



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Knob
Sale AT-341-2024-W00870-01

District: Astoria

Date: January 10, 2024

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,647,091.39	\$93,459.96	\$2,740,551.35
		Project Work:	(\$192,737.00)
		Advertised Value:	\$2,547,814.35



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Shingle Knob Sale AT-341-2024-W00870-01

District: Astoria

Date: January 10, 2024

Timber Description

Location:

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	20	0	97
Western Hemlock / Fir	18	0	96
Sitka Spruce	21	0	97
Alder (Red)	14	0	95

Volume by Grade	2S	3S & 4S 6"-11"	Camprun	12"+	6" - 7"	8" - 11"	Total
Douglas - Fir	4,051	1,780	0	0	0	0	5,831
Western Hemlock / Fir	123	86	0	0	0	0	209
Sitka Spruce	0	0	1	0	0	0	1
Alder (Red)	0	0	0	54	151	191	396
Total	4,174	1,866	1	54	151	191	6,437

Comments: Pond Values Used: Local Pond Values, December, 2023.

Expected Log Markets: Clatskanie, Warrenton, Willamina, Forest Grove, Mist, Tillamook, Eugene, Longview, WA, Elma, WA, Chehalis, WA, and Vancouver, WA.

PRICING:

Western Redcedar stumpage = pond value - (Douglas-fir) logging cost.
\$857.25/MBF = \$1,200/MBF - \$342.75/MBF

Fuel cost allowance based on month local pond values were collected.

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

Machine Washing for Invasive Weed Compliance = \$2,000.00

Ditch Filters:

Bales of straw 12 @ \$12/bale = \$144.00

4 hour of labor @ \$50/hr = \$200.00

Close unsurfaced road segments, water bar and block (C315, 8 hours) \$127/hr = \$1,016.00

TOTAL Other Costs (with Profit & Risk to be added): \$3,360.00

Other Costs (No Profit & Risk added:

None.

SLASH PILING

(See attached appraisal. Includes move-in, pile materials, end-hauling in Unit 2) = \$11,898

ROAD MAINTENANCE

(See attached Road Maintenance Cost Summary Sheet)

TOTAL Road Maintenance: \$38,300/6,437 MBF = \$5.95/MBF



"STEWARDSHIP IN FORESTRY"

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District: Astoria

Date: January 10, 2024

Logging Conditions

Combination#: 1

Douglas - Fir	90.00%
Western Hemlock / Fir	90.00%
Sitka Spruce	90.00%
Alder (Red)	90.00%

Logging System: Cable: Medium Tower >40 - <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: 10
bd. ft / load: 4600

cost / mbf: \$173.44

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

Combination#: 2

Douglas - Fir	10.00%
Western Hemlock / Fir	10.00%
Sitka Spruce	10.00%
Alder (Red)	10.00%

Logging System: Shovel
Process: Feller Buncher

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

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

loads / day: 15
bd. ft / load: 4600

cost / mbf: \$144.93

machines: Feller Buncher w/ Delimber



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Knob
Sale AT-341-2024-W00870-01

District: Astoria

Date: January 10, 2024

Logging Costs

Operating Seasons: 4.00

Profit Risk: 12%

Project Costs: \$192,737.00

Other Costs (P/R): \$3,360.00

Slash Disposal: \$11,898.00

Other Costs: \$0.00

Miles of Road

Road Maintenance: \$5.95

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	3.5
Western Hemlock / Fir	\$0.00	4.0	5.5
Sitka Spruce	\$0.00	2.0	5.5
Alder (Red)	\$0.00	4.0	5.0



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Shingle Knob Sale AT-341-2024-W00870-01

District: Astoria

Date: January 10, 2024

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
\$170.59	\$6.13	\$2.73	\$122.62	\$0.52	\$36.31	\$1.85	\$2.00	\$0.00	\$342.75
Western Hemlock / Fir									
\$170.59	\$6.19	\$2.73	\$59.09	\$0.52	\$28.69	\$1.85	\$2.00	\$0.00	\$271.66
Sitka Spruce									
\$170.59	\$6.13	\$2.73	\$117.05	\$0.52	\$35.64	\$1.85	\$2.00	\$0.00	\$336.51
Alder (Red)									
\$170.59	\$6.25	\$2.73	\$65.62	\$0.52	\$29.49	\$1.85	\$2.00	\$0.00	\$279.05

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$786.68	\$443.93	\$0.00
Western Hemlock / Fir	\$0.00	\$550.89	\$279.23	\$0.00
Sitka Spruce	\$0.00	\$513.00	\$176.49	\$0.00
Alder (Red)	\$0.00	\$515.06	\$236.01	\$0.00



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Shingle Knob
Sale AT-341-2024-W00870-01

District: Astoria

Date: January 10, 2024

Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,831	\$443.93	\$2,588,555.83
Western Hemlock / Fir	209	\$279.23	\$58,359.07
Sitka Spruce	1	\$176.49	\$176.49
Alder (Red)	396	\$236.01	\$93,459.96

Gross Timber Sale Value

Recovery: \$2,740,551.35

Prepared By: Avery Petersen

Phone: 503-325-5451

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Shingle Knob
Date: January 3rd, 2024
By: Ryan Simpson CB

MBF: 6,437
\$\$/MBF: \$5.95

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
First Interim Operations and/or Snow Plowing	Grader 14G	\$972	1	16	\$126	\$2,988
Second Interim Operations and/or Snow Plowing	Grader 14G	\$972	1	16	\$126	\$2,988
	Dump Truck 12CY	\$205	1	8	\$99	\$997
	Rubber tired backhoe	\$401	1	4	\$97	\$789
	Vibratory Roller	\$972	1	4	\$97	\$1,360
Final Road Maintenance	Grader 14G	\$972	1	60	\$126	\$8,532
	Dump Truck 12CY	\$205	2	32	\$99	\$3,578
	FE Loader C966	\$931	1	8	\$108	\$1,795
	Vibratory Roller	\$972	1	60	\$97	\$6,792
	Water Truck 2,500 gallon	\$238	1	30	\$113	\$3,628
	C315 Excavator (add time for sidecast pullback 2C-2D)	\$1,005	1	24	\$127	\$4,053
	Labor			16	\$50	\$800
Total						\$38,300

First and Second Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	3.0	6.0	2.0	16
Vibratory Roller	2.0	1.3	0.6	5

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.0	15.3	7.7	61
Vibratory Roller	2.0	15.3	7.7	61

Process and compact: All crushed rock roads
Shingle Mill Road = 9.2 Miles
Big Nic Road = 1.8 Miles
Foster Mainline = 1.2 Miles
Simonsen Road = 0.4 Miles
Nicolai Lookout Road = 1.0 Miles
Unnamed Spur Roads = 1.7 Miles
Grade & Process Total = 15.3 Miles

Site Prep Appraisal

Sale Number: AT-341-2024-W00870-01

Sale Name: Shingle Knob

Date: 01/03/2024

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre	Landing Production Rate (hrs/30 acres)
Doug-fir	A	0.5	0.5	6
Hemlock/Fir	B	1.3	4.5	8
Hemlock/Spruce	C	1.8	6.0	10
Hemlock	D	1.8	6.0	8
Conifer/Hardwood	E	1.0	2.0	8
Whole Tree Yarding	F	0.5	0.5	12

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area	
1	MC	A	5	3	\$145.00	\$362.50	
2	MC	A	10	5	\$145.00	\$725.00	
In-unit Piling						Sub Total =	\$1,087.50
Sale Area	Number of Landings to be Piled	# cable acres per area	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area	
1	6	60	\$1,740.00	8.5	\$5.00	\$42.50	
2	7	92	\$2,668.00	12	\$5.00	\$60.00	
Materials						Sub Total =	\$102.50
Landing Piling						Sub Total =	\$4,408.00
Additional Move-in allowance							
Move-In Allowance	Number of Move-In's	Total Move-In Allowance					
\$1,290.00	1.5	\$1,935.00	Brush Piler				
\$205.00	1	\$205.00	Dump Truck (12cy)				
					Move-In	Sub Total =	\$2,140.00
Slash Endhaul							
Dump Truck hrs	Cost/Hour	Total	Loader hrs	Cost/Hour	Total		
16	\$99.00	\$1,584.00	16	\$161.00	\$2,576.00	Sub Total =	\$4,160.00
							Grand Total =
							\$11,898.00

*Cost includes separating firewood

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Shingle Knob

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length (Sta)</u>	<u>Length (Mile)</u>	<u>Cost</u>
Surfaced			
2A to 2B, 2E	4.95	0.09	\$15,673
Unsurfaced			
2C to 2D	16.85	0.32	\$9,035
Road Maint.			\$210
Move-In			\$1,235
TOTALS	21.80	0.41	\$26,154

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length (Sta)</u>	<u>Length (Mile)</u>	<u>Cost</u>
I1 to I2, I3 to I4,	562.65	10.66	\$157,377
I5 to I6, I7 to I8,			
I9 to I10, I11 to I12,			
I13 to I14, I15 to I16,			
I17 to I18			
Road Maint.			\$1,338
Move-In			\$7,869
TOTALS		10.66	\$166,583

SPECIAL PROJECTS (Move-In and Road Maint. are included separately as needed, for each Special Project)

<u>Description</u>	<u>Length/Vol.</u>	<u>Cost</u>
TOTAL		

GRAND TOTAL \$192,737

Compiled By: Brittany West

Date: 02/02/2024

Move In and Maintenance Calculator for Construction and Improvement

SALE NAME: Shingle Knob

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Length/Mile</u>	<u>Cost</u>
Surfaced			
2A to 2B, 2E	4.95	0.09	\$15,673.06
Unsurfaced			
2C to 2D	16.85	0.32	\$9,035.04
TOTALS	21.80	0.41	\$24,708

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Length/Mile</u>	<u>Cost</u>
I1 to I2, I3 to I4,	562.65	10.66	\$157,376.65
I5 to I6, I7 to I8,			
I9 to I10, I11 to I12,			
I13 to I14, I15 to I16,			
I17 to I18			
TOTALS	562.65	10.66	\$157,377

