



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal  
Thin To Win  
Sale 341-13-55

District: Astoria

Date: September 06, 2012

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**cost summary**

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$417,806.06	\$14,409.42	\$432,215.48
		Project Work:	\$(36,377.00)
		Advertised Value:	\$395,838.48



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**timber description**

**Location:** Portions of Sections 1, 12, and 13, T7N, R6W, W.M., Clatsop County, Oregon.

**Stand Stocking:** 40%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	15	0	96
Western Hemlock / Fir	13	0	95
Alder (Red)	9	0	98

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	527	405	79	0	1,011
Western Hemlock / Fir	390	416	119	0	925
Alder (Red)	0	0	0	61	61
Total	917	821	198	61	1,997



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**comments:** Pond Values Used: 2nd Quarter Calendar Year 2012.

Expected Log Markets: Warrenton, OR; Tillamook, OR; Clatskanie, OR; Mist, OR; Longview, WA.

Sitka Spruce Stumpage Price = Pond Value minus Logging Cost  
 $\$126.71/\text{MBF} = \$405/\text{MBF} - \$278.29/\text{MBF}$

Western redcedar Stumpage Price = Pond Value minus Logging Cost  
 $\$671.71/\text{MBF} = \$950/\text{MBF} - \$278.29/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

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

Additional Logging Costs:

Branding and Painting: \$1 per MBF x 1,997 MBF = \$1,997

Scarification in Patch Cuts (Area 2)w/log loader = 6 hrs x  
\$90.00/hr = \$540.00

TOTAL Other Costs (with Profit & Risk to be added)= \$2,537

Other Costs (No Profit & Risk added):

Open old spurs(existing):

6 hours w/315 excavator @ \$94/hour = \$564

6 hours with 14G Grader @ \$93/hour = \$558

4 hours to close @ \$94/hour = \$376

Machine Washing Invasive Weeds = \$3,000

TOTAL Other Costs (No Profit & Risk added) = \$4,498



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**logging conditions**

**combination#: 1**      Douglas - Fir      79.00%  
                                 Western Hemlock / Fir      79.00%  
                                 Alder (Red)      79.00%

**yarding distance:** Medium (800 ft)      **downhill yarding:** No  
**logging system:** Track Skidder      **Process:** Harvester Head Delimbing  
**tree size:** Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF  
**loads / day:** 8.0      **bd. ft / load:** 3,800  
**cost / mbf:** \$136.67

**machines:** Forwarder  
Harvester

**combination#: 2**      Douglas - Fir      21.00%  
                                 Western Hemlock / Fir      21.00%  
                                 Alder (Red)      21.00%

**yarding distance:** Medium (800 ft)      **downhill yarding:** No  
**logging system:** Cable: Small Tower <=40      **Process:** Manual Delimbing  
**tree size:** Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF  
**loads / day:** 4.0      **bd. ft / load:** 3,900  
**cost / mbf:** \$173.14

**machines:** Log Loader (A)  
Tower Yarder (Small)





"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Thin To Win Sale 341-13-55

**District: Astoria**

**Date: September 06, 2012**

## logging costs

<b>Operating Seasons:</b>	2.00	<b>Profit Risk:</b>	14.00%
<b>Project Costs:</b>	\$36,377.00	<b>Other Costs (P/R):</b>	\$2,537.00
<b>Slash Disposal:</b>	\$0.00	<b>Other Costs:</b>	\$4,498.00

### Miles of Road

**Road Maintenance:** \$11.13

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

### Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.0
Western Hemlock / Fir	\$0.00	2.0	3.8
Alder (Red)	\$0.00	2.0	3.0



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal  
Thin To Win  
Sale 341-13-55

District: Astoria

Date: September 06, 2012

### logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
<b>Douglas - Fir</b>									
\$144.33	\$11.58	\$4.39	\$59.30	\$1.27	\$30.92	\$0.00	\$5.00	\$2.25	\$259.04
<b>Western Hemlock / Fir</b>									
\$144.33	\$11.69	\$4.39	\$94.53	\$1.27	\$35.87	\$0.00	\$5.00	\$2.25	\$299.33
<b>Alder (Red)</b>									
\$144.33	\$11.35	\$4.39	\$116.32	\$1.27	\$38.87	\$0.00	\$5.00	\$2.25	\$323.78

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$529.25	\$270.21	\$0.00
Western Hemlock / Fir	\$0.00	\$455.68	\$156.35	\$0.00
Alder (Red)	\$0.00	\$560.00	\$236.22	\$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
Alder (Red)	0	\$0.00	\$0.00

**Unamortized**

Specie	MBF	Value	Total
Douglas - Fir	1,011	\$270.21	\$273,182.31
Western Hemlock / Fir	925	\$156.35	\$144,623.75
Alder (Red)	61	\$236.22	\$14,409.42

**Gross Timber Sale Value**

Recovery: \$432,215.48

Prepared by: Edward Holloran

Phone: 503-325-5451

## SUMMARY OF ALL PROJECT COSTS

**SALE NAME:** Thin To Win

### **ROAD CONSTRUCTION:**

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	4A-4B	1.50	\$3,361.00
	<b>TOTALS</b>	1.50	\$3,361.00
		0.03 Miles	

### **ROAD IMPROVEMENT:**

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	I1-I2, I3-I4	176	\$21,610.00
	I5-I6, I7-I8		
	<b>TOTALS</b>	176.00	\$21,610.00
		3.33 Miles	

### **SPECIAL PROJECTS:**

	<u>Description</u>	<u>Cost</u>
	Project Road Maintenance	\$6,195.00
	<b>TOTAL</b>	\$6,195.00

### **MOVE IN:**

	<u>Equipment</u>	<u>Cost</u>
	Dump Trucks (12cy x 4)	\$564.00
	Dump Trucks (20cy x 3)	\$498.00
	F E Loader (C966)	\$675.00
	Grader (14G)	\$675.00
	Vibratory Roller	\$675.00
	Water Truck (2,500 gallon)	\$165.00
	Excavator (C330)	\$1,220.00
	Excavator (C315)	\$699.00
	<b>TOTAL</b>	\$5,171.00

**GRAND TOTAL** **\$36,337.00**

Compiled By: B Rodgers *FL*

Date: 05/24/2012

SALE NAME: Thin To Win  
ROAD: 4A to 4B  
POINTS: \_\_\_\_\_

NEW CONSTRUCTION: 1.50 STATIONS  
IMPROVEMENT:            STATIONS

0.03 MILES  
MILES

	Method	Acres/amount	x	Rate	=	Cost
4A to 4B	Scattering	0.14	x	\$1,161.00	=	\$162.54
			x		=	
			x		=	
			x		=	
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>						<b>\$163</b>

	Material	Cy/amount	x	Rate	=	Cost
4A to 4B	Balanced Construction \$\$/sta.	1.50	x	\$106.00	=	\$159.00
	Landing Construction \$\$/landing	1.00	x	\$338.00	=	\$338.00
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
			x		=	
SUB TOTAL FOR EXCAVATION						\$497

[illegible]

Subtotal of Clearing, Exc., Culv.

**\$660**

SURFACING					Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep: Description								
4A to 4B Grade, Shape and Ditch 16'					1.50	x	\$21.55	\$32.33
Subgrade Compaction					1.50	x	\$17.52	\$26.28

ROAD SEGMENT 4A to 4B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4A to 4B Volume (CY) per	0+00 to 1+50 Number of					
Base Rock	6"-0"	0+00 -1+50	10	station	63	stations	1.50	95	\$13.52	\$1,278
Junctions	1 1/2"-0"	0+00	N/A	junction	22	junctions	1	22	\$4.68	\$103
Landings	6"-0"	1+50	N/A	Landing	66	Landings	1	66	\$13.52	\$892
Total Rock for Road Segment: 4A to 4B								183		\$2,273

Processing:		Description	No.sta	Rate/sta	Cost
					\$0
		6"-0"pr	1 1/2"-0"	Total	
SUB TOTAL FOR SURFACING		161	22	183	183 \$2,332

SPECIAL PROJECTS		Description	Cost
		Develop Pit Run (\$2.30 x 161)	\$370
SUB TOTAL FOR SPECIAL PROJECTS			\$370

Subtotal of Surfacing & Spec. Proj.		\$2,702
Subtotal of Clearing, Exc., Culv.		\$660
<b>GRAND TOTAL</b>		<b>\$3,361</b>

Compiled By: Bryce Rodgers

Date: 05/24/2012

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	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	Culvert Markers	7	\$18.00	\$126.00
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>				
			<i>Subtotal of Clearing, Exc., Culv.</i>	<b>\$126</b>

