.87
Alder (Red)									
\$144.99	\$7.58	\$4.09	\$135.20	\$2.77	\$29.46	\$0.00	\$7.00	\$0.93	\$332.02
Maple									
\$144.99	\$7.58	\$4.09	\$135.20	\$2.77	\$29.46	\$0.00	\$7.00	\$0.93	\$332.02

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$638.29	\$389.60	\$0.00
Western Hemlock / Fir	\$0.00	\$522.74	\$295.33	\$0.00
Sitka Spruce	\$0.00	\$482.00	\$225.13	\$0.00
Alder (Red)	\$0.00	\$707.02	\$375.00	\$0.00
Maple	\$0.00	\$468.00	\$135.98	\$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
Maple	0	\$0.00	\$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	1,254	\$389.60	\$488,558.40
Western Hemlock / Fir	140	\$295.33	\$41,346.20
Sitka Spruce	6	\$225.13	\$1,350.78
Alder (Red)	731	\$375.00	\$274,125.00
Maple	15	\$135.98	\$2,039.70

Gross Timber Sale Value

Recovery: \$807,420.08

Prepared By: Bryce Rodgers

Phone: 503-325-5451

Sale Number: 341-17-108
Sale Name: Fire and Ice
Date: 02/08/2017

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
1	MC	F	6.0	3	\$129.00	\$387.00
2	MC	F	34.0	17	\$129.00	\$2,193.00
					In-unit Piling	Sub Total = \$2,580.00
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
1	4	\$220.00	\$880.00	3	\$5.00	\$15.00
2	5	\$220.00	\$1,100.00	17	\$5.00	\$85.00
					Materials	Sub Total = \$100.00
					Landing Piling	Sub Total = \$1,980.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance			Move-In	Sub Total =
\$1,290.00	1	\$1,290.00				\$1,290.00
Grand Total =						\$5,950.00

Final Road Maintenance Cost Summary

Sale: Fire and Ice
Date: 08-Feb-17
By: J. Choate

MBF: 2,146
\$/MBF: \$7.29

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$778	1	8	\$100	\$1,578
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	35	\$100	\$4,278
	Dump Truck 12CY	\$163	2	10	\$79	\$1,906
	Vibratory Roller	\$778	1	35	\$77	\$3,473
	Water Truck 2,500 gallon	\$190	1	20	\$89	\$1,970
	FE Loader C966	\$778	1	4	\$83	\$1,110
	Rubber Tired Backhoe C580	\$321	1	8	\$77	\$937
	Labor			10	\$40	\$400
Total						\$15,652

Progressive Ops. 1st Entry	Production Rates	Miles/day	Distance(miles)	Days	Hours
	Grader	2.5	2.5	1.0	8.0

Final Road Maintenance	Production Rates	Miles/day	Distance(miles)	Days	Hours
	Grader	1.5	5.0	3.3	26.7
	Vibratory Roller	1.5	5.0	3.3	26.7

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Fire and Ice

ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1			
	1A-1B, and 2A-2B.	24.00	\$22,932
	TOTALS	24.00 stations 0.45 miles	\$22,932

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2			
	I1-I2, I3-I4, and I5-I6.	241.75	\$51,930
	TOTALS	241.75 stations 4.58 miles	\$51,930

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
	Project Road Maintenance	\$1,127
	TOTAL	\$1,127

MOVE IN:

	<u>Equipment</u>	<u>Cost</u>
	Dozer (D8)	\$1,406.00
	Excavator (C330)	\$1,406.00
	Excavator (C315)	\$805.00
	Dump Trucks (12cy x 4)	\$652.00
	Front End Loader (C966)	\$778.00
	Grader (14G)	\$778.00
	Vibratory Roller	\$778.00
	Water Truck (2,500 gallon)	\$190.00
	Off Highway Dump Truck (24cy x 1)	\$774.00
	TOTAL	\$7,567.00

GRAND TOTAL **\$83,556**

Compiled By: A. Arvin

Date: 03/15/2017

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Fire and Ice
ROAD: 1A to 1B(6.5), 2A to 2B(17.5)
POINTS:
NEW CONSTRUCTION: 24.00 STATIONS
IMPROVEMENT: STATIONS
0.45 MILES
0.00 MILES

CLEARING & GRUBBING					
Method	Acres/amount	x	Rate	=	Cost
Scatter outside of R/W	2.20	x	\$ 1,337	=	\$2,941.40
SUB TOTAL FOR CLEARING & GRUBBING					\$2,941

EXCAVATION					
	Material	Cy/amount	x	Rate	= Cost
1A to 1B	Balanced Construction \$/sta.	6.50	x	\$122.00	\$793.00
	Landing Construction \$/LDG	2.00		\$389.00	\$778.00
2A to 2B	Balanced Construction \$/sta.	17.50	x	\$122.00	\$2,135.00
	Landing Construction \$/LDG	1.00		\$389.00	\$389.00
SUB TOTAL FOR EXCAVATION					\$4,095

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
1A to 1B				\$0.00					\$0.00
5+00	18	30	\$19.53	\$585.90					\$0.00
2A to 2B				\$0.00					\$0.00
4+30	18	30	\$19.53	\$585.90					\$0.00
8+90	18	30	\$19.53	\$585.90					\$0.00
				\$0.00					\$0.00
				\$0.00					\$0.00
				\$0.00					\$0.00
				\$0.00					\$0.00
				\$0.00					\$0.00

Description				Quantity	Rate	Cost
Other/miscellaneous:						
Culvert stakes & markers:						
6" x 2 1/2" White fiberglass posts				3	\$20.00	\$60.00
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION						\$1,818
Subtotal of Clearing, Exc., Culv.						\$8,854

SURFACING						Stations/ amount		Rate/ sta/amt	Cost
Subgrade prep: Description							x		
Grade, Shape and Ditch 16'						19.70	x	\$24.83	\$489.15
Grade Shape and Ditch 14"						4.30	x	\$18.35	\$78.91
Subgrade Compaction						24.00	x	\$20.19	\$484.56

ROAD SEGMENT 1A to 1B				POINT TO POINT		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B Volume (CY) per				
Base Rock	Pit-Run	0+00-6+50	10	station	63	6.50	410	\$2,486
Traction Rock	1 1/2" - 0"	0+00-6+50	2	station	13	6.50	85	\$339
Junction Rock	Pit-Run	0+00	N/A	junctions	22	1.00	22	\$134
Junction Rock	1 1/2" - 0"	0+00	N/A	junctions	22	1.00	22	\$88
Landings	Pit-Run	3+20, 6+50	N/A	Landing	80	2.00	160	\$971
Total Rock for Road Segment: 1A to 1B						698		\$4,017

ROAD SEGMENT 2A to 2B				POINT TO POINT		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B Volume (CY) per				
Base Rock	Pit Run	0+00-17+50	10	station	63	17.50	1,103	\$6,692
Traction Rock	1 1/2" - 0"	4+00-8+00	2	station	13	4.00	52	\$209
Turnouts	Pit-Run	4+00, 13+50	10	turnout	22	2.00	44	\$267
Turnarounds	Pit-Run	14+70	10	turnaround	22	1.00	22	\$134
Landings	Pit-Run	17+50	N/A	Landing	80	1.00	80	\$486
Total Rock for Road Segment: 2A to 2B						1,301		\$7,178

Processing:				No. sta	Rate/sta	Cost
Pit-Run Processing (D6 and Roller)				24.00	\$51.54	\$1,236.96
Water, Process & Compact Traction Rock (1 1/2"-0")				10.50	\$56.48	\$593.04