MOVE IN (Construction & Improvement Only)

<u>Equipment</u>	<u>Length/Mile</u>	<u>Cost</u>
Vibratory Roller		\$972.00
D8 Dozer		\$1,755.00
C315 Excavator		\$1,005.00
C330 Excavator		\$1,755.00
C966 Loader		\$972.00
14 G Grader		\$972.00
Water Truck (2,500 gal)		\$238.00
Dump Truck 10cy (x6)		\$1,230.00
Off Highway Truck 24cy		\$205.00
TOTAL		\$9,104.00

ROAD MAINTENANCE (Construction & Improvement Only)

	<u>Length/Mile</u>	<u>Cost</u>
Knob Point Road &		\$1,548.00
Knob Point Quarry Road		
TOTAL		\$1,548.00

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Shingle Knob
ROAD: 2A to 2B (4.95), 2C to 2D (16.85)
POINTS: 2E

NEW CONSTRUCTION: 21.80 STATIONS 0.41 MILES
IMPROVEMENT: STATIONS 0.00 MILES

CLEARING & GRUBBING

	Method	Acres/amount	x	Rate	=	Cost
Surfaced						
2A to 2B	Scatter outside right of way	0.45	x	\$ 1,669	=	\$751.05
2E	Haul clearing debris w/ C330 and Off-Hwy Dump (\$/hr)	2.00		\$ 354	=	\$708.00
Unsurfaced						
2C to 2D	Scatter outside right of way	1.16	x	\$ 1,669	=	\$1,936.04
2C to 2D	Haul clearing debris w/ C330 and Off-Hwy Dump	2.00	x	\$ 354	=	\$708.00
SUB TOTAL FOR CLEARING & GRUBBING						\$4,103

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
2A to 2B			x		=	
0+00 to 4+95	Balanced construction (\$/sta)	4.95	x	\$154.00	=	\$762.30
2+35, 4+95	Landing construction (\$/ldg)	2	x	\$487.00	=	\$974.00
2C to 2D			x		=	
0+00 to 16+85	Common drift (<50% slopes) (\$/cy)	1,322	x	\$2.25	=	\$2,974.50
0+00 to 16+85	Embankment compaction (\$/cy)	1,469	x	\$0.87	=	\$1,278.03
0+00 to 16+85	Cut slope rounding (\$/sta)	6.6		\$54.39	=	\$358.97
16+85	Landing Construction (\$/ldg)	1		\$487.00	=	\$487.00
2E						
	Cut slope rounding (\$/sta)	1.00	x	\$54.39	=	\$54.39
	End-haul excavation (\$/cy)	800	x	\$4.99	=	\$3,992.00
	Ripping (C330/hr)	8	x	\$195.00	=	\$1,560.00
	Waste material compacting (\$/cy)	800	x	\$0.50	=	\$400.00
SUB TOTAL FOR EXCAVATION						\$12,841

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
				\$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					\$0.00
				\$0.00					\$0.00
				\$0.00					\$0.00

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:				\$0.00
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION				

Subtotal of Clearing, Exc., Culv. \$16,944

[illegible]

Compiled By Brittany West

Date: 01/18/2024

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Shingle Knob
ROAD: I1 to I2 (218.90), I3 to I4 (115.50), I5 to I6 (8.75),
I7 to I8 (10.80), I9 to I10 (1.70), I11 to I12 (7.2),
I13 to I14 (4.15), I15 to I16 (177.05), I17 to I18 (18.60)
POINTS:

NEW CONSTRUCTION: STATIONS 0.00 MILES
IMPROVEMENT: 562.65 STATIONS 10.66 MILES

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
		x		=	\$0.00
		x		=	\$0.00
		x		=	\$0.00

SUB TOTAL FOR CLEARING & GRUBBING

\$0

EXCAVATION

Material	Cy/amount	x	Rate	=	Cost
I1 to I2					
1+25 to 3+40					
Reestablish ditch (C315/hr)	1.0	x	\$127.00	=	\$127.00
End haul waste (\$/hr)	1.0	x	\$99.00	=	\$99.00
16+85, 103+90, 105+25,127+85, 132+50, 177+20,					
191+60, 212+00 Clean inlet, outlet and catch basin (C315/hr)	8.0	x	\$127.00	=	\$1,016.00
28+60 to 31+85 Reestablish ditch (C315/hr)	2.0	x	\$127.00	=	\$254.00
End haul waste (\$/hr)	2.0	x	\$99.00	=	\$198.00
38+40 to 70+85 Reestablish ditch (C315/hr)	6.0	x	\$127.00	=	\$762.00
End haul waste (\$/hr)	6.0	x	\$99.00	=	\$594.00
44+70, 46+30, 53+90, 56+90, 62+40, 64+60, 82+45, 86+75, 87+20, 93+95, 97+30, 104+60, 105+25, 115+10, 122+55, 126+30,					
132+50 Install dissipator /dissipator)	17.0	x	\$225.33	=	\$3,830.61
86+65, 93+35, 94+10, 139+30, 140+40, 187+05,					
187+35 Install rock ditch filters (C315/hr)	7.0	x	\$127.00	=	\$889.00
80+65 Improve catch basin (C315/hr)	0.5	x	\$127.00	=	\$63.50
82+45 to 93+35 Reestablish ditch (C315/hr)	2.00	x	\$127.00	=	\$254.00
86+75 See Fill Reconstruction Cost Estimate Sheet				=	\$5,580.00
181+65 to 187+20 Reestablish ditch (C315/hr)	3.00	x	\$127.00	=	\$381.00
End haul waste (\$/hr)	3.00	x	\$99.00	=	\$297.00
0+00 to 218+90 Additional ditch work (C315/hr)	6.00	x	\$127.00	=	\$762.00

I3 to I4						
0+00 to 100+85	Clean inlet, outlet and catch basin (C315/hr)	8.00	x	\$127.00	=	\$1,016.00
I5 to I6						
0+00 to 8+75	Remove roadside alder (C315/hr)	4.00	x	\$127.00	=	\$508.00
I7 to I8						
0+00 to 10+80	Sod removal (\$/station)	10.80	x	\$40.27	=	\$434.92
9+20	Clean inlet, outlet and catch basin (C315/hr)	1.00	x	\$127.00	=	\$127.00
10+80	Reestablish drainage (C315/hr)	1.00	x	\$127.00	=	\$127.00
I9 to I10						
0+00 to 1+70	Sod removal (\$/station)	1.70	x	\$40.27	=	\$68.46
I11 to I12						
0+00 to 7+20	Sod removal (\$/station)	7.20	x	\$40.27	=	\$289.94
4+90	Clean inlet, outlet and catch basin (C315/hr)	1.00	x	\$127.00	=	\$127.00
I13 to I14						
0+00 to 4+15	Sod removal (\$/station)	4.15	x	\$40.27	=	\$167.12
4+15	Remove large DF (20" DBH) (\$/hr)	1.0	x	\$245.00	=	\$245.00
I15 to I16						
29+40	See Fill Reconstruction Cost Estimate Sheet		x		=	\$4,895.00
38+70	See Fill Reconstruction Cost Estimate Sheet		x		=	\$5,580.00
10+55, 29+40, 29+92, 28+70, 49+40, 53+40, 58+20, 85+05, 168+70						
	Install dissipator /dissipator)	9.0	x	\$225.33	=	\$2,027.97
29+70, 38+90,	Install rock ditch filters (C315/hr)	1.0	x	\$127.00	=	\$127.00
46+20 to 49+40	Reconstruct ditch (C315/hr)	5.0	x	\$127.00	=	\$635.00
	End haul waste (\$/hr)	5.0	x	\$99.00	=	\$495.00
76+00	Clean outlet (C315/hr)	1.0	x	\$127.00	=	\$127.00
85+05	Improve catch basin (\$/dissipator)	1.0	x	\$225.33	=	\$225.33
138+40	Clean inlet (C315/hr)	1.0	x	\$127.00	=	\$127.00
164+50	Reestablish drainage at trail junction (C315/hr)	2.0	x	\$127.00	=	\$254.00
SUB TOTAL FOR EXCAVATION						\$32,711

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I1 to I2					I15 to I16				
44+70	18"/CPP	30	\$24.37	\$731.10	10+55	18"/CPP	30	\$24.37	\$731.10
46+30	18"/CPP	30	\$24.37	\$731.10	29+40	* 24"/CPP	50	\$22.76	\$1,138.00
53+90	18"/CPP	30	\$24.37	\$731.10	29+90	18"/CPP	30	\$24.37	\$731.10
56+90	18"/CPP	30	\$24.37	\$731.10	38+70	* 30"/ASCP	50	\$58.94	\$2,946.84
62+40	18"/CPP	30	\$24.37	\$731.10	49+40	18"/CPP	30	\$24.37	\$731.10
64+60	18"/CPP	30	\$24.37	\$731.10	53+40	18"/CPP	30	\$24.37	\$731.10
82+45	18"/CPP	40	\$24.37	\$974.80	58+20	18"/CPP	30	\$24.37	\$731.10
86+75	* 24"/CPP	50	\$22.76	\$1,138.00	60+20	18"/CPP	30	\$24.37	\$731.10
87+20	18"/CPP	30	\$24.37	\$731.10	72+30	18"/CPP	30	\$24.37	\$731.10
93+15	18"/CPP	40	\$24.37	\$974.80	85+05	18"/CPP	30	\$24.37	\$731.10
97+30	18"/CPP	40	\$24.37	\$974.80	101+25	18"/CPP	30	\$24.37	\$731.10
102+85	18"/CPP	30	\$24.37	\$731.10	115+05	18"/CPP	30	\$24.37	\$731.10
104+60	18"/CPP	30	\$24.37	\$731.10	168+70	18"/CPP	30	\$24.37	\$731.10
106+95	18"/CPP	30	\$24.37	\$731.10					
122+55	18"/CPP	30	\$24.37	\$731.10					
126+30	18"/CPP	30	\$24.37	\$731.10					
135+80	18"/CPP	30	\$24.37	\$731.10					
144+60	18"/CPP	30	\$24.37	\$731.10					
150+20	18"/CPP	40	\$24.37	\$974.80					
155+30	18"/CPP	40	\$24.37	\$974.80					
160+40	18"/CPP	30	\$24.37	\$731.10					