SURFACING				Stations/ amount	x	Rate/ sta/amt	Cost			
Subgrade prep: Description										
Grade, Shape and Ditch 16' I1-I2, I3-I4, I5-I6, I7-I8				176.00	x	\$21.55	\$3,792.80			
Scatter ditch waste material I1-I2 (7.2) I3-I4 (17.75 )I5-I6 (26) I7-I8 (24.2)				75.15	x	\$10.78	\$810.12			
Load & haul ditch waste material I3-I4 (6.25) I7-I8 (.8)				7.05	x	\$19.89	\$140.22			
ROAD SEGMENT I1 to I2				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I1 to I2		0+00 to 101+00				
				Volume (CY) per	Number of					
Base Rock	1 1/2"-0"		N/A	Load	10	loads	101.00	1,010	\$4.68	\$4,727
Surfacing	1 1/2"-0"	95+00		Load	10	loads	2.00	20		*
Base Rock	6"-0" Pit-run	95+00		Load	10	loads	5.00	50		*
Barriers/Armor	36"-12" Riprap	95+00		Load	10	loads	2.00	20		*
Total Rock for Road Segment: I1 to I2							1,100			\$4,727
ROAD SEGMENT I3 to I4				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I3 to I4		0+00 to 24+00				
				Volume (CY) per	Number of					
Base Rock	1 1/2"-0"		N/A	Load	10	loads	24.00	240	\$4.68	\$1,123
Total Rock for Road Segment: I3 to I4							240			\$1,123
ROAD SEGMENT I5 to I6				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I5 to I6		0+00 to 26+00				
				Volume (CY) per	Number of					
Subgrade Leveling	1 1/2"-0"		N/A	Load	10	loads	10.00	100	\$4.68	\$468
Total Rock for Road Segment: I5 to I6							100			\$468
ROAD SEGMENT I7 to I8				POINT TO POINT	Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	I7 to I8		0+00 to 25+00				
				Volume (CY) per	Number of					
Base Rock	1 1/2"-0"		N/A	Load	10	loads	25.00	250	\$4.68	\$1,170
Total Rock for Road Segment: I7 to I8							250			\$1,170
Processing: Description				No.sta	Rate/sta		Cost			
Water, Process & Compact: I1-I2, I3-I4, I7-I8				150.00	\$49.02		\$7,353			
SUB TOTAL FOR SURFACING				36"-12"	6"-0"pr	4"-0"	1 1/2"-0"	Total		
				20	50	0	1,620		1,690	\$19,584
SPECIAL PROJECTS				Description	Cost					
				Waterhole Construction (I1 to I2 Sta. 95+00)	\$ 1,900.00					
				(8hrs. C330, 8hrs. 10-12cy Dump Truck, Seed and Mulch)						
				*(Includes rock haul, development)						
SUB TOTAL FOR SPECIAL PROJECTS					\$1,900					
				Subtotal of Surfacing & Spec. Proj.						\$21,484
				Subtotal of Clearing, Exc., Culv.						\$126
GRAND TOTAL										\$21,610

Compiled By: B. Rodgers

Date: 05/24/2012



## CRUSHED ROCK COST

SALE NAME:	Thin To Win
PROJECT:	No. 1
QUARRY:	Kerry Stockpile

MATERIAL: Crushed

DATE: 05/24/2012  
BY: B. Rodgers

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 3  
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$3.51	/cy
Load:	\$0.45	/cy
Spread:	\$0.73	/cy

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

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

Production: cy/day = 1,309

CRUSHED ROCK HAUL COSTS      1,622 cy @      \$4.68 /cy

## PIT RUN ROCK COST

SALE NAME:	Thin To Win
PROJECT:	No. 1
QUARRY:	Viewpoint

DATE: 05/24/2012  
BY: B. Rodgers

[illegible]

ROCK HAUL:

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

Ave haul:	\$7.70	/cy
Load:	\$4.03	/cy
Spread:	\$1.79	/cy

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

Truck type:	<u>D10</u>	No. trucks:	<u>2</u>
Delay min.:	<u>5</u>	Efficiency:	<u>85%</u>

Production: cy/day = 151

### PIT RUN ROCK HAUL COSTS

161 cy @ \$13.52 /cy

### Projects Road Maintenance Cost Summary

**Sale:** Thin To Win  
**Date:** May 24, 2012  
**By:** Bryce Rodgers

Type	Equipment/Rationale	Hours	Rate	Cost	
Post-Projects Road	Grader 14G	30	\$93	\$2,790	
	Vibratory Roller	30	\$72	\$2,160	
	Water Truck 2500 gallon	15	\$83	\$1,245	
					<b>Total    \$6,195</b>

#### Final Road Maintenance

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	4.5	3.0	30
1.5	4.5	3.0	30

**\*Maintenance calculations were determined as follows:**

Maintain from Kerry Stockpile to Point I1. Maintain from Point I2 to Point I7.

**Total Miles: 4.5 miles.**

### Road Maintenance Cost Summary (Interim and Post Harvest)

**Sale:** Thin To Win  
**Date:** June 18, 2012  
**By:** Ed Holloran

**MBF:** 1,997  
**\$\$/MBF:** \$11.13

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Road Maintenance	Grader 14G	\$675	1	8	\$93	\$1,419
	Dump Truck 12CY	\$141	1	8	\$73	\$725
	FE Loader C966	\$675	1	8	\$77	\$1,291
Final Road Maintenance	Grader 14G	\$675	1	66	\$93	\$6,813
	Dump Truck 12CY	\$141	2	16	\$73	\$1,450
	FE Loader C966	\$675	1	8	\$77	\$1,291
	Vibratory Roller	\$675	1	66	\$72	\$5,427
	Water Truck 2,500 gallon	\$165	1	33	\$83	\$2,904
	Labor			24	\$38	\$912
<b>Total</b>						<b>\$22,232</b>

#### Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Process - Grader	1.5	9.9	6.6	66.0
Vibratory Roller	1.5	9.9	6.6	66.0

**Process and Compact:** West Creek Ridge (4.5 miles), East Kerry (3.9 miles), In unit spurs (1.5 miles)

Total Miles = 9.9 miles

# THIN TO WIN TIMBER CRUISE REPORT FY 2013

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, and 6 are located in portions of Sections 1, 12, and 13, T7N, R6W, W.M., Clatsop County, Oregon.

2. **Fund Distribution:** BOF 100%  
Tax Code 1-02 (30.9%), 30-05 (68.7%), AND 6J-01 (0.4%)

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Patch Cuts	GTRA	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Partial Cut	40	0	0	4.0	0	0.5	35.5	GIS
2	Partial Cut	109	3.2	0.1	6.0	0	0.2	99.5	GIS
3	Partial Cut	30	0	0	1.0	0	1.0	28.0	GIS
4	Partial Cut	30	0	0	0.7	0.3	0	29.0	GIS
5	Partial Cut	29	0	0	1.0	0	0	28.0	GIS
6	Partial Cut	10	0	0	1.0	0	0	9.0	GIS
7	Patch cuts	3.2	0	0	0	0	0	3.2	GIS
8	Right-of-Way	0.3	0	0	0	0	0	0.3	GIS
<b>TOTALS</b>		<b>251.5</b>	<b>3.2</b>	<b>0.1</b>	<b>13.7</b>	<b>0.3</b>	<b>1.7</b>	<b>232.5</b>	

4. **Cruisers and Cruise Dates:** Areas 1, 3, 4, 5, and 6 were cruised by Justin Dalton, Jay Morey, Jason McCoy, Kevin Berry, Bryce Rodgers, and Ed Holloran. Area 2 was cruised by John Tillotson, Jay Morey, Bryce Rodgers, and Ed Holloran in May, 2012.

5. **Cruise Method and Computation:**

Areas 1, 3, 4, 5, and 6 (partial cuts) -- These sale areas were variable plot cruised using a 20 BAF. 46 plots were sampled on a cruise grid of 6 chains by 5 chains, with a count/cruise ratio of 1:1.

Area 2 (partial cut) -- This area is a partial cut with 7 patch cuts scattered within it. The area was variable plot cruised using a 33.61 BAF. 25 plots were sampled on a cruise grid of 6 chains by 6 chains, with a count/cruise ratio of 1:1.

Area 7 (patch cuts) -- consists of 6 patch cuts within Area 2.

Area 8 R/W Right-of-way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 1, 3, 4, 5, and 6. Right-of-way totals 0.3 acres

All cruisers used Corvallis Micro Technology (CMT) data collectors, and were downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE	ACRES
1, 3, 4, 5, and 6	T07N R06W 12	13456	TAKE	129.5
2	T07N R06W 13	2	TAKE	99.5
7 (Area 2)	T07N R06W 13	7	MCC	3.2
8 R/W	T07N R06W	9	R/W	0.3

## 6. Timber Description:

Areas 1, 3, 4, 5, and 6 (partial cuts) – These stands are first entry thinnings, approximately 30 to 70 years old, consisting of Douglas-fir, western hemlock, red alder, and noble fir. The average “take” volume per acre is 6 MBF, tree size is 12 inches DBH, and 37 feet to a merchantable top (6” D.I.B. or 40% of the diameter at 16 feet

Area 2 (partial cut) – These stands are approximately 75 years old that has been thinned previously, consisting of Douglas-fir, and western hemlock. The average “take” volume per acre is 11 MBF, tree size is 17 inches DBH, and 67 feet to a merchantable top (6” D.I.B. or 40% of the diameter at 16 feet

Area 7 (patch cuts) These patch cuts are within Area 2. The average “take” volume per acre is 39 MBF, tree size is 19 inches DBH, and 73 feet to a merchantable top (6” D.I.B. or 40% of the diameter at 16 feet).