		6"-0"pr	1 1/2"-0"crushed	Total
SUB TOTAL FOR SURFACING		1,840	159	1,999

SPECIAL PROJECTS		Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS			\$0

Subtotal of Surfacing & Spec. Proj.		\$14,078
Subtotal of Clearing, Exc., Culv.		\$8,854
GRAND TOTAL		\$22,932

Compiled By: _____

Date: _____

SALE NAME: Fire and Ice
ROAD: I1-I2, I3-I4, and I5-I6
POINTS:

NEW CONSTRUCTION:	STATIONS	MILES
IMPROVEMENT:	241.75 STATIONS	4.58 MILES

CLEARING & GRUBBING

GRODDING					
Method	Acres/amount	x	Rate	=	Cost
		x		=	
		x		=	
		x		=	
		x		=	

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
I1 to I2			x		=	
61+00	Install dissipator (C315)hrs.	1.0	x	\$101.00	=	\$101.00
62+40	Install ditch filter (C315)hrs.	1.0	x	\$101.00	=	\$101.00
66+65	Install dissipator (C315)hrs.	1.0	x	\$101.00	=	\$101.00
71+80	Install dissipator (C315)hrs.	1.0	x	\$101.00	=	\$101.00
			x		=	
I5 to I6			x		=	
49+45	Install dissipator (C315)hrs.	1.0	x	\$101.00	=	\$101.00
			x		=	
			x		=	

\$505

[illegible]

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	6' X 2 1/2" white fiberglass posts	1	\$20.00	\$20.00

Subtotal of Clearing, Exc., Culv.

\$2,950
\$3,455

Date: 03/14/2017

CRUSHED ROCK COST

SALE NAME:	Fire and Ice
PROJECT:	1 and 2
QUARRY:	Quartz Creek Stockpile

MATERIAL: Crushed

DATE: 03/13/2017
BY: A. Arvin

[illegible]

ROCK HAUL:

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

Ave haul:	\$2.69	/cy
Load:	\$0.48	/cy
Spread:	\$0.84	/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 = 940

CRUSHED ROCK HAUL COSTS 3,076 cy @ \$4.01 /cy

3,076 cy @ \$4.01 /cy

PIT RUN ROCK COST

SALE NAME:	Fire and Ice
PROJECT:	1 and 2
QUARRY:	Spruce Run

MATERIAL: Pit Run

DATE: 03/13/2017
BY: A. Arvin

[illegible]

ROCK HAUL:

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

Ave haul:	\$4.08	/cy
Load:	\$0.72	/cy
Spread:	\$1.26	/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 = 619

PIT RUN ROCK HAUL COSTS	1,874 cy @	\$6.07 /cy
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RIP RAP ROCK COST

SALE NAME:	Fire and Ice
PROJECT:	1 and 2
QUARRY:	Spruce Run

MATERIAL: Rip Rap

DATE: 03/13/2017
BY: A. Arvin

[illegible]

ROCK HAUL:

Truck type:	D12	No. trucks:	2
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul:	\$2.20	/cy
Load:	\$1.08	/cy
Develop:	<u> </u>	/cy

Production: cy/day = 574

RIP RAP ROCK HAUL COSTS

55 cy @ \$3.28 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. <u>3</u>	Timber Sale Name: <u>Fire and Ice</u>
Quarry: <u>Spruce Run</u>	Swell: <u> </u>
Location: <u>SE 1/4, NW 1/4, Sec. 16, T4N, R7W</u>	Shrink: <u>16%</u>
County: <u>Clatsop</u>	
By: <u>A. Arvin</u>	Loading Hopper: <u> </u>
Date: <u>03/13/2017</u>	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	12%	CR			
1-1/2"-0"	2%	CR			
4"-0"		CR			
6"-0"		PR		1,841	1,841
24"-6"		RR		55	55
36"		RR			
TOTAL CUBIC YARDS OF ROCK:				1,896	1,896

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST

SUB TOTAL FOR MOBILIZATION

EQUIPMENT SET UP	TIMES	RATE	COST

SUB TOTAL FOR SET UP COSTS

TOTAL MOBILIZATION & SET UP COSTS

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear, Load, Haul to Waste Area	4.0	hr	\$282	\$1,128
Slash and Stumps (1 truck, 1 exc.)				
Pile & Burn Slash and Stumps(1 exc)	4.0	hr	\$155	\$620
Move-in Fire Truck for the burning of the Clearing Debris	1.0	ea	\$190	\$190

TOTAL CLEARING & GRUBBING COSTS

\$1,938

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavator)	16	hr	\$155.00	\$2,480
Overburden Removal (dozer)	8	hr	\$158.00	\$1,264
Overburden Removal (truck)	8	hr	\$127.00	\$1,016

TOTAL EXCAVATION COSTS \$4,760

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	100%	1,896	\$2.20	\$4,171
crushed	NA	NA	Drill & shoot			\$2.30	
pit run	1,841	97%	Oversize red			\$5.80	
rip rap	55	3%	Other				
Total	1,896						
reject							

TOTAL ROCK DEVELOPMENT COSTS \$4,171

5) CALIBRATION & TESTING

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

TOTAL CALIBRATION & TESTING COSTS

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock			

TOTAL FEEDING & LOADING COSTS

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
			3 stage w/s			
			3 stage w/s			
			2 stage w/s			

TOTAL ROCK CRUSHING COSTS

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total

SUB TOTAL

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

HAUL & STOCKPILE						
STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST	

1.
2.
3.
4.
5.
6.

SUB TOTAL

TOTAL STOCKPILING COSTS

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Final Quarry Dev., Access Road Const., Waterbarring, Drainage,	\$1,240
Block Quarry Access	Excavator (8 Hrs.)

TOTAL MISCELLANEOUS COSTS \$1,240

10) GRAND TOTAL: \$12,109

\$/Cubic Yard \$6.39

Footnotes:

Projects Road Maintenance Cost Summary

Sale: Fire and Ice
Date: March 14, 2017
By: A. Arvin FL

Type	Equipment/Rationale			Hours	Rate	Cost
Final Project Haul Road Maintenance	Grader 14G			4.0	\$100	\$400
	Dump Truck 12CY			2.0	\$79	\$158
	FE Loader C966			1.0	\$83	\$83
	Vibratory Roller			4.0	\$77	\$308
	Water Truck 2,500 gallon			2.0	\$89	\$178
Total						\$1,127

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	0.75	0.5	4.00
1.5	0.75	0.5	4.00

Quartz Creek Stockpile to Pt. I2 = 0.7 miles

Spruce Run Quarry to Pt. I1 = 0.05 miles

Total Miles = 0.75 Miles

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**FIRE AND ICE
FY 2017
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, and 3 are located in portions of Sections 9, 10, 15 and 16 of T4N, R7W, W.M., Clatsop County, Oregon.

2. **Fund Distribution:** Fund: BOF 100% CSL 0%
Tax Code: 8-01 100%

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Stream Buffer Acres	New R/W Acres	Net Acreage	Survey Method
1	Modified Clearcut	55	4	1	50	GIS
2	Modified Clearcut	36	1	1	34	GIS
3	R/W	2	N/A	N/A	2	Length X Width
TOTALS		93	5	2	86	

4. **Cruisers and Cruise Dates:** Area 1 was cruised by Bryce Rodgers with Ella Salkeld, John Choate, Cody Valencia, and Avery Petersen on March 9, 2017. Area 2 was cruised March 10, 2017 by Kevin Berry, Bryce Rodgers, Ella Salkeld, Cody Valencia, Avery Petersen and John Choate. Additional cruise plots were added on 3/13/17 in Area 1 to lower the Standard error.