*Material only - see fill cost sheet

	Description	Quantity	Rate	Cost
Other/miscellaneous:	Seed (\$/acre)	0.30	\$784.00	\$235.20
	Mulch (\$/bale)	30	\$13.39	\$401.70
	Labor (\$/hr)	8.00	\$50.00	\$400.00
Culvert stakes & markers:	Install culvert marker	45	\$25.53	\$1,148.85

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

\$31,291

Subtotal of Clearing, Exc., Culv. \$64,002

SURFACING							Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:		Description								
Grade, Shape and Ditch 16':		I1 to I2 (187.20), I3 to I4 (100.85),					311.90	x	\$30.98	\$9,662.66
		I7 to I8 (10.80), I9 to I10 (1.70), I11 to I12 (7.20),								
		I13 to I14 (4.15),								
Subgrade Compaction:		I1 to I2 (187.20), I3 to I4 (100.85),					311.90	x	\$25.19	\$7,856.76
		I7 to I8 (10.80), I9 to I10 (1.70), I11 to I12 (7.20),								
		I13 to I14 (4.15),								
Spot Grade w/ 14G and Compact (\$/hr):		I5 to I6 (8.75), I15 to I16 (57.40)					8.00	x	\$126.00	\$1,008.00
ROAD SEGME 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 218+90				
				Volume (CY) per		Number of				
Surfacing	3/4"-0" crushed	0+00 to 79+95	3	station	19	stations	79.95	1,519	\$4.29	\$6,517
Surfacing	3/4"-0" crushed	79+95 to 187+20	2	station	13	stations	107.25	1,394	\$4.29	\$5,981
Surface Leveling Rock	3/4"-0" crushed	70+85, 78+35	N/A	load	11	loads	2	22	\$4.29	\$94
		3+15, 7+00, 13+80, 24+60, 36+95, 67+25, 74+70, 100+85, 103+60, 108+10, 111+50, 124+00, 130+10, 134+85, 143+70, 149+40, 158+35, 162+40, 169+55, 174+15, 180+40								
Turnouts	3/4"-0" crushed		N/A	turnout	11	turnouts	21	231	\$4.29	\$991
Turnouts	3/4"-0" crushed	48+80, 57+00, 93+35	N/A	turnout	22	turnouts	3	66	\$4.29	\$283
Junctions	3/4"-0" crushed	18+65, 79+95, 90+45, 115+30, 156+00, 161+90	N/A	junction	11	junctions	6	66	\$4.29	\$283
		44+70, 46+30, 53+90, 56+90, 62+40, 64+60, 82+45, 87+20, 93+15, 97+30, 102+85, 104+60, 106+95, 122+55, 126+30, 135+80, 144+60, 150+20, 155+30, 160+40								
Culvert Bedding and Backfill	3/4"-0" crushed		N/A	culvert	33	culverts	20	660	\$4.29	\$2,831
		44+70, 46+30, 53+90, 56+90, 62+40, 64+60, 82+45, 86+75, 87+20, 97+30, 104+60, 122+55, 126+30	N/A	dissipator	11	dissipators	13	143	\$6.35	\$908
Culvert Bedding and Backfill	3/4"-0" crushed	86+75	N/A	culvert	44	culverts	1	44	\$4.29	\$189
Fill Armoring	24"-6" riprap	86+75	N/A	load	11	loads	5	55	\$6.35	\$349
Base Rock	4"-0" crushed	86+75	N/A	load	11	loads	2	22	\$4.29	\$94
Surfacing	3/4"-0" crushed	86+75	N/A	load	11	loads	1	11	\$4.29	\$47

Fill Armoring	24"-6" riprap	93+95	N/A	load	11	loads	4	44	\$6.35	\$279
Rock Ditch Filters	6"-4" pit-run	86+65, 94+10, 139+30, 140+40	N/A	3 filter series	11	3 filter series	4	44	\$6.35	\$279
Rock Barriers	6"-0" pit-run	97+30, 104+60	N/A	load	11	loads	1	11	\$6.35	\$70
Surface Leveling Rock	3/4"-0" crushed	187+20 to 218+90	N/A	load	11	loads	10	110	\$4.29	\$472
Total Rock for Road Segment: I1 to I2								4,442		\$19,669
ROAD SEGME I3 to I4			Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location		I3 to I4		0+00 to 115+50				
			Volume (CY) per		Number of					
Surfacing	3/4"-0" crushed	0+00 to 100+85	2	station	13	stations	100.85	1,311	\$4.29	\$5,624
Junctions	3/4"-0" crushed	0+00, 43+70, 50+95, 59+00, 74+80, 78+90, 100+85	N/A	junction	11	junctions	7	77	\$4.29	\$330
Turnouts	3/4"-0" crushed	4+90, 20+40, 56+15, 67+35, 71+15, 76+15, 83+10, 86+00, 90+10, 95+90	N/A	turnout	11	turnouts	10	110	\$4.29	\$472
Curve Widening Surface	3/4"-0" crushed	30+95	N/A	load	11	loads	2	22	\$4.29	\$94
Surface Leveling Rock	3/4"-0" crushed	83+10	N/A	load	11	loads	1	11	\$4.29	\$47
Total Rock for Road Segment: I3 to I4								1,531		\$6,568
ROAD SEGME I5 to I6			Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location		I5 to I6		0+00 to 8+75				
			Volume (CY) per		Number of					
Surface Leveling Rock	4"-0" crushed	0+00 to 8+75	4	load	11	loads	5	55	\$4.29	\$236
Turnouts	6"-0" pit-run	0+70	N/A	turnout	22	turnouts	1	22	\$6.35	\$140
Turnaround	6"-0" pit-run	6+80	N/A	turnaround	22	turnarounds	2	44	\$6.35	\$279
Total Rock for Road Segment: I5 to I6								121		\$655
ROAD SEGME I7 to I8			Depth of Rock (inches)	POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location		I7 to I8		0+00 to 10+80				
			Volume (CY) per		Number of					
Surfacing	4"-0" crushed	0+00 to 10+80	4	station	25	stations	10.8	270	\$4.29	\$1,158
Turnouts	4"-0" crushed	1+80, 5+95	4	turnout	22	turnouts	2	44	\$4.29	\$189
Landings	6"-0" pit-run	10+80	N/A	load	11	loads	6	66	\$6.35	\$419
Total Rock for Road Segment: I7 to I8								380		\$1,766

ROAD SEGME I9 to I10				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I9 to I10		0+00 to 1+70				
				Volume (CY) per		Number of				
Surfacing	4"-0"	0+00 to 1+70	4	station	25	stations	1.7	43	\$4.29	\$182
Landings	6"-0" pit-run	1+70	N/A	load	11	loads	6	66	\$6.35	\$419
Total Rock for Road Segment:				I9 to I10				109		\$601
ROAD SEGME I11 to I12				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I11 to I12		0+00 to 7+20				
				Volume (CY) per		Number of				
Surfacing	4"-0"	0+00 to 7+20	4	station	25	stations	7.2	180	\$4.29	\$772
Junctions	4"-0"	4+15	N/A	junction	11	junctions	1	11	\$4.29	\$47
Total Rock for Road Segment:				I11 to I12				191		\$819
ROAD SEGME I13 to I14				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I13 to I14		0+00 to 4+15				
				Volume (CY) per		Number of				
Surfacing	4"-0"	0+00 to 4+15	4	station	25	stations	4.15	104	\$4.29	\$445
Landings	6"-0" pit-run	4+15	N/A	load	11	loads	6	66	\$6.35	\$419
Total Rock for Road Segment:				I13 to I14				170		\$864
ROAD SEGME I15 to I16				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	I15 to I16		0+00 to 177+05				
				Volume (CY) per		Number of				
Base Rock	4"-0"	29+40	N/A	load	11	loads	2	22	\$4.29	\$94
Surfacing	3/4"-0"	29+40	N/A	load	11	loads	1	11	\$4.29	\$47
Fill Armoring	24"-6" riprap	29+40	N/A	load	11	loads	5	55	\$6.35	\$349
Base Rock	4"-0"	38+70	N/A	load	11	loads	2	22	\$4.29	\$94
Surfacing	3/4"-0"	38+70	N/A	load	11	loads	1	11	\$4.29	\$47
Fill Armoring	24"-6" riprap	38+70	N/A	load	11	loads	5	55	\$6.35	\$349
Culvert Bedding and Backfill	3/4"-0" crushed	29+40, 38+70	N/A	culvert	44	culverts	2	88	\$4.29	\$378
Culvert Bedding and Backfill	3/4"-0" crushed	10+55, 29+90, 49+40, 53+40, 58+20, 60+20, 72+30, 85+05, 101+25, 115+05, 168+70	N/A	culvert	33	culverts	11	363	\$4.29	\$1,557
Culvert Energy Dissipator	24"-6" riprap	10+55, 29+40, 29+90, 38+70, 49+40, 53+40, 58+20, 85+05, 168+70	N/A	dissipator	11	dissipators	9	99	\$6.35	\$629
Rock Ditch Filters	6"-4" pit-run	29+70, 38+90	N/A	3 filter series	11	3 filter series	2	22	\$6.35	\$140
Surface Leveling Rock	3/4"-0" crushed	0+00 to 119+65	N/A	load	11	loads	25	275	\$4.29	\$1,180
Surface Leveling Rock	4"-0" crushed	119+65 to 177+05	N/A	load	11	loads	5	55	\$4.29	\$236
Total Rock for Road Segment:				I15 to I16				1,078		\$5,100

