



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Boiler Fleet
Sale AT-341-2018-40-

District: Astoria

Date: February 12, 2018

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,959,849.53	\$178,013.28	\$3,137,862.81
		Project Work:	(\$250,758.00)
		Advertised Value:	\$2,887,104.81



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Timber Description

Location: Located in portions of Sections 10, 11, 14, 15, 16, 23 and 25, T8N, R9W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	14	0	97
Western Hemlock / Fir	15	0	97
Sitka Spruce	15	0	98
Alder (Red)	13	0	98

Volume by Grade	2S	3S	4S	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	500	1,451	280	0	0	0	0	2,231
Western Hemlock / Fir	2,030	2,344	551	0	0	0	0	4,925
Sitka Spruce	88	7	5	0	0	0	0	100
Alder (Red)	0	0	0	114	65	97	117	393
Total	2,618	3,802	836	114	65	97	117	7,649

Comments: Pond Values Used: Local Pond Values, December 2017.

Expected log markets are; Warrenton, OR, Tillamook, OR, Mist, OR, Garibaldi, OR, Forest Grove, OR, Willamina, OR, Banks, OR, Longview, WA, Vancouver, WA.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$1,175/\text{MBF} = \$1,500/\text{MBF} - \$325/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = \$2.00/MBF

FUEL COST ALLOWANCE = \$3.00/GALLON

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

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

Three road Flaggers For Highway 30 and John Day River Road for three days @ \$40/hr = \$2,880

Extra rock to protect underground waterlines and natural gas lines to allow machines to cross: 10 locations to cross pipeline @ 2 loads pit-run per crossing = 220 yds @ \$13.35/station = \$2,937

TOTAL Other Costs(Profit & Risk to be added) = \$5,817

Other Costs (No Profit & Risk added):

Temporary Easement = \$960

Machine Washing for Invasive Weeds = \$3,000

TOTAL Other Costs (No Profit & Risk added) = \$3,960

SLASH DISPOSAL

(See attached Cost Summary Sheet)

TOTAL Slash Disposal = \$28,293

ROAD MAINTENANCE

(See attached Road Maintenance Cost Summary Sheet)

TOTAL Road Maintenance: $\$31,973/7,649 \text{ MBF} = \$4.18/\text{MBF}$



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Logging Conditions

Combination#: 1	Douglas - Fir	38.00%
	Western Hemlock / Fir	38.00%
	Sitka Spruce	38.00%
	Alder (Red)	38.00%
Logging System:	Shovel	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF	
loads / day:	12	bd. ft / load: 3500
cost / mbf:	\$93.75	
machines:	Shovel Logger	
Combination#: 2	Douglas - Fir	18.00%
	Western Hemlock / Fir	18.00%
	Sitka Spruce	18.00%
	Alder (Red)	18.00%
Logging System:	Cable: Medium Tower >40 - <70	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF	
loads / day:	10	bd. ft / load: 3900
cost / mbf:	\$169.23	
machines:	Log Loader (A) Tower Yarder (Medium)	
Combination#: 3	Douglas - Fir	31.00%
	Western Hemlock / Fir	31.00%
	Sitka Spruce	31.00%
	Alder (Red)	31.00%
Logging System:	Track Skidder	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
loads / day:	8	bd. ft / load: 3600
cost / mbf:	\$154.70	
machines:	Log Loader (B) Track Skidder	
Combination#: 4	Douglas - Fir	13.00%
	Western Hemlock / Fir	13.00%
	Sitka Spruce	13.00%
	Alder (Red)	13.00%
Logging System:	Cable: Medium Tower >40 - <70	Process: Manual Falling/Delimbing
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
loads / day:	7	bd. ft / load: 3600
cost / mbf:	\$261.90	

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



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Logging Costs

Operating Seasons: 3.00	Profit Risk: 12%
Project Costs: \$250,758.00	Other Costs (P/R): \$5,817.00
Slash Disposal: \$28,293.00	Other Costs: \$3,960.00

Miles of Road

Road Maintenance: \$4.18

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	3.5
Western Hemlock / Fir	\$0.00	2.0	3.2
Sitka Spruce	\$0.00	3.0	4.5
Alder (Red)	\$0.00	2.0	3.6



Timber Sale Appraisal Boiler Fleet Sale AT-341-2018-40-

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Date: February 12, 2018

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
\$148.09	\$4.31	\$1.72	\$114.77	\$0.76	\$32.36	\$3.70	\$7.00	\$0.52	\$313.23
Western Hemlock / Fir									
\$148.09	\$4.31	\$1.72	\$125.53	\$0.76	\$33.65	\$3.70	\$7.00	\$0.52	\$325.28
Sitka Spruce									
\$148.09	\$4.26	\$1.72	\$58.94	\$0.76	\$25.65	\$3.70	\$7.00	\$0.52	\$250.64
Alder (Red)									
\$148.09	\$4.26	\$1.72	\$110.50	\$0.76	\$31.84	\$3.70	\$7.00	\$0.52	\$308.39

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$798.86	\$485.63	\$0.00
Western Hemlock / Fir	\$0.00	\$701.80	\$376.52	\$0.00
Sitka Spruce	\$0.00	\$471.12	\$220.48	\$0.00
Alder (Red)	\$0.00	\$761.35	\$452.96	\$0.00



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Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	2,231	\$485.63	\$1,083,440.53
Western Hemlock / Fir	4,925	\$376.52	\$1,854,361.00
Sitka Spruce	100	\$220.48	\$22,048.00
Alder (Red)	393	\$452.96	\$178,013.28

Gross Timber Sale Value

Recovery: \$3,137,862.81

Prepared By: Ella Salkeld

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Boiler Fleet

ROAD CONSTRUCTION:

Project No. 1	Road segment	Length/Sta	Cost
Surfaced	1A-1B, 1C-1D, 1E-1F		
	5A-5B, 5C-5D, 7A-7B		
	7C-7D, 10A-10B, 11A-11B	64.60	\$100,775.00
Unsurfaced	2A-2B, 2C-2D, 2E-2F, 3A-3B		
	3C-3D, 3E-3F, 4A-4B, 6A-6B		
	6C-6D, 8A-8B, 9A-9B, 11C-11D	101.85	\$24,748.00
TOTALS		166.45 stations 3.15	\$125,523

ROAD IMPROVEMENT:

Project No. 2	Road segment	Length/Sta	Cost
	I1-I2, I3-I4, I5-I6,		
	I7-I8, I9-I10, I11-I12,		
	I13-I14, I15-I16, I17-I18	457.95	\$89,012.00
	I19-I20, I21-I22		
TOTALS		457.95 stations 8.67	\$89,012

SPECIAL PROJECTS:

	Description	Cost
Project No. 3	Vacating: V1-V2, V3-V4, V5-V6, V7-V8	\$20,214
Project No. 4	Gate Installation	\$657
	Project Road Maintenance	\$5,074
TOTAL		\$25,945

MOVE IN:

Equipment	Cost
Dozer (D8)	\$2,109.00
Excavator (C330)	\$2,109.00
Excavator (C315)	\$805.00
Dump Trucks (12cy x 3)	\$652.00
Dump Truck (20cy x 6)	\$1,146.00
Front End Loader (C966)	\$778.00
Grader (14G)	\$778.00
Vibratory Roller	\$778.00
Water Truck (2,500 gallon)	\$190.00
Dump Truck w/ 20 Tilt Deck Trailer	\$216.00
Rubber Tire Skidder (C518)	\$717.00
TOTAL	\$10,278.00

GRAND TOTAL **\$250,758**

Compiled By: _____

Date: _____

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Boiler Fleet NEW CONSTRUCTION: 166.45 STATIONS 3.15 MILES
ROAD: 1A-1B(16.65), 1C-1D(2.35), 1E-1F(1.00), 2A-2B(7.20), 2C-2D(9.70), 2E-2F(1.0), 3A-3B(2.00), 3C-3D(11.70), 3E-3F(4.50), 4A-4B(2.75), 5A-5B(17.50),
5C-5D(3.00), 6A-6B(3.30), 6C- 6D(10.90) 7A-7B(20.70), 7C-7D(9.40), 8A-8B(10.90), 9A-9B(8.25), 9C-9D(5.90), 10A-10B(3.10), 10C, 11A-11B(3.10),
11C-11D(12.25), 11E,

POINTS:

CLEARING & GRUBBING					
Method	Acres/amount	x	Rate	=	Cost
Scatter outside of R/W(new construction)	6.92	x	1,337.00	=	\$9,252.04
1E-1F, 2E-2F, 3C-3F, 5A-5B, 5C-5D				=	
6C-6D, 10A-10B, 11A-11B, 10C, 11E				=	
Scatter outside of R/W(reconstruction)	3.00	x	668.50	=	\$2,005.50
1A-1B, 1C-1D, 2A-2B, 2C-2D, 3A-3B				=	
3E-3F, 4A-4B, 6A-6B, 7A-7B, 7C-7D				=	
8A-8B, 9A-9B, 9C-9D, 11C-11D				=	
SUB TOTAL FOR CLEARING & GRUBBING					\$11,258

EXCAVATION

1A to 1B	Material	Cy/amount	x	Rate	=	Cost	
	Balanced Construction	\$/sta	10.00	x	122.00	=	\$1,220.00
	Landing constructicon	\$/Ldg	2.00	x	389.00	=	\$778.00
1C to 1D							
	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
1E to 1F							
	Balanced Construction	\$/sta	1.00	x	122.00	=	\$122.00
	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
2E to 2F							
	Balanced construction	\$/sta	1.00	x	122.00	=	\$122.00
3C to 3D							
	Drift earth up to 200'	\$/sta	2.70	x	190.00	=	\$513.00
	Balanced construction	\$/sta	9.00	x	122.00	=	\$1,098.00
5A to 5B							
	Common Drift		2,570	x	\$1.80	=	\$4,626.00
	Compaction		2,570	x	\$0.70	=	\$1,799.00
	Cutslope Rounding		10.00	x	\$43.00	=	\$430.00
	Install Dissipater	C315/hrs	2.00	x	\$101.00	=	\$202.00
5C to 5D							
	Field design - Drift earth up to 200'		190.0	x	\$3.00	=	\$570.00
	Landing Construction		1	x	\$389.00	=	\$389.00
6C to 6D							
	Dirft earth up to 200'	\$/sta	6.90	x	190.00	=	\$1,311.00
	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
7A to 7B							
	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
	Balanced construction	\$/sta	6.70	x	122.00	=	\$817.40
7C to 7D							
	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
	Balanced construction	\$/sta	5.50	x	122.00	=	\$671.00
10A to 10B							
	Balanced constructicon	\$/sta	3.10	x	122.00	=	\$378.20
	Landing constructicon	\$/Ldg	2.00	x	389.00	=	\$778.00
10C	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
11A to 11B							
	Balanced constructicon	\$/sta	3.10	x	122.00	=	\$378.20
	Landing constructicon	\$/Ldg	1.00	x	389.00	=	\$389.00
11E	Landing construction	\$/Ldg	1.00	x	389.00	=	\$389.00
SUB TOTAL FOR EXCAVATION							
							\$19,315

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
1A to 1B					7A to 7B				
0+00	18" CPP	35	\$19.53	\$683.55	0+00	18" CPP	35	\$19.53	\$683.55
7+00	18" CPP	35	\$19.53	\$683.55	2+90	18" CPP	35	\$19.53	\$683.55
15+50	18" CPP	35	\$19.53	\$683.55	5+20	18" CPP	35	\$19.53	\$683.55
5A to 5B					10+00	18" CPP	35	\$19.53	\$683.55
3+10	18	40	\$19.53	\$781.20	10A to 10B				
6+00	18	40	\$19.53	\$781.20	0+00	18" CPP	35	\$19.53	\$683.55
10+60	18	30	\$19.53	\$585.90					
16+10	18	40	\$19.53	\$781.20					
6C to 6D									
6+70	18" CPP	45	\$19.53	\$878.85					
Other/miscellaneous:					Description				
Culvert stakes & markers:					Quantity				
					Rate				
					Cost				
					6"x2½' white carsonite post				
					13				
					\$20.00				
					\$260.00				
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION					\$9,537				

Subtotal of Clearing, Exc., Culv.

\$40,109

Subgrade prep:	Description	Stations/ amount	x	Rate/ sta/amt	Cost
	Grade, Shape and Ditch 16'	64.60	x	\$24.83	\$1,604.02
	Grade, Shape and Outslope 14'	89.65	x	\$18.35	\$1,645.08
	Subgrade Compaction	154.25	x	\$20.19	\$3,114.31

ROAD SEGMENT 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B Volume (CY) per		0+00 to 16+65 Number of				
Base Rock	4"-0" crushed	0+00-16+65	8	Station	50	Stations	16.65	833	\$10.34	\$8,613
Subgrade Reinforcement	4"-0" crushed	12+00-12+40	N/A	Load	11	Loads	5	55	\$10.34	\$569
Junctions	4"-0" crushed	0+00	N/A	Junction	50	Junctions	1	50	\$10.34	\$517
Culvert Bedding/Backfill	4"-0" crushed	0+00,7+00,15+50	N/A	culvert	44	culverts	3	132	\$10.34	\$1,365
Landings	6"-0" pit-run	14+00, 16+65	N/A	Landing	88	Landings	2	176	\$13.58	\$2,390
Total Rock for Road Segment:				1A to 1B				1,246		

\$13,454

ROAD SEGMENT				1C to 1D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (Inches)	1C to 1D		2+35						
				Volume (CY) per		Number of						
Base Rock	4"-0" crushed	0+00-2+35	8	Station	50	Stations	2.35	118	\$10.34	\$1,215		
Junctions	4"-0" crushed	0+00	8	Junction	33	Junctions	1	33	\$10.34	\$341		
Landings	6"-0" pit-run	2+35	N/A	Landing	88	Landings	1	88	\$13.58	\$1,195		
Total Rock for Road Segment:				1C to 1D				239				

\$2,751

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1F to 1E Volume (CY) per	0+00 to 1+00 Number of					
Junction	1 1/2"-0" crushed	0+00	8	Junction 33	Junctions 1	33	\$10.34	\$341		
Base Rock	6"-0" pit-run	0+00-1+00	6	Station 39	Stations 1	39	\$13.58	\$530		
Landings	6"-0" pit-run	1+00	N/A	Landing 88	Landings 1	88	\$13.58	\$1,195		
Total Rock for Road Segment:				1F to 1E		160				

\$2,066

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
2A to 2B				2A to 2B		0+00 to 7+20				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of					
Junction	6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				2A to 2B				33		

\$448

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2F		0+00 to 1+00				
				Volume (CY) per		Number of				
Junctions	6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				2E to 2F				33		

\$448

ROAD SEGMENT				3A to 3B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B Volume (CY) per		0+00 to 2+00 Number of					
Junctions		6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448	
Total Rock for Road Segment:				3A to 3B						33		

\$448

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3C to 3D		0+00 to 11+70				
				Volume (CY) per		Number of				
Junctions	6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				3C to 3D				33		

\$448

ROAD SEGMENT				3E to 3F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F Volume (CY) per		0+00 to 4+50 Number of					
Junctions		6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448	
Total Rock for Road Segment:				3E to 3F						33		

\$448

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
4A to 4B				4A to 4B		0+00 to 2+75				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of					
Junctions	6"-0" pit-run	0+00	8	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				4A to 4B				33		

\$448

ROAD SEGMENT				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	5A to 5B		0+00 to 17+50				
				Volume (CY) per		Number of				
Base Rock	4"-0" crushed	0+00 to 17+50	8	station	50	stations	17.50	875	\$10.34	\$9,048
Turnouts	4"-0" crushed	0+75, 3+60, 8+80, 11+50	8	turnout	22	turnouts	4	88	\$10.34	\$910
Curve Widening	4"-0" crushed	0+00 to 1+10, 3+10 to 4+25	8	curve	50	curves	2	100	\$10.34	\$1,034
Junctions	4"-0" crushed	0+00, 17+50	8	junction	50	junctions	2	100	\$10.34	\$1,034
Turnaround	4"-0" crushed	8+80	8	turnaround	20	turnarounds	1	20	\$10.34	\$207
Traction Rock	3/4"-0" crushed	0+00 to 17+50	3	station	19	stations	18	333	\$10.34	\$3,438
Turnouts	3/4"-0" crushed	0+75, 3+60, 8+80, 11+50	3	turnout	10	turnouts	4	40	\$10.34	\$414
Curve Widening	3/4"-0" crushed	0+00 to 1+10, 3+10 to 4+25	N/A	curve	20	curves	2	40	\$10.34	\$414
Junctions	3/4"-0" crushed	0+00, 17+50	N/A	junction	40	junctions	2	80	\$10.34	\$827
Fill Armor	24"-6" riprap		N/A	N/A	N/A	N/A	N/A	250	\$10.43	\$2,608
Dissipator	24"-6" riprap	3+10, 6+00	N/A	dissipator	20	dissipators	2	40	\$10.43	\$417
Total Rock for Road Segment:				5A to 5B				1,966		

\$20,349

ROAD SEGMENT				5C to 5D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	5C to 5D		0+00 to 3+00						
				Volume (CY) per		Number of						
Base Rock	4"-0" crushed	0+00 to 3+00	8	station	50	stations	3.00	150	\$10.34	\$1,551		
Turnouts	4"-0" crushed	2+00	8	turnout	22	turnouts	4	88	\$10.34	\$910		
Junctions	4"-0" crushed	0+00	8	junction	40	junctions	1.00	40	\$10.34	\$414		