Area 8 R/W is similar to the timber description mentioned above for Areas 1 and 2. The average volume (net) is 19 MBF/acre.

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

Statistics for Stand Net B.F. /Acre volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 3, 4, 5, & 6	30%	10%	37.9%	5.6%
2	45%	9%	24.4%	5.0%

## 8. Volumes by Species and Log Grade: (See “Species, Sort, Grade” - Project Report, attached).

Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include “in-growth.”

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	15”	1,011	527	405	79	-	3.3	51
Hemlock/True-fir	13”	925	390	416	119	-	11	46
Alder	9”	61	-	-	-	61	2	3
<b>TOTALS</b>		<b>1997</b>	<b>917</b>	<b>821</b>	<b>198</b>	<b>61</b>		<b>100</b>

## 9. Approvals:

Prepared by: Ed Holloran

Date: May 23, 2012

Unit Forester Approval: 

Date: 7/11/2012

## 10. Attachments:

Cruise Designs and Maps – 8 pages  
Volume Reports – 5 pages  
Statistics Reports – 6 pages  
Log Stock Tables – TAKE – 3 pages  
Stand Table Summary – TAKE – 2 pages

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																
<div>T07N R06W S12 TyTAKE THRU T07N R06W S13 TyMCC</div>				Project:		TTW										Page		1		
				Acres		232.50										Date		7/11/2012		
																Time		9:57:16AM		
S Spp	So T	Gr rt ad	%	Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs
									Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	Per /Acre
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
H		DOCU														11		0.00	8.4	
H		DO2S	41	3.9	1,665	1,601	372		3	96	1		2	21	78	37	218	1.45	7.3	
H		DO3S	45	2.3	1,814	1,772	412		100	0			2	52	45	36	72	0.64	24.7	
H		DO4S	14	7.3	553	512	119	7	93			55	42	2		20	25	0.44	20.8	
H Totals			45	3.7	4,032	3,885	903	1	59	40	0	7	7	33	53	27	63	0.69	61.2	
D		DOCU														6		0.00	2.5	
D		DO2S	52	1.9	2,312	2,268	527		17	74	9	2	10	7	80	36	224	1.55	10.1	
D		DO3S	40	2.1	1,778	1,741	405		99	1		2	5	27	65	36	82	0.66	21.3	
D		DO4S	8	1.4	346	341	79	6	94	0		68	29	3	0	19	24	0.40	14.1	
D Totals			51	1.9	4,436	4,351	1,011	0	56	39	5	7	10	15	68	29	91	0.84	48.0	
A		DOCR	100		260	260	61		100			41	20		38	23	34	0.40	7.7	
A Totals			3		260	260	61		100			41	20		38	23	34	0.40	7.7	
NF		DOCU														16		0.00	.1	
NF		DO2S	81	10.6	88	78	18			81	19	19		28	53	32	179	1.52	.4	
NF		DO3S	19		17	17	4		100					100	0	32	54	0.58	.3	
NF Totals			1	8.8	105	96	22		18	66	16	16		41	43	30	109	1.03	.9	
Totals				2.7	8,834	8,592	1,998	1	58	39	3	9	9	23	60	28	73	0.74	117.8	

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1			
				Project: TTW										Date		7/11/2012			
														Time		7:22:38AM			
T07N R06W S12 TTAKE										T07N R06W S12 TTAKE									
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt	
07N		06W		12		13456		TAKE		129.50		46		105		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	Bd	CF/ Lf	
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft		
H DO CU																13		0.00	11.4
H DO 2S			16	1.1 578 572			74		15	85			10	33	57	35	198	1.43	2.9
H DO 3S			65	3.3 2,293 2,218			287		100					52	48	36	72	0.61	30.9
H DO 4S			19	5.4 648 613			79	10	90			64	33	3		19	24	0.41	25.8
H Totals			58	3.3 3,518 3,402			441	2	84	14		12	8	40	41	26	48	0.55	71.0
D DO CU																7		0.00	3.6
D DO 2S			4	16.0 100 84			11			100		100				17	81	1.43	1.0
D DO 3S			73	4.6 1,411 1,346			174		97	3		6	5	40	50	35	70	0.60	19.4
D DO 4S			23	2.1 423 415			54	8	92			65	30	5		19	24	0.40	17.0
D Totals			31	4.6 1,935 1,845			239	2	91	7		23	10	30	36	25	45	0.54	41.0
A DO CR			100	466 466			60		100			41	20		38	23	34	0.40	13.8
A Totals			8	466 466			60		100			41	20		38	23	34	0.40	13.8
NF DO CU																16		0.00	.2
NF DO 2S			81	10.6 157 140			18			81	19	19		28	53	32	179	1.51	.8
NF DO 3S			19	31 31			4		100					100		32	54	0.58	.6
NF Totals			3	8.8 188 171			22	18	66	16		16		41	43	30	109	1.03	1.6
Type Totals				3.6 6,106 5,884			762	2	85	12	0	18	9	34	39	26	46	0.54	127.4



T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1					
		Project: TTW												Date	7/11/2012				
														Time	7:43:10AM				
T07N R06W S13 TTAKE												T07N R06W S13 TTAKE							
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
07N	06W	13	2	TAKE	99.50	25	24	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 Ft	Bd Ft	CF/ Lf			
D	DO	CU												2		0.00		.9	
D	DO	2S	65	1.6	4,595	4,523	450	19	75	6		11	6	83	38	227	1.51	19.9	
D	DO	3S	31		2,128	2,128	212	100				6	16	78	37	95	0.72	22.5	
D	DO	4S	4		225	225	22	100			74	26			18	23	0.39	9.8	
D	Totals		62	1.0	6,949	6,877	684	47	49	4	2	10	9	79	33	130	1.02	53.1	
H	DO	CU																	
H	DO	2S	65	4.7	2,893	2,757	274		100				16	84	38	222	1.44	12.4	
H	DO	3S	26		1,090	1,090	108	100				8	55	37	34	71	0.70	15.4	
H	DO	4S	9	11.3	422	374	37	100			37	63			20	27	0.50	14.0	
H	Totals		38	4.2	4,405	4,221	420	35	65		3	8	24	65	28	91	0.91	46.6	
Type Totals				2.3	11,354	11,098	1,104	42	55	2	3	9	15	73	31	111	0.98	99.7	

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
				Project: TTW										Date		7/11/2012				
														Time		8:03:09AM				
T07N R06W S13 TMCC												T07N R06W S13 TMCC								
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
07N		06W		13		7		MCC		3.20		25		78		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	Bd	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft		
D DO CU										6	65	29	1	5	16	78	7		0.00	4.5
D DO 2S				76	1.4	20,954	20,664	66		6	65	29	1	5	16	78	37	287	1.86	72.0
D DO 3S				20	.3	5,381	5,364	17		100			2	3	25	70	36	92	0.75	58.3
D DO 4S				4		896	896	3		87	13		70	30			18	30	0.53	29.5
D Totals				69	1.1	27,232	26,924	86		27	51	22	4	6	17	74	33	164	1.28	164.3
H DO CU																	5		0.00	4.7
H DO 2S				58	2.6	7,368	7,180	23			84	16			39	61	36	249	1.56	28.9
H DO 3S				36	.9	4,583	4,542	15		100				2	42	56	35	85	0.73	53.1
H DO 4S				6	6.6	705	658	2		100			65	35			19	27	0.45	24.1
H Totals				31	2.2	12,656	12,380	40		42	49	9	3	3	38	56	31	112	0.95	110.8
Type Totals					1.5	39,888	39,304	126		32	50	18	4	5	24	68	32	143	1.15	275.1

T		Species, Sort Grade - Board Foot Volumes (Type)										Page 1								
TSPCSTGR		Project: TTW										Date 7/11/2012								
												Time 9:49:09AM								
T07N R06W S12 TRW										T07N R06W S12 TRW										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
07N	06W	12	8	RW	.30	46	260	1	W											
S Spp	So T	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
				Def%	Gross	Net		4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
H	DO	CU								13	0.00		15.1							
H	DO	2S	28	1.1	2,873	2,840	1	6	87	7	2	37	61	36	213	1.59	13.4			
H	DO	3S	57	2.6	5,918	5,763	2	99	1		0	64	36	35	79	0.68	73.1			
H	DO	4S	15	6.0	1,520	1,429	0	8	92		57	35	7	20	25	0.44	57.2			
H Totals			54	2.7	10,311	10,032	3	1	72	25	2	8	6	48	38	28	63	0.69	158.7	
D	DO	CU												9	0.00		6.3			
D	DO	2S	12	3.8	993	955	0		74	26	39	5	36	20	24	156	1.73	6.1		
D	DO	3S	71	5.2	5,512	5,225	2	98	2		2	2	59	37	34	83	0.74	63.1		
D	DO	4S	17	6.2	1,297	1,216	0	3	97		54	30	10	5	20	25	0.44	47.9		
D Totals			40	5.2	7,802	7,396	2	1	85	11	3	16	7	48	30	27	60	0.69	123.5	
A	DO	CR	100		803	803	0	100			31	15		54	26	38	0.43	21.1		
A Totals			4		803	803	0	100			31	15		54	26	38	0.43	21.1		
NF	DO	CU												16	0.00		.2			
NF	DO	2S	82	5.4	310	293	0		91	9	9		37	53	33	216	1.65	1.4		
NF	DO	3S	18		64	64	0	100					77	23	33	55	0.65	1.2		
NF Totals			2	4.4	374	357	0	18	75	8	8		44	48	32	131	1.14	2.7		
Type Totals					3.6	19,290	18,589	6	1	77	19	3	12	7	46	36	27	61	0.67	306.1