Processing:	Description				No.sta	Rate/sta	Cost
Water, Process & Compact:	I1 to I2 (218.90), I3 to I4 (115.50),				496.50	\$70.47	\$34,988
	I7 to I8 (10.80), I9 to I10 (1.70), I11 to I12 (7.20),						
	I13 to I14 (4.15), I15 to I16 (119.65), I17 to I18 (18.60)						
Traction Rock Wate	11 to I12 (4.15)				4.15	\$70.47	\$292
SUB TOTAL FOR SURFACING	24"-6" rr	6"-4" pr	6"-0"pr	4"-0" crushed	3/4"-0" crushed	Total	
	451	66	275	828	6,402	8,022	

SPECIAL PROJECTS

Description	Cy/Amount	Rate	Cost
pit-run development	341	\$3.24	\$1,104.84
riprap development	451	\$5.36	\$2,417.36

SUB TOTAL FOR SPECIAL PROJECTS

\$3,522

Subtotal of Surfacing & Spec. Proj. \$93,375
Subtotal of Clearing, Exc., Culv. \$64,002

GRAND TOTAL

\$157,377

Compiled By: Brittany West

Date: 01/19/2024

CRUSHED ROCK COST

SALE NAME:	Shingle Knob
PROJECT:	Project No. 1 and 2
Stockpile:	Knob Point

DATE: 01/12/2024
BY: Chris Scott

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES								Total	Haul			
			50	MPH	30	MPH	25	MPH	20	MPH			15	MPH	10
2C to 2D	1.00	116				0.10		0.20		0.10		0.05		0.05	0.50
2E	N/A	11				0.10		0.10		0.10		0.15		0.12	0.57
I1 to I2	218.90	4,431				1.20		0.50		0.20		0.14		0.12	2.16
I3 to I4	100.85	1,531				0.45		0.20		0.15		0.12		0.12	1.04
I5 to I6	8.75	252				0.40		0.20		0.12		0.15		0.12	0.99
I7 to I8	10.80	314				0.50		0.26		0.12		0.15		0.12	1.15
I11 to I12	7.20	191				0.98		0.20		0.12		0.15		0.12	1.57
I13 to I14	4.15	104				0.96		0.20		0.15		0.15		0.12	1.58
I15 to I16	177.05	847				1.80		0.90		0.23		0.15		0.12	3.20
										</					

ROCK HAUL:

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

Ave haul:	\$3.03	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,306

CRUSHED ROCK HAUL COSTS

7,797 cy @ \$4.29 /cy

CRUSHED ROCK COST

SALE NAME:	Shingle Knob
PROJECT:	Project No. 1 and 2
QUARRY:	Knob Point

MATERIAL: Pit Run & Rip Rap

DATE: 01/12/2024
BY: Chris Scott

[illegible]

ROCK HAUL:

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

Ave haul:	\$4.85	/cy
Load:	\$0.54	/cy
Spread:	\$0.96	/cy

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

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

Production: cy/day = 816

PIT RUN ROCK HAUL COSTS	1,269 cy @	\$6.35 /cy
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Fill Reconstruction Cost EstimateSegment: 11 to 12
Fill: 1Station: 86+75
Height: 8.5

Materials	Quantity		\$	Total
24"x50', CPP	50		\$22.76	\$1,138.00
24"-6" Riprap Dissipator	11	cy	\$6.35	\$69.85
24"-6" Riprap Fill Armor	55	cy	\$6.35	\$349.25
3/4"-0" Crushed Rock for Bedding/Backfill	44	cy	\$4.29	\$188.76
3/4"-0" Crushed Rock for Road	19	cy	\$4.29	\$81.51
4"-0" Crushed Rock for Road	25	cy	\$4.29	\$107.25
Erosion Control: Seed	0.1	ac	\$784.00	\$78.40
Erosion Control: Mulch	8	bale	\$13.39	\$107.12

\$2,120.14

Excavation	Rate		Amount	Total
End-Haul Excavation and Back Fill	\$99.00	hr	10	\$990.00
Excavate and Reconstruct Fill	\$195.00	hr	10	\$1,950.00
Fill Compaction	\$97.00	hr	5	\$485.00

Miscellaneous

Site Prep and Compaction @ Fill, Waste Area & Borrow Site w/330	\$195.00	hr	2	\$390.00
Fill Armor Placement w/330	\$195.00	hr	5	\$975.00
Dissipator Placement w/330	\$195.00	hr	2	\$390.00
Laborer	\$50.00	hr	8	\$400.00

\$5,580.00**Project Total****\$7,700**

Fill Reconstruction Cost Estimate

Segment: I15 to I16
Fill: 2

Station: 29+40
Height: 7

Materials	Quantity		\$	Total
24"x50', CPP	50		\$22.76	\$1,138.00
24"-6" Riprap Dissipator	11	cy	\$6.35	\$69.85
24"-6" Riprap Fill Armor	55	cy	\$6.35	\$349.25
3/4"-0" Crushed Rock for Bedding/Backfill	44	cy	\$4.29	\$188.76
3/4"-0" Crushed Rock for Road	19	cy	\$4.29	\$81.51
4"-0" Crushed Rock for Road	25	cy	\$4.29	\$107.25
Erosion Control: Seed	0.1	ac	\$784.00	\$78.40
Erosion Control: Mulch	8	bale	\$13.39	\$107.12

\$2,120.14

Excavation	Rate		Amount	Total
End-Haul Excavation and Back Fill	\$99.00	hr	8	\$792.00
Excavate and Reconstruct Fill	\$195.00	hr	8	\$1,560.00
Fill Compaction	\$97.00	hr	4	\$388.00

Miscellaneous				
Site Prep and Compaction @ Fill, Waste Area & Borrow Site w/330	\$195.00	hr	2	\$390.00
Fill Armor Placement w/330	\$195.00	hr	5	\$975.00
Dissipator Placement w/330	\$195.00	hr	2	\$390.00
Laborer	\$50.00	hr	8	\$400.00

\$4,895.00

Project Total \$7,015

Fill Reconstruction Cost Estimate

Segment: I15 to I16

Station: 38+70

Fill: 3

Height: 8

Materials	Quantity		\$	Total
30"x50', ASCP	50		\$58.94	\$2,946.84
24"-6" Riprap Dissipator	11	cy	\$6.35	\$69.85
24"-6" Riprap Fill Armor	55	cy	\$6.35	\$349.25
3/4"-0" Crushed Rock for Bedding/Backfill	44	cy	\$4.29	\$188.76
3/4"-0" Crushed Rock for Road	19	cy	\$4.29	\$81.51
4"-0" Crushed Rock for Road	25	cy	\$4.29	\$107.25
Erosion Control: Seed	0.1	ac	\$784.00	\$78.40
Erosion Control: Mulch	8	bale	\$13.39	\$107.12

\$3,928.98

Excavation	Rate		Amount	Total
End-Haul Excavation and Back Fill	\$99.00	hr	10	\$990.00
Excavate and Reconstruct Fill	\$195.00	hr	10	\$1,950.00
Fill Compaction	\$97.00	hr	5	\$485.00

Miscellaneous				
Site Prep and Compaction @ Fill, Waste Area & Borrow Site w/330	\$195.00	hr	2	\$390.00
Fill Armor Placement w/330	\$195.00	hr	5	\$975.00
Dissipator Placement w/330	\$195.00	hr	2	\$390.00
Laborer	\$50.00	hr	8	\$400.00

\$5,580.00

Project Total	\$9,509
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Projects Road Maintenance Cost Summary

Sale: Shingle Knob
Date: 18-Jan-24
By: Brittany West

Type	Equipment/Rationale			Hours	Rate	Cost	
Project Work	Grader 14G			4	\$126	\$504	
Final Haul	Dump Truck 12CY			1	\$99	\$99	
Road	FE Loader C966			1	\$105	\$105	
Maintenance	Vibratory Roller			4	\$97	\$388	
	Water Truck 2,500 gallon			4	\$113	\$452	
Total							\$1,548

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	0.66	0.4
Vibratory Roller	1.5	0.66	0.4

NOTE:			Miles
Knob Point Road &	0.49		Miles
Knob Point Quarry Road	0.17		Miles
			Miles
	TOTAL=	0.66	Miles

Shingle Knob TIMBER CRUISE REPORT FY 2024

1. **Sale Area Location:** Portions of Sections 17, 18, 19, & 20 of T7N, R6W, W.M., Clatsop County, OR.
2. **Fund Distribution:** BOF 100% Tax Code: 8-01 (100%)
3. **Sale Acreage by Area:**

Unit	Harvest Type	Gross Acres	Stream Buffer Acres	Reserve Tree Area	Existing R/W Acres	New R/W	Net Acres	Survey Method
1	Modified Clearcut	78	6	3	4	-	65	GIS
2	Modified Clearcut	127	14	3	6	2	102	GIS
3	R/W	2	-	-	-	-	2	LxW
TOTALS		207	20	6	10	2	169	

4. Cruisers and Cruise Dates: Avery Petersen, John Czarnecki, Ryan Simpson, Michele Huffman, and Justin Bush (12/21/2023)

5. Cruise Method and Computation:

Units 12S: Units 12S were variable plot cruised with a 40 BAF for conifers and a 33.61 BAF for hardwoods. A total of 48 plots were sampled on an eight and a half by four and a half chain spacing with a count to grade ratio of 2:1, resulting in 18 grade plots and 30 count plots.

Unit 2N: Unit 2N was variable plot cruised with a 33.61 BAF for conifers and for hardwoods. A total of 31 plots were sampled on a three by two chain spacing with a count to grade ratio of 2:1, resulting in 12 grade plots and 19 count plots.

*The reported number of grade plots vary from those indicated on the cruise map for U12S and U2N due to minor species being graded on one count plot.

Unit 3 (R/W): Right-of-Way consists of new spur roads and landings within Unit 2. Cruise data for Unit 3 was obtained from the U12S and 2N cruise and acreages have been adjusted accordingly.