5. **Cruise Method and Computation:** Area 1 is a modified clearcut unit. A variable plot cruise with a 40 BAF for hardwood and 54.45 BAF for conifers was used for this Area. The plots were located on a 5 chain by 2 chain grid, with a count/cruise plot ratio of 1:2. A total of 45 plots were sampled.

Area 2 is a modified clearcut. A variable plot cruise with a 40 BAF was used for this Area. The plots were located on a 4 chain by 2 chain grid, with a count/cruise plot ratio of 2:1. A total of 44 plots were sampled, with 16 measured plots and 32 count plots.

Area 3 R/W was calculated applying road R/W acreage and using volume per acre from both sale Areas.

Cruisers used Allegro 2 data collectors, that were downloaded to the Atterbury Super A.C.E. program at the Astoria 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.

<u>AREAS</u>	<u>PROJECT</u>	<u>TRACT</u>	<u>CRUISE TYPE</u>
1	FIREICE	A1	00MC, RW, TAKE
2	FIREICE	A2	A2MC, RW, TAKE
3	FIREICE	A3	RW

Timber Description: Area 1 is an approximately 54 year old stand of red alder, Douglas-fir, with some western hemlock, Sitka spruce and big leaf maple. The average take alder tree size is approximately 13 inches DBH, with an average merchantable tree height of 38 feet. The average take hemlock tree size is approximately 12 inches DBH, with an average merchantable tree height of 57 feet. The average take Douglas-fir tree size for harvest is approximately 18 inches DBH, with an average merchantable tree height of 54 feet. The average volume per acre to be harvested (net) is approximately 25 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Area 2 is a stand of approximately 64 year old red alder and Douglas-fir and with some Sitka spruce, western hemlock and bigleaf maple. The average take Douglas-fir tree size for harvest is approximately 24 inches DBH, with an average merchantable tree height of 96 feet. The average alder tree size is

approximately 17 inches DBH, with an average merchantable tree height of 58 feet. The average volume per acre to be harvested (net) is approximately 26 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Area 3 R/W. The volume to be removed from the R/W is based on the cruise volumes from both sale Areas. The average volume per acre to be harvested (net) is approximately 50 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Cedar is a reserved species.

6. Statistical Analysis: (See also "Statistics Reports," attached.)

Area	Target CV	Target SE%	Actual CV	Actual SE%
1	45	9	66.7	9.9
2	55	8	38.5	5.8

The statistics are for all areas and Take and Leave trees combined based on Net BF/Acre.

7. 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.

Conifer

Species	DBH	Net Vol. MBF	2 Saw	3Saw	4 Saw	% D & B	% Sale
Douglas-fir	18.6	1,254	937	275	42	2.4	59
Western Hemlock/fir	17.6	140	83	51	6	4.0	7
Sitka Spruce	14.8	6	-	1	5	0	<1

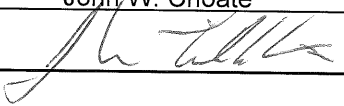
Hardwoods

Species	DBH	Net Vol. MBF	12"+	10-12"	8-10"	6-8"	% D & B	% Sale
Red Alder	16.7	731	272	223	81	155	1.7	33
Bigleaf Maple	17.2	15	4	-	-	11	14.4	<1

TOTAL NET VOLUME	2,146 MBF
-------------------------	------------------

8. Prepared by: John W. Choate

Date: 3/22/17

10. Approved by: 

Date: 3/30/2017

11. Attachments: Cruise Plans & Maps (5)
Species, Sort, Grade Report (4)
Statistics Reports (3)
Stand Table Report (2)
Log Stock Table Report MBF (3)

CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Fire and Ice Area(s) 1

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 50 Estimated CV% 45 Net BF/Acre SE% Objective 9 Net BF/Acre

Planned Sale Volume : 1.8 MMBF Estimated Sale Area Value/Acre: \$12,250/Ac
(35 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 54.45 (Conifer) (Full point; Half point) (circle one)
BAF 40 (Hardwood) (Full point; Half point) (circle one)
Cruise Line Directions Area 2: 254°/74°
Cruise Line Spacing 5 (chains)
Cruise Plot Spacing 2 (chains)
Grade/Count Ratio 1:2

Take plots as marked on cruise map. All cedar will be reserved. Grade all alder. 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:

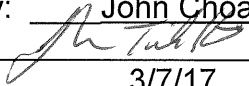
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: 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: John Choate
Approved by: 
Date: 3/7/17

CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Fire and IceArea(s) A2

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 34 Estimated CV% 55 Net BF/Acre SE% Objective 8 Net BF/AcrePlanned Sale Volume : 0.875 MMBF Estimated Sale Area Value/Acre: \$8,750/Ac
(25 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 40 (Full point; Half point) (circle one)
 Cruise Line Directions Area 2: 143°/323°
 Cruise Line Spacing 4 (chains)
 Cruise Plot Spacing 2 (chains)
 Grade/Count Ratio 1:2

Take plots as marked on cruise map. All cedar will be reserved. Grade all Conifer (Including
 count plots). 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:

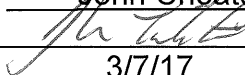
- A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. Sort: 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: John Choate
Approved by: 
Date: 3/7/17

Fire And Ice Cruise Map

Area 2 (MC)
Plots Total: 44
Grade Plots: 16
Count Plots: 32
AZ: 143/323
BAF: 40
Line Spacing: 4 Chains
Plot Spacing: 2 Chains

T4N R7W

16

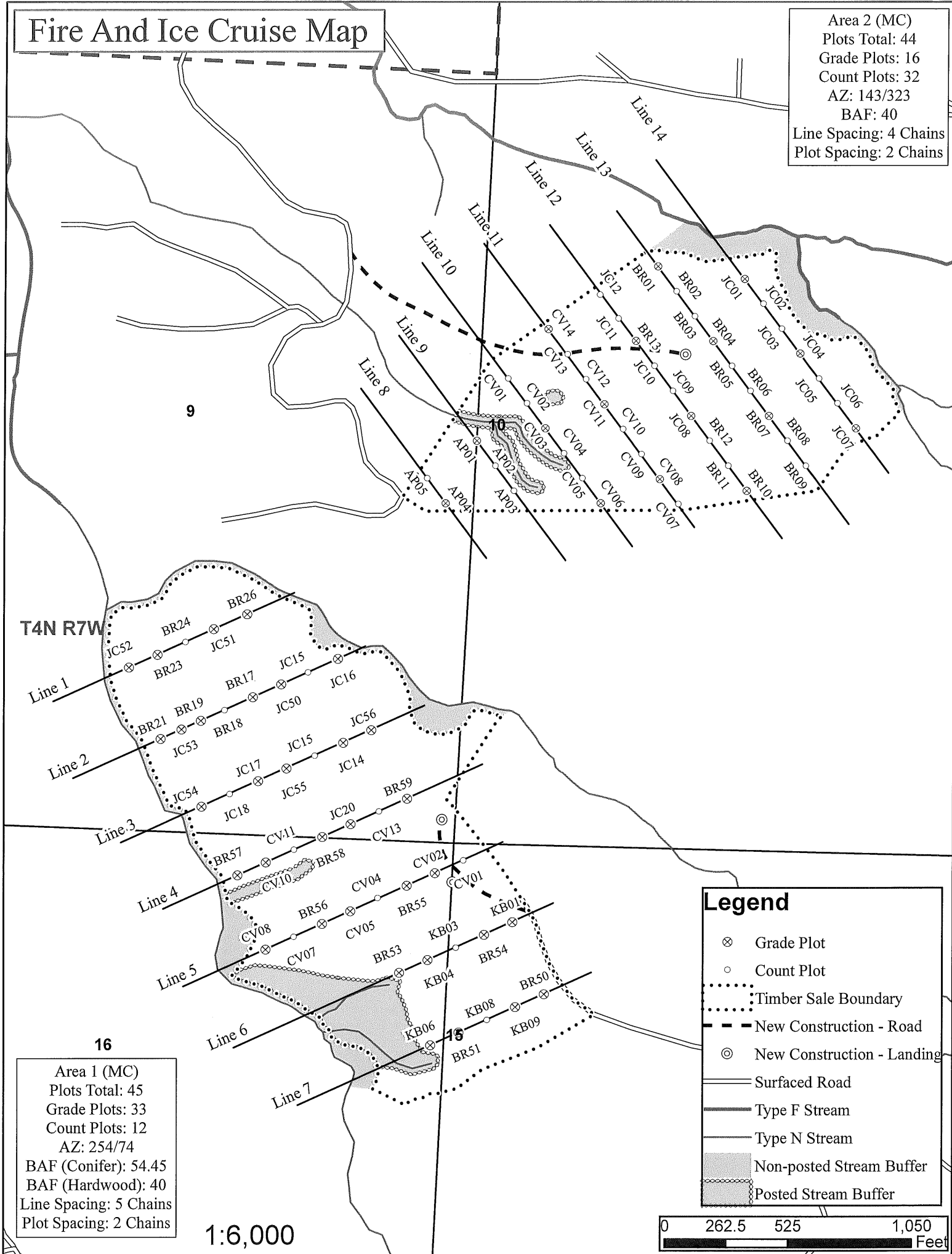
Area 1 (MC)
Plots Total: 45
Grade Plots: 33
Count Plots: 12
AZ: 254/74
BAF (Conifer): 54.45
BAF (Hardwood): 40
Line Spacing: 5 Chains
Plot Spacing: 2 Chains