TC PSTATS			PROJECT STATISTICS							PAGE	1	
			PROJECT				TTW		DATE			7/11/2012
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt	
07N	06	12	13456	TAKE	THR	232.50		142	847	1	W	
07N	06W	13	7	MCC								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL			142	847	6.0							
CRUISE			72	467	6.5		17,287		2.7			
DBH COUNT												
REFOREST												
COUNT			64	347	5.4							
BLANKS			6									
100 %												
STAND SUMMARY												
			SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR			225	26.5	15.0	56		32.6	4,436	4,351	1,182	1,182
WHEMLOCK			213	39.8	13.2	43		37.7	4,032	3,885	1,133	1,133
R ALDER			23	7.7	9.3	24		3.6	260	260	72	72
NOB FIR			6	.3	20.4	83	0	.7	105	96	27	27
TOTAL			467	74.4	13.6	46		74.6	8,834	8,592	2,413	2,413
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL	68.1	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15	
DOUG FIR			131.4	8.8	216	236	257					
WHEMLOCK			86.6	5.9	141	150	159					
R ALDER			28.4	6.3	41	44	47					
NOB FIR			29.0	12.9	286	328	371					
TOTAL			126.5	5.9	178	189	200	639	160		71	
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15	
DOUG FIR			196.2	16.5	22	27	31					
WHEMLOCK			186.5	15.6	34	40	46					
R ALDER			501.7	42.1	4	8	11					
NOB FIR			697.8	58.5	0	0	1					
TOTAL			137.1	11.5	66	74	83	751	188		83	
CL	68.1	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15	
DOUG FIR			198.8	16.7	27	33	38					
WHEMLOCK			173.9	14.6	32	38	43					
R ALDER			472.5	39.6	2	4	5					
NOB FIR			679.9	57.0	0	1	1					
TOTAL			126.9	10.6	67	75	83	643	161		71	
CL	68.1	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10		15	
DOUG FIR			237.7	19.9	3,483	4,351	5,218					
WHEMLOCK			190.3	16.0	3,265	3,885	4,505					
R ALDER			467.2	39.2	158	260	362					
NOB FIR			681.2	57.1	41	96	150					
TOTAL			149.4	12.5	7,515	8,592	9,668	891	223		99	

TC TSTATS				STATISTICS				PAGE 1			
				PROJECT	TTW	DATE 7/11/2012					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	06W	12	13456	0PC1	129.50	46	461	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL				46	461	10.0					
CRUISE				25	266	10.6	25,203	1.1			
DBH COUNT											
REFOREST											
COUNT				21	172	8.2					
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE				TREES	AVG	BOLE	REL	BASAL	GROSS	NET	
TREES				/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	
									CF/AC	CF/AC	
HEMLEAV				74	48.8	15.3	54	62.6	6,867	6,705	
DOUGLEAV				76	44.2	15.6	53	58.7	5,951	5,627	
WHEMLOCK				54	49.2	12.1	39	39.6	3,518	3,402	
DOUG FIR				39	29.9	12.0	37	23.5	1,935	1,845	
R ALDER				10	13.8	9.3	24	6.5	466	466	
ALDRLEAV				3	6.0	11.6	41	4.3	358	358	
SNAG				4	1.2	16.2	39	1.7		121	
NFIRLEAV				2	.6	20.4	72	0	1.3	175	
NOB FIR				2	.6	20.4	83	0	1.3	175	
CEDLEAV				2	.4	19.7	41	.9	120	114	
TOTAL				266	194.6	13.7	45	200.4	19,576	18,863	
									5,722	5,722	
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
HEMLEAV				68.9	8.0	160	174	188			
DOUGLEAV				224.4	25.7	135	182	229			
WHEMLOCK				82.4	11.2	88	99	110			
DOUG FIR				53.3	8.5	69	76	82			
R ALDER				28.4	10.0	37	41	45			
ALDRLEAV				.0	.0	60	60	60			
SNAG											
NFIRLEAV				54.1	50.6	168	340	512			
NOB FIR				29.2	27.3	229	315	401			
CEDLEAV				135.0	126.4		875	1,981			
TOTAL				175.6	10.8	130	146	161	1,231	308	137
CL: 68.1 %				COEFF				TREES/ACRE		# OF PLOTS REQ.	INF. POP.
SD: 1.0				VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
HEMLEAV				78.2	11.5	43	49	54			
DOUGLEAV				82.7	12.2	39	44	50			
WHEMLOCK				120.9	17.8	40	49	58			
DOUG FIR				132.0	19.4	24	30	36			
R ALDER				276.5	40.7	8	14	19			
ALDRLEAV				410.4	60.5	2	6	10			
SNAG				468.3	69.0	0	1	2			
NFIRLEAV				393.3	57.9	0	1	1			
NOB FIR				393.3	57.9	0	1	1			
CEDLEAV				588.2	86.7	0	0	1			
TOTAL				40.5	6.0	183	195	206	66	16	7
CL: 68.1 %				COEFF				BASAL AREA/ACRE		# OF PLOTS REQ.	INF. POP.
SD: 1.0				VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
HEMLEAV				78.1	11.5	55	63	70			
DOUGLEAV				79.5	11.7	52	59	66			

TC TSTATS				STATISTICS			PAGE	2	
				PROJECT	TTW	DATE 7/11/2012			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	06W	12	13456	0PC1	129.50	46	461	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
WHEMLOCK		115.5	17.0	33	40	46			
DOUG FIR		124.8	18.4	19	23	28			
R ALDER		259.0	38.2	4	7	9			
ALDRLEAV		410.4	60.5	2	4	7			
SNAG		407.6	60.0	1	2	3			
NFIRLEAV		382.8	56.4	1	1	2			
NOB FIR		382.8	56.4	1	1	2			
CEDLEAV		474.2	69.9	0	1	1			
TOTAL		29.3	4.3	192	200	209	34	9	4
CL:	68.1 %	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
HEMLEAV		84.6	12.5	5,869	6,705	7,541			
DOUGLEAV		79.2	11.7	4,971	5,627	6,284			
WHEMLOCK		138.5	20.4	2,708	3,402	4,097			
DOUG FIR		128.6	18.9	1,495	1,845	2,194			
R ALDER		255.9	37.7	290	466	641			
ALDRLEAV		410.4	60.5	141	358	574			
SNAG									
NFIRLEAV		384.6	56.7	76	175	274			
NOB FIR		383.6	56.5	74	171	268			
CEDLEAV		597.9	88.1	14	114	214			
TOTAL		37.9	5.6	17,809	18,863	19,916	57	14	6

TC TSTATS				STATISTICS			PAGE 1			
				PROJECT	TTW	DATE 7/11/2012				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	12	13456	TAKE	129.50	46	163	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
PLOTS		TREES								
TOTAL		46	163	3.5						
CRUISE		25	105	4.2		12,107		.9		
DBH COUNT										
REFOREST										
COUNT		16	48	3.0						
BLANKS		5								
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		54	49.2	12.1	39	39.6	3,518	3,402	1,024	1,024
DOUG FIR		39	29.9	12.0	37	23.5	1,935	1,845	556	556
R ALDER		10	13.8	9.3	24	6.5	466	466	128	128
NOB FIR		2	.6	20.4	83	1.3	188	171	48	48
TOTAL		105	93.5	11.8	37	70.9	6,106	5,884	1,756	1,756
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		82.4	11.2	88	99	110				
DOUG FIR		53.3	8.5	69	76	82				
R ALDER		28.4	10.0	37	41	45				
NOB FIR		29.2	27.3	229	315	401				
TOTAL		82.3	8.1	82	89	97		271	68	30
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
WHEMLOCK		120.9	17.8	40	49	58				
DOUG FIR		132.0	19.4	24	30	36				
R ALDER		276.5	40.7	8	14	19				
NOB FIR		393.3	57.9	0	1	1				
TOTAL		70.2	10.3	84	93	103		197	49	22
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		115.5	17.0	33	40	46				
DOUG FIR		124.8	18.4	19	23	28				
R ALDER		259.0	38.2	4	7	9				
NOB FIR		382.8	56.4	1	1	2				
TOTAL		62.3	9.2	64	71	77		155	39	17
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		138.5	20.4	2,708	3,402	4,097				
DOUG FIR		128.6	18.9	1,495	1,845	2,194				
R ALDER		255.9	37.7	290	466	641				
NOB FIR		383.6	56.5	74	171	268				
TOTAL		76.2	11.2	5,224	5,884	6,544		232	58	26