Data was collected on Allegro 2 data collectors and downloaded to the Atterbury SuperACE 2008 program for computing. See the attached Cruise Designs for more details on the cruise method. The cruise calculations were processed in the Astoria District office.

UNIT(s)	CRUISE	TRACT	TYPE	ACRES
Unit 12S	SK	U12S	00MC	151
Unit 2N	SK	U2N	00MC	16
Unit 3 (R/W)	SK	RW	00MC	2

6. Timber Description:

Units 12S are modified clearcuts with an average age of 65 years. The stands consist of Douglas-fir, with minor components of red alder, and western hemlock. The average take Douglas-fir is approximately 22 inches DBH and 78 feet to a merchantable top. The average take red alder is approximately 14 inches DBH and 42 feet to a merchantable top. The average take western hemlock is approximately 18 inches DBH and 67 feet to a merchantable top. Average net volume to be harvested per acre is 39 MBF. All trees were cruised to a merchantable top of six inches DIB, 40% of form point, or an otherwise anticipated break point.

Unit 2N is a modified clearcut with an average age of 65 years. The stand consists of Douglas-fir, noble fir, western hemlock, and Sitka spruce. The average take Douglas-fir is approximately 15 inches DBH and 50 feet to a merchantable top. The average take western hemlock is approximately 16 inches DBH and 59 feet to a merchantable top. The average take noble fir is approximately 20 inches DBH and 59 feet to a merchantable top. The average take Sitka spruce is approximately 21 inches DBH and 35 feet to a merchantable top. Average

net volume to be harvested per acre is 31 MBF. All trees were cruised to a merchantable top of six inches DIB, 40% of form point, or an otherwise anticipated break point.

Unit 3 (R/W) is similar to the timber description in Units 12S and 2N. Average net volume to be harvested per acre is 39 MBF.

7. Statistical Analysis and Stand Summary:

Statistics for Stand B.F. volumes

Type	Estimated CV	Target SE%	Actual CV	Actual SE%
U12S	45.0%	8.0%	23.8%	3.4%
U2N	35.0%	8.0%	33.9%	6.1%

8. Volumes by Species and Log Grade:

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

Conifer

Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	% D & B	% Sale
Douglas-fir	20"	5,831	4,051	1,499	281	1.5%	90%
Western hemlock	18"	179	114	57	8	0.8%	3%
Noble fir	20"	30	9	19	2	0%	<1%
Sitka spruce*	21"	1	0	1	0	0%	<1%
TOTALS	--	6,041	4,174	1,576	291	--	--

*Only one Sitka spruce was observed during the cruise, average DBH of Sitka spruce may vary.

Hardwood

Species	DBH	Net Vol.	12"+	10"-11"	8"-9"	6"-7"	% D & B	% Sale
Red alder	14"	396	54	85	106	151	0.9%	6%
TOTALS	--	396	54	85	106	151	--	--

TOTAL VOLUME	6,437 MBF
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9. Approvals:

Prepared by: John Czarnecki

Date: 01/03/2024

Unit Forester Approval: [Signature]

Date: 2/23/2024

10. **Attachments:** Cruise Design and Map (3 pages)
Volume Report (4 pages)
Statistics Report (5 pages)
Log Stock Table (2 pages)
Stand Table Summary (2 pages)

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Shingle Knob

Units 1 & 2S

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 151 **Estimated CV%** 45 Net BF/Acre **SE% Objective** 8% Net BF/Acre

Planned Sale Volume: 6,182 MBF **Estimated Sale Area Value/Acre:** \$15,455/Acre

- A. Cruise Goals:** (a) Grade minimum 80 conifer trees.
(b) Sample 48 plots (18 grade/ 30 count); (c) Other goals (____ Determine "automark" thinning standards;
X Determine log grades for sale value; ____ Determine snag and leave tree species and sizes.

B. Cruise Design:

- 1. Plot Cruises:** BAF(Conifer) 40
BAF(Hardwood) 33.61

U12S:

Cruise Line Direction: 22°/202°
Cruise Line Spacing 8.5 (chains) 561 (feet)
Cruise Plot Spacing 4.5 (chains) 297 (feet)
Grade/Count Ratio 1:2

Take plots as marked on cruise map.

Grade minor species (true fir, spruce, cedar, maple, etc.) on count plots if encountered.

DO NOT: record any 22' log lengths, or any 12', 24', or 32' log lengths for hardwoods.

DO NOT: record snags < 12" DBH or record snag measurements on count plots.

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 < 20" dbh and 40% of dob @ FP for conifer trees > 20" 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); SN (Snag). For "leave 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

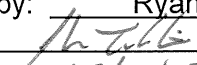
Grade oversized 3-SAW (DIB $\geq$ 12", knots $> 2\frac{1}{2}$ " inside scaling cylinder affecting $> 50\%$ of log)

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), Compass, Allegro II Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint, Permanent Marker.

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: Ryan Simpson
Approved by: 
Date: 12/20/23

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Shingle Knob

Unit 2N

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 17 **Estimated CV%** 35 Net BF/Acre **SE% Objective** 8% Net BF/Acre

Planned Sale Volume: 6,182 MBF **Estimated Sale Area Value/Acre:** \$15,455/Acre

- A. Cruise Goals:** (a) Grade minimum 70 conifer trees.
(b) Sample 31 plots (12 grade/ 19 count); (c) Other goals (____ Determine "automark" thinning standards;
X Determine log grades for sale value; ____ Determine snag and leave tree species and sizes.

B. Cruise Design:

- 1. Plot Cruises:** BAF(Conifer) 33.61
BAF(Hardwood) 33.61

U2N:

Cruise Line Direction: 11°/191°
Cruise Line Spacing 3 (chains) 198 (feet)
Cruise Plot Spacing 2 (chains) 132 (feet)
Grade/Count Ratio 1:2

Take plots as marked on cruise map.

Grade minor species (true fir, spruce, cedar, maple, etc.) on count plots if encountered.

DO NOT: record any 22' log lengths, or any 12', 24', or 32' log lengths for hardwoods.

DO NOT: record snags < 12" DBH or record snag measurements on count plots.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods.
Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16" - 24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 20" dbh and 40% of dob @ FP for conifer trees > 20" 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); SN (Snag). For "leave 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

Grade oversized 3-SAW (DIB $\geq$ 12", knots $> 2\frac{1}{2}$ " inside scaling cylinder affecting $> 50\%$ of log)

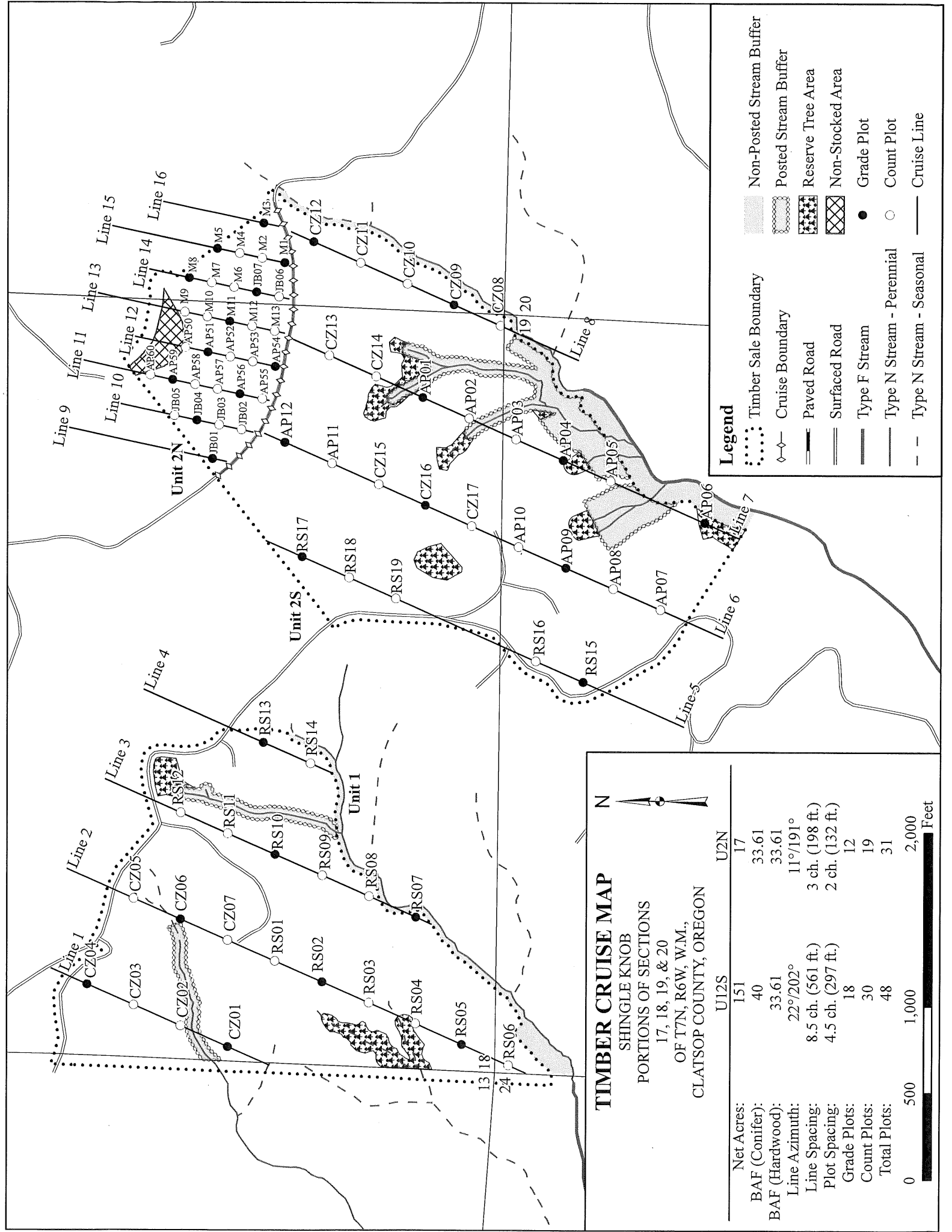
7. **Deductions**: Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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.

