Timber Sale Appraisal
Lost Overlook
Sale AT-341-2019-28-

District: Astoria

Date: December 19, 2018

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$281,684.72	$182,576.88	$464,261.60
		Project Work:	($48,696.00)
		Advertised Value:	$415,565.60

Timber Sale Appraisal
Lost Overlook
Sale AT-341-2019-28-

District: Astoria **Date: December 19, 2018**

Timber Description

Location: Section 30, T4N, R8W and section 36, T4N, R9W, WM, Clatsop County, Oregon

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	14	0	97
Western Hemlock / Fir	19	0	98
Sitka Spruce	35	0	95
Red Cedar	1	0	95
Alder (Red)	15	0	96

Volume by Grade	2S	3S & 4S 6"-11"	(12"+) 2S	Camprun	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	10	20	0	0	0	0	0	0	30
Western Hemlock / Fir	715	253	0	0	0	0	0	0	968
Sitka Spruce	0	8	117	0	0	0	0	0	125
Red Cedar	0	0	0	1	0	0	0	0	1
Alder (Red)	0	0	0	0	95	204	163	255	717
Total	725	281	117	1	95	204	163	255	1,841

Comments: Pond Values Used: Local Pond Values, August 2018.

Expected Log Markets: Mist, Willamina, Banks, North Plains, Clatskanie, Tillamook, Garibaldi, Forest Grove, Warrenton, Elma, WA, Longview, WA, Vancouver, WA and Chehalis, WA.

Bigleaf maple and other hardwoods stumpage = pond value - logging cost.
$210.43/mbf = $510/mbf - $299.57/mbf

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

Slash and Landing Piling (Includes move-in and pile materials) = $2,390

Machine Washing for Invasive Weed Compliance = $1,000

Ditch Filters:
20 bales of straw @ $10.00/bale = $200
8 hours of labor @ $40/hr = $320

TOTAL Other Costs (with Profit & Risk to be added): $3,910

Other Costs (No Profit & Risk added):
None.

ROAD MAINTENANCE
(See attached Road Maintenance Cost Summary Sheet)
TOTAL Road Maintenance: $13,188/1,841 MBF = $7.17/MBF

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Logging Conditions

Combination#: 1

Douglas - Fir	100.00%
Western Hemlock / Fir	100.00%
Sitka Spruce	100.00%
Red Cedar	100.00%
Alder (Red)	100.00%

Logging System: Cable: Large Tower >=70 **Process:** Manual Falling/Delimbing

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

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

loads / day: 9 **bd. ft / load:** 4400

cost / mbf: $171.72

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

District: Astoria **Date: December 19, 2018**

Logging Costs

Operating Seasons:	2.00	**Profit Risk:**	10%
Project Costs:	$48,696.00	**Other Costs (P/R):**	$3,910.00
Slash Disposal:	$0.00	**Other Costs:**	$0.00

Miles of Road

Road Maintenance: $7.17

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	4.2
Western Hemlock / Fir	$0.00	2.0	4.0
Sitka Spruce	$0.00	1.0	5.2
Red Cedar	$0.00	1.0	4.8
Alder (Red)	$0.00	3.0	3.5

Timber Sale Appraisal
Lost Overlook

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District: Astoria

Date: December 19, 2018

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
$171.72	$7.39	$4.77	$77.66	$2.12	$26.37	$0.00	$2.00	$0.00	$292.03
Western Hemlock / Fir									
$171.72	$7.31	$4.77	$121.12	$2.12	$30.70	$0.00	$2.00	$0.00	$339.74
Sitka Spruce									
$171.72	$7.53	$4.77	$191.82	$2.12	$37.80	$0.00	$2.00	$0.00	$417.76
Red Cedar									
$171.72	$7.53	$4.77	$207.82	$2.12	$39.40	$0.00	$2.00	$0.00	$435.36
Alder (Red)									
$171.72	$7.46	$4.77	$94.10	$2.12	$28.02	$0.00	$2.00	$0.00	$310.19

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$683.33	$391.30	$0.00
Western Hemlock / Fir	$0.00	$609.55	$269.81	$0.00
Sitka Spruce	$0.00	$481.40	$63.64	$0.00
Red Cedar	$0.00	$1,250.00	$814.64	$0.00
Alder (Red)	$0.00	$564.83	$254.64	$0.00

Timber Sale Appraisal
Lost Overlook
Sale AT-341-2019-28-

District: Astoria **Date: December 19, 2018**

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
Red Cedar	0	$0.00	$0.00
Alder (Red)	0	$0.00	$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	30	$391.30	$11,739.00
Western Hemlock / Fir	968	$269.81	$261,176.08
Sitka Spruce	125	$63.64	$7,955.00
Red Cedar	1	$814.64	$814.64
Alder (Red)	717	$254.64	$182,576.88

Gross Timber Sale Value

Recovery: $464,261.60

Prepared By: Ella Salkeld **Phone:** 503-325-5451

Site Prep Appraisal

Sale Number: 341-19-26
Sale Name: Lost Overlook
Date: 05/25/2018

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	0.25	0.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour C325	Total Cost/Area	
1	MC	A	0	0	$129.00	$0.00	
					In-unit Piling	**Sub Total =**	$0.00

Sale Area	Number of Landings to be Piled	Cost/Landing Pile	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area	
1	5	$220.00	$1,100.00	0	$5.00	$0.00	
					Materials	**Sub Total =**	$0.00
					Landing Piling	**Sub Total =**	$1,100.00

Move-In Allowance	Number of Move-In's	Total Move-In Allowance					
$1,290.00	1	$1,290.00			Move-In	**Sub Total =**	$1,290.00
						Grand Total =	**$2,390.00**

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale:	**Lost Overlook**	**MBF:**	1,841
Date:	May 25,2018	**$$/MBF:**	$7.16
By:	Bryce Rodgers		

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	
Interim Operations	Grader 14G	$778	1	8	$100	$1,578	
Final Road Maintenance	Grader 14G	$778	1	33	$100	$4,078	
	Dump Truck 12CY	$163	1	8	$79	$795	
	FE Loader C966	$778	1	2	$83	$944	
	Vibratory Roller	$778	1	33	$77	$3,319	
	Water Truck 2,500 gallon	$190	1	15	$89	$1,525	
	Small 4 x 4 (C 580) Backhoe	$321	1	4	$77	$629	
	Labor			8	$40	$320	
Total							**$13,188**

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	3.0	3.00	1.0	8

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	1.5	6.2	4.1	33
Vibratory Roller	1.5	6.2	4.1	33

Process and compact: All crushed rock roads

Fry Creek 1.5

Sweethome Creek .3

North Fork 4

Unnamed Spur .4

Grade & Process Total = 6.2

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Lost Overlook

ROAD CONSTRUCTION:

	Road segment	Length/Sta	Cost	
Project No. 1	1A -1B, 1C-1D	21.75		
			$37,214	
	TOTALS			$37,214

ROAD VACATING:

	Road segment	Length/Sta	Cost	
Project No. 2	V1 - V2, V3		$3,287	
	Project Road Maintenance		$522.00	
	TOTALS			$3,809

TOTAL

MOVE IN:

Equipment	Cost
Dozer (D8)	$1,406.00
Excavator (C330)	$1,406.00
Excavator (C315)	$805.00
Skidder (C518)	$717.00
Dump Trucks (12cy x 5)	$815.00
Front End Loader (C966)	$778.00
Grader (14G)	$778.00
Vibratory Roller	$778.00
Water Truck (2,500 gallon)	$190.00
TOTAL	$7,673.00

GRAND TOTAL **$48,696**

Compiled By: Kraig Kirkpatriuck FL Date: 05/09/2018

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Lost Overlook
ROAD: 1A -1B, 1C - 1D
POINTS:

NEW CONSTRUCTION: _____ **STATIONS** 0.00 **MILES**
IMPROVEMENT: _____ **STATIONS** 0.00 **MILES**

CLEARING & GRUBBING

	Method	Acres/amount	x	Rate	=	Cost
1A-1B			x		=	
0+00-2+75	*Complete*					
2+75-19+75	Scatter outside of R/W, $/ac	1.60		$ 1,337		$2,139.20

SUB TOTAL FOR CLEARING & GRUBBING $2,139

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
1A-1B			x			
	Common Drift $/cy	1,885	x	$1.90	=	$3,581.50
4+90 - 7+20	End-haul Excavation $/cy	2,000	x	$4.00	=	$8,000.00
	Embank compaction $/cy	2,000	x	$0.70	=	$1,400.00
	Landing Construction $/ldg	1	x	$389	=	$389.00
	Fill Armor placement w/330, $/hr	8	x	$155	=	$1,240.00
1C-1D			x		=	
	Balanced Construction, $/sta	1	x	$122.00	=	$122.00
	Landing Construction, $/ldg	1.00	x	$389.00	=	$389.00
			x		=	
			x		=	
			x			
			x		=	

SUB TOTAL FOR EXCAVATION $15,122

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
1A-1B				$0.00					$0.00
4+20	18"CPP	40	$19.53	$781.20					$0.00
8+90	18"CPP	30	$19.53	$585.90					$0.00
				$0.00					$0.00
				$0.00					$0.00
				$0.00					$0.00
				$0.00					$0.00
				$0.00					$0.00
				$0.00					$0.00
				$0.00					$0.00

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	6' X 2 1/2" white fiber glass posts	2	$20.00	$40.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $1,407

Subtotal of Clearing, Exc., Culv. ***$18,668***

SURFACING

Subgrade prep:

Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16'	20.75	x	$24.83	$515.22
Subgrade Compaction	20.75	x	$20.19	$418.94

ROAD SEGMENT	1A to 1B			POINT TO POINT		Sta. to Sta.					
				1A to 1B		0+00 to 19+75		TOTAL	Rate/	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)	Sta./ amt.		
Base Rock	4"-0" crushed	0+00-19+75	8	station	50	stations	19.75	988	$4.27	$4,217	
Turnarounds	4"-0" crushed	11+10,18+30		TA	22	TA's	2	44	$4.27	$188	
Turnouts	4"-0" crushed	4+90,10+30,15+9	8	TO	22	TO's	3	66	$4.27	$282	
Traction Rock	1 1/2"-0" crushed	0+00-8+00, 12+50-16+70	2	station	13	stations	12	156	$4.27	$666	
Subgrade Reinforcement	6"-0" pit-run	17+75-19+75	12	station	75	stations	2	150	$10.01	$1,502	
Dissipator	6"-0" pit-run	4+20,7+00	N/A	dissipator	11	dissipator	2	22	$10.01	$220	
Landings	6"-0" pit-run	19+75	N/A	Landing	88	Landings	1	88	$10.01	$881	
Fill Armor	24"-6" riprap	8+25	N/A	fill	400	fills	1	400	$8.39	$3,356	
Total Rock for Road Segment:			1A to 1B					1,914			$11,311

ROAD SEGMENT	1C to1D			POINT TO POINT		Sta. to Sta.					
				1C to1D		0+00 to 1+00		TOTAL	Rate/	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)	Sta./ amt.		
Base Rock	6"-0" pit-run	0+00-2+00	12	station	75	stations	1	75	$10.01	$751	
Landings	6"-0" pit-run	2+00	N/A	Landing	88	Landings	1	88	$10.01	$881	
Total Rock for Road Segment:			1C to1D					163			$1,632

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact Base Rock (4"-0"):	19.75	$56.48	$1,115.48
Water, Process & Compact Base Rock (1 1/2"-0"):	13	$56.48	$734.24

	24"-6" rr	6"-0"pr	4"-0" crushed	1 1/2"-0" crushed		Total		
SUB TOTAL FOR SURFACING	400	423	1,098	156		2,077	2,077	**$15,727**

SPECIAL PROJECTS

Description	Cy/Amount	Rate	Cost
pit-run development	423	$2.60	$1,099.80
riprap development	400	$4.30	$1,720.00

SUB TOTAL FOR SPECIAL PROJECTS $2,820

Subtotal of Surfacing & Spec. Proj. *$18,546*

Subtotal of Clearing, Exc.,Culv. *$18,668*

GRAND TOTAL **$37,214**

Compiled By: Kraig Kirkpatrick

Date: 05/09/2018

Lost Overlook

Project No.2 Road Vacating

Location/Description	C330 Excavator	Truck w/Trailer	Labor	Seeding	Straw Mulch	Total
V1 to V2 0+00-29+00		2 hrs	5 hrs	50 lb.	6 bales	
Sidecast Pullback (3 sta.)	7 hrs					
Establish stream channels	2 hrs					
Waterbars (24)	3 hrs					
V3		hrs	3 hrs	50 lb.	6 bales	
Establish stream channel	4 hrs					
Total	16 hrs	2 hr	8 hrs	100 lb	12 Bales	
Rate	$155 /hr	$99 /hr	$40 /hr	$1.60 /lb	$10.73 /Bale	
Cost	$2,480	$198	$320	$160	$129	**$3,287**

Prepared by: Kraig Kirkpatrick Date: 05/09/2018

Projects Road Maintenance Cost Summary

Sale: Lost Overlook
Date: 25-May-18
By: Kraig Kirkpatrick

Type	Equipment/Rationale			Hours	Rate	Cost	
Project Work	Grader 14G			4	$100	$400	
Final Haul	Dump Truck 12CY			1	$79	$79	
Road	FE Loader C966			0.5	$86	$43	
Maintenance						$0	
						$0	
Total							$522

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	0.00	0.0
Vibratory Roller	1.5	0.00	0.0

NOTE: Spot Grade and spot rock: Fry Creek Road and Rector Loolout Road Miles

Miles

Miles

Miles

TOTAL= 0.00 Miles

CRUSHED ROCK COST

SALE NAME: Lost Overlook
PROJECT: No.1
Stockpile: Sweethome

MATERIAL: 1 1/2"-0" and 4"0"

DATE: 05/09/2018
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	19.75	1,254					0.85	0.75	0.10	1.70
TOTAL	19.75	1,254								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL							**0.85**	**0.75**	**0.10**	**1.70**
						Average Round Trip Distance (miles)			3.40	

ROCK HAUL:

Truck type:	D20	No. trucks:	
Delay min.:	8	Efficiency:	85%
Truck type:	D12	No. trucks:	5
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul:	$3.01	/cy
Load:	$0.48	/cy
Spread:	$0.78	/cy

Production: cy/day = 1,050

CRUSHED ROCK HAUL COSTS 1,254 cy @ **$4.27 /cy**

PIT RUN ROCK COST

SALE NAME: Lost Overlook
PROJECT: No.1
QUARRY: Rector Ridge

MATERIAL: Pit Run

DATE: 05/09/2018
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	19.75	260				1.00	3.00	1.40	0.10	5.50
1C-1D	2.00	163				1.00	3.00	1.40	0.10	5.50
TOTAL	21.75 STA./NO.	423 CU. YD.								AVERAGE HAUL
CUBIC YARD WEIGHTED HAUL						**1.0**	**3.0**	**1.4**	**0.1**	**5.50**

Average Round Trip Distance (miles) 11.00

ROCK HAUL:

Truck type:	D20	No. trucks:	
Delay min.:	8	Efficiency:	85%
Truck type:	D12	No. trucks:	5
Delay min.:	6	Efficiency:	85%
Truck type:	D10	No. trucks:	
Delay min.:	5	Efficiency:	85%