Landing	6"-0" pit-run	3+00	N/A	landing	66	landings	1	66	\$13.58	\$896
Total Rock for Road Segment:				5C to 5D				344		
ROAD SEGMENT 6A to 6B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	6A to 6B		0+00 to 3+30				
				Volume (CY) per	Number of					
Junctions	6"-0" pit-run	0+00	N/A	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				6A to 6B				33		
ROAD SEGMENT 6C to 6D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	6C to 6D		0+00 to 10+90				
				Volume (CY) per	Number of					
Junctions	6"-0" pit-run	0+00	N/A	Junction	33	Junctions	1	33	\$13.58	\$448
Culvert Bedding/Backfill	4"-0" crushed	6+70	N/A	culvert	44	culverts	1	44	\$10.34	\$455
Total Rock for Road Segment:				6C to 6D				77		
ROAD SEGMENT 7A to 7B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	7A to 7B		0+00 to 20+70				
				Volume (CY) per	Number of					
Base Rock	4"-0" crushed	0+00-14+00	8	Station	50	Stations	14.00	700	\$10.34	\$7,238
Junctions	4"-0" crushed	0+00	N/A	Junction	50	Junctions	1	50	\$10.34	\$517
Turnouts	4"-0" crushed	3+50	8	T/O	11	T/O's	1	11	\$10.34	\$114
Turnarounds	4"-0" crushed	10+00	8	T/A	11	T/A's	1	11	\$10.34	\$114
Culvert Bedding/Backfill	4"-0" crushed	0+00, 2+90, 5+20, 10+00	N/A	culvert	44	culverts	4	176	\$10.34	\$1,820
Landings	6"-0" pit-run	14+00	N/A	Landing	66	Landings	1	66	\$13.58	\$896
Total Rock for Road Segment:				7A to 7B				1,014		
ROAD SEGMENT 7C to 7D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	7C to 7D		0+00 to 9+40				
				Volume (CY) per	Number of					
Base Rock	4"-0" crushed	0+00-3+90	8	Station	50	Stations	3.90	195	\$10.34	\$2,016
Junctions	4"-0" crushed	0+00	8	Junction	33	Junctions	1	33	\$10.34	\$341
Landings	6"-0" pit-run	3+70	N/A	Landing	66	Landings	1	66	\$13.58	\$896
Total Rock for Road Segment:				7C to 7D				294		
ROAD SEGMENT 8A to 8B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	8A to 8B		0+00 to 10+90				
				Volume (CY) per	Number of					
Junctions	4"-0" crushed	0+00	8	Junction	33	Junctions	1	33	\$10.34	\$341
Subgrade Reinforcement	6"-0" pit-run	0+00	N/A	Load	11	Loads	3	33	\$13.58	\$448
Total Rock for Road Segment:				8A to 8B				66		
ROAD SEGMENT 9A to 9B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	9A to 9B		0+00 to 8+25				
				Volume (CY) per	Number of					
Junctions	6"-0" pit-run	0+00	4	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				9A to 9B				33		
ROAD SEGMENT 10A to 10B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	10A to 10B		0+00 to 3+10				
				Volume (CY) per	Number of					
Base Rock	4"-0" crushed	0+00-3+10	8	Station	11	Stations	3.10	34	\$10.34	\$352
Junctions	4"-0" crushed	0+00	N/A	Junction	33	Junctions	1	33	\$10.34	\$341
Turnouts	4"-0" crushed	0+60	8	T/O	22	T/O's	1	22	\$10.34	\$227
Culvert Bedding/Backfill	4"-0" crushed	0+00	N/A	culvert	44	culverts	1	44	\$10.34	\$455
Landings	6"-0" pit-run	3+10	N/A	Landing	66	Landings	1	66	\$13.58	\$896
Total Rock for Road Segment:				10A to 10B				199		
ROAD SEGMENT 10C				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	10C		0+00 to 12+25				
				Volume (CY) per	Number of					
Landings	6"-0" pit-run	N/A	N/A	Landing	88	Landings	1	88	\$13.58	\$1,195
Total Rock for Road Segment:				10C				88		
ROAD SEGMENT 11A to 11B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	11A to 11B		0+00 to 3+10				
				Volume (CY) per	Number of					
Base Rock	4"-0" crushed	0+00-3+10	8	Station	11	Stations	3.10	34	\$10.34	\$352
Junctions	4"-0" crushed	0+00	N/A	Junction	33	Junctions	1	33	\$10.34	\$341
Landings	6"-0" pit-run	3+10	N/A	Landing	88	Landings	1	88	\$13.58	\$1,195
Total Rock for Road Segment:				11A to 11B				155		
ROAD SEGMENT 11C to 11D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	11C to 11D		0+00 to 12+25				
				Volume (CY) per	Number of					
Junctions	6"-0" pit-run	0+00	N/A	Junction	33	Junctions	1	33	\$13.58	\$448
Total Rock for Road Segment:				11C to 11D				33		
ROAD SEGMENT 11E				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	11E		0+00 to 12+25				
				Volume (CY) per	Number of					
Landings	6"-0" pit-run	N/A	N/A	Landing	88	Landings	1	88	\$13.58	\$1,195
Total Rock for Road Segment:				11E				88		

\$3,771

\$448

\$903

\$10,699

\$3,254

\$789

\$448

\$2,272

\$1,195

\$1,888

\$448

\$1,195

Processing:

Description	No. sta	Rate/sta	Cost
Water, Process & Compact: New Construction	44.10	\$56.48	\$2,491
Develop Pit-run (All pit-run for new construction)	1,282	\$2.30	\$2,949
Water, Process & Compact: 4"	20.50	\$56.48	\$1,158
Water, Process & Compact: 3/4"	20.50	\$56.48	\$1,158

Hunt Creek Hunt Creek Hunt Creek Hunt Creek

24"-6" rr	6"-0" pr	4"-0"	1 1/2"-0"	3/4"-0"	Total
290	1,282	4,135	33	493	6,232

SUB TOTAL FOR SURFACING

\$82,737

SPECIAL PROJECTS

Description	Cost
Fabric 1,750 x \$1.30	\$ 1,430.00
Develop riprap 5A-5B) (\$4.30/cy)	\$1,247.00

SUB TOTAL FOR SPECIAL PROJECTS**\$2,677**

Subtotal of Surfacing & Spec. Proj. \$85,414
Subtotal of Clearing, Exc., Culv. \$40,109

GRAND TOTAL**\$125,523**Compiled By: Ella SalkeldDate: 10/25/2017

SUMMARY OF ROAD IMPROVEMENT COSTS

SALE NAME: Boiler Fleet ROAD IMPROVEMENT: 457.95 STATIONS 8.67 MILES
ROAD: I1-I2(154.15), I3-I4(14.20), I5-I6(60.10), I7-I8(4.70), I9-I10(3.25), I11-I12(132.20), I13-I14(17.60), I15-I16(31.25), I17-I18(6.0), I19-I20(34.50), I21-I22(36.90)
POINTS:

CLEARING & GRUBBING						
Method	Acres/amount	x	Rate	=	Cost	
I17 to I18 Daylight Clearing/Slash Removal		x		=		
Dump Truck 12yds \$/hr	4.00	x	\$ 79.00	=	\$316.00	
Excavator C315 \$/hr	4.00	x	\$ 101.00	=	\$404.00	
SUB TOTAL FOR CLEARING & GRUBBING						\$720

EXCAVATION						
I1 to I2 Material	Cy/amount	x	Rate	=	Cost	
0+00 to 8+00 Ditch reestablishment C315 \$/hr	8.00	x	\$101.00	=	\$808.00	
32+40, 54+20 Clean culvert inlet/outlet C315 \$/hr	2.00	x	\$101.00	=	\$202.00	
57+00, 93+50 Clean culvert inlet/outlet C315 \$/hr	2.00	x	\$101.00	=	\$202.00	
116+66 Clean culvert inlet/outlet C315 \$/hr	1.00	x	\$101.00	=	\$101.00	
116+80 to 117+80 Ditch reestablishment C315 \$/hr	2.00	x	\$101.00	=	\$202.00	
I13 to I14						
5+00 to 6+00 Ditch reestablishment C315 \$/hr	1.00	x	\$101.00	=	\$101.00	
I15 to I16						
0+00 to 60+10 Ditch reestablishment C315 \$/hr	2.00	x	\$101.00	=	\$202.00	
Sod removal: load and haul \$/sta.	10.00	x	\$22.92	=	\$229.20	
19+67 Clean culvert inlet/outlet C315 \$/hr	1.00	x	\$101.00	=	\$101.00	
I17 to I18						
0+00-4+70 Sod removal: load and haul \$/sta.	4.70	x	\$22.92	=	\$107.72	
0+00 to 4+70 Ditch reestablishment C315 \$/hr	4.70	x	\$101.00	=	\$474.70	
I19 to I10						
0+00 to 3+25 Ditch reestablishment C315 \$/hr	3.25	x	\$101.00	=	\$328.25	
I11 to I12						
22+20 Remove dirt from road C315 \$/hr	2.00	x	\$101.00	=	\$202.00	
Haul waste \$/sta.	2.00	x	\$22.92	=	\$45.84	
I17 to I18						
Ditch construction, cutslope restoration		x		=		
Dump Truck 12yds	8.00	x	\$ 101.00	=	\$808.00	
Excavator C315	8.00	x	\$ 79.00	=	\$632.00	
I19 to I20						
Excavate and load fill slump material		x		=		
Dump Truck 12yds	1.00	x	\$ 79.00	=	\$79.00	
Excavator C315	1.00	x	\$ 101.00	=	\$101.00	
Dissipator C315 \$/hr	2.00	x	\$ 101.00	=		
SUB TOTAL FOR EXCAVATION						\$4,927

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I17 to I18									
5+75	18	50	\$19.53	\$976.50					
Other/miscellaneous:			Description	Quantity	Rate	Cost			
Culvert stakes & markers:			6" X 2 1/2" white fiberglass posts	17	\$20.00	\$340.00			
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION									\$1,317

Subtotal of Clearing, Exc., Culv. \$6,963

Compiled By: Ella Salkeld

Date: 05/09/2017

SALE NAME:

Boiler Fleet

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SURFACING		Description		Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:		Grade, Shape and Ditch 16'		457.95	x	\$24.83	\$11,371
		Subgrade Compaction		77.05	x	\$20.19	\$1,556
		Scatter Ditch Waste Materials I1-I2, I3-4, I9-10,		12.25	x	\$12.41	\$152.02

ROAD SEGMENT I1 to I2			POINT TO POINT I1 to I2		Sta. to Sta. 0+00 to 154+15		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Leveling Rock	1 1/2"-0" Crushed	56+50, 69+00, 80+15, 82+50, 108+35, 117+15, 121+55, 126+50, 127+60, 128+75, 129+75, 131+90, 133+50, 135+65, 153+50	N/A	Load 11	Loads 15		165	\$10.34	\$1,706
Junctions	1 1/2"-0" Crushed	20+15, 27+30, 33+80, 49+65, 86+20, 101+25, 103+65, 108+25, 110+65, 112+20, 113+45, 123+80	N/A	Junction 11	Junctions 12		132	\$10.34	\$1,365
Turnouts	1 1/2"-0" Crushed	4+70, 8+83, 13+15, 16+10, 24+30, 47+40, 65+80, 75+90, 78+40, 89+15, 96+15	N/A	T/O 11	T/O's 11		121	\$10.34	\$1,251
Turnaround	1 1/2"-0" Crushed	1+20, 32+50, 55+10, 70+20, 148+15	N/A	T/A 11	T/A's 5		55	\$10.34	\$569
Curve Widening	1 1/2"-0" Crushed	28+00	N/A	Curve 13	Curves 1		13	\$10.34	\$134
Total Rock for Road Segment:							486		

\$5,025

ROAD SEGMENT I3 to I4			POINT TO POINT I3 to I4		Sta. to Sta. 0+00 to 14+20		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Surface Rock	1 1/2"-0" Crushed	8+50-11+50	3	Station 19	Stations 3.00		57	\$10.34	\$589
Leveling Rock	1 1/2"-0" Crushed	2+30, 3+50-4+50, 6+20	N/A	Load 11	Loads 8		88	\$10.34	\$910
Turnaround	1 1/2"-0" Crushed	14+20	N/A	T/A 11	T/A's 1		11	\$10.34	\$114
Junctions	1 1/2"-0" Crushed	0+00, 7+50	N/A	Junction 11	Junctions 2		22	\$10.34	\$227
Turnouts	1 1/2"-0" Crushed	4+75, 11+15	N/A	T/O 11	T/O's 2		22	\$10.34	\$227
Total Rock for Road Segment:							200		

\$2,068

ROAD SEGMENT I5 to I6			POINT TO POINT I5 to I6		Sta. to Sta. 0+00 to 60+10		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Surface Rock	1 1/2"-0" Crushed	0+00-60+10	3	Station 19	Stations 60.10		1,142	\$10.34	\$11,807
Leveling Rock	1 1/2"-0" Crushed	17+00 - 23+00, 28+50, 32+60, 35+60	N/A	load 11	Loads 10		110	\$10.34	\$1,137
Turnouts	1 1/2"-0" Crushed	2+23, 18+90, 23+65, 27+10, 37+40	N/A	T/O 11	T/O's 5		55	\$10.34	\$569
Junctions	1 1/2"-0" Crushed	16+00, 17+50, 33+80, 35+70	N/A	Junction 11	Junctions 4		44	\$10.34	\$455
Landings	6"-0" Pit-run	60+10	N/A	Landing 66	Landings 1		66	13.58	
Total Rock for Road Segment:							1,417		

\$13,968

ROAD SEGMENT I7 to I8			POINT TO POINT I7 to I8		Sta. to Sta. 0+00 to 4+70		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Surface Rock	1 1/2"-0" Crushed	0+00-4+70	3	Station 19	Stations 4.70		88	\$10.34	\$910
Leveling Rock	1 1/2"-0" Crushed	2+15	N/A	Load 11	Loads 1		11	\$10.34	\$114
Turnouts	1 1/2"-0" Crushed	1+40	N/A	T/O 11	T/O's 1		11	\$10.34	\$114
Landing	6"-0" Pit-run	4+70	N/A	Landing 66	Landings 1		66	13.58	\$896
Total Rock for Road Segment:							176		

\$2,034

ROAD SEGMENT I9 to I10			POINT TO POINT I9 to I10		Sta. to Sta. 0+00 to 3+25		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Surface Rock	4"-0" Crushed	0+00-3+25	4	Station 26	Stations 3.25		85	\$10.34	\$874
Landings	6"-0" Pit-run	3+25	N/A	Landing 88	Landings 1		88	13.58	\$1,195
Total Rock for Road Segment:							173		

\$2,069

ROAD SEGMENT I11 to I12			POINT TO POINT I11 to I12		Sta. to Sta. 0+00 to 132+20		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of				
Leveling Rock	1 1/2"-0" Crushed	0+00, 7+50, 13+60, 31+50, 33+5035+10, 43+00,	N/A	Load 11	Loads 28		308	\$10.34	\$3,185

Leveling Rock	4"-0" Crushed	48+70, 55+20, 64+50, 83+00, 92+20, 104+40, 104+70, 112+60, 119+40, 129+50 130+55	N/A	Load	11	Loads	32	352	\$10.34	\$3,640		
Junctions	1 1/2"-0" Crushed	0+00, 73+80	N/A	Junction	11	Junctions	2	22	\$10.34	\$227		
Junctions	4"-0" Crushed	92+20, 105+70, 111+20, 132+20	N/A	Junction	11	Junctions	4	44	\$10.34	\$455		
Turnouts	1 1/2"-0" Crushed	43+00, 99+38, 132+18	N/A	T/O	11	T/O's	3	33	\$10.34	\$341		
Subgrade Reinforcement	4"-0" Crushed	22+20	N/A	Load	11	Loads	6	66	\$10.34	\$682		
Subgrade Reinforcement	1 1/2"-0" Crushed	22+20	N/A	Load	11	Loads	6	66	\$10.34	\$682		
Total Rock for Road Segment:				I11 to I12				891				
ROAD SEGMENT				I13 to I14		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	I13 to I14 Volume (CY) per		0+00 to 17+60 Number of					
Traction Rock	1 1/2"-0" Crushed	0+00-3+25	2	Station	13	Stations	3	42	\$10.34	\$434		
Subgrade Leveling	4"-0" Crushed	5+65	N/A	Load	11	Loads	6	66	\$10.34	\$682		
Turnouts	4"-0" Crushed	3+60	N/A	T/O	11	T/O's	1	11	\$10.34	\$114		
Junctions	1 1/2"-0" Crushed	0+00	N/A	Junction	11	Junctions	1	11	\$10.34	\$114		
Turn Around	4"-0" Crushed	17+60	N/A	T/A	11	T/A's	1	11	\$10.34	\$114		
Total Rock for Road Segment:				I13 to I14				141				
ROAD SEGMENT				I15 to I16		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	I15 to I16 Volume (CY) per		0+00 to 31+25 Number of					
Leveling Rock	4"-0" Crushed	0+00, 3+75	N/A	Load	11	Loads	2	22	\$10.34	\$227		
Turnout	4"-0" Crushed	11+10	N/A	T/O	11	T/O's	1	11	\$10.34	\$114		
Turn Around	4"-0" Crushed	12+75, 31+25	N/A	T/A	11	T/A's	2	22	\$10.34	\$227		
Total Rock for Road Segment:				I15 to I16				55				
ROAD SEGMENT				I17 to I18		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	I17 to I18 Volume (CY) per		0+00 to 6+00 Number of					
Surface Rock	3/4"-0" crushed	0+00 to 6+00	3	station	19	stations	6	114	\$10.34	\$1,179		
Subgrade Leveling	4"-0" crushed	0+00 to 6+00	N/A	load	10	loads	7	70	\$10.34	\$724		
Turnouts	4"-0" crushed	3+00, 4+00	N/A	load	10	loads	3	30	\$10.34	\$310		
Culver Bedding and Backfill	3/4"-0" crushed	5+75	N/A	load	10	loads	2	20	\$10.34	\$207		
Turnouts	3/4"-0" crushed	3+00, 4+00	N/A	turnout	20	turnouts	2	40	\$10.34	\$414		
Dissipator	24"-6" Riprap	3+00	N/A	dissipator	10	dissipators	1	10	\$10.43	\$104		
Total Rock for Road Segment:				I17 to I18				284				
ROAD SEGMENT				I19 to I20		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	I19 to I20 Volume (CY) per		0+00 to 34+50 Number of					
Subgrade Leveling	3/4"-0" crushed	0+00 to 34+50	N/A	load	10	loads	22	220	\$10.34	\$2,275		
Fill Armor	24"-6" Riprap	23+00	N/A	load	10	loads	4	40	\$10.43	\$417		
Dissipator	24"-6" Riprap	23+00	N/A	load	10	loads	1	10	\$10.43	\$104		
Total Rock for Road Segment:				I19 to I20				270				
ROAD SEGMENT				I21 to I22		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application		Rock Size and Type	Location	Depth of Rock (inches)	I21 to I22 Volume (CY) per		0+00 to 36+90 Number of					
Patch Rock	1 1/2"-0" Crushed	N/A	N/A	load	11	loads	6	66	\$10.34	\$682		
Total Rock for Road Segment:				I21 to I22				66				
Processing:									No.sta	Rate/sta	Cost	
				Description								
				Water, Process & Compact: (all roads)					457.95	\$56.48	\$25,865	
SUB TOTAL FOR SURFACING				24"-6" rr	6"-0" pr	4"-0"	1 1/2"-0"	3/4"-0"	Total			
				60	220	790	2,695	394	4,158		\$80,585	
Special Projects												
Description								Cost				
Grading on Pt I21 to I22								\$200				
Seed and mulch waste areas								\$ 500.00				
Develop Riprap \$4.30/cy								\$ 258.00				
Devolp Pit run 2.30/cy								\$ 506.00				
SUB TOTAL FOR SPECIAL PROJECTS												
										\$1,464		
Subtotal of Surfacing & Spec. Proj.										\$82,049		
Subtotal of Clearing, Exc., Culv.										\$6,963		
GRAND TOTAL												
										\$89,012		