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT		TTW		DATE	7/11/2012	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	13	2	0PC2	99.50	25	178	1	W	
			TREES	ESTIMATED		PERCENT				
			PER PLOT	TOTAL		SAMPLE				
PLOTS			TREES	TREES		TREES				
TOTAL			25	178		7.1				
CRUISE			11	79		7.2		12,423		.6
DBH COUNT										
REFOREST										
COUNT			14	99		7.1				
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE			TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS
TREES			/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC
DOUGLEAV			41	42.6	22.0	87	112.9	20,288	20,053	5,015
HEMLEAV			13	33.8	16.0	63	47.1	8,224	8,130	2,014
DOUG FIR			15	20.8	18.9	88	40.3	6,949	6,877	1,812
WHEMLOCK			9	26.7	15.2	51	33.6	4,405	4,221	1,201
SNAG			1	1.0	32.0	12	5.4			
TOTAL			79	124.9	18.7	73	239.3	39,867	39,281	10,043
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			37.2	5.8	521	553	585			
HEMLEAV			68.0	19.6	278	346	414			
DOUG FIR			36.7	9.8	323	358	393			
WHEMLOCK			57.8	20.4	174	219	264			
SNAG										
TOTAL			52.5	5.9	411	437	463	110	27	12
CL:	68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15
DOUGLEAV			48.9	10.0	38	43	47			
HEMLEAV			86.6	17.7	28	34	40			
DOUG FIR			120.1	24.5	16	21	26			
WHEMLOCK			97.3	19.9	21	27	32			
SNAG			233.9	47.7	1	1	1			
TOTAL			37.7	7.7	115	125	134	59	15	7
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			43.7	8.9	103	113	123			
HEMLEAV			92.2	18.8	38	47	56			
DOUG FIR			115.4	23.5	31	40	50			
WHEMLOCK			95.7	19.5	27	34	40			
SNAG			233.9	47.7	3	5	8			
TOTAL			24.4	5.0	227	239	251	25	6	3
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			44.6	9.1	18,230	20,053	21,875			
HEMLEAV			109.4	22.3	6,316	8,130	9,943			
DOUG FIR			118.6	24.2	5,214	6,877	8,539			
WHEMLOCK			102.4	20.9	3,340	4,221	5,103			
SNAG										
TOTAL			24.4	5.0	37,328	39,281	41,233	25	6	3



TC TSTATS				STATISTICS				PAGE 1			
				PROJECT	TTW			DATE	7/11/2012		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	06W	13	2	TAKE	99.50	25	55	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		25	55	2.2							
CRUISE		11	24	2.2	4,724	.5					
DBH COUNT											
REFOREST											
COUNT		13	31	2.4							
BLANKS		1									
100 %											
STAND SUMMARY											
		SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
		TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR		15	20.8	18.9	88		40.3	6,949	6,877	1,812	1,812
WHEMLOCK		9	26.7	15.2	51		33.6	4,405	4,221	1,201	1,201
TOTAL		24	47.5	16.9	67		73.9	11,354	11,098	3,013	3,013
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		36.7	9.8	323	358	393					
WHEMLOCK		57.8	20.4	174	219	264					
TOTAL		47.1	9.8	276	306	336	93	23	10		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		120.1	24.5	16	21	26					
WHEMLOCK		97.3	19.9	21	27	32					
TOTAL		69.4	14.2	41	47	54	201	50	22		
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		115.4	23.5	31	40	50					
WHEMLOCK		95.7	19.5	27	34	40					
TOTAL		61.5	12.6	65	74	83	158	39	18		
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		118.6	24.2	5,214	6,877	8,539					
WHEMLOCK		102.4	20.9	3,340	4,221	5,103					
TOTAL		67.2	13.7	9,577	11,098	12,619	188	47	21		

TC PLOGSTVB		Log Stock Table - MBF																		
T07N R06W S12 TyTAKE THRU T07N R06W S13 TyMCC					Project: TTW										Page 1					
					Acres 103.00										Date 7/11/2012					
															Time 7:51:50AM					
Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
H		DO	2S	24	7		7	.8					7							
H		DO	2S	32	77		76	8.5					0	59	17					
H		DO	2S	40	303	4.9	289	31.9					11	168	57	53				
H		DO	3S	28	0		0	.0			0									
H		DO	3S	30	9		9	1.0			9									
H		DO	3S	32	206	4.4	197	21.8			37	51	109	0						
H		DO	3S	34	19		19	2.1			19									
H		DO	3S	36	30		30	3.4			30	0								
H		DO	3S	38	10		10	1.1			10									
H		DO	3S	40	147		146	16.2			131	1	15							
H		DO	4S	12	2		2	.2			2									
H		DO	4S	14	0		0	.0			0									
H		DO	4S	16	46	6.0	43	4.7		3	36	4								
H		DO	4S	18	9		9	1.0		0	9									
H		DO	4S	20	12		12	1.3		5	6	0	0							
H		DO	4S	22	25	19.6	20	2.2			20									
H		DO	4S	24	11		11	1.3			6	6								
H		DO	4S	26	6		6	.7			6									
H		DO	4S	28	3		3	.4			3									
H		DO	4S	30	10		10	1.1			10									
H		DO	4S	32	4	39.8	3	.3			3									
H		Totals			937	3.7	903	45.2		8	337	62	135	235	73	53				
D		DO	2S	16	8	11.9	7	.7						7	0					
D		DO	2S	18	0		0	.0								0				
D		DO	2S	20	5	21.2	4	.4						0	4	0				
D		DO	2S	24	28	3.1	27	2.7								27				
D		DO	2S	26	1		1	.1								1				
D		DO	2S	30	27		27	2.6					26	0	1					
D		DO	2S	32	38		38	3.7						31	4	2				
D		DO	2S	40	430	1.6	423	41.8					64	163	136	57	3	0	0	
D		DO	3S	16	0		0	.0					0							
D		DO	3S	18	4		4	.4					4							
D		DO	3S	20	6		6	.6				0			6					
D		DO	3S	24	0		0	.0			0									
D		DO	3S	26	4		4	.4				4								
D		DO	3S	28	4		4	.4				4								

## Log Stock Table - MBF

T07N R06W S12 TyTAKE  
THRU  
T07N R06W S13 TyMCC

Project: TTW  
Acres 103.00

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Date 7/11/2012  
Time 7:51:50AM

S T Spp	So Gr rt	Log de Len	Gross MBF	Def %	Net MBF	% Sp	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	3S	30	12		12	1.2					12							
D	DO	3S	32	103	7.5	95	9.4			8	68	19	0						
D	DO	3S	34	14		14	1.4			14									
D	DO	3S	36	62	1.4	61	6.0			23	38								
D	DO	3S	40	204		204	20.2			92	63	48							
D	DO	4S	12	5		5	.5			4	2								
D	DO	4S	14	1		1	.1			1	0								
D	DO	4S	16	30	1.6	30	2.9		4	23	2		0						
D	DO	4S	18	13		13	1.3			13	0								
D	DO	4S	20	4		4	.4			4	0								
D	DO	4S	22	2		2	.2			2	0								
D	DO	4S	24	7		7	.7			7	0								
D	DO	4S	26	6		6	.6			6									
D	DO	4S	28	4		4	.4			4									
D	DO	4S	30	3		3	.3			3									
D	DO	4S	32	3	20.2	3	.3			3	0								
D	DO	4S	36	0		0	.0					0							
D	Totals			1,031	1.9	1,011	50.6		4	208	182	174	202	151	88	3	0	0	
A	DO	CR	16	21		21	35.0			21									
A	DO	CR	20	4		4	6.3			4									
A	DO	CR	24	5		5	7.7			5									
A	DO	CR	30	8		8	12.7			8									
A	DO	CR	36	15		15	25.4			15									
A	DO	CR	40	8		8	12.8			8									
A	Totals			61		61	3.0			61									
NF	DO	2S	16	6	38.1	4	15.7							4					
NF	DO	2S	32	5		5	23.1					5							
NF	DO	2S	40	10		10	43.1					10		0					
NF	DO	3S	32	4		4	18.0			4									
NF	DO	3S	40	0		0	.0			0									
NF	Totals			24	8.8	22	1.1			4		15		4					
C	DO	2S	32	0	6.6	0	79.3									0	0		
C	DO	3S	30	0		0	12.5			0									
C	DO	3S	32	0		0	8.2					0							
C	Totals			0	5.3	0	.0			0		0				0	0		

TC PLOGSTVB

## Log Stock Table - MBF

T07N R06W S12 TyTAKE  
THRU  
T07N R06W S13 TyMCC

Project: TTW  
Acres 103.00

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Date 7/11/2012  
Time 7:51:50AM

S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
Total		All Species		2,054	2.7	1,998	100.0		13	609	245	308	452	225	144	3	0		0