1:6,000

Legend

- ⊗ Grade Plot
- Count Plot
- ⋯ Timber Sale Boundary
- - - New Construction - Road
- ⊙ New Construction - Landing
- == Surfacd Road
- Type F Stream
- Type N Stream
- Non-posted Stream Buffer
- ▨ Posted Stream Buffer

0 262.5 525 1,050 Feet



TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																
T04N R07W S09 TyRW THRU T04N R07W S09 TyTAKE				Project:		FIREICE								Page				1		
				Acres		86.00								Date				3/22/2017		
														Time				1:20:56PM		
S Spp	So Gr T rt ad	%	Bd. Ft. per Acre			Total	Percent of Net Board Foot Volume								Average Log				Logs	
		Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	Per /Acre	
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
D	DOCU		100.0	256											14	12		0.00	3.0	
D	DO2S	74	.9	10,995	10,894	937		3	35	62	2	3	10	86	37	16	399	2.42	27.3	
D	DO3S	22		3,196	3,196	275		86	14		5	9	23	63	34	8	87	0.79	36.6	
D	DO4S	4		493	493	42		100			87	13			19	6	21	0.46	23.2	
D Totals		58	2.4	14,940	14,583	1,254		24	29	46	5	5	12	78	30	10	162	1.32	90.2	
A	DOCU		100.0	134											8	20		0.00	1.0	
A	DO1S	37		3,162	3,162	272			95	5	3	9	8	81	37	13	247	1.76	12.8	
A	DO2S	30		2,594	2,594	223		85	15		2	3	8	87	37	11	166	1.25	15.6	
A	DO3S	11		944	944	81		100			2	13	28	57	34	9	96	0.86	9.8	
A	DO4S	22	.6	1,809	1,799	155		100			21	34	22	22	27	6	38	0.57	46.7	
A Totals		34	1.7	8,643	8,499	731		58	40	2	6	13	13	68	31	9	99	0.97	86.0	
H	DOCU		100.0	53											10	29		0.00	.1	
H	DO2S	59	1.5	979	964	83			62	38				100	40	15	357	2.23	2.7	
H	DO3S	36		593	593	51		100				14	33	53	34	8	83	0.78	7.1	
H	DO4S	5		70	70	6	44	56			22	34		44	32	6	35	0.51	2.0	
H Totals		7	4.0	1,695	1,627	140		2	39	37	22	1	7	12	35	9	136	1.11	12.0	
M	DOCU		100.0	29											20	8		0.00	.7	
M	DO1S	28		49	49	4		100						100	40	14	290	1.77	.2	
M	DO4S	72		122	122	11		100			56	12	14	19	22	8	39	0.74	3.1	
M Totals		1	14.4	200	171	15		71	29		40	9	10	42	22	8	43	0.70	4.0	
S	DO3S	22		16	16	1		100						100	36	7	60	1.39	.3	
S	DO4S	78		58	58	5		100			39		61		25	7	43	0.89	1.3	
S Totals		0		74	74	6		100			31		47	22	27	7	46	1.00	1.6	
Totals			2.3	25,553	24,954	2,146		0	37	33	29	6	8	12	74	31	9	129	1.14	193.8

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1						
		Project: FIREICE												Date 3/22/2017						
														Time 1:21:49PM						
T04N R07W S09 TTAKE										T04N R07W S09 TTAKE										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
04N	07W	09	A1	TAKE	50.00	45	121	1	W											
S So Gr Spp T rt ad			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/ Lf
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		
D	DO	CU		00.0	402											15	11		0.00	4.6
D	DO	2S	72	.8	15,307	15,183	759		3	36	61	2	3	11	84	37	16	396	2.41	38.4
D	DO	3S	24		4,849	4,849	242		85	15		4	9	24	64	34	8	87	0.79	55.6
D	DO	4S	4		782	782	39		100			86	14			19	6	21	0.45	37.4
D Totals			85	2.5	21,340	20,813	1,041		26	30	44	5	5	14	76	30	10	153	1.27	136.0
H	DO	CU		00.0	90											10	29		0.00	.2
H	DO	2S	59	1.6	1,556	1,531	77			60	40				100	40	15	363	2.23	4.2
H	DO	3S	36		923	923	46		100				14	35	51	34	8	86	0.80	10.7
H	DO	4S	5		118	118	6	44	56			22	34		44	32	6	35	0.51	3.4
H Totals			10	4.3	2,687	2,572	129	2	38	36	24	1	7	13	80	35	9	139	1.12	18.6
A	DO	CU		00.0	59											6	22		0.00	.5
A	DO	1S	25		265	265	13			100			51	49		31	13	210	1.68	1.3
A	DO	2S	15		145	145	7	100							100	40	11	180	1.33	.8
A	DO	3S	11		120	120	6	100					23	77		31	7	60	0.67	2.0
A	DO	4S	49		493	493	25	100				7	31	14	49	30	6	47	0.61	10.5
A Totals			4	5.4	1,081	1,022	51		74	26		3	31	28	38	30	8	68	0.76	15.0
M	DO	CU		00.0	25											20	8		0.00	.6
M	DO	4S	100		182	182	9		100			50	14	15	21	23	8	41	0.75	4.5
M Totals			1	12.3	208	182	9	100				50	14	15	21	22	8	36	0.67	5.1
S	DO	3S	100		28	28	1	100							100	36	7	60	1.39	.5
S Totals			0		28	28	1	100							100	36	7	60	1.39	.5
Type Totals				2.9	25,343	24,617	1,231	0	30	30	40	5	6	14	75	30	9	141	1.20	175.1