Compiled By:

Ella Salkeld

Date: 05/09/2017

[illegible][illegible]

V7										
Road block/waterbar	0+00		1.00					0.5	4	3
Remove fill and culvert	4+90	1	2.00					1	4	3
Remove fill and culvert	9+40	5	8.00					2	12	10
End haul to waste area						1.5				
Remove fill and culvert	12+80	10	16.00					5	25	15
End haul to waste area						2				
Remove fill and culvert	15+50	5	8.00					2	12	10
End haul to waste area						3				
Remove fill and culvert	22+20	10	16.00					5	25	15
End haul to waste area						4				
Remove fill and culvert	27+80	10	16.00					5	25	15
End haul to waste area						3				
Road block/waterbar	30+00		1.00					0.5	4	3
Waterbars	10		4.00							
V8	30+25									
Haul off old culverts						1.5				
Total Quantity (Hours)		43.00	73.00	36.50	0	15	0	30.5	174	131.5
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$430	\$11,315	\$3,687	\$0	\$1,485	\$0	\$1,220	\$1,867	\$210

Total Cost

\$20,214

Boiler Fleet

Gate Cost Appraisal – Project No. 4

			<u>TOTAL</u>
Transport-Dump truck and tilt bed	2 hrs @ 99	=	\$ 198
Dig trench 315	1 hr @ 101	=	\$ 101
Set gate and backfill 315	2hrs @ 101	=	\$ 202
	2hrs compactor @ 10	=	\$ 20
Four 80lb bags Quick 4x4		=	\$ 16
Install blocking post	1hr @ 40	=	\$ 40
Labor s	2hrs @ 40	=	\$ 80

TOTAL COST

\$657

CRUSHED ROCK COST

SALE NAME: Boiler Fleet
 PROJECT: 1 and 2
 Stockpile: Hunt Creek

MATERIAL: 4"-0", 1 1/2", 3/4"

DATE: 07/07/2017
 BY: Ella Salkeld

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I9 to I10	3.25	85	11.18	5.13			2.13	1.14		19.58
I11 to I12	132.20	891	11.18	4.57		0.19	3.06	2.27		21.27
11A to 11B	3.10	67	11.18	5.13			2.13	1.14	0.03	19.61
10A to 10B	3.10	133	11.18	5.13			2.13	1.14	0.04	19.62
8A to 8B	10.90	33	11.18	5.13			3.46	1.11		20.88
7A to 7B	14.00	948	11.18	5.13			3.46	1.11	0.13	21.01
7C to 7D	3.70	228	11.18	5.13			3.46	1.12	0.04	20.93
6C to 6D	10.90	44	11.18	5.13			4.46	1.61		22.38
1A to 1B	16.65	1,070	11.18	4.57		0.19	2.60		0.17	18.71
1C to 1D	2.35	151	11.18	4.57		0.19	2.60		0.02	18.56
1E to 1F	1.00	33	11.18	4.57		0.19	2.81			18.75
5A to 5B	17.50	1,676	12.00	4.70	0.50	0.50	0.20	0.10	0.20	18.20
5C to 5D	3.00	278	12.00	4.70	0.50	0.50	0.20	0.10	0.20	18.20
I1 to I2	154.15	486	11.18	5.13			4.56	0.79		21.66
I3 to I4	14.20	200	11.18	5.13			4.56	0.19		21.06
I5 to I6	16.10	1,351	11.18	5.13			2.13	0.45		18.89
I7 to I8	4.70	110	11.18	5.13			2.13	0.60	0.04	19.08
I13 to I14	17.60	141	11.18	4.57		0.19	3.06	1.49		20.49
I15 to I16	31.25	55	11.18	4.57		0.19	3.36	1.48		20.78
I17 to I18	6.00	274	12.00	4.70	0.50	0.50	0.20	0.10	0.10	18.10
I19 to I20	34.50	220	12.0	4.70	0.50	0.50	0.50	0.40	0.30	18.90
I21 to I22	36.90	66	11.18	4.57		0.19	3.50	2.27	0.30	22.01
TOTAL		537.05								AVERAGE HAUL
		8,540								
CUBIC YARD WEIGHTED HAUL			11.42	4.85	0.14	0.20	2.18	0.66	0.10	
Average Round Trip Distance (miles)										39.08

ROCK HAUL:

Truck type: D20 No. trucks: 6
 Delay min.: 8 Efficiency: 85%

Ave haul: \$8.83 /cy
 Load: \$0.54 /cy
 Spread: \$0.96 /cy

Truck type: D12 No. trucks: 4
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 829

CRUSHED ROCK HAUL COSTS 8,540 cy @ \$10.34 /cy

PIT RUN ROCK COST

SALE NAME: Boiler Fleet
PROJECT: 1 and 2
QUARRY: Hunt Creek

MATERIAL: Pit Run

DATE: 09/11/2017
BY: Ella Salkeld

[illegible]

ROCK HAUL:

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

Ave haul:	\$11.18	/cy
Load:	\$0.84	/cy
Spread:	\$1.56	/cy

Truck type: D12 No. trucks: 10
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 565

PIT RUN ROCK HAUL COSTS	1,722 cy @	\$13.58 /cy
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RIP RAP ROCK COST

SALE NAME: Boiler Fleet
PROJECT:
QUARRY: Hunt Creek

MATERIAL: Rip Rap

DATE: 09/11/2017
BY: _____

[illegible]

ROCK HAUL:

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>
Truck type:	<u>D10</u>	No. trucks:	<u>5</u>
Delay min.:	<u>5</u>	Efficiency:	<u>85%</u>

Ave haul:	\$8.63	/cy
Load:	\$1.80	/cy
Develop:	<u> </u>	/cy

Production: cy/day = 366

RIP RAP ROCK HAUL COSTS

350 cy @ \$10.43 /cy

Project Road Maintenance Cost Summary

Sale: Boiler Fleet
 Date: 05/18/17
 By: Ella Salkeld

Type Maintenance	Equipment Utilized	Hours	Rate	Cost
Final Project Haul Road Maintenance	Grader 14G	18	\$100	\$1,800
	Dump Truck (12 yd ³)	10	\$79	\$790
	Front End Loader C966	2.5	\$83	\$208
	Vibratory Roller	18	\$77	\$1,386
	Water Truck (2,500 gallon)	10	\$89	\$890
Total				\$5,074

Production Rates

Grader

Vibratory Roller

Miles/Day	Distance (Miles)	Days	Hours
1.5	3.6	2.40	19
1.5	3.6	2.40	19

Hunt Creek Quarry to Hwy 30 2.3 miles

Scandinavian Cannery Road 1.3 miles

X:\DOCUMENT\STATE_FOREST\UNIT_SUNSET\2018 FY Sales\Boiler Fleet\Sale Prep\Project Costing\BF Project Road Maintenance

Site Prep Appraisal

Sale Number: 341-18-40
Sale Name: boiler fleet
Date: 11/07/2017

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	0.5	2.0
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	1.00	2.0

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour C325	Total Cost/Area	
1	MC	F	0	0	\$129.00	\$0.00	
3	MC	F	70	70	\$129.00	\$9,030.00	
4	MC	F	12	12	\$129.00	\$1,548.00	
5	MC	F	5	5	\$129.00	\$645.00	
11	MC	F	60	60	\$129.00	\$7,740.00	
					In-unit Piling	Sub Total =	\$18,963.00

Sale Area	Number of	Cost/Landing	Total Cost/Area	Number of In-	Material	Total	
	Landings to be						Piled
1	4	\$220.00	\$880.00	0	\$5.00	\$0.00	
3	6	\$220.00	\$1,320.00	140	\$5.00	\$700.00	
4	1	\$220.00	\$220.00	24	\$5.00	\$120.00	
5	3	\$220.00	\$660.00	10	\$5.00	\$50.00	
11	10	\$220.00	\$2,200.00	120	\$5.00	\$600.00	
					Materials	Sub Total =	\$1,470.00
					Landing Piling	Sub Total =	\$5,280.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance					
\$1,290.00	2	\$2,580.00					
					Move-In	Sub Total =	\$2,580.00

Grand Total = \$28,293.00

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Boiler Fleet
Date: October 16, 2017
By: John Choate *FL*

MBF: 7,649
\$\$/MBF: \$4.18

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations	Grader 14G	\$778	1	24	\$100	\$3,178
Interim Operations	Grader 14G	\$778	1	24	\$100	\$3,178
	Dump Truck 12CY	\$163	1	8	\$79	\$795
	FE Loader C966	\$778	1	2	\$83	\$944
Final Road Maintenance	Grader 14G	\$778	1	70	\$100	\$7,778
	Dump Truck 12CY	\$163	2	24	\$79	\$2,222
	FE Loader C966	\$778	1	6	\$83	\$1,276
	Vibratory Roller	\$778	1	70	\$77	\$6,168
	Water Truck 2,500 gallon	\$190	1	35	\$89	\$3,305
	Rubber Tired Backhoe-small Labor	\$321	1	24	\$77	\$2,169
Total				24	\$40	\$960
						\$31,973

Interim Operations Road Maintenance (Areas 1,2, 3, 4, 5)

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.0	6.5	3.3	26

Interim Operations Road Maintenance (Areas 6, 7, 8, 9, 10, 11)

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.0	6.5	3.3	26

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours*
Process - Grader	1.5	13	8.7	69
Vibratory Roller	1.5	13	8.7	69

Process and compact: All crushed rock roads

Areas 1, 2, 3, 4, 5: Sale Areas to Grimstad (6.5 Miles)

Areas 6, 7, 8, 9: Sale Areas to Williamsport Road (4.4 Miles)

Areas 10, 11: Sale Areas to Scandinavian Cannery Road (2.1 Miles)

Grade & Process Total = 13.0

**Boiler Fleet T. S.
FY 2018
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, and 11 are located in portions of Sections 10, 11, 14, 15, 16, 23, and 25, T8N, R9W, W.M., Clatsop County, Oregon.

2. **Fund Distribution:** Fund: BOF 100% CSL 0%
Tax Code: 1-01 9.6%
1-02 18.9%
1-04 39.3%
1-08 32.2%

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acres	Stream Buffer Acres	New R/W Acres	Existing R/W Acres	Net Acreage
1	MC	32	6	0	1	25
2	PC	37	<1	<1	2	34
3	MC	78	1	<1	3	71
4	MC	12	0	0	<1	12
5	MC	20	0	2	<1	18
6	PC	16	0	<1	<1	15
7	PC	30	2	<1	<1	27
8	PC	32	0	0	1	31
9	PC	35	0	0	1	34
10	PC	33	2	<1	<1	30
11	MC	108	7	<1	5	96
RWPC	MC	2				2
RW1	MC	2				2
TOTALS		433	18	4	14	397

4. **Cruisers and Cruise Dates:** Areas 6, 7, 9, and 10 were cruised on 9/18/2017 through 9/22/2017, by Ella Salkeld and Cody Valencia. Areas 1, 2, 3, 4, 5, 8, and 11 were cruised on 10/03/2017 and 10/04/2017, by Ella Salkeld, Cody Valencia, Bryce Rodgers, Ed Holloran, Jenny Johnson, and John Tillotson.

5. **Cruise Method and Computation:** Areas 1, 3, 4, and 5 are modified clearcut units. A variable plot cruise with a 40.0 BAF was used in these Areas. These plots were located on a 5 chain by 5 chain grid, with a count/cruise plot ratio of 1 to 1. A total of 56 plots were sampled, with 26 measured plots and 30 count plots.

Areas 2, 6, 7, 8, 9, and 10 are partial cut units. A variable plot cruise with a 33.61 BAF was used in these areas. These plots were located on a 5 chain by 5 chain grid, with a count/cruise plot ratio of 2 to 1. A total of 72 plots were sampled, with 29 measured plots and 43 count plots.

Area 11 is a modified clearcut unit. A variable plot cruise with a 40.0 BAF was used in this Area. These plots were located on a 4 chain by 8 chain grid, with a count/cruise plot ratio of 1 to 1. A total of 32 plots were sampled, with 16 measured plots and 16 count plots.

Cruisers used Allegro 2 data collectors, and 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>
1,3,4,5	BF	CC	OOMC and TAKE
2,6,7,8,9,10	BF	Thins	OOPC, Take, and Leave
11	BF	A11	OOMC and TAKE
RWPC	BF	THINS	RWPC
RW1	BF	CC	RW1

6. **Timber Description:** Areas 1, 3, 4, and 5 are approximately 45 year old stands of Western Hemlock, with some Douglas-fir, and alder. The average take hemlock tree size is approximately 14 inches DBH, with an average merchantable tree height of 52 feet. The average take Douglas-fir tree size for harvest is approximately 13 inches DBH, with an average merchantable tree height of 52 feet. The average take alder tree size is approximately 12 inches DBH, with an average merchantable tree height of 41 feet. The average volume per acre to be harvested (net) is approximately 27 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Areas 2, 6, 7, 8, 9, and 10 are approximately 35 year old stands of Douglas-fir and hemlock, with some alder. The average take Douglas-fir tree size for harvest is approximately 12 inches DBH, with an average merchantable tree height of 43 feet. The average take hemlock tree size is approximately 13 inches DBH, with an average merchantable tree height of 44 feet. The average take alder tree size is approximately 11 inches DBH, with an average merchantable tree height of 39 feet. The average volume per acre to be harvested (net) is approximately 6 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp. The target basal area is 130-140. The SDI is 33%.

Area 11 is approximately 60 year old stand of hemlock and Douglas-fir, with some alder. The average take hemlock tree size is approximately 20 inches DBH, with an average merchantable tree height of 66 feet. The average take Douglas-fir tree size for harvest is approximately 17 inches DBH, with an average merchantable tree height of 68 feet. The average take Spruce tree size for harvest is approximately 19 inches DBH, with an average merchantable tree height of 60 feet. The average take alder tree size is approximately 16 inches DBH, with an average merchantable tree height of 46 feet. The average volume per acre to be harvested (net) is approximately 33 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

Cedar is a reserved species.

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

Areas	Target CV	Target SE%	Actual CV	Actual SE%
1,3,4,5	45	11	48	6.4
2,6,7,8,9,10	50	11	36	4.3
11	50	11	37.5	6.6

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

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

Conifer

Species	DBH	Net Vol. MBF	2 Saw	3Saw	4 Saw	% D&B	% Sale
Douglas-fir	14	2,231	500	1,451	280	1	30
W. Hemlock	15	4,925	2,030	2,344	551	2.4	64
Spruce	15	100	88	7	5	18.1	1

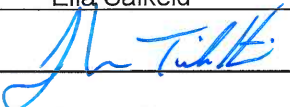
Hardwoods

Species	DBH	Net Vol. MBF	12"+	10-12"	8-10"	6-8"	% Sale
Red Alder	13	393	75	22	185	111	5

TOTAL NET VOLUME	7,649
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9. Prepared by: Ella Salkeld

Date: 10/6/2017

10. Approved by: 

Date: 12/4/17

11. Attachments: Cruise Plans & Maps (6)
Species, Sort, Grade Report (10)
Statistics Reports (10)
Stand Table Report (1)
Log Stock Table Report MBF (2)

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Boiler Fleet **Area(s)** 11

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 107 **Estimated CV%** 50 Net BF **SE% Objective** 11 Net BF

Planned Sale Volume: 2,940 MBF **Estimated Sale Area Value/Acre:** \$10,500

A. Cruise Goals: (a) Grade minimum 100 conifer and _____ hardwood trees:
(b) Sample 32 cruise plots; (c) Other goals (_____ Determine "automark" thinning standards; _____ Determine log grades for sale value; x Determine snag and leave tree species and sizes; x Determine LWD (down wood) cubic feet and decay classes; _____ Determine "diameter limit" harvest parameters;)

B. Cruise Design:

1. Plot Cruises: BAF 40 (Full point)
Fixed Plot Size _____ Plot Radius _____ feet
Cruise Line Direction(s) 68/248
Cruise Line Spacing 8 (chains) (feet)
Cruise Plot Spacing 4 (chains) (feet)
Grade/Count Ratio 1:1 (16 grade:16 count)

2. ITS (Sample Tree) Cruises: Measure-grade ratios: D-fir _____ Hemlock _____
Spruce _____ True Fir _____ Cedar _____ Hardwood _____

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN
Grade all hardwoods on grade plots. (not camp run)

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 for conifer is 7 " 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. log segment. Do not use “double dash” (--) feature on the data recorder except for the top segment of the tree.
- 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 ; 9 = Utility
Hardwoods: #1 Sawmill = 12”+ scaling diameter; #2 Sawmill = 10” and 11”; #3 Sawmill = 8” and 9”; #4 Sawmill = 6” and 7”
- 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 yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible 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.
ITS and 100% Cruises: Mark cruise “strips” with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
- 9. Cruising Equipment:** Relaskop, Rangefinder or Lazer, Logger’s Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards 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: Ella Salkeld