Ave haul: $7.01 /cy
Load: $1.08 /cy
Spread: $1.92 /cy

Production: cy/day = 450

PIT RUN ROCK HAUL COSTS 423 cy @ **$10.01 /cy**

RIP RAP ROCK COST

SALE NAME: Lost Overlook
PROJECT: No.1
QUARRY: Rector Ridge

MATERIAL: Rip Rap

DATE: 05/09/2018
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
1A-1B	19.75	400				1.00	3.00	1.40	0.10	5.50
TOTAL	19.75 STA./NO.	400 CU. YD.								AVERAGE HAUL
CUBIC YARD WEIGHTED HAUL						1.0	3.0	1.4	0.1	5.50

Average Round Trip Distance (miles) 11.00

ROCK HAUL:

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

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

Ave haul: $7.01 /cy
Load: $1.38 /cy
Develop: ______ /cy

Production: cy/day = 450

RIP RAP ROCK HAUL COSTS 400 cy @ **$8.39 /cy**

Lost Overlook
FY 2019
TIMBER CRUISE REPORT

1. **Sale Area Location:** Area 1 are located in portions of Section 30, T4N, R8W, W.M., Clatsop County, Oregon and in portions of Section 36, T4N, R9W, W.M., Clatsop County, Oregon

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Stream Buffer Acres	New R/W Acres	Existing RW Acres	Net Acreage	Survey Method
1	Modified Clearcut	97	20	0	0	77	GIS
2	R/W	1	N/A	N/A	N/A	1	Length x Width
TOTALS		**98**	**20**	**0**	**0**	**78**	

4. **Cruisers and Cruise Dates:** Area 1 was cruised by Bryce Rodgers, John Choate, Cody Valencia, Ella Salkeld, Matt Dimick, and Kellen Salseina on May 3, 2018.

5. **Cruise Method and Computation:** Area 1 is a modified clearcut unit. A variable plot cruise with a 40 BAF was used for this Area. The plots were located on a 4 chain by 3 chain grid, with a count/grade plot ratio of 2:1. A total of 65 plots were sampled.

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

   Cruisers used Allegro 2 data collectors that were downloaded to the Atterbury Super A.C.E. program at the Astoria District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria District office.

AREA	PROJECT	TRACT	CRUISE TYPE
1	LO	A1	00MC, TAKE
2	LO	TK	R/W

   Timber Description: **Area 1** is an approximately 65 year old stand of western hemlock, red alder with some Sitka Spruce and Douglas fir. The average hemlock take tree size is 19 inches in DBH, with an average merchantable tree height of 46 feet. The average red alder take tree size for harvest is 15 inches DBH, with an average merchantable tree height of 47 feet. The average take Sitka Spruce tree size 35 inches DBH, with an average merchantable tree height of 72 feet. The average take Douglas-fir tree size is 14 inches DBH, with an average merchantable tree height of 51 feet. The average volume per acre to be harvested (net) is approximately 24 MBF. All trees were cruised to a merchantable top of 6 inch DIB or 40% fp.

   Area 2 R/W is similar to the timber description mentioned above in the timber sale area 1. The average volume 24 MBF/Acre (net).

   Cedar is a reserved species.

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

Area	Target CV	Target SE%	Actual CV	Actual SE%
1	70	11	50.5	6.3

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

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

Conifer

Species	DBH	Net Vol. MBF	2 Saw	3Saw	4 Saw	% D & B	% Sale
Western Hemlock/fir	19	968	715	171	82	2.5	53
Sitka Spruce	35	125	117	6	2	-	7
Douglas-fir	14	30	10	13	7	-	1
Cedar	41	1	1	0	0	-	<1

*Approximately 68% of the Sitka Spruce is greater than 20" scale diameter.

Hardwoods

Species	DBH	Net Vol. MBF	12"+	10-12"	8-10"	6-8"	% D & B	% Sale
Red Alder	15	717	163	204	95	255	0.4	39

TOTAL NET VOLUME	1,841 MBF

8. **Prepared by:** Cody Valencia **Date:** 5/25/2018

10. **Approved by:** **Date:** 6/1/18

11. **Attachments:**
Cruise Plan & Maps (3 pages)
Species, Sort, Grade Report (3 pages)
Statistics Reports (6 pages)
Stand Table Report (2 pages)
Log Stock Table Report MBF (3 pages)

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Lost Overlook **Area** 1

Harvest Type: (MC) Modified Clearcut

Approx. Cruise Acres: 77 **Estimated CV%** 70 Net BF/Acre **SE% Objective** 11 Net BF/Acre

Planned Sale Volume : 2.3 MMBF **Estimated Sale Area Value/Acre:** $11,600/Acre
(29 MBF/Ac. @ $400/Acre)

A. Cruise Goals: (a) Grade minimum 100 conifer and 20 hardwood trees (b) Sample 60 cruise plots (20 grade/ 40 count); (c) Other goals (____ Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

B. Cruise Design:

1. Plot Cruises: BAF **40** (Full point)
Cruise Line Directions: 156°/336°
Cruise Line Spacing 4 (chains) 264 (Feet)
Cruise Plot Spacing 3 (chains) 198 (Feet)
Grade/Count Ratio 1:2

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

DO NOT RECORD 12', 22' and 32' (for Hardwoods).

DO NOT RECORD 22' LENGTHS.

All hardwood will be measured to a G, or as appropriate.

C. Tree Measurements:

1. Diameter: Minimum DBH to cruise is 8" for conifers and 8" for hardwoods. Record dbh to nearest ½" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.

2. Bole Length: Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.

3. Top Cruise Diameter (TCD): Minimum top outside bark is 7" for conifers and 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for conifer trees > 18" dbh.

4. Form Factors: (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree. Hardwoods shall be recorded in 8' and 10' multiples.

6. **Species, Sort, and Grade Codes:**

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

B. Sort: Use code "1" (Domestic).

C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
Hardwoods: Alder Grades: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill, or R = Camp Run; 0 = Cull.
All Maple Camp Run = R