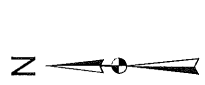
9. **Cruising Equipment**: Relaskop, Rangefinder, Logger's Tape (with dbh on back), Compass, Allegro II Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging, Yellow Paint, Permanent Marker.

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: Ryan Simpson
Approved by: [Signature]
Date: 12/20/2023



- Legend**
- Timber Sale Boundary
 - Cruise Boundary
 - Paved Road
 - Surface Road
 - Type F Stream
 - Type N Stream - Perennial
 - Type N Stream - Seasonal
 - Non-Posted Stream Buffer
 - Posted Stream Buffer
 - Reserve Tree Area
 - Non-Stocked Area
 - Grade Plot
 - Count Plot
 - Cruise Line



TIMBER CRUISE MAP
SHINGLE KNOB
PORTIONS OF SECTIONS
17, 18, 19, & 20
OF T7N, R6W, W.M.,
CLATSOP COUNTY, OREGON

	U12S	U2N
Net Acres:	151	17
BAF (Conifer):	40	33.61
BAF (Hardwood):	33.61	33.61
Line Azimuth:	22°/202°	11°/191°
Line Spacing:	8.5 ch. (561 ft.)	3 ch. (198 ft.)
Plot Spacing:	4.5 ch. (297 ft.)	2 ch. (132 ft.)
Grade Plots:	18	12
Count Plots:	30	19
Total Plots:	48	31
0 500 1,000 2,000		
		Feet

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T07N R06W S17 Ty00MC2.00 T07N R06W S17 Ty00MC151.00 T07N R06W S17 Ty00MC16.00				Project: SK				Acres169.00								Page1 Date1/3/2024 Time12:30:22PM					
Spp	S T	So rt	Gr ad	%	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre
									Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
A		DO1S		13		320	320	54			100				100		40	13	240	1.71	1.3
A		DO2S		22	4.2	524	502	85		67	33				100		39	11	170	1.20	2.9
A		DO3S		26		625	625	106		100			14	17	69		31	8	78	0.82	8.1
A		DO4S		39		894	894	151		100			23	11	23	42	27	7	46	0.52	19.6
A Totals				6	.9	2,364	2,342	396		79	21		13	9	9	70	30	8	73	0.75	31.9
D		DOCU															9	15		0.00	3.5
D		DO2S		69	1.7	24,382	23,973	4,051		1	56	44		2	2	96	39	15	361	2.25	66.5
D		DO3S		26	.3	8,896	8,868	1,499		97	3		3	13	15	69	35	9	98	0.84	90.9
D		DO4S		5	4.4	1,737	1,660	281	0	98	2		52	42		6	22	7	30	0.51	54.6
D Totals				91	1.5	35,015	34,501	5,831	0	30	39	30	3	7	6	84	32	10	160	1.30	215.4
H		DOCU															4	12		0.00	.9
H		DO2S		63		673	673	114			57	43			100		40	16	387	2.24	1.7
H		DO3S		32	2.3	343	335	57		82	18			4	16	79	37	9	99	0.83	3.4
H		DO4S		5		45	45	8		100			65	35			19	8	37	0.61	1.2
H Totals				3	.8	1,061	1,053	179178		30	42	27	3	3	5	89	30	10	144	1.23	7.3
NF		DOCU															39	9		0.00	.7
NF		DO2S		30		53	53	9			100				100		40	12	200	1.60	.3
NF		DO3S		64		112	112	19		80	20		2	28	69		33	9	107	1.05	1.0
NF		DO4S		6		10	10	2		100			100				16	6	20	0.51	.5
NF Totals				0		174	174	3029		57	43		7	18	75		32	9	71	0.73	2.5
S		DO3S		100		3	3	1		100					100		34	8	70	1.47	.0
S Totals				0		3	3	1		100					100		34	8	70	1.47	.0
Totals					1.4	38,617	38,073	6,4376,434	0	33	38	28	4	7	6	84	32	10	148	1.23	257.2

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1						
Project: SK														Date	1/3/2024					
														Time	12:32:27PM					
T07N R06W S17 T00MC										T07N R06W S17 T00MC										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
07N	06W	17	U2N	00MC	16.00	31	115	1	W											
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log		Logs Per /Acre		
			Log Scale Dia.					Log Length				Ln	Dia	Bd	CF/ Lb					
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
D	DO	CU														9	9		0.00	7.2
D	DO	2S	17	1.3	4,948	4,881	78	4	89	7				9	91	39	13	244	1.81	20.0
D	DO	3S	69	.4	19,595	19,511	312	100					5	17	78	37	8	96	0.79	204.1
D	DO	4S	14	1.1	4,000	3,954	63	0	100			55	43		2	20	6	25	0.45	158.6
D Totals			92	.7	28,542	28,346	453 454	0	83	15	1	8	9	13	70	30	8	73	0.76	389.9
NF	DO	CU														39	9		0.00	7.0
NF	DO	2S	30		561	561	9		100						100	40	12	200	1.60	2.8
NF	DO	3S	64		1,179	1,179	19	80	20			2	28		69	33	9	107	1.05	11.0
NF	DO	4S	6		102	102	2	100				100				16	6	20	0.51	5.1
NF Totals			6		1,842	1,842	30 29		57	43		7	18		75	32	9	71	0.73	25.9
H	DO	3S	100		425	425	7	100						15	85	37	9	117	0.87	3.6
H Totals			1		425	425	7	100						15	85	37	9	117	0.87	3.6
S	DO	3S	100		32	32	1	100						100		34	8	70	1.47	.5
S Totals			0		32	32	1	100						100		34	8	70	1.47	.5
Type Totals				.6	30,840	30,645	491 490	0	82	17	1	7	10	13	70	30	8	73	0.76	419.9

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
				Project: SK										Date		1/3/2024				
														Time		12:32:06PM				
T07N R06W S17 T00MC												T07N R06W S17 T00MC								
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
07N		06W		17		U12S		00MC		151.00		48		112		1		W		
S So Gr T rt ad Spp				% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
									Log Scale Dia.				Log Length				Ln Dia Bd CF/ Ft In Ft Lf			
									4-5 6-11 12-16 17+				12-20 21-30 31-35 36-99							
D DO CU																	9 16 0.00			3.1
D DO 2S				73	1.7 26,415 25,970			3,921	1 55 44				2 2 96				39 15 364 2.26			71.3
D DO 3S				22	.3 7,777 7,755			1,171	97 3				4 15 15 67				34 9 98 0.86			79.1
D DO 4S				5	5.3 1,500 1,420			214	98 2				51 42 7				22 7 32 0.53			43.7
D Totals				90	1.5 35,692 35,145			5,306 5,307	26 41 33				3 6 5 86				33 11 178 1.41			197.2
A DO 1S				13	354 354			53	100				100				40 13 240 1.71			1.5
A DO 2S				22	4.2 579 555			84	67 33				100				39 11 170 1.20			3.3
A DO 3S				26	690 690			104	100				14 17 69				31 8 78 0.82			8.9
A DO 4S				39	988 988			149	100				23 11 23 42				27 7 46 0.52			21.6
A Totals				7	.9 2,611 2,587			390 391	79 21				13 9 9 70				30 8 73 0.75			35.3
H DO CU																	4 12 0.00			1.0
H DO 2S				66	743 743			112	57 43				100				40 16 387 2.24			1.9
H DO 3S				29	2.7 335 326			49	79 21				5 16 79				36 9 97 0.83			3.4
H DO 4S				5	50 50			8	100				65 35				19 8 37 0.61			1.4
H Totals				3	.8 1,128 1,119			169	28 44 28				3 3 5 89				30 11 146 1.25			7.7
Type Totals					1.5 39,430 38,850			5,865 5,866	29 40 31				4 6 5 85				32 10 162 1.31			240.1

T	Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
Project: SK											Date	1/3/2024								
											Time	12:32:48PM								
T07N R06W S17 T00MC										T07N R06W S17 T00MC										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
07N	06W	17	R/W	00MC	2.00	48	112	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	Dia In	Bd Ft	CF/ Lf				
					4-5		6-11	12-16	17+	12-20	21-30	31-35					36-99			
D	DO	CU												9 16		0.00	3.1			
D	DO	2S	73	1.7	26,415	25,970	52		1	55	44		2	2	96	39 15	364 2.26	71.3		
D	DO	3S	22	.3	7,777	7,755	16		97	3			4	15	15	67	34 9	98 0.86	79.1	
D	DO	4S	5	5.3	1,500	1,420	3		98	2			51	42		7	22 7	32 0.53	43.7	
D Totals		90		1.5	35,692	35,145	71 70		26	41	33		3	6	5	86	33 11	178 1.41	197.2	
A	DO	1S	13		354	354	1				100					100	40 13	240 1.71	1.5	
A	DO	2S	22	4.2	579	555	1		67	33						100	39 11	170 1.20	3.3	
A	DO	3S	26		690	690	1		100				14	17		69	31 8	78 0.82	8.9	
A	DO	4S	39		988	988	2		100				23	11	23	42	27 7	46 0.52	21.6	
A Totals		7		.9	2,611	2,587	5		79	21			13	9	9	70	30 8	73 0.75	35.3	
H	DO	CU															4 12		0.00	1.0
H	DO	2S	66		743	743	1			57	43					100	40 16	387 2.24	1.9	
H	DO	3S	29	2.7	335	326	1		79	21				5	16	79	36 9	97 0.83	3.4	
H	DO	4S	5		50	50	0		100				65	35			19 8	37 0.61	1.4	
H Totals		3		.8	1,128	1,119	2		28	44	28		3	3	5	89	30 11	146 1.25	7.7	
Type Totals				1.5	39,430	38,850	78		29	40	31		4	6	5	85	32 10	162 1.31	240.1	