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1								
Project: FIREICE												Date 3/22/2017										
												Time 1:22:08PM										
T04N R07W S09 TTAKE										T04N R07W S09 TTAKE												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
04N	07W	09	A2	TAKE	34.00	44	78	1	W													
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log		Logs Per /Acre				
								Log Scale Dia.				Log Length				Ln	Dia		Bd	CF/ Lf		
										4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		
A	DO	CU		00.0	243													8	20		0.00	1.9
A	DO	1S	38		7,383	7,383	251				95	5		3	7	6	85	37	13	250	1.76	29.6
A	DO	2S	31		6,163	6,163	210			84	16			2	3	8	87	37	11	166	1.25	37.2
A	DO	3S	11		2,146	2,146	73			100				2	12	24	62	34	9	101	0.89	21.2
A	DO	4S	20	.7	3,727	3,702	126			100				24	35	24	17	26	6	37	0.56	99.5
A Totals			76	1.4	19,663	19,394	659			57	41	2		7	12	12	70	31	9	102	0.99	189.4
D	DO	CU		00.0	43													6	17		0.00	.6
D	DO	2S	84	1.4	4,711	4,645	158				32	68		2	2	2	93	37	16	415	2.46	11.2
D	DO	3S	14		788	788	27			100				12	16	15	57	32	9	88	0.75	9.0
D	DO	4S	2		72	72	2			100				100				16	7	27	0.53	2.6
D Totals			22	2.0	5,614	5,504	187			16	27	57		5	4	4	87	32	12	235	1.68	23.4
S	DO	4S	100		142	142	5			100				39		61		25	7	43	0.89	3.3
S Totals			1		142	142	5			100				39		61		25	7	43	0.89	3.3
M	DO	CU		00.0	34													20	8		0.00	.9
M	DO	1S	77		121	121	4			100						100		40	14	290	1.77	.4
M	DO	4S	23		35	35	1			100				100				16	8	30	0.62	1.2
M Totals			1	17.9	190	156	5			22	78			22		78		22	9	64	0.79	2.4
H	DO	2S	54		137	137	5			100						100		40	14	290	2.22	.5
H	DO	3S	46		112	112	4			100				21		79		35	6	58	0.64	2.0
H Totals			1		249	249	8			45	55			9		91		36	8	103	0.98	2.4
Type Totals				1.6	25,858	25,445	865			48	38	14		7	10	10	73	31	9	115	1.06	220.9

TC PSCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																					
T04N R07W S09 TyRW1.00 T04N R07W S09 TyRW1.00				Project: FIREICE Acres2.00												Page1 Date3/22/2017 Time1:22:29PM							
S Spp	So T	Gr rt	ad	% Net BdFt	Bd. Ft. per Acre Def%GrossNet			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							
D		DOCU			100.0	223										14	12		0.00	2.6			
D		DO2S		75	1.0	10,009	9,914	20		2	35	63		2	3	9	86	37	16	400	2.42	24.8	
D		DO3S		21		2,818	2,818	6		87	13			5	10	22	63	34	8	87	0.78	32.3	
D		DO4S		4		427	427	1		100				87	13			19	6	21	0.46	20.0	
D Totals				53	2.4	13,477	13,159	26		24	29	47		5	5	12	78	31	10	165	1.34	79.7	
A		DOCU			100.0	151												8	20		0.00	1.2	
A		DO1S		37		3,824	3,824	8			95	5		3	8	7	82	37	13	248	1.76	15.4	
A		DO2S		31		3,154	3,154	6		85	15			2	3	8	87	37	11	166	1.25	19.0	
A		DO3S		11		1,133	1,133	2		100				2	13	27	59	34	9	98	0.87	11.6	
A		DO4S		21	.6	2,110	2,097	4		100				22	35	23	21	26	6	38	0.56	55.0	
A Totals				41	1.6	10,372	10,208	20		58	40	2		7	13	13	68	31	9	100	0.97	102.2	
H		DOCU			100.0	45												10	29		0.00	.1	
H		DO2S		59	1.5	847	834	2			63	37					100	40	15	355	2.23	2.3	
H		DO3S		36		518	518	1		100					15	31	54	34	8	82	0.78	6.3	
H		DO4S		5		59	59	0		44	56			22	34		44	32	6	35	0.51	1.7	
H Totals				6	3.9	1,468	1,411	3		2	39	37	22		1	7	12	35	9	135	1.11	10.5	
M		DOCU			100.0	30												20	8		0.00	.7	
M		DO1S		35		60	60	0			100						100	40	14	290	1.77	.2	
M		DO4S		65		108	108	0		100				58	11	13	18	21	8	39	0.73	2.8	
M Totals				1	15.0	199	169	0		64	36			37	7	8	47	22	8	45	0.71	3.8	
S		DO3S		16		14	14	0		100							100	36	7	60	1.39	.2	
S		DO4S		84		71	71	0		100				39		61		25	7	43	0.89	1.6	
S Totals				0		85	85	0		100				33		51	16	27	7	45	0.98	1.9	
Totals					2.2	25,601	25,031	50		0	39	34	27		6	8	12	74	31	9	126	1.12	198.0

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT		FIREICE					DATE	3/22/2017	
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
04N	07	09	A1	TAKE		84.00		89	380	1	W	
04N	07W	09	A2	TAKE								
					TREES		ESTIMATED		PERCENT			
					PER PLOT		TOTAL		SAMPLE			
			PLOTS		TREES		TREES		TREES			
TOTAL			89		380		4.3					
CRUISE			49		199		4.1		9,498		2.1	
DBH COUNT												
REFOREST												
COUNT			39		172		4.4					
BLANKS			1									
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
R ALDER			71	49.1	16.7	55	18.3	75.1	8,602	8,458	2,555	2,533
DOUG FIR			100	50.4	18.6	56	22.2	95.7	14,975	14,617	3,682	3,634
WHEMLOCK			15	7.9	17.6	55	3.2	13.3	1,701	1,632	474	465
BL MAPLE			10	4.0	14.8	23	1.2	4.8	200	171	74	62
S SPRUCE			3	1.6	17.1	28	0.6	2.6	74	74	44	44
TOTAL			199	113.1	17.6	54	45.6	191.4	25,552	24,952	6,828	6,738
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	
R ALDER			55.3	6.6	194	208	222					
DOUG FIR			90.8	9.1	570	626	683					
WHEMLOCK			81.4	21.8	266	340	414					
BL MAPLE			147.5	49.1	29	57	85					
S SPRUCE			34.6	24.0	38	50	62					
TOTAL			111.9	7.9	385	418	451	500	125	56		
CL	68.1	COEFF	TREES/ACRE						# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
R ALDER			113.2	12.0	43	49	55					
DOUG FIR			144.8	15.3	43	50	58					
WHEMLOCK			328.2	34.8	5	8	11					
BL MAPLE			489.8	51.9	2	4	6					
S SPRUCE			375.1	39.7	1	2	2					
TOTAL			63.3	6.7	105	113	121	160	40	18		
CL	68.1	COEFF	BASAL AREA/ACRE						# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
R ALDER			112.6	11.9	66	75	84					
DOUG FIR			108.7	11.5	85	96	107					
WHEMLOCK			331.5	35.1	9	13	18					
BL MAPLE			495.2	52.4	2	5	7					
S SPRUCE			392.6	41.6	1	3	4					
TOTAL			50.2	5.3	181	191	202	101	25	11		
CL	68.1	COEFF	NET BF/ACRE						# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
R ALDER			119.6	12.7	7,387	8,458	9,530					
DOUG FIR			108.9	11.5	12,931	14,617	16,303					
WHEMLOCK			368.3	39.0	995	1,632	2,268					
BL MAPLE			535.9	56.8	74	171	269					
S SPRUCE			381.1	40.4	44	74	104					
TOTAL			61.4	6.5	23,329	24,952	26,576	151	38	17		