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

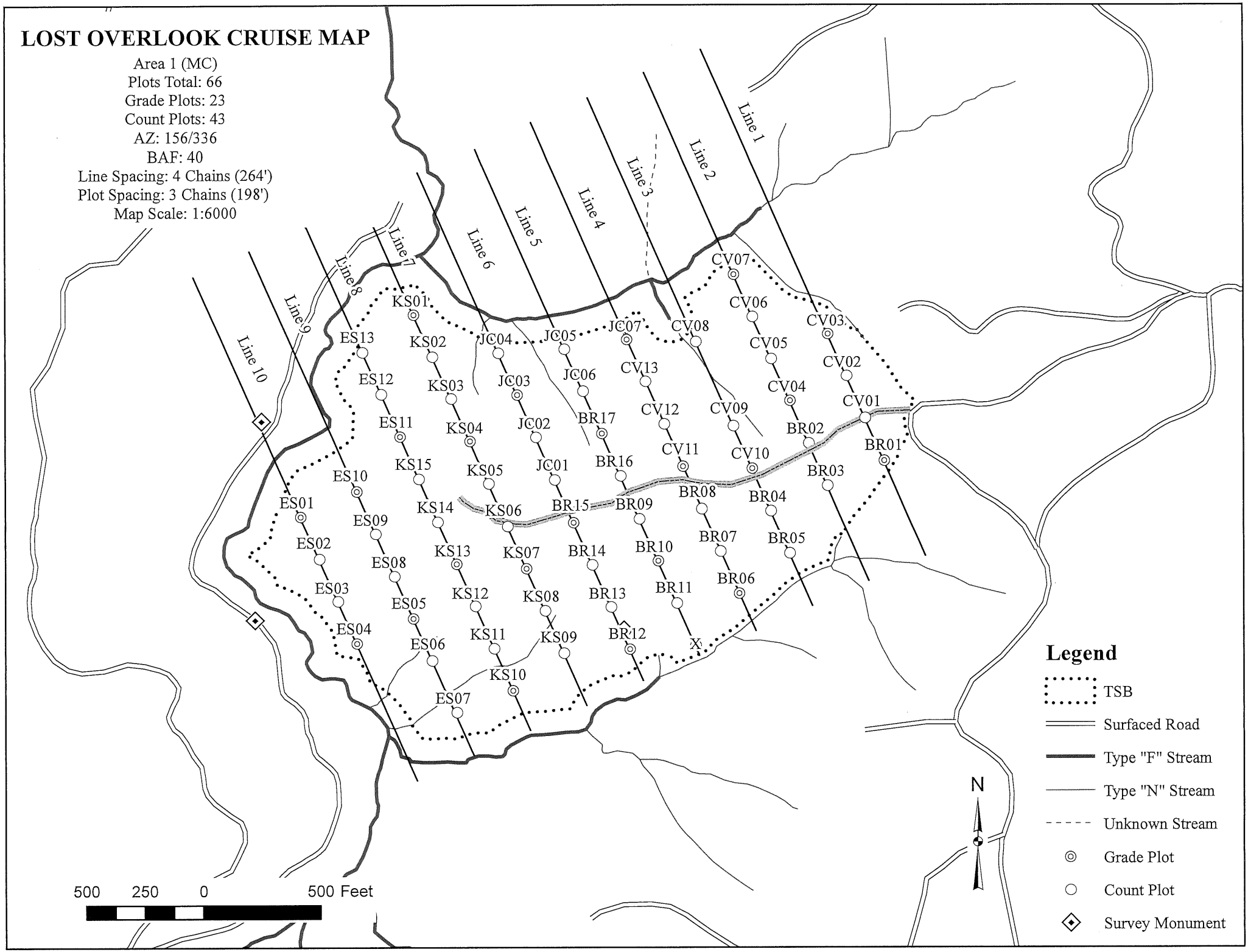
8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy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

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

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

Cruise Design by: Bruce Rodgers
Approved by: [signature]
Date: 5/30/2018

X:\STATE_FORESTS\2019 FY Sales\Lost_Overlook\Sale Prep\Cruise\LO_Cruisedesign_A1


LOST OVERLOOK CRUISE MAP
Area 1 (MC)
Plots Total: 66
Grade Plots: 23
Count Plots: 43
AZ: 156/336
BAF: 40
Line Spacing: 4 Chains (264')
Plot Spacing: 3 Chains (198')
Map Scale: 1:6000
Line 1
Line 2
Line 3
Line 4
Line 5
Line 6
Line 7
Line 8
Line 9
Line 10
KS01
KS02
KS03
KS04
KS05
KS06
KS07
KS08
KS09
KS10
KS11
KS12
KS13
KS14
KS15
ES01
ES02
ES03
ES04
ES05
ES06
ES07
ES08
ES09
ES10
ES11
ES12
ES13
JC01
JC02
JC03
JC04
JC05
JC06
JC07
BR01
BR02
BR03
BR04
BR05
BR06
BR07
BR08
BR09
BR10
BR11
BR12
BR13
BR14
BR15
BR16
BR17
CV01
CV02
CV03
CV04
CV05
CV06
CV07
CV08
CV09
CV10
CV11
CV12
CV13
X
500 250 0 500 Feet
N
Legend
TSB
Surfaced Road
Type "F" Stream
Type "N" Stream
Unknown Stream
Grade Plot
Count Plot
Survey Monument

TC PSPCSTGR

Species, Sort Grade - Board Foot Volumes (Project)

T04N R08W S30 TyTAKE	77.00	**Project:** LO	**Page** 1
T04N R08W S30 TyR/W	1.00	**Acres** 78.00	**Date** 5/31/2018
			Time 8:26:48AM

Spp	S T	So Gr rt ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent of Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
A		DOCU														8	10		0.00	6.3
A		DO1S	22		2,092	2,092	163			85	15		25	11	64	36	13	238	1.70	8.8
A		DO2S	29	1.5	2,653	2,613	204		66	16	18	3	14	8	76	35	11	165	1.29	15.9
A		DO3S	13		1,214	1,214	95		100			9	50	16	25	28	9	70	0.85	17.3
A		DO4S	36		3,269	3,269	255		100			19	21		59	29	6	44	0.52	74.5
A	**Totals**		39	.4	9,228	9,188	717		67	24	9	9	24	7	61	29	8	75	0.78	122.7
S		DO2S	93		1,500	1,500	117				100	0			100	40	21	794	4.98	1.9
S		DO3S	5		74	74	6		97		3			40	60	36	7	67	1.56	1.1
S		DO4S	2		23	23	2		100			100				20	7	30	1.05	.8
S	**Totals**		7		1,598	1,598	125		6		94	2		2	97	35	14	424	3.46	3.8
H		DOCU														31	12		0.00	5.0
H		DO2S	73	2.5	9,393	9,163	715			33	67	0	4	10	86	38	16	430	2.79	21.3
H		DO3S	18	2.7	2,252	2,192	171		93		7	6	3	31	60	35	8	90	0.91	24.5
H		DO4S	9	2.2	1,077	1,054	82		78	22		51	49			20	7	35	0.57	30.3
H	**Totals**		53	2.5	12,723	12,409	968		23	26	51	6	7	13	74	30	10	153	1.39	81.1
D		DO2S	32		124	124	10			0	100				100	40	17	463	2.32	.3
D		DO3S	44		173	173	13		100					40	60	34	8	87	0.72	2.0
D		DO4S	24		90	90	7	0	100			34			66	23	6	30	0.44	3.0
D	**Totals**		2		387	387	30	0	68	0	32	8		18	74	28	7	74	0.71	5.2
C		DO2S	65	2.8	5	5	0				100			47	53	35	22	717	6.51	.0
C		DO3S	32		3	3	0			18	82	5		14	82	32	16	447	3.78	.0
C		DO4S	3		0	0	0		100			67	33			20	8	37	1.42	.0
C	**Totals**		0	1.8	8	8	1		3	6	91	3	1	35	60	29	16	421	4.53	.0
Totals				1.5	23,944	23,590	1,841 ~~1,840~~	0	40	23	37	7	13	10	70	30	9	111	1.07	212.8

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: LO

Page 1
Date 5/30/2018
Time 7:37:19AM

T04N R08W S30 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
04N	08W	30	A1	TAKE	77.00	65	108	1	W

T04N R08W S30 TTAKE

Spp	ST	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
H		DO	CU														31	12		0.00	5.0
H		DO	2S	73	2.5	9,393	9,163	706			33	67	0	4	10	86	38	16	430	2.79	21.3
H		DO	3S	18	2.7	2,252	2,192	169		93		7	6	3	31	60	35	8	90	0.91	24.5
H		DO	4S	9	2.2	1,077	1,054	81		78	22		51	49			20	7	35	0.57	30.3
H	**Totals**			53	2.5	12,723	12,409	955		23	26	51	6	7	13	74	30	10	153	1.39	81.1
A		DO	CU														8	10		0.00	6.3
A		DO	1S	22		2,092	2,092	161			85	15		25	11	64	36	13	238	1.70	8.8
A		DO	2S	29	1.5	2,653	2,613	201		66	16	18	3	14	8	76	35	11	165	1.29	15.9
A		DO	3S	13		1,214	1,214	93		100			9	50	16	25	28	9	70	0.85	17.3
A		DO	4S	36		3,269	3,269	252		100			19	21		59	29	6	44	0.52	74.5
A	**Totals**			39	.4	9,228	9,188	708		67	24	9	9	24	7	61	29	8	75	0.78	122.7
S		DO	2S	93		1,492	1,492	115				100				100	40	21	789	4.95	1.9
S		DO	3S	5		73	73	6		100					41	59	36	7	66	1.55	1.1
S		DO	4S	2		23	23	2		100			100				20	7	30	1.05	.8
S	**Totals**			7		1,588	1,588	122		6		94	1		2	97	35	14	420	3.44	3.8
D		DO	2S	31		123	123	9				100				100	40	17	460	2.30	.3
D		DO	3S	45		173	173	13		100					40	60	34	8	87	0.72	2.0
D		DO	4S	24		89	89	7		100			34			66	23	6	30	0.44	3.0
D	**Totals**			2		385	385	30		68		32	8		18	74	28	7	74	0.71	5.2
Type Totals					1.5	23,924	23,570	1,815		40	23	37	7	13	10	70	30	9	111	1.07	212.8