TC PSTNDSUM		Stand Table Summary										Page	1			
												Date:	7/11/2012			
T07N R06W S12 TyTAKE THRU T07N R06W S13 TyMCC					Project TTW					Time:			7:51:51AM			
					Acres 232.50					Grown Year:						
S Spc	T	Tot			Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Sample Trees	FF 16'				Av Ht	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF
D		8	2	85	21	.963	.34	.96	4.0	20.0		4	19		9	4
D		9	8	88	38	3.044	1.34	3.04	7.3	32.5		22	99		51	23
D		10	10	88	62	3.082	1.68	3.08	12.0	44.0		37	136		86	32
D		11	12	85	70	2.606	1.72	2.61	16.2	54.1		42	141		98	33
D		12	8	85	75	1.287	1.01	2.14	13.4	44.0		29	94		67	22
D		13	21	88	69	1.472	1.36	1.84	19.2	63.8		35	118		82	27
D		14	18	84	67	1.580	1.69	2.21	19.6	51.4		43	114		101	26
D		15	19	85	71	1.649	2.02	3.02	18.8	59.1		57	179		132	42
D		16	12	86	139	.884	1.23	2.65	23.3	93.1		62	246		143	57
D		17	24	86	109	3.473	5.47	8.45	26.2	95.7		221	808		514	188
D		18	20	85	112	2.424	4.28	5.54	32.2	114.7		179	636		415	148
D		19	12	89	121	.627	1.23	1.27	42.9	167.8		55	214		127	50
D		20	11	85	97	.735	1.60	1.49	39.5	136.1		59	203		137	47
D		21	10	86	114	.728	1.75	1.87	38.8	149.4		73	280		169	65
D		22	5	89	104	.493	1.30	1.00	54.8	203.1		55	203		127	47
D		23	6	86	120	.850	2.45	2.54	44.4	177.1		113	449		262	104
D		24	10	88	133	.462	1.45	1.36	51.2	218.3		70	298		162	69
D		25	4	86	126	.044	.15	.13	53.2	225.0		7	30		16	7
D		26	3	83	134	.031	.11	.09	59.7	232.2		5	21		13	5
D		27	3	85	114	.028	.11	.08	63.6	245.0		5	19		11	4
D		28	2	86	121	.018	.08	.05	66.2	293.3		3	16		8	4
D		29	3	84	136	.025	.11	.07	78.1	331.3		5	22		12	5
D		30	1	80	131	.008	.04	.02	75.7	300.0		2	7		4	2
D		49	1	91	129	.000	.00	.00	220.0	1223.3		0	0		0	0
D		Totals	225	86	82	26.513	32.55	45.54	26.0	95.5		1,182	4,351		2,748	1,011
H		8	9	85	25	4.691	1.64	4.69	5.0	17.5		23	82		55	19
H		9	5	85	45	1.966	.87	1.04	13.1	56.7		14	59		32	14
H		10	12	82	45	6.773	3.69	6.77	11.1	37.7		75	255		175	59
H		11	26	87	65	6.886	4.50	8.13	12.9	43.2		105	351		243	82
H		12	11	83	51	3.666	2.88	4.19	14.1	40.0		59	167		137	39
H		13	16	86	60	1.838	1.69	2.29	19.5	60.0		44	137		103	32
H		14	19	85	62	2.332	2.46	3.08	18.6	52.5		57	162		133	38
H		15	18	84	84	1.382	1.70	2.76	21.9	76.9		60	212		141	49
H		16	22	87	85	3.304	4.59	6.31	26.8	96.8		169	611		393	142
H		17	22	88	92	3.168	4.99	6.08	32.6	117.4		198	713		460	166
H		18	7	91	115	.116	.20	.32	32.2	134.2		10	43		24	10
H		19	8	91	92	.866	1.70	1.73	40.0	145.1		69	251		161	58
H		20	13	87	94	1.530	3.34	3.08	42.2	144.7		130	446		303	104
H		21	11	87	95	.343	.83	.69	39.1	140.1		27	96		62	22
H		22	4	90	93	.780	2.06	1.40	55.1	190.1		77	267		180	62
H		23	1	85	79	.000	.00	.00	51.0	140.0		0	0		0	0
H		24	4	82	52	.147	.46	.16	64.5	109.9		11	18		24	4
H		25	1	89	111	.000	.00	.00	57.0	250.0		0	0		0	0
H		26	3	85	130	.014	.05	.04	68.4	315.0		3	13		7	3
H		27	1	87	80	.000	.00	.00	72.0	245.0		0	0		0	0
H		Totals	213	85	61	39.803	37.66	52.76	21.5	73.6		1,133	3,885		2,633	903
A		8	4	87	20	2.087	.73	2.09	5.0	20.0		10	42		24	10
A		9	8	86	35	3.299	1.46	3.30	7.5	30.0		25	99		58	23
A		10	2	86	40	.668	.36	.67	9.0	30.0		6	20		14	5
A		11	8	87	63	1.659	1.10	1.66	18.3	60.0		30	100		71	23
A		13	1	87	57	.001	.00	.00	24.0	60.0		0	0		0	0

TC		PSTNDSUM		Stand Table Summary										Page		2		
														Date:		7/11/2012		
T07N R06W S12 TyTAKE THRU T07N R06W S13 TyMCC					Project					TTW					Time:		7:51:51AM	
					Acres					232.50					Grown Year:			
S		Tot						Average Log		Net		Net		T o t a l s				
Sp	T	DBH	Sample Trees	FF 16'	Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre	Bd.Ft. Acre	Tons	Cunits	MBF		
A		Totals	23	86	37	7.715	3.65	7.71	9.3	33.8		72	260		167	61		
NF		18	3	91	91	.207	.36	.41	34.5	125.0		14	52		33	12		
NF		24	3	82	121	.116	.36	.35	36.4	126.8		13	44		29	10		
NF		Totals	6	88	102	.323	.73	.76	35.4	125.8		27	96		63	22		
C		15	1	76	46	.000	.00	.00	22.0	40.0		0	0		0	0		
C		37	1	87	135	.000	.00	.00	117.0	570.0		0	0		0	0		
C		Totals	2	78	59	.001	.00	.00	53.4	215.0		0	0		0	0		
Totals			469	86	66	74.354	74.59	106.78	22.6	80.5		2,413	8,592		5,611	1,998		

Revised August, 2002

# CRUISE DESIGN ASTORIA DISTRICT

Sale Name: Thin to win Area(s) 1, 3, 4, 5, & 6

Harvest Type: CC PC CT "Automark Thinning" (circle one)

Approx. Cruise Acres: 140 Estimated CV% 30 <sup>Net BF or</sup> BA/Acre SE% Objective      <sup>Net BF or</sup> BA/Acre

Planned Sale Volume: 700 MMBF Estimated Sale Area Value/Acre: \$ 1,400

- A. **Cruise Goals:** (a) Grade minimum 70 conifer and 0 hardwood trees:  
 (b) Sample X cruise plots; (c) Other goals ( X 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 130 sq. ft. Cruiser needs to select 6 or 7 leave trees per plot.

## B. Cruise Design:

1. **Plot Cruises:** BAF 20 (Full point; Half point) (circle one)  
 Fixed Plot Size      Plot Radius      feet  
 Cruise Line Direction(s) EAST ↔ WEST  
 Cruise Line Spacing 6 (chains) (feet)  
 Cruise Plot Spacing 5 (chains) (feet)  
 Grade/Count Ratio 1:1
2. **ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir      Hemlock       
 Spruce      True Fir      Cedar      Hardwood

## 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", 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
4. **Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

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: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"

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

8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at 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 Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

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

Cruise Design by: T. L. LOTSON

Approved by: [Signature]

Date: 5/10/12



## EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-13-55  
THIN TO WIN  
PORTIONS OF SECTIONS 12 AND 13, T7N, R6W,  
W.M., CLATSOP COUNTY, OR

1 inch = 1,000 feet

660 330 0 660 1,320 Feet

### LEGEND

- ..... Timber Sale Boundary
- Streams
- Ownership
- Paved Road
- Surfaced Road
- Unknown Road