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT		FIREICE						DATE	3/22/2017
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
04N	07	09	A1	TAKE		50.00		45	159	1	W	
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			45	159	3.5							
CRUISE			32	121	3.8	5,462		2.2				
DBH COUNT												
REFOREST												
COUNT			12	38	3.2							
BLANKS			1									
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
DOUG FIR			90	79.2	18.2	54	33.5	142.8	21,340	20,813	5,319	5,244
WHEMLOCK			13	12.0	17.8	57	4.9	20.6	2,687	2,572	738	723
R ALDER			10	12.5	14.4	38	3.7	14.2	1,081	1,022	351	342
BL MAPLE			7	5.1	15.0	23	1.6	6.2	208	182	88	77
S SPRUCE			1	.5	22.0	37	0.3	1.2	28	28	23	23
TOTAL			121	109.2	17.6	51	44.1	185.0	25,343	24,617	6,519	6,409
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			
DOUG FIR			97.3	10.2	538	599	661					
WHEMLOCK			79.4	22.9	279	362	444					
R ALDER			91.1	30.3	79	114	149					
BL MAPLE			53.3	21.7	28	36	43					
S SPRUCE												
TOTAL			109.8	10.0	447	497	546	481	120	53		
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			88.2	13.1	69	79	90					
WHEMLOCK			248.8	37.1	8	12	16					
R ALDER			242.6	36.1	8	12	17					
BL MAPLE			435.3	64.8	2	5	8					
S SPRUCE			670.8	99.9	0	0	1					
TOTAL			68.1	10.1	98	109	120	185	46	21		
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			59.4	8.8	130	143	155					
WHEMLOCK			247.9	36.9	13	21	28					
R ALDER			241.0	35.9	9	14	19					
BL MAPLE			432.4	64.4	2	6	10					
S SPRUCE			670.8	99.9	0	1	2					
TOTAL			52.1	7.8	171	185	199	108	27	12		
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			66.9	10.0	18,740	20,813	22,887					
WHEMLOCK			271.5	40.4	1,532	2,572	3,612					
R ALDER			244.1	36.4	650	1,022	1,393					
BL MAPLE			517.8	77.1	42	182	323					
S SPRUCE			670.8	99.9	0	28	55					
TOTAL			66.7	9.9	22,172	24,617	27,063	178	44	20		

TC PSTATS			PROJECT STATISTICS						PAGE	1		
			PROJECT	FIREICE			DATE			3/22/2017		
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
04N	07	09	A2	TAKE		34.00		44	221	1	W	
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			44	221	5.0							
CRUISE			17	78	4.6	4,036		1.9				
DBH COUNT												
REFOREST												
COUNT			27	134	5.0							
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
R ALDER			61	102.9	17.1	58	39.8	164.5	19,663	19,394	5,796	5,755
DOUG FIR			10	8.1	24.4	96	5.3	26.4	5,614	5,504	1,274	1,267
S SPRUCE			2	3.3	15.9	26	1.1	4.5	142	142	74	74
WHEMLOCK			2	2.0	16.0	45	0.7	2.7	249	249	85	85
BL MAPLE			3	2.4	14.4	23	0.7	2.7	190	156	54	41
TOTAL			78	118.7	17.6	59	47.9	200.9	25,858	25,445	7,283	7,222
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			
R ALDER			49.3	6.3	209	223	238					
DOUG FIR			40.0	13.3	754	870	986					
S SPRUCE			47.1	44.1	25	45	65					
WHEMLOCK			99.0	92.7	15	200	385					
BL MAPLE			149.5	103.4		107	217					
TOTAL			92.3	10.4	266	297	328	340	85	38		
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
R ALDER			59.5	9.0	94	103	112					
DOUG FIR			152.0	22.9	6	8	10					
S SPRUCE			283.5	42.7	2	3	5					
WHEMLOCK			408.0	61.5	1	2	3					
BL MAPLE			464.1	69.9	1	2	4					
TOTAL			47.3	7.1	110	119	127	89	22	10		
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
R ALDER			56.3	8.5	151	165	178					
DOUG FIR			134.7	20.3	21	26	32					
S SPRUCE			282.5	42.6	3	5	6					
WHEMLOCK			374.0	56.3	1	3	4					
BL MAPLE			489.8	73.8	1	3	5					
TOTAL			39.7	6.0	189	201	213	63	16	7		
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
R ALDER			59.5	9.0	17,657	19,394	21,132					
DOUG FIR			135.0	20.3	4,385	5,504	6,623					
S SPRUCE			285.5	43.0	81	142	203					
WHEMLOCK			384.9	58.0	105	249	394					
BL MAPLE			532.8	80.3	31	156	280					
TOTAL			38.5	5.8	23,972	25,445	26,919	59	15	7		

TC TSTATS				STATISTICS				PAGE		1	
				PROJECT		FIREICE		DATE		3/24/2017	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
04N	07W	09	A1	00MC	54.00	45	165	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		45	165	3.7							
CRUISE		33	125	3.8	5,970	2.1					
DBH COUNT											
REFOREST											
COUNT		11	37	3.4							
BLANKS		1									
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
DOUG FIR		90	79.2	18.2	54	33.5	142.8	21,340	20,813	5,319	5,244
WHEMLOCK		13	12.0	17.8	57	4.9	20.6	2,687	2,572	738	723
R ALDER		10	12.5	14.4	38	3.7	14.2	1,081	1,022	351	342
SNAG		4	1.3	31.7	51	1.3	7.3				
BL MAPLE		7	5.1	15.0	23	1.6	6.2	208	182	88	77
S SPRUCE		1	.5	22.0	37	0.3	1.2	28	28	23	23
TOTAL		125	110.6	17.9	51	45.5	192.3	25,343	24,617	6,519	6,409
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		
DOUG FIR		97.3	10.2	538	599	661					
WHEMLOCK		79.4	22.9	279	362	444					
R ALDER		91.1	30.3	79	114	149					
SNAG											
BL MAPLE		53.3	21.7	28	36	43					
S SPRUCE											
TOTAL		113.1	10.1	432	481	529	511	128	57		
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		88.2	13.1	69	79	90					
WHEMLOCK		248.8	37.1	8	12	16					
R ALDER		242.6	36.1	8	12	17					
SNAG		262.9	39.2	1	1	2					
BL MAPLE		435.3	64.8	2	5	8					
S SPRUCE		670.8	99.9	0	0	1					
TOTAL		66.6	9.9	100	111	122	177	44	20		
CL:	68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		59.4	8.8	130	143	155					
WHEMLOCK		247.9	36.9	13	21	28					
R ALDER		241.0	35.9	9	14	19					
SNAG		257.8	38.4	4	7	10					
BL MAPLE		432.4	64.4	2	6	10					
S SPRUCE		670.8	99.9	0	1	2					
TOTAL		48.6	7.2	178	192	206	94	24	10		
CL:	68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		66.9	10.0	18,740	20,813	22,887					
WHEMLOCK		271.5	40.4	1,532	2,572	3,612					
R ALDER		244.1	36.4	650	1,022	1,393					
SNAG											

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	FIREICE				
								DATE	3/24/2017
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	07W	09	A1	00MC	54.00	45	165	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
BL MAPLE		517.8	77.1	42	182	323			
S SPRUCE		670.8	99.9	0	28	55			
TOTAL		66.7	9.9	22,172	24,617	27,063	178	44	20