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: LO

Page 1
Date 5/30/2018
Time 7:58:41AM

T04N R08W S30 TR/W

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
04N	08W	30	TK	R/W	1.00	65	120	1	W

T04N R08W S30 TR/W

Spp	ST	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
H		DO	CU														31	12		0.00	5.0
H		DO	2S	73	2.5	9,393	9,163	9			33	67	0	4	10	86	38	16	430	2.79	21.3
H		DO	3S	18	2.7	2,252	2,192	2		93		7	6	3	31	60	35	8	90	0.91	24.5
H		DO	4S	9	2.2	1,077	1,054	1		78	22		51	49			20	7	35	0.57	30.3
H	**Totals**			49	2.5	12,723	12,409	12		23	26	51	6	7	13	74	30	10	153	1.39	81.1
A		DO	CU														8	10		0.00	6.3
A		DO	1S	22		2,092	2,092	2			85	15		25	11	64	36	13	238	1.70	8.8
A		DO	2S	29	1.5	2,653	2,613	3		66	16	18	3	14	8	76	35	11	165	1.29	15.9
A		DO	3S	13		1,214	1,214	1		100			9	50	16	25	28	9	70	0.85	17.3
A		DO	4S	36		3,269	3,269	3		100			19	21		59	29	6	44	0.52	74.5
A	**Totals**			37	.4	9,228	9,188	9		67	24	9	9	24	7	61	29	8	75	0.78	122.7
S		DO	2S	90		2,176	2,176	2				100	3			97	37	26	1294	7.67	1.7
S		DO	3S	9		213	213	0		23		77			9	91	36	10	266	2.56	.8
S		DO	4S	1		15	15	0		100			100				20	7	30	1.05	.5
S	**Totals**			10		2,404	2,404	2		3		97	3		1	96	34	18	802	5.55	3.0
C		DO	2S	65	2.8	418	406	0				100			47	53	35	22	717	6.51	.6
C		DO	3S	32		198	198	0			18	82	5		14	82	32	16	447	3.78	.4
C		DO	4S	3		17	17	0		100			67	33			20	8	37	1.42	.5
C	**Totals**			2	1.8	633	621	1		3	6	91	3	1	35	60	29	16	421	4.53	1.5
D		DO	2S	47		239	239	0			8	92				100	40	19	613	3.35	.4
D		DO	3S	33		166	166	0		100					40	60	34	8	87	0.72	1.9
D		DO	4S	20		95	95	0	10	90			41			59	21	5	25	0.39	3.8
D	**Totals**			2		500	500	1	2	50	4	44	8		13	79	26	7	82	0.81	6.1
Type Totals					1.4	25,488	25,123	25	0	37	22	41	7	12	10	71	29	9	117	1.12	214.3

TC PSTATS

PROJECT STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08	30	A1	TAKE	78.00	130	729	1	W
04N	08W	30	TK	R/W					

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	130	729	5.6		
CRUISE	46	228	5.0	11,135	2.0
DBH COUNT					
REFOREST					
COUNT	84	501	6.0		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	116	57.3	18.5	46	24.9	107.1	12,723	12,409	3,350	3,350
R ALDER	86	80.5	14.6	47	24.5	93.5	9,228	9,188	2,810	2,810
S SPRUCE	8	1.9	34.6	72	2.1	12.3	1,598	1,598	455	455
SNAG	4	.0	20.8	34	0.0	.1				
DOUG FIR	9	3.0	13.8	51	0.8	3.1	387	387	103	103
WR CEDAR	5	.0	41.0	61	0.0	.1	8	8	3	3
TOTAL	*228*	*142.8*	*16.7*	*47*	*53.0*	*216.2*	*23,944*	*23,590*	*6,720*	*6,720*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - BF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
WHEMLOCK	120.6	11.2	478	538	598			
R ALDER	89.0	9.6	147	163	178			
S SPRUCE	126.7	47.8	1,423	2,726	4,029			
SNAG								
DOUG FIR	143.7	50.7	200	407	613			
WR CEDAR	26.4	13.1	744	856	968			
TOTAL	*195.4*	*12.9*	*405*	*465*	*526*	*1,524*	*381*	*169*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	TREES/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	156.3	13.7	49	57	65			
R ALDER	169.0	14.8	69	81	92			
S SPRUCE	334.9	29.4	1	2	2			
SNAG	367.0	32.2	0	0	0			
DOUG FIR	626.4	54.9	1	3	5			
WR CEDAR	463.2	40.6	0	0	0			
TOTAL	*121.5*	*10.7*	*128*	*143*	*158*	*590*	*147*	*66*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	BASAL AREA/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	153.8	13.5	93	107	122			
R ALDER	163.8	14.4	80	94	107			
S SPRUCE	333.0	29.2	9	12	16			
SNAG	325.9	28.6	0	0	0			
DOUG FIR	587.9	51.5	1	3	5			
WR CEDAR	466.1	40.8	0	0	0			
TOTAL	*114.4*	*10.0*	*195*	*216*	*238*	*522*	*131*	*58*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	NET BF/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	165.2	14.5	10,612	12,409	14,205			
R ALDER	169.5	14.9	7,823	9,188	10,553			
S SPRUCE	329.8	28.9	1,136	1,598	2,060			
SNAG								

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08	30	A1	TAKE	78.00	130	729	1	W
04N	08W	30	TK	R/W					

CL 68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.00	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR	580.4	50.9	190	387	583			
WR CEDAR	458.9	40.2	5	8	11			
TOTAL	*120.3*	*10.5*	*21,103*	*23,590*	*26,076*	*578*	*144*	*64*

TC TSTATS

STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	30	A1	TAKE	77.00	65	351	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	65	351	5.4		
CRUISE	23	108	4.7	10,989	1.0
DBH COUNT					
REFOREST					
COUNT	42	243	5.8		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	58	57.3	18.5	46	24.9	107.1	12,723	12,409	3,350	3,350
R ALDER	43	80.5	14.6	47	24.5	93.5	9,228	9,188	2,810	2,810
S SPRUCE	3	1.9	34.5	72	2.1	12.3	1,588	1,588	453	453
DOUG FIR	4	3.0	13.8	51	0.8	3.1	385	385	103	103
TOTAL	*108*	*142.7*	*16.7*	*47*	*52.9*	*216.0*	*23,924*	*23,570*	*6,716*	*6,716*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

SAMPLE TREES - BF

CL: 68.1 % / SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
WHEMLOCK	121.1	15.9	452	538	623			
R ALDER	89.5	13.6	140	163	185			
S SPRUCE	31.7	21.9	687	880	1,073			
DOUG FIR	128.0	73.2	62	230	398			
TOTAL	*136.5*	*13.1*	*336*	*387*	*437*	*744*	*186*	*83*

TREES/ACRE

CL: 68.1 % / SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	87.7	10.9	51	57	64			
R ALDER	99.1	12.3	71	81	90			
S SPRUCE	229.4	28.4	1	2	2			
DOUG FIR	444.8	55.1	1	3	5			
TOTAL	*52.0*	*6.4*	*134*	*143*	*152*	*108*	*27*	*12*