TC PSTATS				PROJECT STATISTICS					PAGE	1		
				PROJECT	SK	DATE 1/3/2024						
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt			
07N	06	17	R/W	00MC	169.00	127	920	1	W			
07N	06W	17	U12S	00MC								
07N	06W	17	U2N	00MC								
				TREES	ESTIMATED	PERCENT						
				PER PLOT	TOTAL	SAMPLE						
					TREES	TREES						
TOTAL			127	920	7.2							
CRUISE			51	337	6.6	22,173		1.5				
DBH COUNT												
REFOREST												
COUNT			76	550	7.2							
BLANKS												
100 %												
STAND SUMMARY												
			SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
			TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR			279	102.7	20.2	72	50.7	227.8	35,002	34,488	9,129	9,129
R ALDER			32	23.6	13.7	42	6.5	24.1	2,364	2,342	706	706
NOB FIR			9	1.4	19.5	59	0.7	2.9	174	174	58	58
WHEMLOCK			16	3.5	18.3	66	1.5	6.3	1,061	1,053	271	271
S SPRUCE			1	.0	21.0	35	0.0	.1	3	3	2	2
TOTAL			337	131.2	19.1	66	59.8	261.2	38,604	38,060	10,165	10,165
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			87.2	5.2	387	408	430					
R ALDER			66.5	11.7	113	128	142					
NOB FIR			84.8	29.9	84	120	156					
WHEMLOCK			76.7	19.8	346	432	517					
S SPRUCE												
TOTAL			92.4	5.0	355	374	393	341	85	38		
CL	68.1	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR			106.6	9.5	93	103	112					
R ALDER			375.9	33.3	16	24	31					
NOB FIR			453.1	40.2	1	1	2					
WHEMLOCK			643.1	57.0	2	3	5					
S SPRUCE			1126.9	99.9	0	0	0					
TOTAL			107.0	9.5	119	131	144	457	114	51		
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			114.5	10.2	205	228	251					
R ALDER			372.1	33.0	16	24	32					
NOB FIR			453.3	40.2	2	3	4					
WHEMLOCK			586.3	52.0	3	6	10					
S SPRUCE			1126.9	99.9	0	0	0					
TOTAL			107.9	9.6	236	261	286	465	116	52		
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			121.1	10.7	30,786	34,488	38,191					
R ALDER			364.1	32.3	1,586	2,342	3,098					
NOB FIR			477.0	42.3	101	174	248					
WHEMLOCK			622.1	55.2	472	1,053	1,634					
S SPRUCE			1126.9	99.9	0	3	6					
TOTAL			116.6	10.3	34,127	38,060	41,994	543	136	60		

TC PSTATS				PROJECT STATISTICS				PAGE	2
				PROJECT SK				DATE	1/3/2024
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	06	17	R/W	00MC	169.00	127	920	1	W
07N	06W	17	U12S	00MC					
07N	06W	17	U2N	00MC					

TC TSTATS				STATISTICS			PAGE 1			
				PROJECT	SK	DATE 1/3/2024				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	17	U12S	00MC	151.00	48	312	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		48	312	6.5						
CRUISE		19	111	5.8	17,807	.6				
DBH COUNT										
REFOREST										
COUNT		29	191	6.6						
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
DOUG FIR		88	88.3	21.5	78	47.9	221.7	35,678	35,130	9,165
R ALDER		16	26.0	13.7	42	7.2	26.6	2,611	2,587	780
WHEMLOCK		7	3.6	18.4	67	1.6	6.7	1,128	1,119	287
TOTAL		111	117.9	19.9	70	57.1	254.9	39,416	38,836	10,232
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		66.3	7.1	517	556	595				
R ALDER		67.6	17.4	105	128	150				
WHEMLOCK		75.2	30.6	325	469	612				
TOTAL		76.0	7.2	454	489	524	231	58	26	
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		46.5	6.7	82	88	94				
R ALDER		222.0	32.0	18	26	34				
WHEMLOCK		423.8	61.1	1	4	6				
TOTAL		40.5	5.8	111	118	125	65	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		
DOUG FIR		34.5	5.0	211	222	233				
R ALDER		219.5	31.7	18	27	35				
WHEMLOCK		378.1	54.5	3	7	10				
TOTAL		20.7	3.0	247	255	263	17	4	2	
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		33.0	4.8	33,461	35,130	36,800				
R ALDER		214.2	30.9	1,788	2,587	3,386				
WHEMLOCK		397.8	57.4	477	1,119	1,761				
TOTAL		23.8	3.4	37,503	38,836	40,169	23	6	3	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	SK	DATE				1/3/2024	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
07N	06W	17	U2N	00MC	16.00	31	296	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		31	296	9.5							
CRUISE		13	115	8.8	4,131	2.8					
DBH COUNT											
REFOREST											
COUNT		18	168	9.3							
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
DOUG FIR		103	240.7	14.8	50	74.5	286.2	28,542	28,346	8,783	8,783
NOB FIR		9	14.6	19.5	59	6.9	30.4	1,842	1,842	607	607
WHEMLOCK		2	2.4	15.7	59	0.8	3.3	425	425	119	119
S SPRUCE		1	.5	21.0	35	0.2	1.1	32	32	23	23
TOTAL		115	258.2	15.1	51	82.6	320.9	30,840	30,645	9,531	9,531
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		67.5	6.6	145	156	166					
NOB FIR		84.8	29.9	84	120	156					
WHEMLOCK		44.4	41.6	102	175	248					
S SPRUCE											
TOTAL		68.3	6.4	143	152	162		186	47	21	
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		42.5	7.6	222	241	259					
NOB FIR		208.7	37.5	9	15	20					
WHEMLOCK		310.7	55.8	1	2	4					
S SPRUCE		556.8	99.9	0	0	1					
TOTAL		31.4	5.6	244	258	273		39	10	4	
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		40.4	7.3	265	286	307					
NOB FIR		208.8	37.5	19	30	42					
WHEMLOCK		310.6	55.7	1	3	5					
S SPRUCE		556.8	99.9	0	1	2					
TOTAL		23.7	4.3	307	321	335		22	6	2	
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		44.9	8.1	26,063	28,346	30,630					
NOB FIR		221.6	39.8	1,109	1,842	2,574					
WHEMLOCK		323.7	58.1	178	425	672					
S SPRUCE		556.8	99.9	0	32	63					
TOTAL		33.9	6.1	28,782	30,645	32,507		46	11	5	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SK	DATE				1/3/2024
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	17	R/W	00MC	2.00	48	312	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
PLOTS		TREES		TREES		TREES				
TOTAL		48		312		6.5				
CRUISE		19		111		5.8		236		47.1
DBH COUNT										
REFOREST										
COUNT		29		191		6.6				
BLANKS										
100 %										
STAND SUMMARY										
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR		88	88.3	21.5	78	47.9	221.7	35,678	35,130	9,165
R ALDER		16	26.0	13.7	42	7.2	26.6	2,611	2,587	780
WHEMLOCK		7	3.6	18.4	67	1.6	6.7	1,128	1,119	287
TOTAL		111	117.9	19.9	70	57.1	254.9	39,416	38,836	10,232
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		66.3	7.1	517	556	595				
R ALDER		67.6	17.4	105	128	150				
WHEMLOCK		75.2	30.6	325	469	612				
TOTAL		76.0	7.2	454	489	524	231	58	26	
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		46.5	6.7	82	88	94				
R ALDER		222.0	32.0	18	26	34				
WHEMLOCK		423.8	61.1	1	4	6				
TOTAL		40.5	5.8	111	118	125	65	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		
DOUG FIR		34.5	5.0	211	222	233				
R ALDER		219.5	31.7	18	27	35				
WHEMLOCK		378.1	54.5	3	7	10				
TOTAL		20.7	3.0	247	255	263	17	4	2	
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		33.0	4.8	33,461	35,130	36,800				
R ALDER		214.2	30.9	1,788	2,587	3,386				
WHEMLOCK		397.8	57.4	477	1,119	1,761				
TOTAL		23.8	3.4	37,503	38,836	40,169	23	6	3	

Log Stock Table - MBF

T07N R06W S17 Ty00MC	2.00
T07N R06W S17 Ty00MC	151.00
T07N R06W S17 Ty00MC	16.00

Project:	SK	
Acres		169.00

Page 1
Date 1/3/2024
Time 11:53:53AM

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
A		DO	1S	40	54		54	13.7				54						
A		DO	2S	36	28		28	7.2				28						
A		DO	2S	40	60	6.1	56	14.3				56						
A		DO	3S	16	3		3	.7			3							
A		DO	3S	20	12		12	3.0			12							
A		DO	3S	30	18		18	4.4			5	12						
A		DO	3S	36	48		48	12.2			48							
A		DO	3S	40	25		25	6.3			25							
A		DO	4S	16	24		24	6.2			24							
A		DO	4S	20	11		11	2.8			11							
A		DO	4S	24	16		16	4.1			16							
A		DO	4S	32	35		35	9.0			35							
A		DO	4S	36	43		43	10.8			43							
A		DO	4S	40	21		21	5.4			21							
A		Totals			399		396	6.2			135	122	56	83				
D		DO	2S	24	16		16	.3					16					
D		DO	2S	28	31	3.6	30	.5				15		15				
D		DO	2S	30	32		32	.6				14		19				
D		DO	2S	32	101		101	1.7				74		3	24			
D		DO	2S	36	17		17	.3				17						
D		DO	2S	40	3,922	1.7	3,855	66.1				25	658	958	1553	547	113	
D		DO	3S	16	4		4	.1				4						
D		DO	3S	18	7		7	.1				7						
D		DO	3S	20	32		32	.6			23	9						
D		DO	3S	24	70		70	1.2			8	10	51					
D		DO	3S	26	45	2.8	43	.7			2	10	31					
D		DO	3S	28	11		11	.2				11						
D		DO	3S	30	67		67	1.2			5	3	59					
D		DO	3S	32	221		221	3.8			19	81	121					
D		DO	3S	34	9		9	.2			9							
D		DO	3S	36	155		155	2.7			94	22	38					
D		DO	3S	38	51		51	.9			42	8						
D		DO	3S	40	831		828	14.2			169	90	530	39				
D		DO	4S	12	1		1	.0			1							
D		DO	4S	14	1		1	.0			1							