Approved by: _____

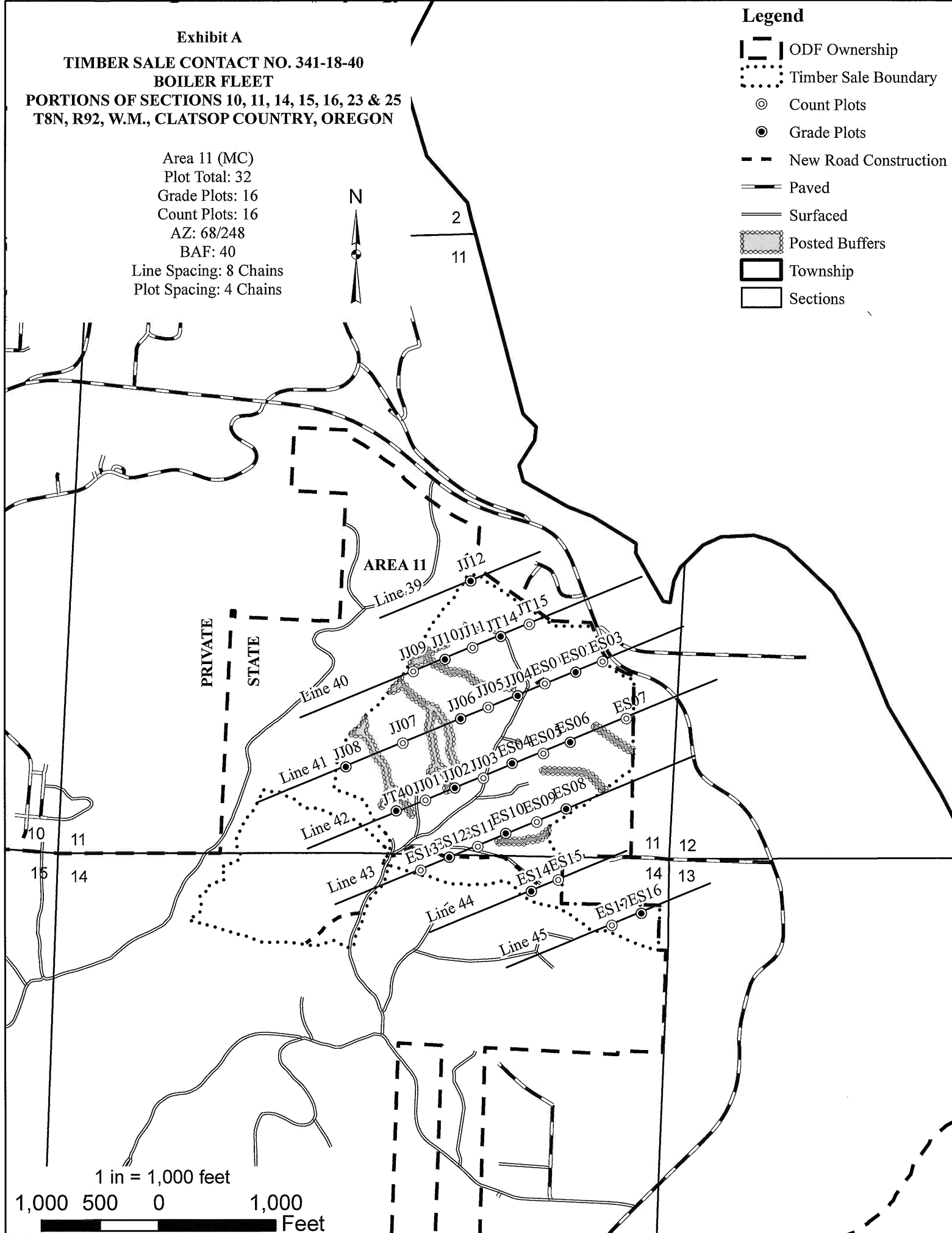
Date: _____

Exhibit A
TIMBER SALE CONTACT NO. 341-18-40
BOILER FLEET
PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON

Area 11 (MC)
 Plot Total: 32
 Grade Plots: 16
 Count Plots: 16
 AZ: 68/248
 BAF: 40
 Line Spacing: 8 Chains
 Plot Spacing: 4 Chains

Legend

-  ODF Ownership
-  Timber Sale Boundary
-  Count Plots
-  Grade Plots
-  New Road Construction
-  Paved
-  Surfaced
-  Posted Buffers
-  Township
-  Sections



Revised August, 2002

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Boiler Fleet **Area(s)** 1, 3, 4 and 5

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 134 **Estimated CV%** 45 Net BF **SE% Objective** 11 Net BF

Planned Sale Volume: 2,435 MBF **Estimated Sale Area Value/Acre:** \$5,805

- A. Cruise Goals:** (a) Grade minimum 120 conifer and 25 hardwood trees:
(b) Sample 56 cruise plots; (c) Other goals (Determine "automark" thinning standards; x Determine log grades for sale value; x Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)

B. Cruise Design:

- 1. Plot Cruises:** BAF 40 (Full point)
Fixed Plot Size Plot Radius feet
Cruise Line Direction(s) 1:181/1, 3:59/239, 4:173/353, 5:90/180
Cruise Line Spacing 5 (chains) (feet)
Cruise Plot Spacing 5 (chains) (feet)
Grade/Count Ratio 1:1 (29 grade:26 count)

- 2. ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
Spruce True Fir Cedar Hardwood

Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN
Grade all hardwoods on grade plots. (not camp run)

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 for conifer is 7 " 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. log segment. Do not use “double dash” (--) feature on the data recorder except for the top segment of the tree.
- 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 ; 9 = Utility
Hardwoods: #1 Sawmill = 12”+ scaling diameter; #2 Sawmill = 10” and 11”; #3 Sawmill = 8” and 9”; #4 Sawmill = 6” and 7”
- 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 yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible 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.
ITS and 100% Cruises: Mark cruise “strips” with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
- 9. Cruising Equipment:** Relaskop, Rangefinder or Lazer, Logger’s Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards 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: Ella Salkeld

Approved by: _____

Date: _____

Exhibit A

TIMBER SALE CONTACT NO. 341-18-40

BOILER FLEET

PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON

Area 1, 3, 4 and 5 (MC)

Plot Total: 56

Grade Plots: 30

Count Plots: 26

AZ: 1:1/181, 3:59/239, 4:173/353, 5:90/270

BAF: 40

Line Spacing: 5 Chains

Plot Spacing: 5 Chains

N



PRIVATE

STATE

AREA 5

BR12 BR13 BR14 ES11 Line 16
ES07 E 08 ES09-ES10 Line 17

Legend

○ Count Plots

● Grade Plots

--- New Road Construction

== Paved

== Surfaced

— Fish

— Nonfish

▨ Posted Buffers

▭ Township

▭ Sections

⋯ Timber Sale Boundary

▭ ODF Ownership

1 inch = 1,000 feet

1,000 500 0 1,000
Feet

AREA 1

Line 1

Line 2

Line 3

Line 4

BR11

CV12

CV11

24

26

25

14

13

23

24

Exhibit A

TIMBER SALE CONTACT NO. 341-18-40

BOILER FLEET

PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON

Area 1, 3, 4 and 5 (MC)

Plot Total: 56

Grade Plots: 30

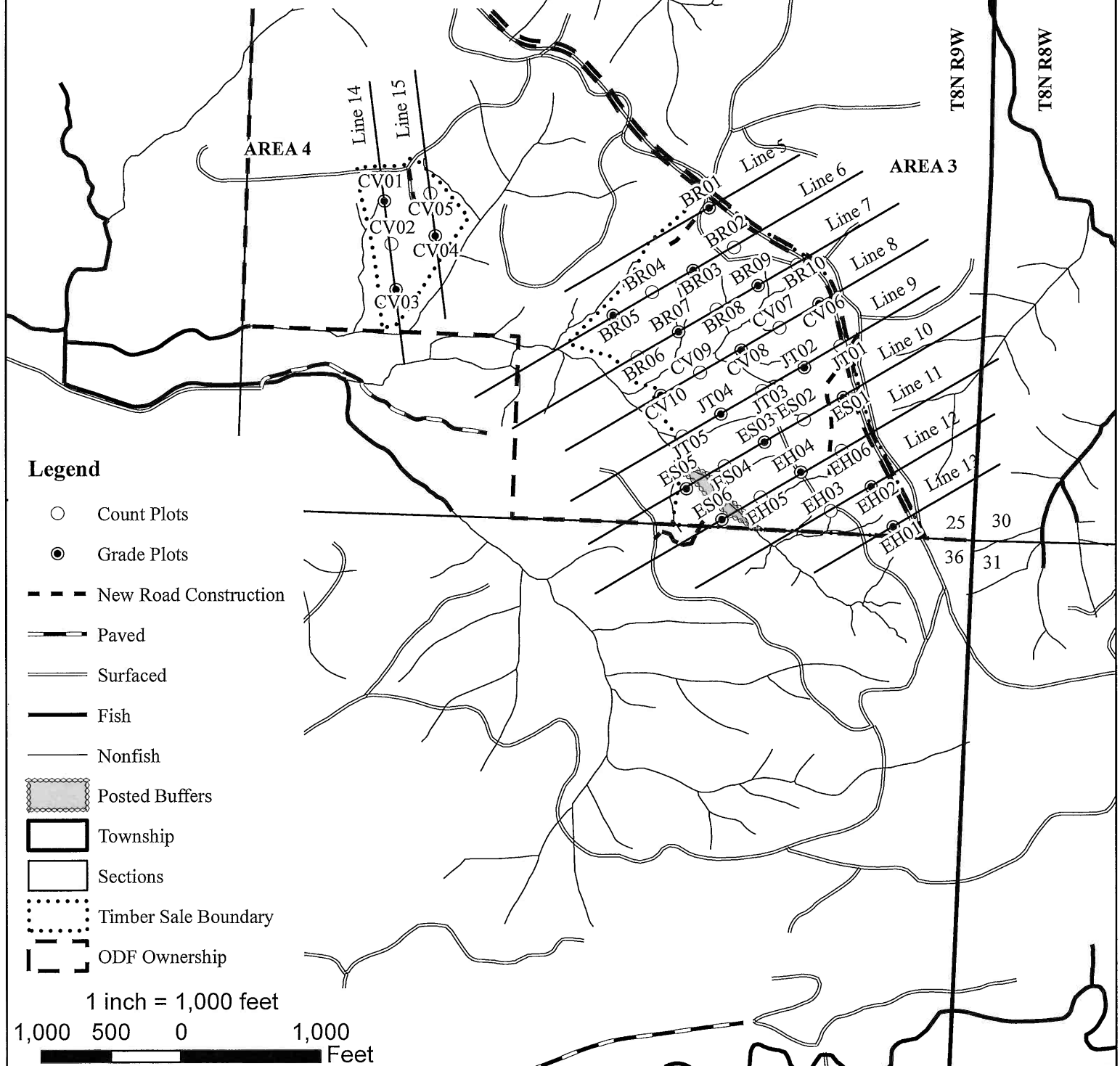
Count Plots: 26

AZ: 1:1/181, 3:59/239, 4:173/353, 5:90/270

BAF: 40

Line Spacing: 5 Chains

Plot Spacing: 5 Chains



**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Boiler Fleet **Area(s)** 2, 6, 7, 8, 9 and 10

Harvest Type: Partial Cut "Automark Thinning" (circle one)

Approx. Cruise Acres: 181 **Estimated CV%** 50 Net BF **SE% Objective** 12 Net BF

Planned Sale Volume: 983 MBF **Estimated Sale Area Value/Acre:** \$1,878

- A. Cruise Goals:** (a) Grade minimum 200 conifer and 30 hardwood trees:
(b) Sample 72 cruise plots; (c) Other goals (Determine "automark" thinning standards; x Determine log grades for sale value; x Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)
Basal Area leave target 110-140 sq. ft. Cruiser needs to select 3 or 4 leave trees per plot.

B. Cruise Design:

- 1. Plot Cruises:** BAF 33.6 (Full point)
Fixed Plot Size Plot Radius feet
Cruise Line Direction(s) 2,8,9:90/270, 6:56/236, 7:93/283, 10:113/293
Cruise Line Spacing 5 (chains) (feet)
Cruise Plot Spacing 5 (chains) (feet)
Grade/Count Ratio 1:2 (29 grade :43 count)
- 2. ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
Spruce True Fir Cedar Hardwood
- Take plots as marked on cruise map. All cedar will be reserved. Record all snags as SN
Grade all hardwoods as camp run.

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 for conifer is 7 " 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. log segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.
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 ; 9 = Utility
Hardwoods: #1 Sawmill = 12"+ scaling diameter; #2 Sawmill = 10" and 11"; #3 Sawmill = 8" and 9"; #4 Sawmill = 6" and 7"
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 yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible 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.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
9. **Cruising Equipment:** Relaskop, Rangefinder or Lazer, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards 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: Ella Salkeld
Approved by: _____
Date: _____

Exhibit A

**TIMBER SALE CONTACT NO. 341-18-40
BOILER FLEET
PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON**

Area 2, 6, 7, 8, 9 and 10 (PC)

Plot Total: 80

Grade Plots: 31

Count Plots: 49

AZ: 2,8,9: 90/270, 6: 56/236, 7: 93/273, 10: 113/293

BAF: 33.6

Line Spacing: 5 Chains

Plot Spacing: 5 Chains

3-4 Leave Trees/Plot



Legend

○ Count Plots

● Grade Plots

— Paved

— Surfaced

— Fish

— Nonfish

- - - New Road Construction

Unposted Buffer

Township

Sections

Timber Sale Boundary

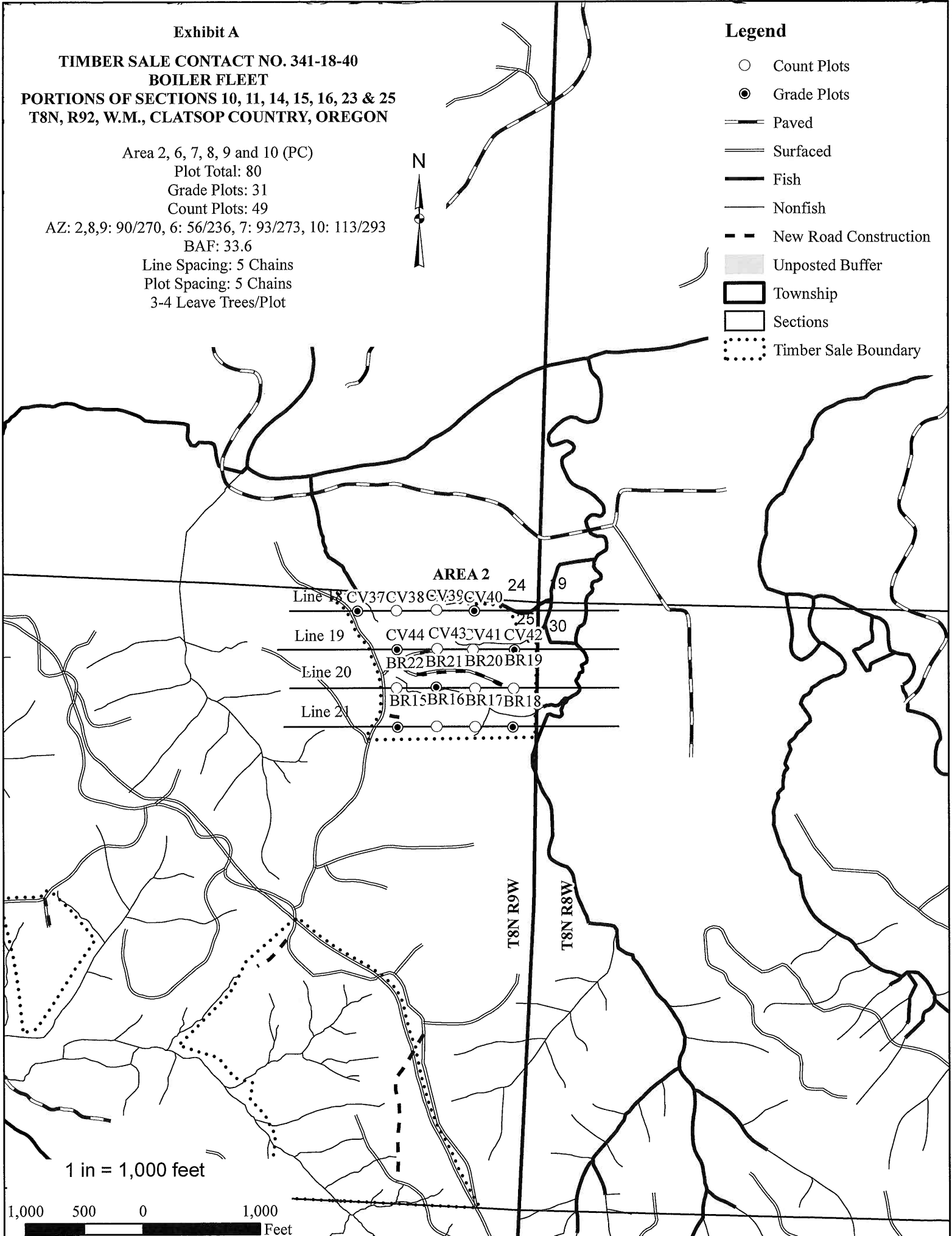


Exhibit A

TIMBER SALE CONTACT NO. 341-18-40
BOILER FLEET
PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON

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3-4 Leave Trees/Plot



Legend

- Count Plots
- Grade Plots
- Paved
- Surfaced
- Fish
- Nonfish
- - - New Road Construction
- Unposted Buffer
- Township
- Sections
- Timber Sale Boundary