BASAL AREA/ACRE

CL: 68.1 % / SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	85.4	10.6	96	107	118			
R ALDER	94.5	11.7	83	94	104			
S SPRUCE	229.3	28.4	9	12	16			
DOUG FIR	418.0	51.8	1	3	5			
TOTAL	*42.9*	*5.3*	*205*	*216*	*227*	*74*	*18*	*8*

NET BF/ACRE

CL: 68.1 % / SD: 1.0	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	95.7	11.9	10,936	12,409	13,881			
R ALDER	99.6	12.3	8,055	9,188	10,322			
S SPRUCE	228.2	28.3	1,139	1,588	2,037			
DOUG FIR	413.0	51.2	188	385	582			
TOTAL	*50.5*	*6.3*	*22,094*	*23,570*	*25,046*	*102*	*25*	*11*

TC TSTATS

STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	30	A1	00MC	77.00	65	378	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	65	378	5.8		
CRUISE	23	120	5.2	11,313	1.1
DBH COUNT					
REFOREST					
COUNT	42	258	6.1		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	58	57.3	18.5	46	24.9	107.1	12,723	12,409	3,350	3,350
R ALDER	43	80.5	14.6	47	24.5	93.5	9,228	9,188	2,810	2,810
S SPRUCE	3	1.9	34.5	72	2.1	12.3	1,588	1,588	453	453
SNAG	4	3.4	20.8	34	1.8	8.0				
CEDLEAV	5	.7	41.0	61	1.1	6.8	633	621	197	197
DOUG FIR	4	3.0	13.8	51	0.8	3.1	395	395	106	106
SPRUCELV	2	.0	77.1	95	0.1	1.2	308	308	61	61
DOUGLEAV	1	.1	45.0	82	0.1	.6	101	101	24	24
TOTAL	*120*	*146.9*	*17.0*	*47*	*56.4*	*232.6*	*24,975*	*24,610*	*7,000*	*7,000*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

SAMPLE TREES - BF

CL: 68.1 % SD: 1.0

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
WHEMLOCK	121.1	15.9	452	538	623			
R ALDER	89.5	13.6	140	163	185			
S SPRUCE	31.7	21.9	687	880	1,073			
SNAG								
CEDLEAV	26.4	13.1	744	856	968			
DOUG FIR	125.9	71.9	65	233	400			
SPRUCELV	14.6	13.7	7,133	8,265	9,397			
DOUGLEAV								
TOTAL	*213.8*	*19.5*	*432*	*537*	*641*	*1,826*	*457*	*203*

TREES/ACRE

CL: 68.1 % SD: 1.0

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	87.7	10.9	51	57	64			
R ALDER	99.1	12.3	71	81	90			
S SPRUCE	229.4	28.4	1	2	2			
SNAG	250.6	31.1	2	3	4			
CEDLEAV	321.0	39.8	0	1	1			
DOUG FIR	444.8	55.1	1	3	5			
SPRUCELV	806.2	99.9	0	0	0			
DOUGLEAV	806.2	99.9	0	0	0			
TOTAL	*50.2*	*6.2*	*138*	*147*	*156*	*101*	*25*	*11*

BASAL AREA/ACRE

CL: 68.1 % SD: 1.0

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WHEMLOCK	85.4	10.6	96	107	118			
R ALDER	94.5	11.7	83	94	104			
S SPRUCE	229.3	28.4	9	12	16			
SNAG	220.1	27.3	6	8	10			
CEDLEAV	323.1	40.0	4	7	9			
DOUG FIR	418.0	51.8	1	3	5			
SPRUCELV	806.2	99.9	0	1	2			

TC TSTATS

STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	30	A1	00MC	77.00	65	378	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
DOUGLEAV	806.2	99.9	0	1	1			
TOTAL	*39.3*	*4.9*	*221*	*233*	*244*	*62*	*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	95.7	11.9	10,936	12,409	13,881			
R ALDER	99.6	12.3	8,055	9,188	10,322			
S SPRUCE	228.2	28.3	1,139	1,588	2,037			
SNAG								
CEDLEAV	317.9	39.4	376	621	866			
DOUG FIR	412.2	51.1	193	395	597			
SPRUCELV	806.2	99.9	0	308	616			
DOUGLEAV	806.2	99.9	0	101	202			
TOTAL	*48.7*	*6.0*	*23,124*	*24,610*	*26,096*	*95*	*24*	*11*

TC TSTATS

STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	30	TK	R/W	1.00	65	378	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	65	378	5.8		
CRUISE	23	120	5.2	146	82.0
DBH COUNT					
REFOREST					
COUNT	42	258	6.1		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	58	57.3	18.5	46	24.9	107.1	12,723	12,409	3,350	3,350
R ALDER	43	80.5	14.6	47	24.5	93.5	9,228	9,188	2,810	2,810
S SPRUCE	5	1.4	41.9	74	2.1	13.5	2,404	2,404	567	567
SNAG	4	3.4	20.8	34	1.8	8.0				
WR CEDAR	5	.7	41.0	61	1.1	6.8	633	621	197	197
DOUG FIR	5	2.9	15.3	52	0.9	3.7	500	500	130	130
TOTAL	*120*	*146.3*	*17.1*	*46*	*56.3*	*232.6*	*25,488*	*25,123*	*7,054*	*7,054*

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	121.1	15.9	452	538	623			
R ALDER	89.5	13.6	140	163	185			
S SPRUCE	106.8	53.1	1,799	3,834	5,869			
SNAG								
WR CEDAR	26.4	13.1	744	856	968			
DOUG FIR	136.8	68.0	175	548	921			
TOTAL	*213.8*	*19.5*	*432*	*537*	*641*	*1,826*	*457*	*203*

CL: 68.1 %	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
WHEMLOCK	87.7	10.9	51	57	64			
R ALDER	99.1	12.3	71	81	90			
S SPRUCE	224.1	27.8	1	1	2			
SNAG	250.6	31.1	2	3	4			
WR CEDAR	321.0	39.8	0	1	1			
DOUG FIR	443.3	54.9	1	3	5			
TOTAL	*50.4*	*6.2*	*137*	*146*	*155*	*101*	*25*	*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	85.4	10.6	96	107	118			
R ALDER	94.5	11.7	83	94	104			
S SPRUCE	217.1	26.9	10	14	17			
SNAG	220.1	27.3	6	8	10			
WR CEDAR	323.1	40.0	4	7	9			
DOUG FIR	369.5	45.8	2	4	5			
TOTAL	*39.3*	*4.9*	*221*	*233*	*244*	*62*	*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	95.7	11.9	10,936	12,409	13,881			
R ALDER	99.6	12.3	8,055	9,188	10,322			
S SPRUCE	221.6	27.5	1,744	2,404	3,064			
SNAG								

TC TSTATS

STATISTICS

PROJECT LO

DATE 5/31/2018

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	08W	30	TK	R/W	1.00	65	378	1	W

CL: 68.1 %
SD: 1.0

	COEFF VAR.	S.E.%	NET BF/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
WR CEDAR	317.9	39.4	376	621	866			
DOUG FIR	361.7	44.8	276	500	724			
TOTAL	*49.4*	*6.1*	*23,585*	*25,123*	*26,660*	*97*	*24*	*11*