AREAS 1, 3, 4, 5, 6

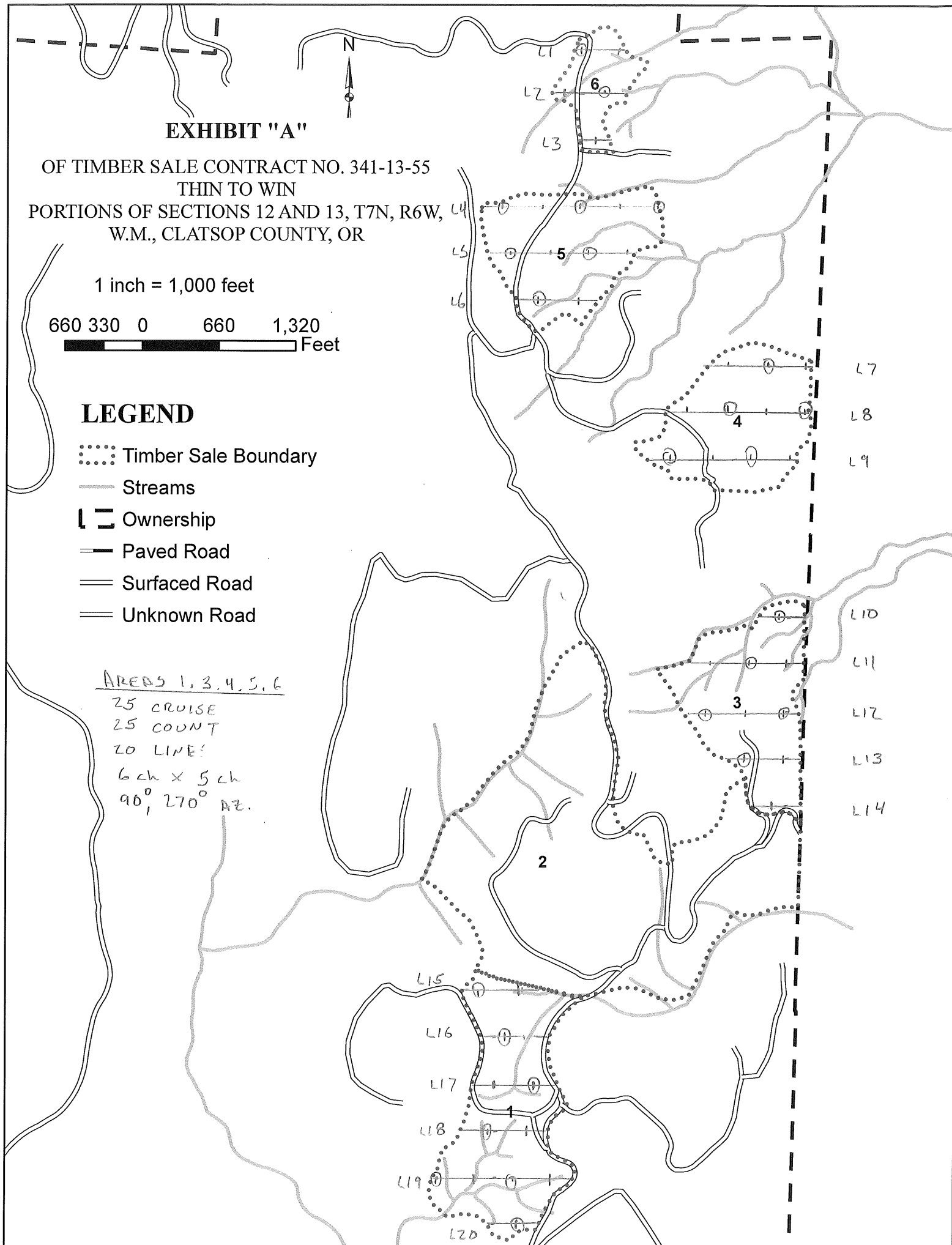
25 CRUISE

25 COUNT

20 LINE

6 ch x 5 ch

90°, 270° AZ.



# EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-13-55  
THIN TO WIN  
PORTIONS OF SECTIONS 12 AND 13, T7N, R6W,  
W.M., CLATSOP COUNTY, OR

1 inch = 1,000 feet

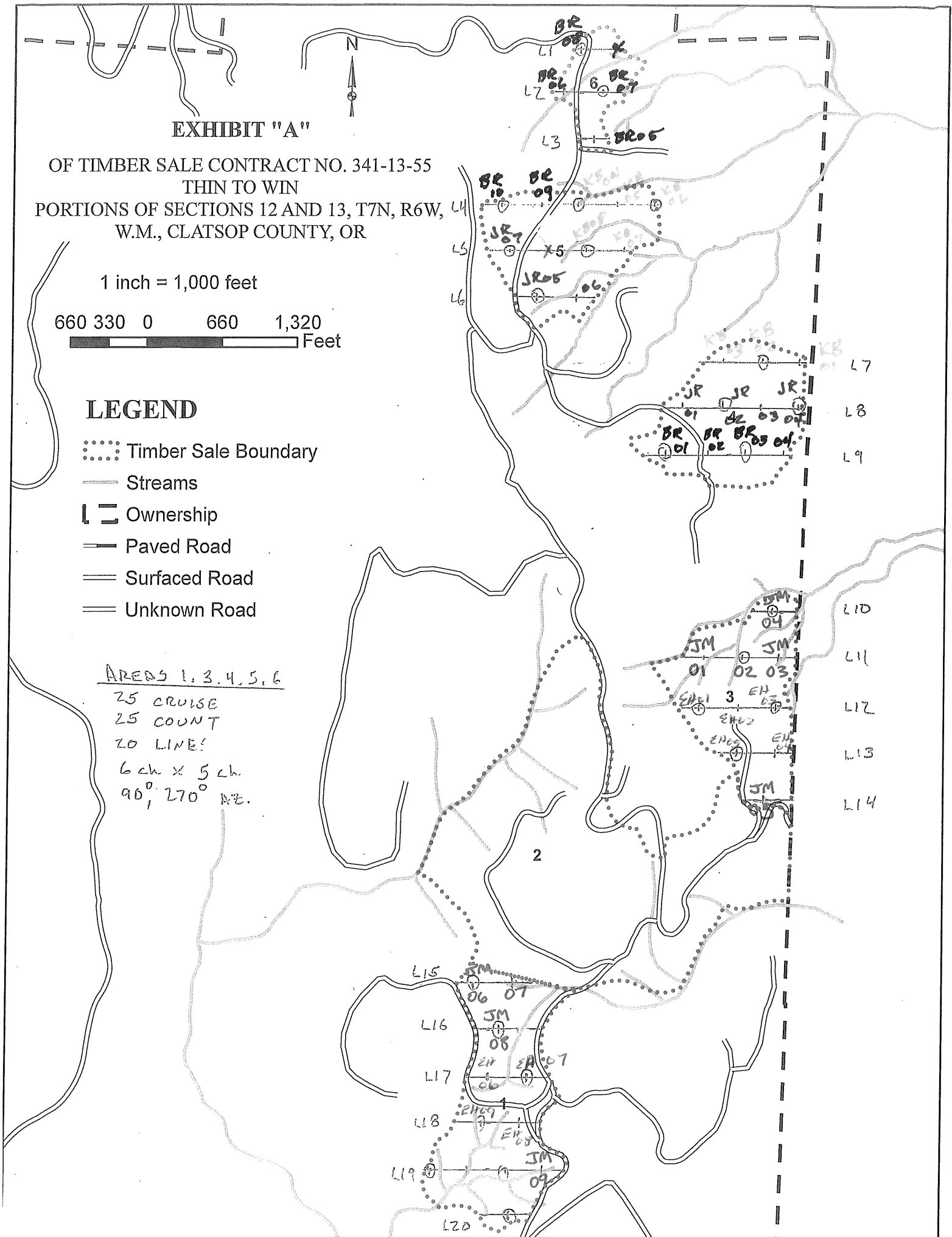
660 330 0 660 1,320 Feet

## LEGEND

- ⋯ Timber Sale Boundary
- Streams
- ┌ ┐ Ownership
- Paved Road
- == Surfaced Road
- == Unknown Road

AREAS 1, 3, 4, 5, 6

25 CRUISE  
25 COUNT  
20 LINES  
6 ch x 5 ch.  
90°, 270° BE.



## CRUISE DESIGN ASTORIA DISTRICT

Sale Name: THIN TO WIN Area(s) 2

Harvest Type: CC (PC) CT "Automark Thinning" (circle one)

Approx. Cruise Acres: 100 Estimated CV% 45 <sup>Net BF or</sup>BA/Acre SE% Objective 9 <sup>Net BF or</sup>BA/Acre

Planned Sale Volume: 1200 MMBF Estimated Sale Area Value/Acre: \$ 3,900

- A. **Cruise Goals:** (a) Grade minimum 60 conifer and 10 hardwood trees:  
 (b) Sample X cruise plots; (c) Other goals ( X 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 160 sq. ft. Cruiser needs to select 4 to 5 leave trees per plot.

**B. Cruise Design:**

1. **Plot Cruises:** BAF 33.61 (Full point) Half point (circle one)

Fixed Plot Size      Plot Radius      feet

Cruise Line Direction(s) EAST WEST

Cruise Line Spacing 6 (chains) (feet)

Cruise Plot Spacing 6 (chains) (feet)

Grade/Count Ratio 1:1

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

**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 ", 7 " for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
4. **Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.

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: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"

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

8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at 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 Logger's Tape (with dbh on back) Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint.