TC PLOGSTVB			Log Stock Table - MBF																			
T07N R06W S17 Ty00MC				2.00		Project: SK										Page 2						
T07N R06W S17 Ty00MC				151.00		Acres 169.00										Date 1/3/2024						
T07N R06W S17 Ty00MC				16.00		Time 11:53:53AM																
Spp	S T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches														
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+			
D		DO 4S	16	56		56	1.0			43	13											
D		DO 4S	18	20		20	.3			16	4											
D		DO 4S	20	68		68	1.2		0	47	20											
D		DO 4S	24	49		49	.8			41	8											
D		DO 4S	26	14		14	.2			14												
D		DO 4S	28	30	40.4	18	.3			13			5									
D		DO 4S	30	38		38	.6			38												
D		DO 4S	36	17	4.3	16	.3			16												
D		Totals		5,918	1.5	5,831	90.6		0	579	295	886	822	996	1592	547	113					
H		DO 2S	36	10		10	5.4							10								
H		DO 2S	40	104		104	58.5							56	23	26						
H		DO 3S	30	3		3	1.4			3												
H		DO 3S	32	1		1	.6			1												
H		DO 3S	34	10	14.3	8	4.6				8											
H		DO 3S	36	18		18	10.0					18										
H		DO 3S	40	27		27	15.2			11	2	4	10									
H		DO 4S	16	3		3	1.8			2	1											
H		DO 4S	20	2		2	1.0				2											
H		DO 4S	24	3		3	1.5			3												
H		Totals		179		178	2.8			19	14	21	10	65	23	26						
NF		DO 2S	40	9		9	30.5					9										
NF		DO 3S	16	0		0	1.5			0												
NF		DO 3S	28	2		2	5.5			2												
NF		DO 3S	30	4		4	12.6						4									
NF		DO 3S	40	13		13	44.4			2		11										
NF		DO 4S	16	2		2	5.5			2												
NF		Totals		29		29	.5			6		11	13									
S		DO 3S	34	1		1	100.0				1											
S		Totals		1		1	.0				1											
Total		All Species		6,526	1.4	6,434	100.0		0	739	431	975	927	1062	1615	573	113					

TC	Stand Table Summary										Page	1				
											Date:	1/3/2024				
T07N R06W S17 Ty00MC2.00 T07N R06W S17 Ty00MC151.00 T07N R06W S17 Ty00MC16.00					Project SK					Time: 11:58:59AM						
					Acres 169.00					Grown Year:						
S Spc T	Sample		Tot					Average Log		Net		Net		Totals		
	DBH	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	
D	9	1	83	26	.596	.26	.60	5.0	20.0		3	12		5	2	
D	10	3	83	69	1.447	.79	1.93	9.5	32.5		18	63		31	11	
D	11	8	83	55	3.345	2.10	3.34	12.3	38.7		41	129		69	22	
D	12	9	86	64	5.278	4.12	5.95	17.2	56.1		102	333		173	56	
D	13	12	86	66	5.352	4.91	7.09	17.7	54.3		126	385		213	65	
D	14	15	86	69	10.311	10.96	15.85	18.8	60.2		298	954		503	161	
D	15	9	86	96	3.380	4.12	2.18	22.3	64.1		49	140		82	24	
D	16	15	86	94	5.364	7.45	10.73	25.2	87.9		270	943		456	159	
D	17	26	85	94	9.925	15.61	19.85	29.2	100.0		579	1,984		979	335	
D	18	21	85	93	8.099	14.30	17.19	28.8	99.9		496	1,717		838	290	
D	19	10	86	92	3.118	6.14	6.24	35.7	118.1		223	737		377	125	
D	20	13	86	108	4.790	10.44	11.67	37.2	127.2		434	1,484		733	251	
D	21	18	86	102	7.809	18.77	17.51	42.7	152.6		748	2,673		1,264	452	
D	22	9	86	103	2.891	7.63	5.78	51.2	174.7		296	1,010		500	171	
D	23	16	85	108	5.715	16.49	13.80	49.3	187.8		681	2,592		1,150	438	
D	24	15	84	118	5.165	16.23	15.41	45.8	164.2		706	2,531		1,193	428	
D	25	11	86	119	3.422	11.67	8.93	59.8	242.2		534	2,162		902	365	
D	26	11	84	127	3.164	11.67	9.42	58.6	232.9		552	2,194		933	371	
D	27	15	84	118	4.081	16.23	11.03	65.5	256.4		722	2,828		1,221	478	
D	28	14	83	127	3.733	15.96	11.20	67.4	273.3		755	3,061		1,275	517	
D	29	6	85	124	1.491	6.84	3.98	80.9	346.2		322	1,377		544	233	
D	31	6	86	117	1.305	6.84	3.48	87.8	382.5		305	1,331		516	225	
D	32	6	84	127	1.225	6.84	3.67	87.9	387.8		323	1,425		546	241	
D	34	4	83	144	.723	4.56	2.17	106.8	486.7		232	1,056		392	178	
D	35	2	86	130	.341	2.28	1.02	108.7	496.7		111	509		188	86	
D	36	4	80	122	.645	4.56	1.94	106.2	450.0		206	871		347	147	
D	Totals	279	85	96	102.716	227.78	211.95	43.1	162.8		9,130	34,501		15,429	5,831	
A	10	2	87	18	2.760	1.51	2.76	7.0	30.0		19	83		33	14	
A	11	4	86	56	4.563	3.01	4.56	16.0	55.0		73	251		123	42	
A	12	4	86	51	3.834	3.01	3.83	18.0	55.0		69	211		117	36	
A	13	2	86	95	1.633	1.51	3.27	19.0	70.0		62	229		105	39	
A	14	4	87	50	2.817	3.01	2.82	23.5	70.0		66	197		112	33	
A	15	8	87	70	4.907	6.02	8.59	22.3	71.4		191	613		323	104	
A	17	2	87	81	.955	1.51	1.91	30.0	100.0		57	191		97	32	
A	19	4	86	83	1.529	3.01	3.06	38.5	135.0		118	413		199	70	
A	22	2	86	70	.570	1.51	1.14	44.0	135.0		50	154		85	26	
A	Totals	32	86	58	23.569	24.09	31.94	22.1	73.3		706	2,342		1,194	396	
H	13	2	82	70	.935	.86	.94	24.0	70.0		22	65		38	11	
H	14	2	80	64	.807	.86	.81	27.0	60.0		22	48		37	8	
H	16	2	85	87	.228	.31	.35	32.5	116.6		11	40		19	7	
H	20	2	86	128	.395	.86	1.19	38.7	156.7		46	186		77	31	
H	21	2	85	117	.358	.86	1.08	41.0	176.7		44	190		75	32	
H	23	2	80	88	.299	.86	.60	55.5	170.0		33	102		56	17	
H	25	2	86	129	.253	.86	.76	61.7	270.0		47	205		79	35	
H	27	2	88	117	.217	.86	.65	70.0	333.3		46	217		77	37	
H	Totals	16	83	90	3.492	6.34	6.36	42.6	165.7		271	1,053		458	178	
NF	17	1	86	75	.203	.32	.41	25.0	85.0		10	34		17	6	
NF	18	2	83	74	.372	.64	.56	34.9	100.6		20	57		33	10	
NF	20	2	84	80	.300	.64	.29	28.5	85.0		8	25		14	4	
NF	21	3	84	61	.398	.96	.53	36.5	110.0		19	58		33	10	
NF	23	1	85	91	.111	.32										

TC PSTNDSUM		Stand Table Summary										Page 2		
												Date: 1/3/2024		
T07N R06W S17 Ty00MC 2.00 T07N R06W S17 Ty00MC 151.00 T07N R06W S17 Ty00MC 16.00					Project SK					Time: 11:58:59AM				
					Acres 169.00					Grown Year:				
S Spc T			Tot					Average Log		Net Net		Totals		
	Sample	FF	Av	Trees/	BA/	Logs	Net	Net	Tons/	Cu.Ft.	Bd.Ft.			
	DBH	Trees	16'	Ht	Acre	Acre	Acre	Cu.Ft.	Bd.Ft.	Acre	Acre	Tons	Cunits	MBF
NF	Totals	9	84	73	1.384	2.87	1.79	32.1	97.3	58	174	97 29		
S	21	1	79	44	.043	.10	.04	50.0	70.0	2	3	4 1		
S	Totals	1	79	44	.043	.10	.04	50.0	70.0	2	3	4 1		
Totals		337	85	89	131.203	261.19	252.08	40.3	151.0	10,167	38,073	17,182 6,434		

LOGGING PLAN MAP

OF TIMBER SALE CONTRACT
NO. AT-341-2024-W00870-01
SHINGLE KNOB
PORTIONS OF SECTIONS
17, 18, 19 & 20
OF T7N, R6W, W.M.
CLATSOP COUNTY, OREGON

Logging Breakdown

Unit	Tractor	Cable	Acres
Unit 1	8%	92%	65
Unit 2	9%	91%	102
Unit 3 (R/W)	100%	0%	2
Total	10%	90%	169
0	500	1,000	2,000

1 inch = 1,000 feet

Legend

- Ownership Boundary
- Timber Sale Boundary
- Paved Road
- Surfaced Road
- New Road Construction - Surfaced
- New Road Construction - Unsurfaced
- Existing Landing
- Landing To Be Constructed
- Type F Stream
- Type N Stream - Perennial
- Type N Stream - Seasonal
- Non-Posted Stream Buffer
- Posted Stream Buffer
- Reserve Tree Area
- Non-Stocked Area
- Controlled Felling
- Reforestation Area
- Cable Based Yarding
- Ground Based Yarding
- Survey Monument