TC TSTATS				STATISTICS PROJECT FIREICE				PAGE 1 DATE 3/24/2017		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	09	A2	A2MC	35.00	44	233	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		44	233	5.3						
CRUISE		17	86	5.1	4,279	2.0				
DBH COUNT										
REFOREST										
COUNT		27	138	5.1						
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
R ALDER		61	102.9	17.1	58	39.8	164.5	19,663	19,394	5,796
DOUG FIR		10	8.1	24.4	96	5.3	26.4	5,614	5,504	1,274
CEDLEAV		8	3.5	22.8	42	2.1	10.0	387	387	222
S SPRUCE		2	3.3	15.9	26	1.1	4.5	142	142	74
WHEMLOCK		2	2.0	16.0	45	0.7	2.7	249	249	85
BL MAPLE		3	2.4	14.4	23	0.7	2.7	190	156	54
TOTAL		86	122.3	17.8	59	50.0	210.9	26,245	25,833	7,505
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		
R ALDER		49.3	6.3	209	223	238				
DOUG FIR		40.0	13.3	754	870	986				
CEDLEAV		179.3	67.6	54	168	281				
S SPRUCE		47.1	44.1	25	45	65				
WHEMLOCK		99.0	92.7	15	200	385				
BL MAPLE		149.5	103.4		107	217				
TOTAL		97.4	10.5	255	285	315	379	95	42	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
R ALDER		59.5	9.0	94	103	112				
DOUG FIR		152.0	22.9	6	8	10				
CEDLEAV		301.3	45.4	2	4	5				
S SPRUCE		283.5	42.7	2	3	5				
WHEMLOCK		408.0	61.5	1	2	3				
BL MAPLE		464.1	69.9	1	2	4				
TOTAL		46.5	7.0	114	122	131	87	22	10	
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
R ALDER		56.3	8.5	151	165	178				
DOUG FIR		134.7	20.3	21	26	32				
CEDLEAV		274.5	41.3	6	10	14				
S SPRUCE		282.5	42.6	3	5	6				
WHEMLOCK		374.0	56.3	1	3	4				
BL MAPLE		489.8	73.8	1	3	5				
TOTAL		38.9	5.9	199	211	223	60	15	7	
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
R ALDER		59.5	9.0	17,657	19,394	21,132				
DOUG FIR		135.0	20.3	4,385	5,504	6,623				
CEDLEAV		324.3	48.8	198	387	577				
S SPRUCE		285.5	43.0	81	142	203				
WHEMLOCK		384.9	58.0	105	249	394				
BL MAPLE		532.8	80.3	31	156	280				

TC TSTATS				STATISTICS				PAGE	2
				PROJECT	FIREICE			DATE	3/24/2017
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	07W	09	A2	A2MC	35.00	44	233	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
TOTAL		37.8	5.7	24,363	25,833	27,303	57	14	6

TC		PSTNDSUM										Stand Table Summary										Page		1				
																						Date:		3/22/2017				
T04N R07W S09 TyRW THRU T04N R07W S09 TyTAKE					Project										FIREICE										Time:		1:24:41PM	
					Acres										86.00										Grown Year:			
S Spec	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net		Net	T o t a l s														
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre		Bd.Ft. Acre	Tons	Cunits	MBF											
D		8	2	85	21	2.695	.94	2.70	3.0			8			7													
D		10	8	84	46	6.900	3.76	5.17	12.0	40.0		62	207		53	18												
D		11	8	84	47	5.702	3.76	5.70	12.8	37.5		73	214		63	18												
D		12	4	84	62	2.396	1.88	2.40	20.0	60.0		48	144		41	12												
D		13	6	87	65	3.062	2.82	5.10	14.2	44.0		72	225		62	19												
D		14	6	84	65	2.640	2.82	3.52	20.2	57.5		71	202		61	17												
D		15	8	87	88	3.174	3.90	6.35	20.9	76.0		133	483		114	42												
D		16	10	86	81	3.369	4.70	6.74	22.6	77.0		152	519		131	45												
D		17	4	88	72	1.194	1.88	2.39	24.0	82.5		57	197		49	17												
D		18	8	88	88	2.130	3.76	4.26	31.9	108.7		136	463		117	40												
D		19	2	88	115	.545	1.07	1.63	30.0	110.0		49	180		42	15												
D		20	6	87	83	1.294	2.82	2.59	36.3	118.3		94	306		81	26												
D		21	16	88	100	3.129	7.53	6.26	46.6	159.4		292	997		251	86												
D		22	2	82	44	.356	.94	.36	46.0	170.0		16	61		14	5												
D		23	6	86	117	.978	2.82	2.28	52.1	200.0		119	457		102	39												
D		24	6	85	100	.898	2.82	2.10	52.1	188.6		109	395		94	34												
D		25	8	86	102	1.104	3.76	2.48	60.0	228.9		149	569		128	49												
D		26	8	85	109	1.021	3.76	2.55	60.6	232.0		155	592		133	51												
D		27	12	88	125	1.519	6.04	4.56	63.4	280.8		289	1,280		248	110												
D		28	16	87	122	1.822	7.79	5.50	66.1	291.1		364	1,600		313	138												
D		29	6	87	112	.615	2.82	1.64	74.9	326.2		123	535		106	46												
D		30	8	88	120	.767	3.76	2.30	77.3	360.0		178	828		153	71												
D		31	6	87	119	.564	2.95	1.51	89.2	400.9		135	606		116	52												
D		32	6	85	119	.505	2.82	1.52	74.4	343.3		113	521		97	45												
D		33	8	84	129	.678	4.03	2.03	94.2	431.3		192	877		165	75												
D		34	2	88	111	.149	.94	.45	91.3	433.3		41	194		35	17												
D		35	4	87	129	.282	1.88	.84	109.3	543.3		92	459		79	39												
D		36	2	83	130	.133	.94	.40	111.0	496.7		44	198		38	17												
D		37	2	85	120	.126	.94	.38	112.7	560.0		43	212		37	18												
D		39	2	83	133	.113	.94	.34	132.3	566.7		45	193		39	17												
D		40	6	85	126	.323	2.82	.86	140.5	693.7		121	598		104	51												
D		43	2	88	142	.093	.94	.28	181.3	973.3		51	272		44	23												
D		Totals	200	86	77	50.277	95.40	87.19	41.6	167.3		3,625	14,583		3,118	1,254												
A		10	2	87	18	2.013	1.10	2.01	7.0	30.0		14	60		12	5												
A		11	6	84	47	4.219	2.78	4.22	14.0	40.9		59	173		51	15												
A		12	2	87	78	1.398	1.10	2.80	13.0	45.0		36	126		31	11												
A		13	8	85	65	4.212	3.88	5.40	20.1	66.6		108	360		93	31												
A		14	8	86	74	4.108	4.39	7.19	20.4	65.7		147	472		126	41												
A		15	12	85	73	4.953	6.08	8.53	22.4	76.0		191	649		164	56												
A		16	8	85	75	3.145	4.39	6.29	24.6	85.0		155	535		133	46												
A		17	16	86	80	5.572	8.78	10.45	30.2	100.0		315	1,045		271	90												
A		18	24	86	81	7.167	12.66	13.71	34.6	113.3		474	1,554		408	134												
A		19	18	86	75	4.889	9.63	9.35	35.6	113.7		333	1,063		286	91												
A		20	6	87	84	1.510	3.29	3.02	37.8	131.7		114	398		98	34												
A		21	10	84	71	2.282	5.49	4.56	39.4	133.0		180	607		155	52												
A		22	8	86	83	1.663	4.39	3.33	51.0	183.8		170	611		146	53												
A		23	4	87	88	.761	2.20	1.52	57.2	200.0		87	304		75	26												
A		24	2	87	80	.268	.84	.54	46.0	180.0		25	97		21	8												
A		25	2	86	82	.322	1.10	.64	64.0	225.0		41	145		35	12												
A		27	6	84	67	.828	3.29	1.38	68.8	218.0		95	301		82	26												
A		Totals	142	86	71	49.310	75.40	84.94	30.0	100.1		2,545	8,499		2,188	731												
H		11	2	89	54	1.422	.94	1.42	15.0	60.0		21	85		18	7												