TC PSTNDSUM

Stand Table Summary

Page 1
Date: 5/30/2018

T04N R08W S30 TyTAKE 77.00
T04N R08W S30 TyR/W 1.00

Project LO
Acres 78.00

Time: 7:46:25AM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
H		8	2	89	54	5.289	1.85	5.29	8.0	30.0		42	159		33	12
H		9	4	87	43	8.358	3.69	8.36	8.5	35.0		71	293		55	23
H		11	4	81	53	5.595	3.69	5.59	15.0	50.0		84	280		65	22
H		12	6	85	27	7.052	5.54	7.05	11.0	23.3		78	165		61	13
H		13	2	88	56	2.003	1.85	2.00	22.0	60.0		44	120		34	9
H		14	2	83	46	1.727	1.85									
H		17	4	85	34	2.342	3.69	1.17	17.0	60.0		20	70		16	5
H		18	6	85	68	3.134	5.54	5.22	32.6	96.0		170	501		133	39
H		20	14	86	75	5.924	12.92	11.85	37.2	116.4		441	1,379		344	108
H		21	4	87	100	1.535	3.69	1.54	65.0	270.0		100	414		78	32
H		23	6	84	78	1.920	5.54	3.20	58.0	188.0		186	601		145	47
H		24	6	87	101	1.763	5.54	4.11	51.9	200.0		213	823		166	64
H		25	6	86	94	1.625	5.54	2.71	62.6	206.0		170	558		132	44
H		26	6	85	84	1.502	5.54	2.00	69.5	262.5		139	526		109	41
H		27	6	83	74	1.393	5.54	2.79	65.7	221.7		183	618		143	48
H		28	8	84	74	1.727	7.38	2.59	80.7	273.3		209	708		163	55
H		29	4	86	91	.805	3.69	1.61	92.8	360.0		149	580		116	45
H		30	10	84	96	1.880	9.23	4.14	91.2	355.5		377	1,471		294	115
H		32	2	85	102	.331	1.85	.66	88.0	430.0		58	284		45	22
H		34	2	85	111	.293	1.85	.88	100.3	466.7		88	410		69	32
H		38	2	85	131	.234	1.85	.70	142.7	730.0		100	513		78	40
H		39	4	84	112	.445	3.69	1.34	132.8	621.7		177	830		138	65
H		41	2	85	131	.201	1.85	.60	144.0	696.7		87	421		68	33
H		50	2	83	120	.135	1.85	.41	219.7	976.7		89	397		70	31
H		51	2	82	94	.130	1.85	.26	283.5	1110.0		74	289		58	23
H		Totals	116	85	61	57.343	107.08	76.07	44.0	163.1		3,350	12,409		2,613	968
A		9	4	87	62	9.848	4.35	9.85	11.0	40.0		108	394		84	31
A		10	6	87	97	11.965	6.53	15.95	12.8	50.0		203	798		159	62
A		11	2	86	68	3.296	2.18	3.30	19.0	60.0		63	198		49	15
A		12	6	87	66	8.309	6.53	13.85	13.6	46.0		188	637		147	50
A		13	4	86	57	4.720	4.35	4.72	24.0	60.0		113	283		88	22
A		14	6	86	52	6.105	6.53	6.10	25.3	60.0		155	366		121	29
A		15	12	86	66	10.636	13.05	17.73	21.4	70.0		379	1,241		296	97
A		16	8	86	71	6.232	8.70	10.91	26.0	85.7		284	935		221	73
A		17	10	87	73	6.900	10.88	12.42	28.7	98.9		356	1,228		278	96
A		18	4	87	29	2.462	4.35	2.46	25.5	55.0		63	135		49	11
A		19	2	86	75	1.105	2.18	2.21	35.5	110.0		78	243		61	19
A		20	6	87	77	2.991	6.53	5.98	39.3	131.7		235	788		184	61
A		21	6	87	74	2.713	6.53	4.52	45.2	148.0		204	669		159	52
A		22	2	86	72	.824	2.18	1.65	44.5	135.0		73	222		57	17
A		24	4	86	76	1.385	4.35	2.77	53.0	185.0		147	512		114	40
A		27	2	82	87	.547	2.18	1.09	77.0	245.0		84	268		66	21
A		29	2	86	73	.474	2.18	.95	79.0	285.0		75	270		58	21
A		Totals	86	87	70	80.512	93.54	116.46	24.1	78.9		2,810	9,188		2,192	717
S		31	2	83	68	.779	4.08	1.56	86.0	280.0		134	436		105	34
S		35	2	83	90	.611	4.08	1.22	137.0	505.0		168	617		131	48
S		39	2	82	80	.492	4.08	.98	152.0	535.0		150	527		117	41
S		71	1	85	118	.001	.03	.00	473.3	2470.0		2	9		1	1
S		85	1	81	111	.001	.03	.00	621.7	3040.0		2	8		1	1
S		Totals	8	83	78	1.885	12.32	3.77	120.5	423.6		455	1,598		355	125
D		11	2	88	82	1.165	.77	2.33	9.5	35.0		22	82		17	6

TC PSTNDSUM

Stand Table Summary

Page 2
Date: 5/30/2018

T04N R08W S30 TyTAKE 77.00
T04N R08W S30 TyR/W 1.00

Project LO
Acres 78.00

Time: 7:46:25AM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
D		12	2	86	68	.979	.77	.99	18.8	59.4		19	59		15	5
D		16	2	85	72	.551	.77	1.10	19.5	60.0		21	66		17	5
D		23	2	91	128	.266	.77	.80	50.7	223.3		41	179		32	14
D		45	1	86	103	.001	.01	.00	214.0	905.0		0	2		0	0
D		Totals	9	87	80	2.962	3.08	5.22	19.7	74.0		103	387		80	30
C		38	1	83	99	.002	.02	.00	145.0	550.0		1	2		0	0
C		39	2	80	60	.004	.03	.01	103.0	312.5		1	3		1	0
C		42	1	82	74	.002	.02	.00	144.5	440.0		1	2		0	0
C		50	1	77	72	.001	.02	.00	198.0	525.0		1	1		0	0
C		Totals	5	81	73	.009	.09	.02	133.5	420.7		3	8		2	1
SN		16	1	88	17	.018	.03									
SN		18	1	89	74	.015	.03									
SN		30	2	88	35	.010	.05									
SN		Totals	4	88	40	.043	.10									
Totals			228	86	66	142.754	216.21	201.54	33.3	117.0		6,720	23,590		5,242	1,840

TC PLOGSTVB

Log Stock Table - MBF

T04N R08W S30 TyTAKE 77.00
T04N R08W S30 TyR/W 1.00

Project: LO
Acres 0.00

Date 5/30/2018
Time 7:46:24AM

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+
A		DO	1S	26	7		7	1.0						7						
A		DO	1S	30	33		33	4.6						14	19					
A		DO	1S	34	18		18	2.6						18						
A		DO	1S	40	105		105	14.6						37	43	25				
A		DO	2S	14	5		5	.8					5							
A		DO	2S	30	29	4.7	28	3.9					28							
A		DO	2S	34	16		16	2.2					16							
A		DO	2S	38	17		17	2.4					17							
A		DO	2S	40	140	1.2	138	19.2					68	33		38				
A		DO	3S	16	9		9	1.2				9								
A		DO	3S	28	32		32	4.5				32								
A		DO	3S	30	15		15	2.1				15								
A		DO	3S	34	15		15	2.1				15								
A		DO	3S	36	17		17	2.4					17							
A		DO	3S	40	6		6	.9				6								
A		DO	4S	14	6		6	.9			6									
A		DO	4S	16	10		10	1.4			10									
A		DO	4S	18	16		16	2.2			12	4								
A		DO	4S	20	17		17	2.3			17									
A		DO	4S	24	1		1	.2			1									
A		DO	4S	26	9		9	1.2			9									
A		DO	4S	28	14		14	1.9			14									
A		DO	4S	30	31		31	4.3			31									
A		DO	4S	36	25		25	3.5			25									
A		DO	4S	38	4		4	.6			4									
A		DO	4S	40	122		122	17.0			122									
A		Totals			720		717	39.0			251	81	151	109	62	62				
S		DO	2S	12	0		0	.0										0		
S		DO	2S	14	0		0	.0										0		
S		DO	2S	40	117		117	93.8								32	45	39	0	1
S		DO	3S	32	2		2	1.8			2									
S		DO	3S	36	0		0	.1											0	
S		DO	3S	40	3		3	2.7			3									
S		DO	4S	20	2		2	1.5			2									
S		Totals			125		125	6.8			7					32	45	39	0	1