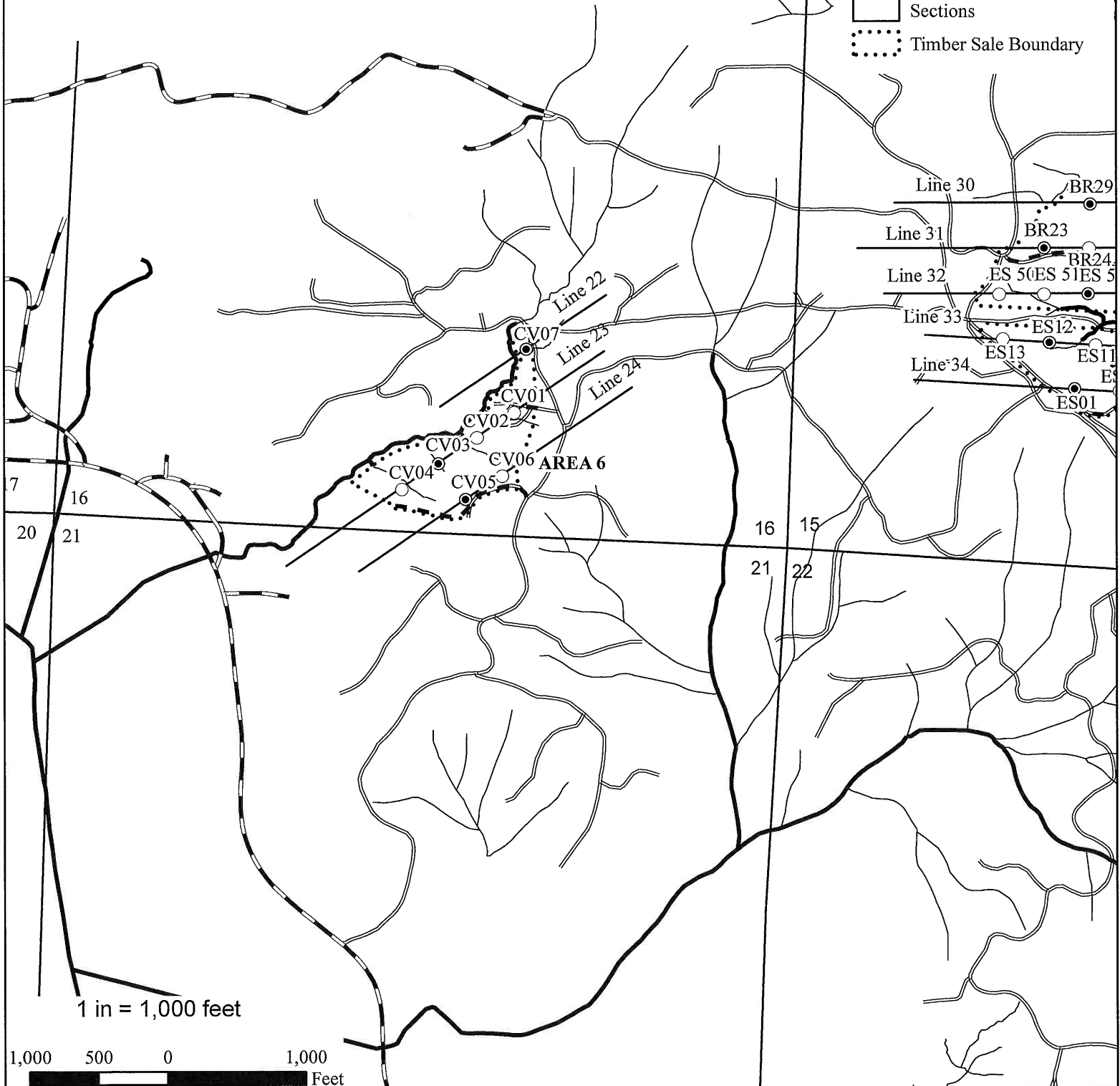


Exhibit A

TIMBER SALE CONTACT NO. 341-18-40

BOILER FLEET

PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON

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- - - New Road Construction
- Unposted Buffer
- Township
- Sections
- Timber Sale Boundary

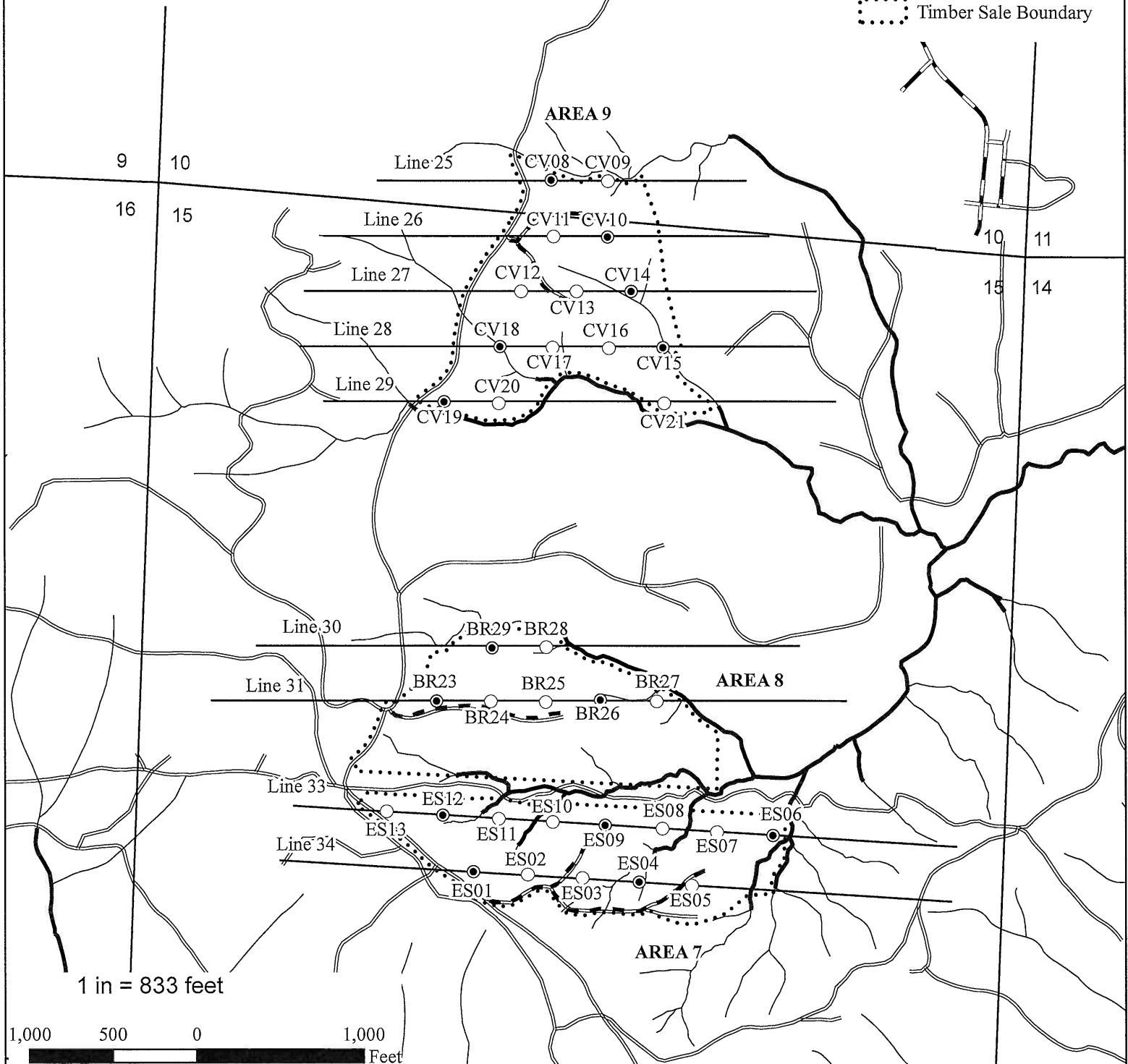


Exhibit A

**TIMBER SALE CONTACT NO. 341-18-40
BOILER FLEET
PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 & 25
T8N, R92, W.M., CLATSOP COUNTY, OREGON**

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Plot Spacing: 5 Chains

3-4 Leave Trees/Plot

Legend

○ Count Plots

● Grade Plots

— Paved

— Surfaced

— Fish

— Nonfish

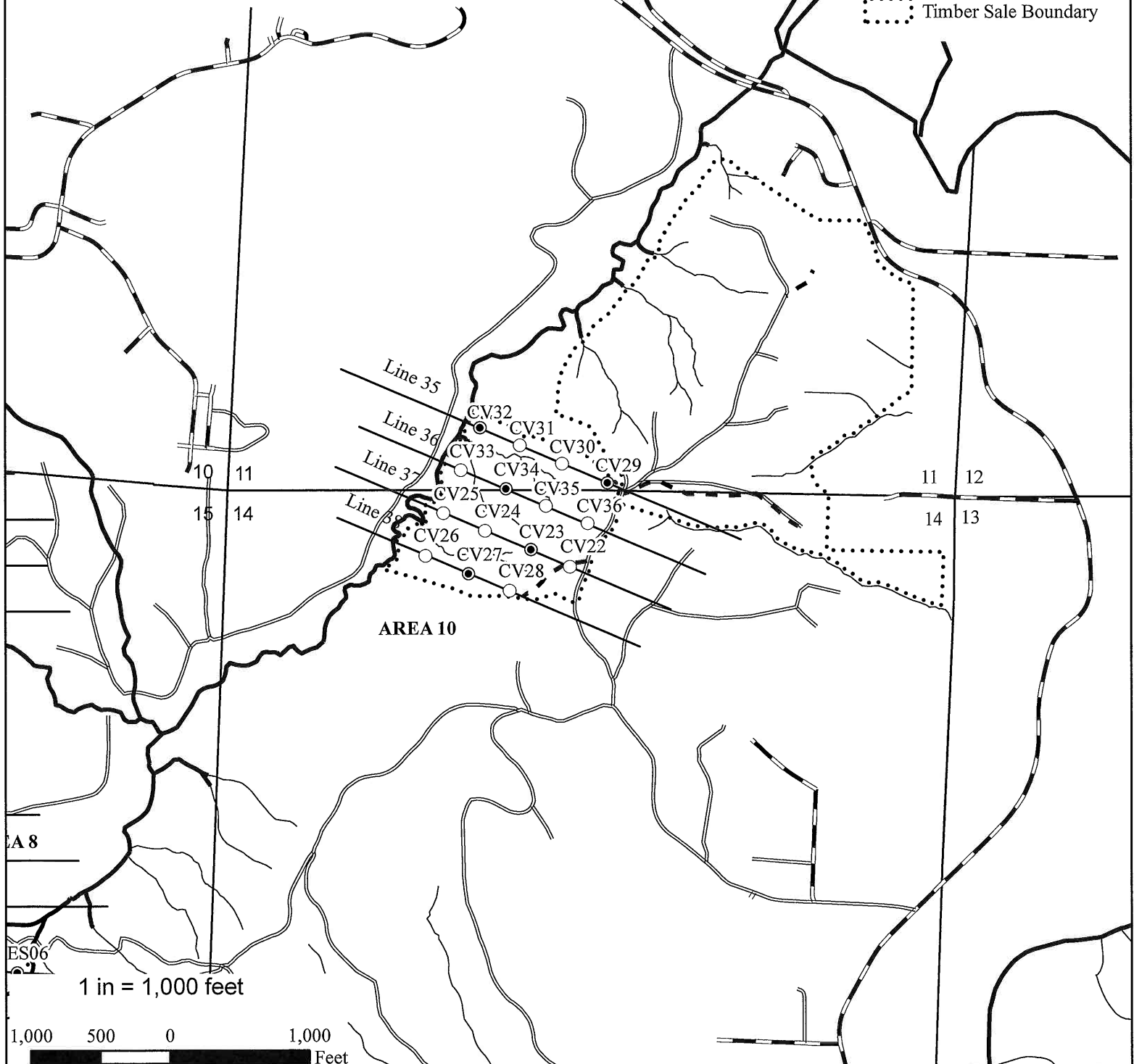
- - - New Road Construction

Unposted Buffer

Township

Sections

Timber Sale Boundary



Species, Sort Grade - Board Foot Volumes (Project)

T08N R09W S11 TyTAKE
THRU
T08N R09W S25 TyTAKE

Project: **BF**
Acres **397.00**

Page **1**
Date **11/20/2017**
Time **9:49:11AM**

Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99							
D	DOCU																5	7		0.00	1.4
D	DO2S	22	.6	1,265	1,258	500		3	97					15	85		38	12	215	1.52	5.9
D	DO3S	65	.7	3,680	3,655	1,451		100					2	28	70		36	8	92	0.73	39.9
D	DO4S	13	1.1	713	705	280		100				56	35	6	3		21	6	24	0.40	29.6
D Totals		29	.7	5,658	5,619	2,231		78	22			7	6	22	64		30	8	73	0.72	76.8
H	DOCU																6	11		0.00	5.0
H	DO2S	41	.8	5,154	5,114	2,030			72	28			0	14	86		38	14	305	1.93	16.8
H	DO3S	47	1.3	5,982	5,905	2,344		96	3	1		1	7	23	68		36	8	89	0.72	66.3
H	DO4S	12	.9	1,400	1,388	551		9	87	4		48	47	1	4		22	6	27	0.42	51.0
H Totals		64	1.0	12,535	12,406	4,925		1	55	31	12		6	9	17	69	30	8	89	0.82	139.1
S	DOCU																18	7		0.00	2.1
S	DO2S	87	1.6	226	222	88			100	0			41		59		29	13	196	1.73	1.1
S	DO3S	7	.1	19	19	7		100					100				30	7	50	0.80	.4
S	DO4S	6		13	13	5		100					100				28	6	30	0.61	.4
S Totals		1	1.4	258	254	100 101		13	87	0			49		51		23	8	63	0.78	4.1
A	DOCU																4	8		0.00	.8
A	DO1S	19		188	188	75			100			0	100	0			30	12	150	1.30	1.3
A	DO2S	5		56	56	22		1	99				99	0	0		30	14	209	1.66	.3
A	DO3S	47		467	467	185		100				14	30	23	34		30	9	77	0.79	6.0
A	DO4S	29		279	279	111		100				50	26	17	7		21	6	29	0.42	9.7
A Totals		5		991	991	393		75	25			21	46	15	18		24	8	55	0.67	18.0
Totals			0.9	19,442	19,269	7,650 7,649		1	63	29	8		7	10	18	65	29	8	81	0.78	238.0

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)														Page 1						
		Project: BF														Date	11/20/2017					
																Time	9:21:26AM					
T08N R09W S11 TTAKE														T08N R09W S11 TTAKE								
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
08N	09W	11	A11	TAKE	96.00	32	87	1	W													
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre			
			Def%	Gross	Net	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		
H	DO	CU																5	11		0.00	8.7
H	DO	2S	71	.5	12,846	12,787	1,228					59	41			18	82	38	15	353	2.17	36.3
H	DO	3S	23	.8	4,205	4,171	400			90	10			3	10	38	49	35	8	89	0.82	47.0
H	DO	4S	6		940	940	90			73		27		67	33			21	7	39	0.64	24.2
H	Totals		55	.5	17,991	17,898	1,718			25	44	31		4	4	22	70	31	10	154	1.30	116.2
D	DO	2S	35	.2	4,436	4,427	425			100					14	86		38	13	231	1.59	19.2
D	DO	3S	58	.6	7,077	7,034	675			100					1	26	73	37	8	102	0.81	69.2
D	DO	4S	7		857	857	82			100				59	32		9	21	6	24	0.43	35.2
D	Totals		38	.4	12,370	12,317	1,182			64	36			4	3	20	73	32	8	100	0.89	123.6
A	DO	1S	52		773	773	74			100				100				30	12	150	1.30	5.2
A	DO	3S	41		596	596	57			100						100		40	8	90	0.85	6.6
A	DO	4S	7		103	103	10			100				100				20	6	20	0.55	5.2
A	Totals		5		1,472	1,472	141			47	53			7	53		40	31	9	87	0.92	16.9
S	DO	CU																30	6		0.00	3.1
S	DO	2S	92	1.6	922	907	87			100					41		59	29	13	195	1.73	4.6
S	DO	3S	8		76	76	7			100				100				30	7	50	0.80	1.5
S	Totals		3	1.5	998	983	94			8	92				46		54	30	10	106	0.99	9.3
Type Totals				.5	32,831	32,670	3,136			40	43	17		4	7	19	69	31	9	123	1.07	266.0

T		Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
TSPCSTGR		Project: BF										Date 10/26/2017									
												Time 9:13:34AM									
T08N R09W S25 TTAKE										T08N R09W S25 TTAKE											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
08N	09W	25	CC	TAKE	126.00	56	160	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						
H	DO	CU		00.0	330									8	11		0.00		8.2		
H	DO	2S	26	1.4	5,493	5,414	682			93	7			5	95	39	13	258	1.67	21.0	
H	DO	3S	59	1.3	12,023	11,864	1,495			97	3		0	9	23	68	36	8	89	0.70	132.7
H	DO	4S	15	1.3	2,897	2,860	360	13	87				46	47	1	5	22	6	26	0.39	111.8
H	Totals		75	2.9	20,743	20,138	2,537	2	70	26	2		7	12	15	66	30	8	74	0.70	273.7
D	DO	2S	5		276	276	35			100					100	40	13	240	1.67	1.2	
D	DO	3S	79	.4	3,765	3,751	473			100				3	38	59	36	8	86	0.68	43.6
D	DO	4S	16		720	720	91			100			62	34	5		21	6	24	0.38	30.3
D	Totals		18	.3	4,762	4,748	598			94	6		9	8	30	53	30	7	63	0.62	75.1
A	DO	CU		00.0	25											4	8		0.00	2.5	
A	DO	2S	9		173	173	22			100					100	30	14	210	1.67	.8	
A	DO	3S	52		1,002	1,002	126			100			20	43	33	5	27	9	73	0.76	13.8
A	DO	4S	39		730	730	92			100			49	31	20		21	6	29	0.40	25.2
A	Totals		7	1.3	1,930	1,906	240			91	9		29	43	25	3	22	7	45	0.57	42.3
Type Totals				2.3	27,435	26,791	3,376	1	76	22	1		9	13	18	59	29	8	69	0.67	391.1