TC		PSTNDSUM										Stand Table Summary										Page		2											
																						Date:		3/22/2017											
T04N R07W S09 TyRW THRU T04N R07W S09 TyTAKE												Project										FIREICE										Time:		1:24:41PM	
												Acres										86.00										Grown Year:			
S Sp	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals																					
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF																			
H		13	4	87	49	1.620	1.49	1.62	19.5	41.1		32	67		27	6																			
H		14	2	85	42	.878	.94	.88	19.0	50.0		17	44		14	4																			
H		16	2	89	96	.672	.94	1.34	31.0	115.0		42	155		36	13																			
H		17	2	85	88	.595	.94	1.19	31.5	110.0		38	131		32	11																			
H		19	2	89	90	.477	.94	.95	41.5	145.0		40	138		34	12																			
H		20	2	86	99	.430	.94	.86	45.5	140.0		39	120		34	10																			
H		21	2	89	78	.390	.94	.78	41.0	140.0		32	109		28	9																			
H		23	4	86	90	.518	1.49	1.04	59.0	204.6		61	212		52	18																			
H		24	2	88	91	.299	.94	.60	63.5	235.0		38	140		33	12																			
H		25	2	88	99	.275	.94	.55	73.0	275.0		40	151		35	13																			
H		32	2	83	91	.168	.94	.34	107.5	410.0		36	138		31	12																			
H		35	2	85	99	.140	.94	.28	103.0	485.0		29	136		25	12																			
H		Totals	30	87	70	7.884	13.31	11.85	39.1	137.3		464	1,627		399	140																			
M		12	2	86	17	.471	.37	.47	10.0	30.0		5	14		4	1																			
M		13	2	87	17	.572	.53	.57	10.0	40.0		6	23		5	2																			
M		14	6	86	26	1.332	1.42	.99	15.0	35.0		15	35		13	3																			
M		16	6	87	30	1.133	1.58	.76	21.5	45.0		16	34		14	3																			
M		17	2	86	39	.334	.53	.33	26.0	50.0		9	17		7	1																			
M		20	2	87	82	.170	.37	.17	71.0	290.0		12	49		10	4																			
M		Totals	20	86	28	4.012	4.80	3.29	18.9	52.1		62	171		53	15																			
S		15	2	83	23	.754	.92	.75	16.0	30.0		12	23		10	2																			
S		17	2	82	39	.587	.92	.59	31.0	60.0		18	35		16	3																			
S		22	2	83	42	.272	.72	.27	50.0	60.0		14	16		12	1																			
S		Totals	6	83	32	1.612	2.57	1.61	27.2	46.0		44	74		38	6																			
SN		27	1	85	54	.005	.02																												
SN		32	1	89	90	.004	.02																												
SN		35	2	87	48	.006	.04																												
SN		Totals	4	87	61	.015	.08																												
Totals			402	86	71	113.111	191.56	188.88	35.7	132.1		6,740	24,954		5,796	2,146																			

Log Stock Table - MBF

T04N R07W S09 TyRW
THRU
T04N R07W S09 TyTAKE

Project: FIREICE
Acres 86.00

Page 2
Date 3/22/2017
Time 1:24:06PM

S T Spp	So Gr rt	Log de 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	16-20	21-25	26-29	30-39	40+		
A	DO	1S	20	7		7	1.0						7							
A	DO	1S	26	9		9	1.2						9							
A	DO	1S	30	15		15	2.1						8	7						
A	DO	1S	32	21		21	2.9					21								
A	DO	1S	36	11		11	1.5						11							
A	DO	1S	40	208		208	28.5					107	65	37						
A	DO	2S	16	5		5	.7					5								
A	DO	2S	24	7		7	.9					7								
A	DO	2S	32	17		17	2.3					17								
A	DO	2S	40	194		194	26.5					160	22	11						
A	DO	3S	12	1		1	.1				1									
A	DO	3S	18	1		1	.1			1										
A	DO	3S	26	9		9	1.2				1	7								
A	DO	3S	30	2		2	.2				2									
A	DO	3S	32	23		23	3.1			5	8	9								
A	DO	3S	36	2		2	.3				2									
A	DO	3S	40	44		44	6.0				44									
A	DO	4S	16	16		16	2.2			16										
A	DO	4S	18	1		1	.2			1										
A	DO	4S	20	16		16	2.2			16										
A	DO	4S	22	2		2	.3			2										
A	DO	4S	24	12		12	1.6			12										
A	DO	4S	28	1		1	.2			1										
A	DO	4S	30	38		38	5.1			38										
A	DO	4S	32	26	3.4	25	3.4			25										
A	DO	4S	34	9		9	1.2			9										
A	DO	4S	36	6		6	.9			6										
A	DO	4S	37	5		5	.6			5										
A	DO	4S	40	23		23	3.2			18	5									
A	Totals			743	1.7	731	34.1			155	64	206	150	112	44					
H	DO	CU	10	5	100.0															
H	DO	2S	40	84	1.5	83	59.2					26	5	42	10					
H	DO	3S	30	7		7	5.2			6		2								
H	DO	3S	32	17		17	11.9			11	4	2								

Log Stock Table - MBF

T04N R07W S09 TyRW
THRU
T04N R07W S09 TyTAKE

Project: FIREICE
Acres 86.00

Page 3
Date 3/22/2017
Time 1:24:06PM

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	16-20	21-25	26-29	30-39	40+
H	DO	3S	36	3		3	2.2			3									
H	DO	3S	40	24		24	17.1			2	2	20							
H	DO	4S	20	1		1	1.0				1								
H	DO	4S	26	2		2	1.5			2									
H	DO	4S	40	3		3	1.9		3										
H	Totals			146	4.0	140	6.5		3	24	7	23	26	5	42	10			
M	DO	CU	20	2	100.0														
M	DO	1S	40	4		4	28.7						4						
M	DO	4S	12	2		2	13.3					2							
M	DO	4S	16	3		3	19.8				3								
M	DO	4S	20	1		1	6.6			1									
M	DO	4S	28	1		1	8.6			1									
M	DO	4S	32	1		1	9.8			1									
M	DO	4S	36	2		2	13.2			2									
M	Totals			17	14.4	15	.7			6	3	2		4					
S	DO	3S	36	1		1	22.0			1									
S	DO	4S	20	2		2	30.5			2									
S	DO	4S	32	3		3	47.5			3									
S	Totals			6		6	.3			6									
Total	All Species			2,198	2.3	2,146	100.0		3	309	158	333	314	267	446	265	37	14	

Legend

- ODF Ownership
- Timber Sale Boundary
- Paved Road
- Surfaced Road
- New Construction
- Possible Non-project Road
- Landing Construction
- Type F Stream
- Type N Stream
- Posted Stream Buffer
- Non-Posted Stream Buffer
- Survey Monument
- Gate
- Tractor Yarding Area
- Reforestation Area
- Survey Monument

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-17-108

FIRE AND ICE

PORTIONS OF SECTIONS 9, 10, 15, AND 16
OF T4N, R7W, W.M.,
CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres
Area 1 (MC) -	50
Area 2 (MC) -	34
Area 3 (R/W)	2
Total Sale Acreage =	86

Logging Breakdown	Tractor	Cable
Area 1 (MC) -	12%	88%
Area 2 (MC)-	100%	0%
Area 3 (R/W)-	100%	0%
Total=	49%	51%