TC PLOGSTVB

Log Stock Table - MBF

T04N R08W S30 TyTAKE 77.00
T04N R08W S30 TyR/W 1.00

Project: LO
Acres 0.00

Page 2
Date 5/30/2018
Time 7:46:24AM

Spp	S T	Sort	Grade	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	14	1		1	.2								1				
H		DO	2S	16	2		2	.2						2						
H		DO	2S	24	2		2	.2						2						
H		DO	2S	26	4		4	.4						4						
H		DO	2S	28	22	9.4	20	2.0						2						17
H		DO	2S	32	73	1.8	71	7.4						17	8	46				
H		DO	2S	36	4		4	.4								4				
H		DO	2S	38	15		15	1.6						15						
H		DO	2S	40	610	2.4	595	61.5						70	74	181	139	93		38
H		DO	3S	16	3		3	.3					3							
H		DO	3S	20	7		7	.7					7							
H		DO	3S	26	2		2	.2				2								
H		DO	3S	28	4		4	.4				4								
H		DO	3S	32	58	8.1	53	5.5			30	8	4				12			
H		DO	3S	38	4		4	.4					4							
H		DO	3S	40	98		98	10.2			33	11	54							
H		DO	4S	12	4		4	.4			1	1	3							
H		DO	4S	14	7		7	.7			7									
H		DO	4S	16	19	9.8	17	1.7			10	1	5							
H		DO	4S	18	1		1	.1			1									
H		DO	4S	20	13		13	1.3			13									
H		DO	4S	24	2		2	.2			2									
H		DO	4S	26	15		15	1.6			15									
H		DO	4S	28	6		6	.6			6									
H		DO	4S	30	18		18	1.9								18				
H		Totals			992	2.5	968	52.6			117	27	80	113	82	250	151	93		56
D		DO	2S	40	10		10	32.1							0	10		0		
D		DO	3S	32	5		5	18.1			5									
D		DO	3S	36	4		4	14.2				4								
D		DO	3S	40	4		4	12.4					4							
D		DO	4S	12	1		1	3.0			1									
D		DO	4S	16	1		1	2.9	0		1									
D		DO	4S	18	1		1	2.1				1								
D		DO	4S	40	5		5	15.2			5									
D		Totals			30		30	1.6	0		12	5	4		0	10		0		

TC PLOGSTVB

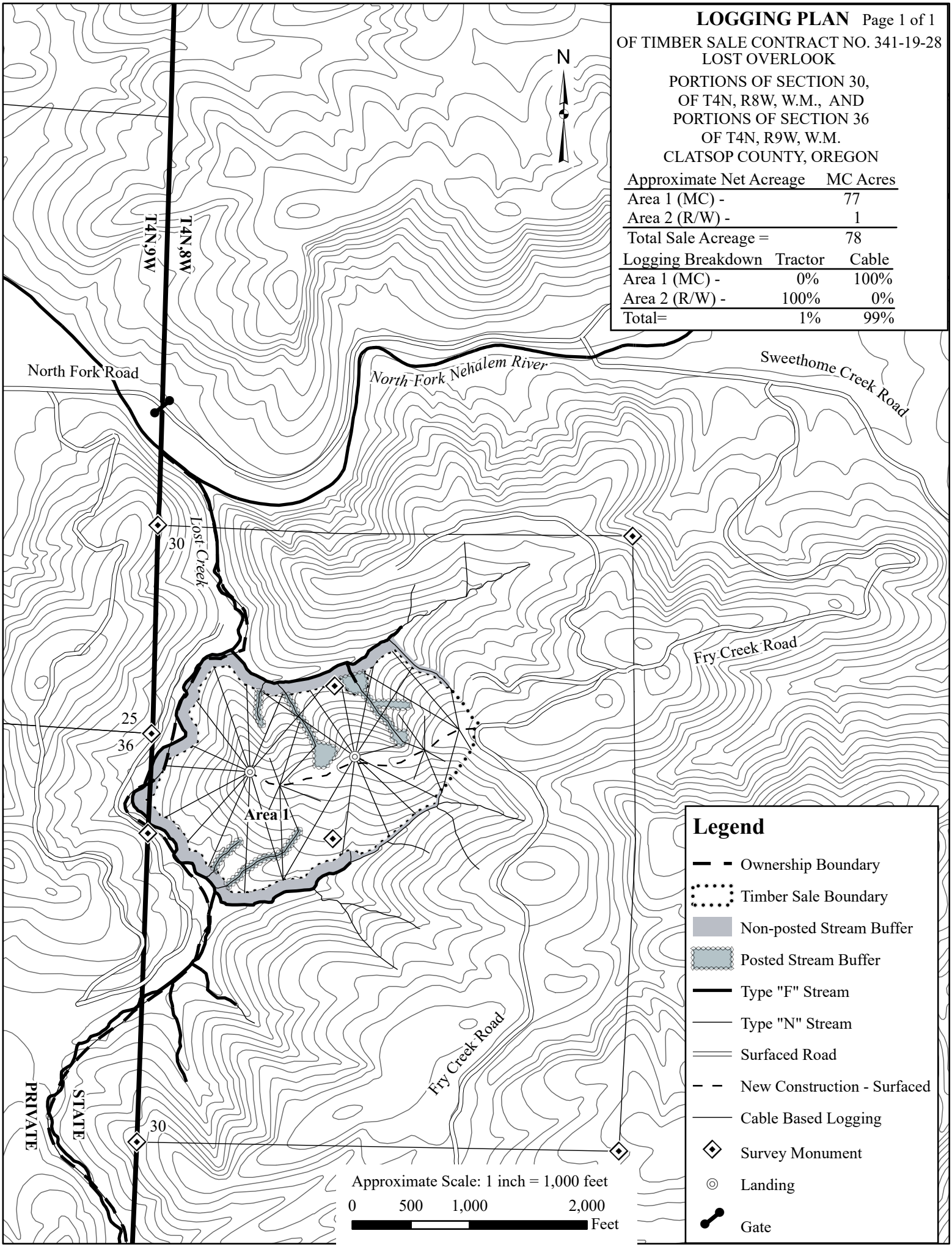
Log Stock Table - MBF

T04N R08W S30 TyTAKE	77.00
T04N R08W S30 TyR/W	1.00

Project: LO
Acres 0.00

Date 5/30/2018
Time 7:46:24AM

Spp	ST	Sort	Grade	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+
C		DO	2S	32	0	3.3	0	31.0									0			
C		DO	2S	40	0	2.3	0	34.4									0	0		
C		DO	3S	18	0		0	1.4						0						
C		DO	3S	32	0		0	4.4						0						
C		DO	3S	40	0		0	26.0									0			
C		DO	4S	18	0		0	1.8			0	0								
C		DO	4S	24	0		0	.9			0									
C		Totals			1	1.8	1	.0			0	0		0			0	0		
Total		All Species			1,868	1.5	1,840	100.0	0		387	113	234	222	144	354	196	132	56	1



LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-19-28
LOST OVERLOOK

PORTIONS OF SECTION 30,
OF T4N, R8W, W.M., AND
PORTIONS OF SECTION 36
OF T4N, R9W, W.M.
CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres
Area 1 (MC) -	77
Area 2 (R/W) -	1
Total Sale Acreage =	78

Logging Breakdown	Tractor	Cable
Area 1 (MC) -	0%	100%
Area 2 (R/W) -	100%	0%
Total=	1%	99%