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
				Project: BF										Date		10/26/2017				
														Time		9:11:04AM				
T08N R09W S15 TTAKE										T08N R09W S15 TTAKE										
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
08N		09W		15		THINS		TAKE		171.00		72		59		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/ Ft In Ft Lf				
H DO CU				00.0 50				100				19 81				10 16 0.00				.5
H DO 2S			15	554 554			95	100				19 81				38 13 210 1.58				2.6
H DO 3S			69	1.6 2,502 2,461			421	96 4				0 12 88				38 7 88 0.68				28.1
H DO 4S			16	546 546			93	100				39 61				22 6 26 0.41				20.9
H Totals			59	2.5 3,653 3,562			609	81 16 3				6 9 11 73				31 7 68 0.66				52.1
D DO CU				00.0 33												5 7 0.00				3.3
D DO 2S			7	5.5 192 182			31	48 52				48 52				34 9 103 0.95				1.8
D DO 3S			68	1.3 1,659 1,637			280	100				5 17 78				37 8 81 0.66				20.3
D DO 4S			25	2.8 617 599			103	100				49 40 12				20 6 24 0.39				25.5
D Totals			40	3.3 2,501 2,419			414	96 4				12 13 18 57				27 7 48 0.56				50.8
S DO CU				00.0 50												11 7 0.00				3.1
S DO 4S			100	30 30			5	100				100				28 6 30 0.61				1.0
S Totals			1	62.2 80 30			5	100				100				15 7 7 0.28				4.1
A DO 4S			100	42 42			7	100				100				38 6 60 0.47				.7
A Totals			1	42 42			7	100				100				38 6 60 0.47				.7
Type Totals				3.6 6,276 6,053			1,035	88 11 2				9 11 14 67				28 7 56 0.61				107.7

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1								
Project: BF												Date	10/26/2017									
												Time	9:11:23AM									
T08N R09W S11 TRW1										T08N R09W S11 TRW1												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
08N	09W	11	CC	RW1	2.00	77	224	1	W													
S So Gr Spp T rt ad			% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log		Logs Per /Acre				
			Def%	Gross	Net	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		
H	DO	CU		100.0	327													7	11		0.00	9.6
H	DO	1S			121	121	0						100				100	32	17	370	2.56	.3
H	DO	2S	39	.9	7,607	7,541	15					73	27			12	88	39	14	308	1.94	24.5
H	DO	3S	48	1.3	9,623	9,500	19				96	4		1	10	26	64	36	8	91	0.73	104.5
H	DO	4S	13	1.1	2,433	2,406	5			11	84		4	50	44	1	5	22	6	27	0.41	89.2
H	Totals		65	2.7	20,111	19,567	39			1	57	30	12	6	10	18	65	29	8	86	0.80	228.0
D	DO	2S	25	.2	2,053	2,050	4					100				13	87	39	13	232	1.60	8.8
D	DO	3S	65	.3	5,325	5,307	11				100				2	30	68	36	8	94	0.74	56.4
D	DO	4S	10		817	817	2				100			66	27	3	4	20	6	23	0.40	34.8
D	Totals		27	.3	8,195	8,173	16				75	25		7	4	23	66	31	8	82	0.76	100.0
A	DO	CU		100.0	22													4	8		0.00	2.2
A	DO	1S	7		137	137	0					100				100		30	12	150	1.30	.9
A	DO	2S	7		153	153	0					100				100		30	14	210	1.67	.7
A	DO	3S	51		994	994	2				100			18	38	29	15	28	9	74	0.77	13.4
A	DO	4S	35		665	665	1				100			50	30	20		21	6	29	0.41	23.3
A	Totals		6	1.1	1,971	1,949	4				85	15		26	45	22	8	23	7	48	0.61	40.5
S	DO	CU		100.0	52													30	6		0.00	1.3
S	DO	2S	92	1.6	383	377	1					100			41		59	29	13	195	1.73	1.9
S	DO	3S	8		32	32	0				100				100			30	7	50	0.80	.6
S	Totals		1	12.5	467	408	1				8	92			46		54	30	10	106	0.99	3.9
Type Totals					2.1	30,745	30,099	60		1	63	28	8	8	11	19	62	29	8	81	0.78	372.4

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1						
		Project: BF												Date	10/26/2017					
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T08N R09W S15 TRWPC										T08N R09W S15 TRWPC										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
08N	09W	15	THINS	RWPC	2.00	72	177	1	W											
S So Gr T rt ad			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/ Lf
Spp			Net BdFt	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		
D	DO	CU		00.0	95											9	7		0.00	5.6
D	DO	2S	22	1.6	2,302	2,266	5		4	96				13	87	38	12	203	1.50	11.2
D	DO	3S	63	1.2	6,384	6,308	13		100				3	22	75	37	8	98	0.80	64.4
D	DO	4S	15	1.3	1,462	1,442	3		100			51	44	5		20	6	23	0.42	62.2
D	Totals		47	2.2	10,243	10,016	20		78	22		7	8	18	67	29	8	70	0.74	143.4
H	DO	CU		00.0	167											7	16		0.00	2.0
H	DO	2S	48	.9	5,205	5,157	10			87	13		6	7	88	38	14	276	1.90	18.7
H	DO	3S	42	1.3	4,581	4,521	9		95	2	2	1	1	18	80	37	8	94	0.77	48.3
H	DO	4S	10	2.3	1,083	1,058	2		100			44	56			21	6	27	0.48	39.3
H	Totals		50	2.7	11,037	10,736	21		50	43	7	5	8	11	76	31	9	99	0.93	108.4
S	DO	CU		00.0	69											11	7		0.00	4.2
S	DO	2S	74		175	175	0			100				100		40	21	760	4.35	.2
S	DO	3S	8	20.0	23	18	0		100				100			24	11	80	1.63	.2
S	DO	4S	18		42	42	0		100				100			28	6	30	0.61	1.4
S	Totals		1	23.8	308	235	0		26	74			26	74		17	7	39	0.72	6.1
A	DO	CU		00.0	39											11	14		0.00	.6
A	DO	1S	39		128	128	0			100		26	40	34		23	13	141	1.53	.9
A	DO	2S	27		91	91	0		100					46	54	36	11	159	1.36	.6
A	DO	4S	34		110	110	0		100			24		12	64	26	7	43	0.60	2.6
A	Totals		2	10.7	368	329	1		61	39		18	16	30	36	25	9	71	0.87	4.7
Type Totals				2.9	21,956	21,316	43		63	32	5	6	9	14	71	29	8	81	0.83	262.5

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1					
Project: BF												Date	10/26/2017						
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T08N R09W S15 T00PC										T08N R09W S15 T00PC									
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
08N	09W	15	THINS	00PC	171.00	72	178	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
DL DO CU				00.0	61										16	8	0.00	2.0	
DL DO 2S			28	1.2	2,187	2,161	370		100				10	90	38	13	225	1.60	9.6
DL DO 3S			61	1.1	4,741	4,687	802	100				2	25	74	36	9	107	0.88	43.6
DL DO 4S			11		807	807	138	100			52	48			20	6	23	0.44	35.3
DL Totals			36	1.8	7,797	7,655	1,309	72	28		6	6	18	70	30	8	85	0.85	90.5
HL DO CU				00.0	116										6	16		0.00	1.5
HL DO 2S			62	1.0	4,524	4,477	766		85	15		6	5	89	38	14	285	1.95	15.7
HL DO 3S			30	1.0	2,151	2,130	364	95	5		2	2	24	72	36	9	101	0.87	21.1
HL DO 4S			8	4.4	549	525	90	100			49	51			21	7	28	0.56	19.0
HL Totals			33	2.8	7,340	7,133	1,220	36	55	9	4	8	11	77	31	10	124	1.16	57.3
H DO CU				00.0	50										10	16		0.00	.5
H DO 2S			15		554	554	95		100				19	81	38	13	210	1.58	2.6
H DO 3S			69	1.6	2,502	2,461	421	96		4	0		12	88	38	7	88	0.68	28.1
H DO 4S			16		546	546	93	100			39	61			22	6	26	0.41	20.9
H Totals			17	2.5	3,653	3,562	609	81	16	3	6	9	11	73	31	7	68	0.66	52.1
D DO CU				00.0	33										5	7		0.00	3.3
D DO 2S			7	5.5	192	182	31	48	52				48	52	34	9	103	0.95	1.8
D DO 3S			68	1.3	1,659	1,637	280	100				5	17	78	37	8	81	0.66	20.3
D DO 4S			25	2.8	617	599	103	100			49	40	12		20	6	24	0.39	25.5
D Totals			11	3.3	2,501	2,419	414	96	4		12	13	18	57	27	7	48	0.56	50.8
AL DO CU				00.0	40										11	14		0.00	.6
AL DO 1S			45		131	131	22		100		26	40	34		23	13	141	1.53	.9
AL DO 2S			33		93	93	16	100					46	54	36	11	159	1.36	.6
AL DO 4S			22		62	62	11	100			43		22	35	21	7	35	0.71	1.8
AL Totals			1	12.3	326	286	49	54	46		21	18	35	25	22	10	73	1.01	3.9
S DO CU				00.0	50										11	7		0.00	3.1
S DO 4S			100		30	30	5	100			100				28	6	30	0.61	1.0
S Totals			0	62.2	80	30	5	100			100				15	7	7	0.28	4.1
SL DO 2S			90		318	318	54		100				100		40	21	760	4.35	.4
SL DO 3S			10	20.0	42	33	6	100			100				24	11	80	1.63	.4
SL Totals			2	2.3	359	351	60	10	90		10		90		32	16	420	3.33	.8
A DO 4S			100		42	42	7	100					100		38	6	60	0.47	.7
A Totals			0		42	42	7	100					100		38	6	60	0.47	.7
Type Totals				2.8	22,099	21,478	3,673	63	32	5	6	8	14	71	29	8	83	0.84	260.3

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1					
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T08N R09W S15 TLEAV												T08N R09W S15 TLEAV											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt					
08N		09W		15		THINS		LEAV		171.00		72		119		1		W					
S So Gr 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				
DL		DO		CU			00.0	61									16	8		0.00	2.0		
DL		DO		2S		28	1.2	2,187	2,161	370		100			10	90	38	13	225	1.60	9.6		
DL		DO		3S		61	1.1	4,741	4,687	802	100			2	25	74	36	9	107	0.88	43.6		
DL		DO		4S		11		807	807	138	100			52	48		20	6	23	0.44	35.3		
DL		Totals				50	1.8	7,797	7,655	1,309		72	28	6	6	18	70	30	8	85	0.85	90.5	
HL		DO		CU			00.0	116									6	16		0.00	1.5		
HL		DO		2S		62	1.0	4,524	4,477	766		85	15		6	5	89	38	14	285	1.95	15.7	
HL		DO		3S		30	1.0	2,151	2,130	364	95	5		2	2	24	72	36	9	101	0.87	21.1	
HL		DO		4S		8	4.4	549	525	90	100			49	51		21	7	28	0.56	19.0		
HL		Totals				46	2.8	7,340	7,133	1,220		36	55	9	4	8	11	77	31	10	124	1.16	57.3
AL		DO		CU			00.0	40									11	14		0.00	.6		
AL		DO		1S		45		131	131	22		100		26	40	34		23	13	141	1.53	.9	
AL		DO		2S		33		93	93	16	100					46	54	36	11	159	1.36	.6	
AL		DO		4S		22		62	62	11	100			43		22	35	21	7	35	0.71	1.8	
AL		Totals				2	12.3	326	286	49		54	46	21	18	35	25	22	10	73	1.01	3.9	
SL		DO		2S		90		318	318	54		100				100		40	21	760	4.35	.4	
SL		DO		3S		10	20.0	42	33	6	100				100			24	11	80	1.63	.4	
SL		Totals				2	2.3	359	351	60		10	90	10		90		32	16	420	3.33	.8	
Type Totals							2.5	15,823	15,425	2,638		53	40	6	5	7	14	73	30	9	101	0.99	152.6

T		Species, Sort Grade - Board Foot Volumes (Type)												Page		1					
TSPCSTGR		Project: BF												Date		10/26/2017					
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T08N R09W S25 T00MC										T08N R09W S25 T00MC											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt			
08N		09W		25		CC		00MC		126.00		56		167		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/ Ft In Ft Lf				
H DO CU					00.0 330												8 11 0.00				8.2
H DO 2S				26	1.4 5,493 5,414			682	93 7				5 95				39 13 258 1.67				21.0
H DO 3S				59	1.3 12,023 11,864			1,495	97 3				0 9 23 68				36 8 89 0.70				132.7
H DO 4S				15	1.3 2,897 2,860			360	13 87				46 47 1 5				22 6 26 0.39				111.8
H Totals				75	2.9 20,743 20,138			2,537	2 70 26 2				7 12 15 66				30 8 74 0.70				273.7
D DO 2S				5	276 276			35	100				100				40 13 240 1.67				1.2
D DO 3S				79	.4 3,765 3,751			473	100				3 38 59				36 8 86 0.68				43.6
D DO 4S				16	720 720			91	100				62 34 5				21 6 24 0.38				30.3
D Totals				18	.3 4,762 4,748			598	94 6				9 8 30 53				30 7 63 0.62				75.1
A DO CU					00.0 25												4 8 0.00				2.5
A DO 2S				9	173 173			22	100				100				30 14 210 1.67				.8
A DO 3S				52	1,002 1,002			126	100				20 43 33 5				27 9 73 0.76				13.8
A DO 4S				39	730 730			92	100				49 31 20				21 6 29 0.40				25.2
A Totals				7	1.3 1,930 1,906			240	91 9				29 43 25 3				22 7 45 0.57				42.3
Type Totals					2.3 27,435 26,791			3,376	1 76 22 1				9 13 18 59				29 8 69 0.67				391.1

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)														Page		1	
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T08N R09W S11 T00MC																		T08N R09W S11 T00MC			
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt			
08N		09W		11		A11		00MC		96.00		32		88		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/ Ft In Ft Lf				
H DO CU																	5 11 0.00				8.7
H DO 2S				71	.5 12,846 12,787			1,228	59 41				18 82				38 15 353 2.17				36.3
H DO 3S				23	.8 4,205 4,171			400	90 10				3 10 38 49				35 8 89 0.82				47.0
H DO 4S				6	940 940			90	73 27				67 33				21 7 39 0.64				24.2
H Totals				55	.5 17,991 17,898			1,718	25 44 31				4 4 22 70				31 10 154 1.30				116.2
D DO 2S				35	.2 4,436 4,427			425	100				14 86				38 13 231 1.59				19.2
D DO 3S				58	.6 7,077 7,034			675	100				1 26 73				37 8 102 0.81				69.2
D DO 4S				7	857 857			82	100				59 32 9				21 6 24 0.43				35.2
D Totals				38	.4 12,370 12,317			1,182	64 36				4 3 20 73				32 8 100 0.89				123.6
A DO 1S				52	773 773			74	100				100				30 12 150 1.30				5.2
A DO 3S				41	596 596			57	100				100				40 8 90 0.85				6.6
A DO 4S				7	103 103			10	100				100				20 6 20 0.55				5.2
A Totals				5	1,472 1,472			141	47 53				7 53 40				31 9 87 0.92				16.9
S DO CU																	30 6 0.00				3.1
S DO 2S				92	1.6 922 907			87	100				41 59				29 13 195 1.73				4.6
S DO 3S				8	76 76			7	100				100				30 7 50 0.80				1.5
S Totals				3	1.5 998 983			94	8 92				46 54				30 10 106 0.99				9.3
Type Totals					.5 32,831 32,670			3,136	40 43 17				4 7 19 69				31 9 123 1.07				266.0

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT				BF		DATE	11/20/2017		
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
08N	09	11	A11	00MC		THR		961.00	541	2,755	1	W
08N	09W	25	CC	TAKE								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			541	2755	5.1							
CRUISE			244	1259	5.2	139,241		.9				
DBH COUNT												
REFOREST												
COUNT			277	1480	5.3							
BLANKS			20									
100 %												
STAND SUMMARY												
			SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK			616	66.8	14.6	53	20.4	77.8	10,293	10,187	2,813	2,813
DOUG FIR			333	36.1	14.3	54	10.7	40.4	4,637	4,604	1,351	1,351
DOUGLEAV			108	18.1	16.2	56	6.4	25.9	2,753	2,724	819	819
HEMLEAV			114	10.5	18.8	62	4.7	20.3	2,571	2,538	725	725
R ALDER			48	8.8	13.0	42	2.3	8.1	814	814	242	242
S SPRUCE			16	2.4	14.5	33	0.7	2.8	212	208	61	61
SNAG			10	1.3	14.3	29	0.4	1.5				
ALDRLEAV			12	.6	18.3	51	0.3	1.2	102	102	31	31
SPRUCELV			2	.1	32.0	66	0.1	.8	128	125	32	32
TOTAL			1,259	144.9	15.0	53	46.1	178.8	21,509	21,303	6,075	6,075
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL	68.1	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		93.9	3.8	240	249	258						
DOUG FIR		60.0	3.3	161	167	172						
DOUGLEAV		45.6	4.4	173	181	189						
HEMLEAV		54.9	5.1	282	297	312						
R ALDER		58.3	8.4	102	111	121						
S SPRUCE		152.4	39.3	94	156	217						
SNAG												
ALDRLEAV		40.1	12.1	141	160	179						
SPRUCELV				840	840	840						
TOTAL		88.0	2.5	212	217	223	309	77	34			
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		171.2	7.4	62	67	72						
DOUG FIR		185.0	7.9	33	36	39						
DOUGLEAV		223.4	9.6	16	18	20						
HEMLEAV		256.5	11.0	9	11	12						
R ALDER		446.1	19.2	7	9	11						
S SPRUCE		609.9	26.2	2	2	3						
SNAG		748.1	32.1	1	1	2						
ALDRLEAV		1027.2	44.1	0	1	1						
SPRUCELV		1087.4	46.7	0	0	0						
TOTAL		97.6	4.2	139	145	151	380	95	42			
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		157.4	6.8	73	78	83						
DOUG FIR		198.8	8.5	37	40	44						
DOUGLEAV		217.3	9.3	23	26	28						
HEMLEAV		249.2	10.7	18	20	22						

TC PSTATS				PROJECT STATISTICS				PAGE	2	
				PROJECT BF				DATE	11/20/2017	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
08N	09	11	A11	00MC	THR	961.00	541	2,755	1	W
08N	09W	25	CC	TAKE						
CL	68.1	COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.
SD:	1.00	VAR.	S.E.%	LOW	AVG	HIGH		5	10	15
R ALDER		463.0	19.9	7	8	10				
S SPRUCE		716.8	30.8	2	3	4				
SNAG		729.8	31.3	1	1	2				
ALDRLEAV		1020.2	43.8	1	1	2				
SPRUCELV		1087.4	46.7	0	1	1				
TOTAL		92.1	4.0	172	179	186		339	85	38
CL	68.1	COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15
WHEMLOCK		162.5	7.0	9,476	10,187	10,898				
DOUG FIR		217.0	9.3	4,175	4,604	5,034				
DOUGLEAV		218.8	9.4	2,468	2,724	2,980				
HEMLEAV		249.4	10.7	2,266	2,538	2,810				
R ALDER		452.5	19.4	656	814	972				
S SPRUCE		1011.2	43.4	118	208	299				
SNAG										
ALDRLEAV		1148.5	49.3	52	102	152				
SPRUCELV		1087.4	46.7	67	125	183				
TOTAL		99.5	4.3	20,393	21,303	22,213		395	99	44