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

Cruise Design by: TILLOTSON  
Approved by: [Signature]  
Date: 5/10/12

## EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-13-55  
THIN TO WIN  
PORTIONS OF SECTIONS 12 AND 13, T7N, R6W,  
W.M., CLATSOP COUNTY, OR

1 inch = 1,000 feet

660 330 0 660 1,320 Feet

### LEGEND

..... Timber Sale Boundary

~~~~~ Streams

┌ ─ Ownership

══ Paved Road

══ Surfaced Road

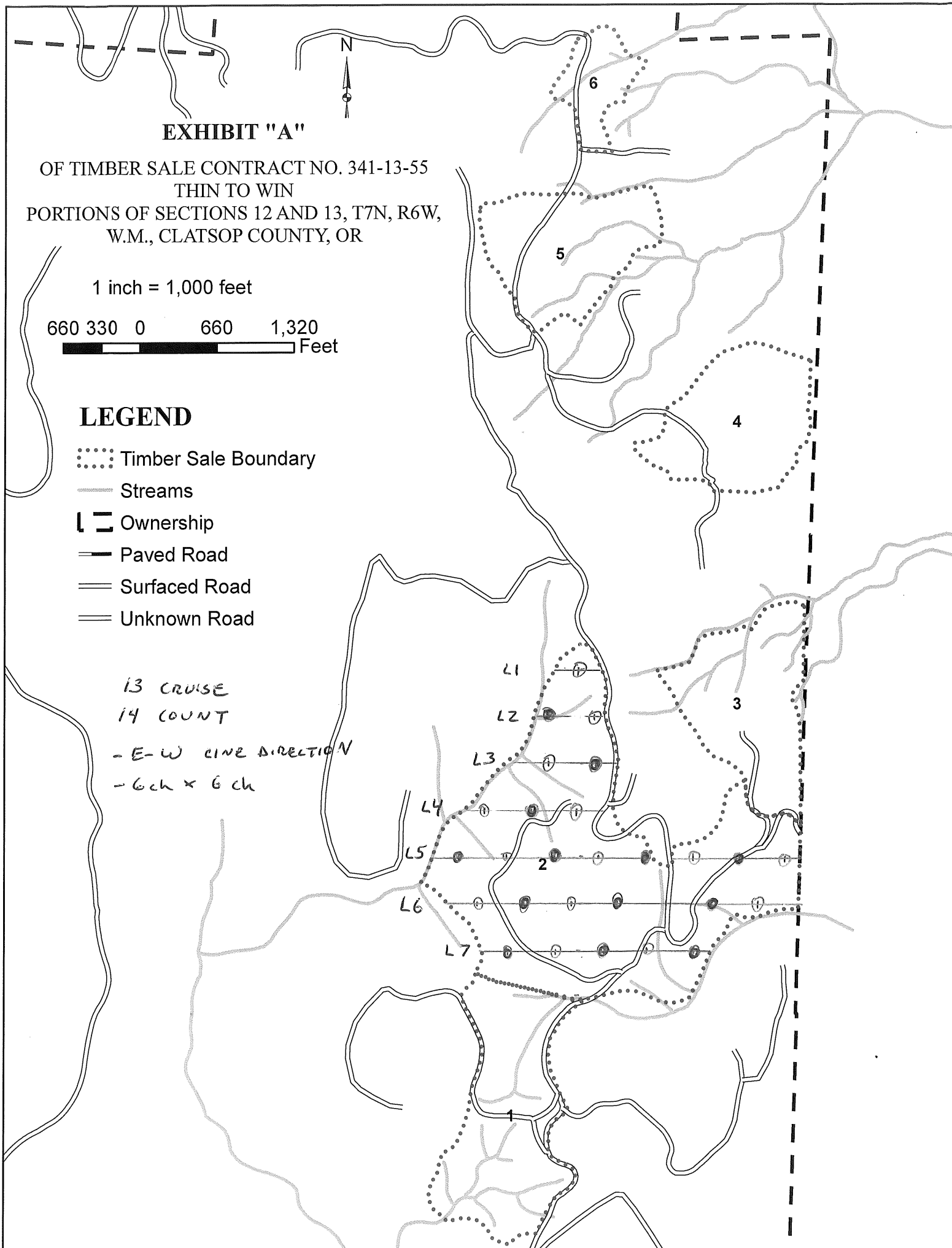
══ Unknown Road

13 CRUISE

14 COUNT

- E-W CINE DIRECTION

- 6 ch x 6 ch



## EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-13-55  
THIN TO WIN  
PORTIONS OF SECTIONS 12 AND 13, T7N, R6W,  
W.M., CLATSOP COUNTY, OR

1 inch = 1,000 feet

660 330 0 660 1,320 Feet

### LEGEND

..... Timber Sale Boundary

— Streams

— Ownership

— Paved Road

— Surfaced Road

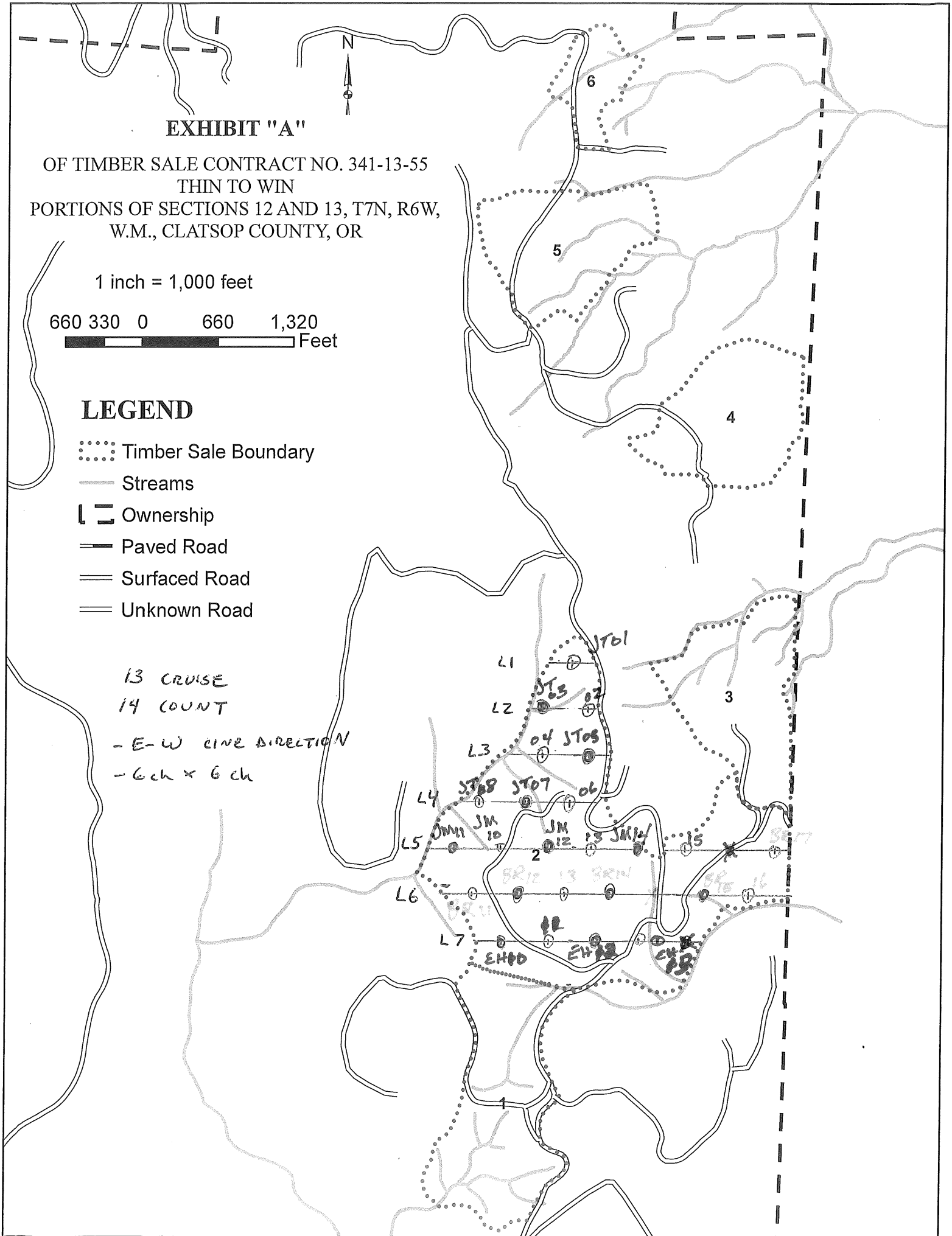
— Unknown Road

13 CRUISE

14 COUNT

- E-W LINE DIRECTION

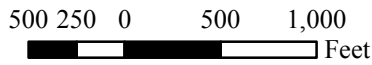
- 6 ch x 6 ch



# LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-13-55  
THIN TO WIN  
PORTIONS OF SECTIONS 1, 12 AND 13, T7N,  
R6W, W.M., CLATSOP COUNTY, OR

1 inch = 1,000 feet



## LEGEND

- Ownership
- Survey Monument
- Section Lines
- Contour Lines
- Timber Sale Boundary
- Area Boundary
- Patch Cut
- Green Tree Retention Area
- Fish Stream
- Nonfish Stream
- Buffer
- Wet Area
- Paved Road
- Surfaced Road
- Unsurfaced Road
- Landing
- New Construction
- Cable Logging
- Tractor Logging



| APPROXIMATE NET ACRES |            |          |
|-----------------------|------------|----------|
| AREA                  | PATCH CUTS | PC ACRES |
| AREA 1                |            | 35.5     |
| AREA 2                |            | 99.5     |
| AREA 3                |            | 28.0     |
| AREA 4                |            | 29.0     |
| AREA 5                |            | 28.0     |
| AREA 6                |            | 9.0      |
| AREA 7                | 3.2        |          |
| AREA 8 R/W            | 0.3        |          |
| TOTAL                 | 3.5        | 229.0    |
| TOTAL ACRES           | =          | 232.5    |

## LOGGING BREAKDOWN

| AREA       | TRACTOR | CABLE |
|------------|---------|-------|
| Area 1     | 100%    | 0%    |
| Area 2     | 88%     | 12%   |
| Area 3     | 40%     | 60%   |
| Area 4     | 31%     | 69%   |
| Area 5     | 100%    | 0%    |
| Area 6     | 100%    | 0%    |
| Area 7     | 94%     | 6%    |
| Area 8 R/W | 100%    | 0%    |
| TOTAL %    | 79%     | 21%   |