TC TSTATS				STATISTICS				PAGE	1			
				PROJECT	BF	DATE				11/20/2017		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt			
08N	09W	11	A11	00MC	96.00	32	193	1	W			
				TREES	ESTIMATED	PERCENT						
PLOTS				TREES	PER PLOT	TREES	TREES					
TOTAL		32	193	6.0								
CRUISE		16	88	5.5	13,192	.7						
DBH COUNT												
REFOREST												
COUNT		16	105	6.6								
BLANKS												
100 %												
STAND SUMMARY												
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET		
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC		
WHEMLOCK		44	55.3	19.6	66	26.2	116.2	17,991	17,898	4,646	4,646	
DOUG FIR		39	61.6	16.9	68	23.4	96.3	12,370	12,317	3,551	3,551	
R ALDER		2	11.8	15.9	46	4.1	16.3	1,472	1,472	483	483	
S SPRUCE		2	4.6	18.6	60	2.0	8.8	998	983	271	271	
SNAG		1	4.1	13.0	39	1.0	3.8					
TOTAL		88	137.4	17.9	64	57.0	241.2	32,831	32,670	8,951	8,951	
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		68.6	10.3	411	459	506						
DOUG FIR		45.5	7.3	216	233	250						
R ALDER		43.5	40.7	77	130	183						
S SPRUCE		76.1	71.3	75	260	445						
SNAG												
TOTAL		76.9	8.2	314	342	370	236	59	26			
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		94.1	16.6	46	55	64						
DOUG FIR		90.1	15.9	52	62	71						
R ALDER		298.9	52.8	6	12	18						
S SPRUCE		362.3	64.0	2	5	8						
SNAG		315.9	55.8	2	4	6						
TOTAL		49.4	8.7	125	137	149	97	24	11			
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15			
WHEMLOCK		75.4	13.3	101	116	132						
DOUG FIR		85.7	15.1	82	96	111						
R ALDER		298.9	52.8	8	16	25						
S SPRUCE		362.3	64.0	3	9	14						
SNAG		315.9	55.8	2	4	6						
TOTAL		38.9	6.9	225	241	258	61	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			
WHEMLOCK		73.3	12.9	15,581	17,898	20,215						
DOUG FIR		88.9	15.7	10,382	12,317	14,253						
R ALDER		298.9	52.8	695	1,472	2,249						
S SPRUCE		362.3	64.0	354	983	1,611						
SNAG												
TOTAL		37.5	6.6	30,506	32,670	34,834	56	14	6			

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT BF				DATE	11/20/2017		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
08N	09W	11	A11	TAKE	96.00	32	190	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		32	190	5.9							
CRUISE		16	87	5.4	12,802	.7					
DBH COUNT											
REFOREST											
COUNT		16	103	6.4							
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
WHEMLOCK		44	55.3	19.6	66	26.2	116.2	17,991	17,898	4,646	
DOUG FIR		39	61.6	16.9	68	23.4	96.3	12,370	12,317	3,551	
R ALDER		2	11.8	15.9	46	4.1	16.3	1,472	1,472	483	
S SPRUCE		2	4.6	18.6	60	2.0	8.8	998	983	271	
TOTAL		87	133.4	18.1	65	55.9	237.5	32,831	32,670	8,951	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK		68.6	10.3	411	459	506					
DOUG FIR		45.5	7.3	216	233	250					
R ALDER		43.5	40.7	77	130	183					
S SPRUCE		76.1	71.3	75	260	445					
TOTAL		75.7	8.1	318	346	374	229	57	25		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK		94.1	16.6	46	55	64					
DOUG FIR		90.1	15.9	52	62	71					
R ALDER		298.9	52.8	6	12	18					
S SPRUCE		362.3	64.0	2	5	8					
TOTAL		47.4	8.4	122	133	145	90	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			
WHEMLOCK		75.4	13.3	101	116	132					
DOUG FIR		85.7	15.1	82	96	111					
R ALDER		298.9	52.8	8	16	25					
S SPRUCE		362.3	64.0	3	9	14					
TOTAL		38.0	6.7	222	238	253	58	14	6		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
WHEMLOCK		73.3	12.9	15,581	17,898	20,215					
DOUG FIR		88.9	15.7	10,382	12,317	14,253					
R ALDER		298.9	52.8	695	1,472	2,249					
S SPRUCE		362.3	64.0	354	983	1,611					
TOTAL		37.5	6.6	30,506	32,670	34,834	56	14	6		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT	BF	DATE 10/26/2017				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
08N	09W	25	CC	00MC	126.00	56	319	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	56	319	5.7							
CRUISE	30	167	5.6		29,341		.6			
DBH COUNT										
REFOREST										
COUNT	26	152	5.8							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	117	159.7	13.6	52	43.5	160.0	20,743	20,138	5,741	5,667
DOUG FIR	32	44.5	13.2	52	11.6	42.1	4,762	4,748	1,375	1,375
R ALDER	11	23.6	11.8	41	5.2	17.9	1,930	1,906	539	534
SNAG	7	5.1	16.0	18	1.8	7.1				
TOTAL	167	232.9	13.4	50	62.1	227.1	27,435	26,791	7,654	7,575
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	70.7	6.5	173	185	197					
DOUG FIR	54.2	9.6	120	133	145					
R ALDER	65.8	20.8	82	104	125					
SNAG										
TOTAL	75.8	5.9	152	162	171		229	57	25	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	68.9	9.2	145	160	174					
DOUG FIR	134.7	18.0	36	44	53					
R ALDER	232.0	31.0	16	24	31					
SNAG	339.3	45.3	3	5	7					
TOTAL	43.9	5.9	219	233	247		77	19	9	
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	64.1	8.6	146	160	174					
DOUG FIR	133.5	17.8	35	42	50					
R ALDER	221.6	29.6	13	18	23					
SNAG	304.1	40.6	4	7	10					
TOTAL	44.8	6.0	214	227	241		80	20	9	
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
WHEMLOCK	65.3	8.7	18,382	20,138	21,894					
DOUG FIR	138.7	18.5	3,869	4,748	5,627					
R ALDER	222.5	29.7	1,340	1,906	2,472					
SNAG										
TOTAL	48.0	6.4	25,075	26,791	28,508		92	23	10	

TC TSTATS				STATISTICS			PAGE 1				
				PROJECT BF		DATE 10/26/2017					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
08N	09W	25	CC	TAKE	126.00	56	309	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		56	309	5.5							
CRUISE		30	160	5.3	28,697		.6				
DBH COUNT											
REFOREST											
COUNT		26	149	5.7							
BLANKS											
100 %											
STAND SUMMARY											
		SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
		TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK		117	159.7	13.6	52	43.5	160.0	20,743	20,138	5,741	5,667
DOUG FIR		32	44.5	13.2	52	11.6	42.1	4,762	4,748	1,375	1,375
R ALDER		11	23.6	11.8	41	5.2	17.9	1,930	1,906	539	534
TOTAL		160	227.8	13.3	51	60.3	220.0	27,435	26,791	7,654	7,575
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %		COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		70.7	6.5	173	185	197					
DOUG FIR		54.2	9.6	120	133	145					
R ALDER		65.8	20.8	82	104	125					
TOTAL		71.3	5.6	159	169	178	203	51	23		
CL: 68.1 %		COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		68.9	9.2	145	160	174					
DOUG FIR		134.7	18.0	36	44	53					
R ALDER		232.0	31.0	16	24	31					
TOTAL		44.8	6.0	214	228	241	80	20	9		
CL: 68.1 %		COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		64.1	8.6	146	160	174					
DOUG FIR		133.5	17.8	35	42	50					
R ALDER		221.6	29.6	13	18	23					
TOTAL		45.6	6.1	207	220	233	83	21	9		
CL: 68.1 %		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK		65.3	8.7	18,382	20,138	21,894					
DOUG FIR		138.7	18.5	3,869	4,748	5,627					
R ALDER		222.5	29.7	1,340	1,906	2,472					
TOTAL		48.0	6.4	25,075	26,791	28,508	92	23	10		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT	BF	DATE 10/26/2017				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
08N	09W	15	THINS	00PC	171.00	72	430	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	72	430	6.0							
CRUISE	29	178	6.1		27,237		.7			
DBH COUNT										
REFOREST										
COUNT	43	252	5.9							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUGLEAV	54	50.8	16.2	56	18.1	72.8	7,797	7,655	2,319	2,301
HEMLEAV	57	29.6	18.8	62	13.1	56.9	7,340	7,133	2,061	2,039
WHEMLOCK	31	37.9	12.8	44	9.5	34.1	3,653	3,562	1,082	1,072
DOUG FIR	24	33.2	12.3	43	7.8	27.5	2,501	2,419	765	759
ALDRLEAV	6	1.8	18.3	51	0.8	3.3	326	286	96	87
S SPRUCE	3	4.1	11.2	15	0.8	2.8	80	30	42	17
SPRUCELV	1	.4	32.0	66	0.4	2.3	359	351	89	89
R ALDER	1	.7	11.0	39	0.1	.5	42	42	13	13
SNAG	1	.7	11.0	40	0.1	.5				
TOTAL	178	159.3	15.2	50	51.5	200.7	22,099	21,478	6,466	6,376
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		
DOUGLEAV	45.8	6.2	170	181	192					
HEMLEAV	55.2	7.3	275	297	319					
WHEMLOCK	152.7	27.4	122	169	215					
DOUG FIR	53.0	11.0	79	89	99					
ALDRLEAV	42.0	18.7	130	160	190					
S SPRUCE	173.2	119.8		10	22					
SPRUCELV										
R ALDER										
SNAG										
TOTAL	86.4	6.5	189	202	215	298	75	33		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	77.5	9.1	46	51	55					
HEMLEAV	101.4	11.9	26	30	33					
WHEMLOCK	193.1	22.7	29	38	47					
DOUG FIR	146.3	17.2	28	33	39					
ALDRLEAV	526.1	62.0	1	2	3					
S SPRUCE	377.2	44.4	2	4	6					
SPRUCELV	557.8	65.7	0	0	1					
R ALDER	848.5	99.9	0	1	1					
SNAG	848.5	99.9	0	1	1					
TOTAL	53.1	6.3	149	159	169	113	28	13		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	72.7	8.6	67	73	79					
HEMLEAV	96.4	11.3	50	57	63					
WHEMLOCK	163.4	19.2	28	34	41					
DOUG FIR	145.3	17.1	23	28	32					

SDI %

18

14

0.8

0.4

33.2

TC TSTATS				STATISTICS				PAGE	2
				PROJECT		BF		DATE	10/26/2017
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
08N	09W	15	THINS	00PC	171.00	72	430	1	W
CL:	68.1 %	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
ALDRLEAV		522.5	61.5	1	3	5			
S SPRUCE		334.0	39.3	2	3	4			
SPRUCELV		557.8	65.7	1	2	4			
R ALDER		848.5	99.9	0	0	1			
SNAG		848.5	99.9	0	0	1			
TOTAL		33.8	4.0	193	201	209	46	11	5
CL:	68.1 %	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV		73.9	8.7	6,990	7,655	8,321			
HEMLEAV		96.5	11.4	6,322	7,133	7,943			
WHEMLOCK		162.6	19.1	2,880	3,562	4,244			
DOUG FIR		147.4	17.4	1,999	2,419	2,838			
ALDRLEAV		589.8	69.5	87	286	485			
S SPRUCE		482.9	56.9	13	30	48			
SPRUCELV		557.8	65.7	120	351	581			
R ALDER		848.5	99.9	0	42	85			
SNAG									
TOTAL		36.1	4.3	20,565	21,478	22,391	52	13	6

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT BF				DATE	10/26/2017		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
08N	09W	11	CC	RW1	2.00	77	455	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		77	455	5.9							
CRUISE		43	224	5.2	414		54.1				
DBH COUNT											
REFOREST											
COUNT		34	215	6.3							
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
WHEMLOCK		144	128.3	14.5	54	38.7	147.5	20,111	19,567	5,439	5,365
DOUG FIR		65	53.9	15.0	60	17.1	66.5	8,195	8,173	2,353	2,353
R ALDER		13	23.0	12.2	41	5.4	18.7	1,971	1,949	563	558
S SPRUCE		2	1.9	18.6	60	0.8	3.6	467	408	134	113
TOTAL		224	207.1	14.5	54	62.1	236.4	30,745	30,099	8,488	8,389
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		92.3	7.7	238	258	278					
DOUG FIR		54.4	6.7	181	194	207					
R ALDER		60.4	17.4	89	108	126					
S SPRUCE		76.1	71.3	75	260	445					
TOTAL		88.5	5.9	217	231	245	313 78		35		
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		75.9	8.6	117	128	139					
DOUG FIR		113.9	13.0	47	54	61					
R ALDER		249.0	28.4	16	23	30					
S SPRUCE		569.4	64.8	1	2	3					
TOTAL		44.0	5.0	197	207	218	77 19		9		
CL:	68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		65.1	7.4	137	148	158					
DOUG FIR		112.0	12.7	58	66	75					
R ALDER		239.3	27.3	14	19	24					
S SPRUCE		569.4	64.8	1	4	6					
TOTAL		37.7	4.3	226	236	246	57 14		6		
CL:	68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		66.0	7.5	18,096	19,567	21,039					
DOUG FIR		116.4	13.3	7,090	8,173	9,257					
R ALDER		240.4	27.4	1,416	1,949	2,483					
S SPRUCE		569.4	64.8	144	408	673					
TOTAL		40.4	4.6	28,713	30,099	31,484	65 16		7		

TC		PSTNDSUM										Stand Table Summary										Page		1	
																						Date:		11/20/2017	
T08N R09W S11 TyTAKE THRU T08N R09W S25 TyTAKE												Project BF										Time:		10:19:29AM	
												Acres 397.00										Grown Year:			
S SpC	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	T o t a l s											
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF									
H		8	10	86	45	6.404	2.24	6.40	7.0	28.0		45	180		178	71									
H		9	12	85	61	6.143	2.71	6.14	11.5	43.4		71	266		282	106									
H		10	25	86	75	11.498	6.27	13.91	12.4	44.6		173	621		687	247									
H		11	29	86	78	10.278	6.74	15.72	13.4	47.5		210	747		836	297									
H		12	18	88	81	5.394	4.24	9.00	16.0	53.2		144	479		572	190									
H		13	26	86	81	5.772	5.32	10.58	17.4	55.9		184	592		729	235									
H		14	30	88	84	5.866	6.24	10.88	21.0	74.6		229	811		909	322									
H		15	29	88	82	4.754	5.80	9.15	22.2	80.2		203	734		808	291									
H		16	23	86	83	3.332	4.65	6.66	25.0	90.7		166	604		660	240									
H		17	29	87	89	4.888	7.70	10.05	30.0	104.7		302	1,052		1,198	418									
H		18	27	86	85	3.047	5.38	6.09	33.5	110.0		204	671		810	266									
H		19	30	88	83	3.822	7.53	7.64	37.3	125.5		285	959		1,131	381									
H		20	23	86	83	2.526	5.51	5.03	37.8	126.4		190	636		756	253									
H		21	18	88	91	.854	2.05	1.77	46.1	179.0		82	318		324	126									
H		22	27	86	89	1.988	5.25	4.22	48.4	178.5		204	753		810	299									
H		23	14	87	98	1.421	4.10	2.84	62.4	232.0		177	659		704	262									
H		24	18	88	98	1.513	4.75	3.44	60.3	241.6		207	830		822	330									
H		25	8	88	90	.384	1.31	.77	70.0	268.9		54	207		213	82									
H		26	4	87	106	.294	1.08	.88	56.6	235.9		50	208		198	82									
H		27	6	86	89	.275	1.09	.55	77.0	282.7		42	156		168	62									
H		28	3	92	94	.152	.65	.30	91.3	418.6		28	127		110	50									
H		29	3	85	101	.142	.65	.42	66.1	310.3		28	132		111	52									
H		30	6	85	99	.352	1.73	.83	79.4	350.8		66	293		263	116									
H		31	2	88	121	.123	.64	.37	92.3	453.3		34	167		135	66									
H		32	2	89	115	.115	.64	.35	93.3	456.7		32	158		128	63									
H		53	2	86	66	.031	.48	.06	234.5	750.0		15	47		58	19									
H		Totals	424	87	78	81.366	94.77	134.09	25.6	92.5		3,426	12,406		13,603	4,925									
D		8	2	91	44	1.434	.50	1.43	5.0	20.0		7	29		28	11									
D		9	3	85	54	1.148	.51	1.15	9.0	29.9		10	34		41	14									
D		10	11	85	66	4.871	2.61	6.42	10.3	37.1		66	238		262	95									
D		11	17	83	76	6.151	4.06	8.34	12.9	44.0		107	367		427	146									
D		12	18	85	79	4.898	3.81	6.85	16.1	52.3		110	358		436	142									
D		13	12	86	86	2.479	2.28	4.95	15.0	48.7		74	241		296	96									
D		14	25	85	80	4.976	5.32	9.09	17.7	54.4		161	495		641	196									
D		15	21	85	83	3.999	4.91	8.00	20.1	66.9		160	535		637	212									
D		16	20	86	92	2.661	3.72	5.32	24.9	87.1		132	464		525	184									
D		17	34	86	95	4.706	7.42	9.41	29.3	103.7		276	975		1,094	387									
D		18	21	86	98	1.875	3.31	4.09	31.0	106.8		127	436		503	173									
D		19	18	85	95	2.062	4.06	4.12	36.1	120.2		149	495		591	197									
D		20	13	88	97	.990	2.16	1.98	42.9	147.7		85	292		337	116									
D		21	9	84	100	.929	2.24	2.11	40.1	136.1		85	287		336	114									
D		22	8	86	93	.466	1.23	.93	48.8	167.6		45	156		180	62									
D		23	3	83	113	.211	.61	.63	42.6	169.4		27	107		107	42									
D		24	2	86	112	.192	.60	.57	45.7	186.7		26	107		104	43									
D		25	1	85	89	.002	.01	.00	59.0	205.0		0	1		1	0									
D		Totals	238	85	82	44.051	49.35	75.40	21.9	74.5		1,649	5,619		6,547	2,231									
A		9	4	87	39	2.365	1.04	2.37	8.5	30.0		20	71		80	28									
A		11	8	86	72	2.684	1.77	5.06	10.0	36.5		51	185		201	73									
A		12	2	87	76	.665	.52	1.33	13.0	45.0		17	60		69	24									
A		14	6	86	71	1.466	1.57	2.93	17.7	61.7		52	181		206	72									
A		15	4	86	67	2.063	2.49	2.52	28.8	82.8		72	208		287	83									
A		17	3	86	65	1.253	1.97	2.51	25.0	85.0		63	213		249	85									

TC PSTNDSUM		Stand Table Summary										Page Date:		2 11/20/2017	
T08N R09W S11 TyTAKE THRU T08N R09W S25 TyTAKE					Project BF					Time:		10:19:29AM			
					Acres 397.00					Grown Year:					
S Spc	T	Sample DBH Trees		Tot FF Av 16' Ht		Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Net Cu.Ft. Bd.Ft.		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons Cunits MBF	
A		18	2	86	71	.003	.01	.01	29.3	100.0		0	1	1	0
A		19	5	86	83	.269	.53	.54	36.9	134.4		20	72	79	29
A		Totals		34	86	63	10.768	9.91	17.25	17.1	57.4	295	991	1,171	393
S		8	2	81	16	1.170	.41								
S		13	2	83	37	.443	.41	.44	17.0	30.0		8	13	30	5
S		16	2	85	70	.764	1.07	.76	30.0	120.0		23	92	91	36
S		21	2	80	37	.170	.41								
S		23	2	82	87	.370	1.07	.74	58.5	200.0		43	148	172	59
S		32	1	86	79	.001	.01	.00	106.5	420.0		0	1	1	0
S		Totals		11	82	44	2.918	3.37	1.95	37.9	130.3	74	254	294	101
Totals				707	86	77	139.104	157.39	228.69	23.8	84.3	5,444	19,269	21,614	7,650

TC PLOGSTVB				Log Stock Table - MBF																	
T08N R09W S11 TyTAKE THRU T08N R09W S25 TyTAKE							Project: BF Acres 397.00										Page 1 Date 11/20/2017 Time 10:19:29AM				
S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches													
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+		
D	DO	2S	32	77		77	3.5			15		39	23								
D	DO	2S	36	0		0	.0					0									
D	DO	2S	38	25	3.6	24	1.1					1	24								
D	DO	2S	40	400		398	17.8					279	89	30							
D	DO	3S	30	35		35	1.6			21	13	0									
D	DO	3S	32	416	2.0	408	18.3			127	147	133									
D	DO	3S	34	0		0	.0			0											
D	DO	3S	36	59		59	2.6			44	15	0									
D	DO	3S	38	114		114	5.1			47	66	1									
D	DO	3S	40	837		836	37.5			164	242	430									
D	DO	4S	12	8		8	.4			8											
D	DO	4S	14	8		8	.4			8											
D	DO	4S	16	39		39	1.7			39											
D	DO	4S	18	11		11	.5			11											
D	DO	4S	20	91		91	4.1			91											
D	DO	4S	22	16		16	.7			16											
D	DO	4S	24	30		30	1.4			30											
D	DO	4S	26	16		16	.7			16											
D	DO	4S	28	3		3	.1			3											
D	DO	4S	30	33		33	1.5			33											
D	DO	4S	32	19	15.6	16	.7			16											
D	DO	4S	40	7		7	.3			7											
D	Totals			2,246		2,231	29.2			684	498	565	319	135	30						
H	DO	2S	30	1	4.3	1	.0						1								
H	DO	2S	32	278		276	5.6					141	43	58	34						
H	DO	2S	36	34		34	.7					0		34							
H	DO	2S	38	67	3.9	65	1.3					63	1	1							
H	DO	2S	40	1,666		1,654	33.6					483	432	529	210						
H	DO	3S	14	2	36.8	1	.0							1							
H	DO	3S	16	16	14.8	13	.3					3	11								
H	DO	3S	20	4		4	.1			4											
H	DO	3S	26	17		17	.3			11	6										
H	DO	3S	30	158	3.1	154	3.1			54	56	43									
H	DO	3S	32	464		463	9.4			120	180	146	18								
H	DO	3S	34	87		87	1.8			69	18										
H	DO	3S	36	114		114	2.3			79	4	30									

TC PLOGSTVB				Log Stock Table - MBF																
T08N R09W S11 TyTAKE THRU T08N R09W S25 TyTAKE				Project: BF														Page 2		
				Acres 397.00														Date 11/20/2017		
																		Time 10:19:29AM		
S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches												
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
H	DO	3S	38	162		162	3.3			33	87	42								
H	DO	3S	40	1,351	1.6	1,329	27.0			291	383	588	50					17		
H	DO	4S	12	8		8	.2			4	1	2								
H	DO	4S	14	24		24	.5			22	1									
H	DO	4S	16	86	2.2	84	1.7		10	69	5									
H	DO	4S	18	8		8	.2			4	0	4								
H	DO	4S	20	144		144	2.9			120	0			24						
H	DO	4S	22	6		6	.1		2	4										
H	DO	4S	24	100		100	2.0		15	85	0									
H	DO	4S	26	38		38	.8			38										
H	DO	4S	28	49		49	1.0			49										
H	DO	4S	30	67		67	1.4			67										
H	DO	4S	32	7	40.0	4	.1			4										
H	DO	4S	36	20		20	.4		20											
H	Totals			4,977	1.0	4,925	64.4		47	1123	745	858	755	486	649	244		17		
S	DO	2S	24	36		36	36.1					36								
S	DO	2S	40	53	2.8	52	51.3						51		0					
S	DO	3S	24	0	20.0	0	.0					0								
S	DO	3S	30	7		7	7.3			7										
S	DO	4S	28	5		5	5.2			5										
S	Totals			102	1.4	101	1.3			13		0	36	51		0				
A	DO	1S	14	0		0	.0						0							
A	DO	1S	24	0		0	.0						0							
A	DO	1S	30	75		75	18.9					75								
A	DO	1S	32	0		0	.0					0								
A	DO	2S	30	22		22	5.6						22							
A	DO	2S	32	0		0	.0					0								
A	DO	2S	40	0		0	.0					0								
A	DO	3S	16	13		13	3.2				13									
A	DO	3S	20	13		13	3.2				13									
A	DO	3S	30	55		55	13.9				14	41								
A	DO	3S	32	42		42	10.6				18	23								
A	DO	3S	36	6		6	1.6			6										
A	DO	3S	40	57		57	14.6				57									

Log Stock Table - MBF

T08N R09W S11 TyTAKE
THRU
T08N R09W S25 TyTAKE

Project: **BF**
Acres **397.00**

Page **3**
Date **11/20/2017**
Time **10:19:29AM**

S Spp	T	So Gr rt 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+
A		DO	4S	12	0	0	.0			0									
A		DO	4S	14	6	6	1.6			6									
A		DO	4S	16	30	30	7.5			30									
A		DO	4S	18	6	6	1.5			6									
A		DO	4S	20	14	14	3.5			14									
A		DO	4S	24	9	9	2.4			9									
A		DO	4S	28	20	20	5.0			20									
A		DO	4S	32	19	19	4.8			19									
A		DO	4S	38	7	7	1.9			7									
A		DO	4S	40	0	0	.0			0									
A		Totals			393	393	5.1			117	115	65	75	22					
Total		All Species			7,718	7,650	100.0		47	1937	1358	1487	1185	695	679	245		17	

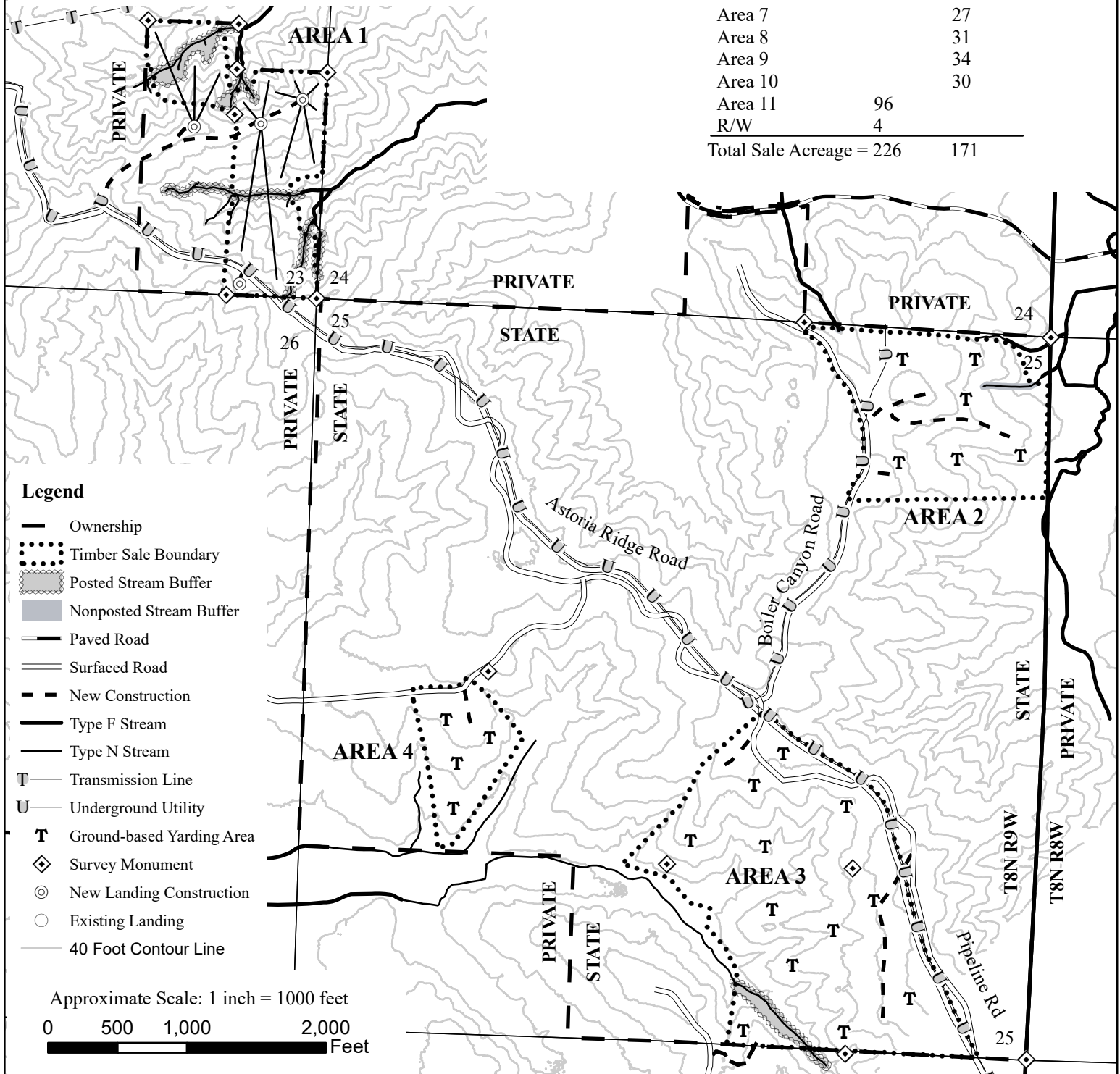
Area 1	0%	100%
Area 2	100%	0%
Area 3	100%	0%
Area 4	100%	0%
Area 5	30%	70%
Area 6	46%	53%
Area 7	65%	35%
Area 8	100%	0%
Area 9	84%	16%
Area 10	10%	90%
Area 11	63%	37%
R/W	100%	0%
Total	68%	32%

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-18-40
 BOILER FLEET
 PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 AND 25
 OF T8N, R9W, W.M.,
 CLATSOP COUNTY, OREGON



Approximate Net Acreage	MC Acres	PC Acres
Area 1	25	
Area 2		34
Area 3	71	
Area 4	12	
Area 5	18	
Area 6		15
Area 7		27
Area 8		31
Area 9		34
Area 10		30
Area 11	96	
R/W	4	
Total Sale Acreage = 226		171



LOGGING PLAN

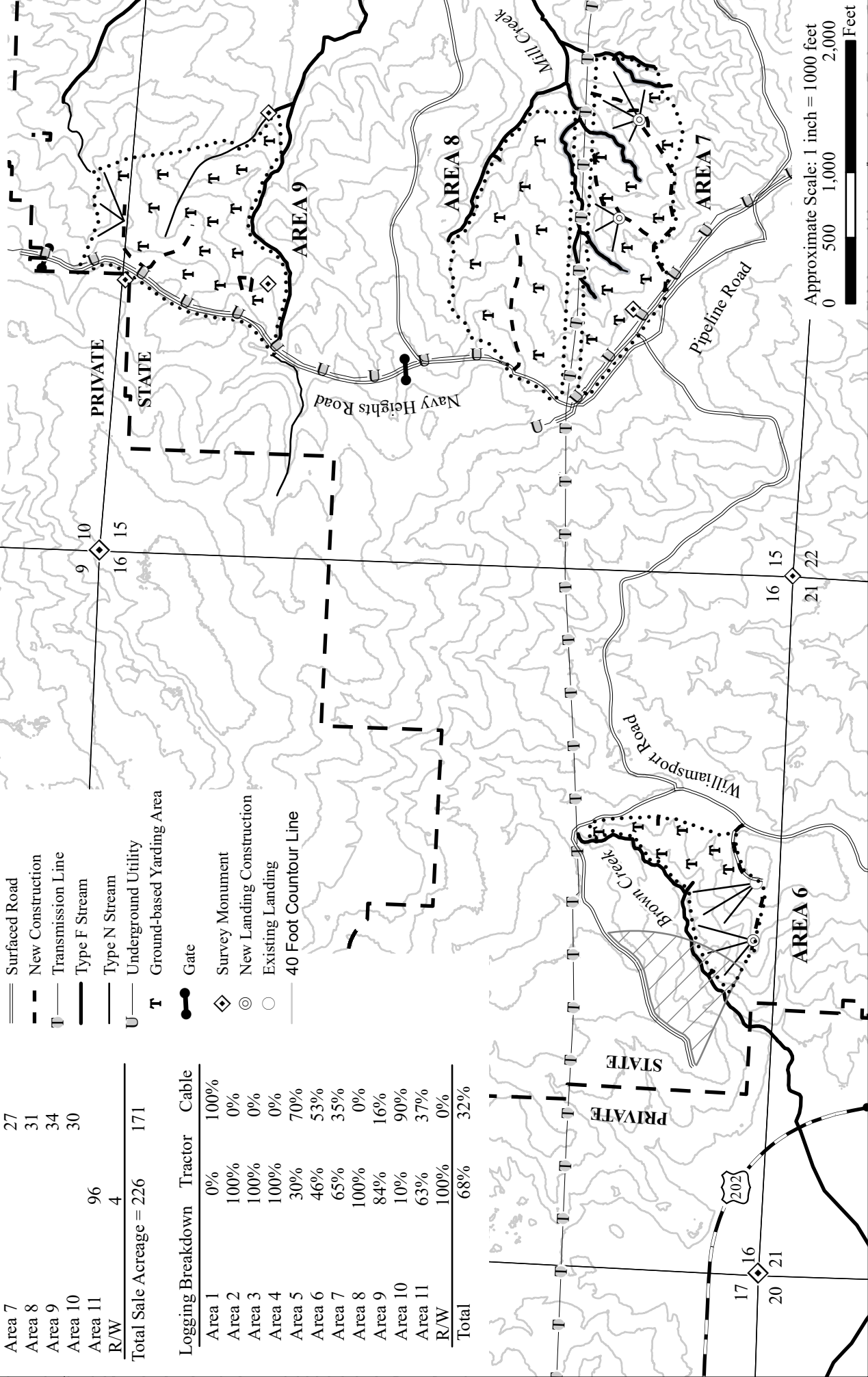
OF TIMBER SALE CONTRACT NO. 341-18-40
BOILER FLEET
PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 AND 25
OF T8N, R9W, W.M.,
CLATSOP COUNTY, OREGON

Legend

- Ownership
 - Timber Sale Boundary
 - Restricted Operation
 - Posted Stream Buffer
 - Nonposted Stream Buffer
 - Paved Road
 - Surfaced Road
 - New Construction
 - Transmission Line
 - Type F Stream
 - Type N Stream
 - Underground Utility
 - Ground-based Yarding Area
- Gate
- Survey Monument
- New Landing Construction
- Existing Landing
- 40 Foot Countour Line

Approximate Net Acreage	MC Acres	PC Acres
Area 1	25	
Area 2		34
Area 3	71	
Area 4	12	
Area 5	18	
Area 6		15
Area 7		27
Area 8		31
Area 9		34
Area 10		30
Area 11	96	
R/W	4	
Total Sale Acreage =		226
		171

Logging Breakdown	Tractor	Cable
Area 1	0%	100%
Area 2	100%	0%
Area 3	100%	0%
Area 4	100%	0%
Area 5	30%	70%
Area 6	46%	53%
Area 7	65%	35%
Area 8	100%	0%
Area 9	84%	16%
Area 10	10%	90%
Area 11	63%	37%
R/W	100%	0%
Total	68%	32%



LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-18-40
 BOILER FLEET
 PORTIONS OF SECTIONS 10, 11, 14, 15, 16, 23 AND 25
 OF T8N, R9W, W.M.,
 CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres	PC Acres
Area 1	25	
Area 2		34
Area 3	71	
Area 4	12	
Area 5	18	
Area 6		15
Area 7		27
Area 8		31
Area 9		34
Area 10		30
Area 11	96	
R/W	4	
Total Sale Acreage =		171

Logging Breakdown	Tractor	Cable
Area 1	0%	100%
Area 2	100%	0%
Area 3	100%	0%
Area 4	100%	0%
Area 5	30%	70%
Area 6	46%	53%
Area 7	65%	35%
Area 8	100%	0%
Area 9	84%	16%
Area 10	10%	90%
Area 11	63%	37%
R/W	100%	0%
Total	68%	32%

