



Timber Sale Appraisal
Vesper Bell
Sale AT-341-2019-W00615-01

District: Astoria

Date: January 24, 2019

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,378,109.72	\$108,886.40	\$2,486,996.12
		Project Work:	(\$69,443.00)
		Advertised Value:	\$2,417,553.12



Timber Sale Appraisal Vesper Bell Sale AT-341-2019-W00615-01

District: Astoria

Date: January 24, 2019

Timber Description

Location: Areas 1 through 3 are located in portions of Sections 2, 3, 11, 12, 13, and 14 T6N R6W. W.M., Clatsop County, OR.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	24	0	97
Western Hemlock / Fir	24	0	99
Alder (Red)	17	0	95

Volume by Grade	2S	3S & 4S 6"-11"	8" - 9"	10" - 11"	12"+	6" - 7"	Total
Douglas - Fir	4,999	802	0	0	0	0	5,801
Western Hemlock / Fir	14	3	0	0	0	0	17
Alder (Red)	0	0	85	37	58	44	224
Total	5,013	805	85	37	58	44	6,042

Comments:

1. SOURCE OF POND VALUES

Pond Values Used: Local Pond Values, November 2018.

2. PRICING

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
\$1,040.66/MBF = \$1,300/MBF - \$259.34/MBF

3. PULP PRICE

Pulp (Conifer and Hardwood) Price = \$30/MBF

4. PROFIT & RISK COSTS

Machine Washing for Invasive Weed Compliance = \$2,000

One week of skidding time for Line Pull required Area=
\$7,560 = \$189 x 40hr

TOTAL Other Costs (with Profit & Risk to be added) = \$9,560

5. NON-PROFIT & RISK COSTS

None

6. SLASH DISPOSAL

Slash and Landing Piling (See attached appraisal)= \$21,001

7. ROAD MAINTENANCE COST

\$4.03/mbf (See attached appraisal)



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Logging Conditions

Combination#: 1 Douglas - Fir 26.00%
 Western Hemlock / Fir 26.00%
 Alder (Red) 26.00%

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: 11 **bd. ft / load:** 4600
cost / mbf: \$130.43
machines: Log Loader (A)
 Tower Yarder (Medium)

Combination#: 2 Douglas - Fir 74.00%
 Western Hemlock / Fir 74.00%
 Alder (Red) 74.00%

Logging System: Shovel **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: 15 **bd. ft / load:** 4600
cost / mbf: \$57.06
machines: Shovel Logger



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
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District: Astoria

Date: January 24, 2019

Logging Costs

Operating Seasons: 3.00	Profit Risk: 12%
Project Costs: \$69,443.00	Other Costs (P/R): \$9,560.00
Slash Disposal: \$21,001.00	Other Costs: \$0.00

Miles of Road

Road Maintenance: \$4.03

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.0
Western Hemlock / Fir	\$0.00	3.0	4.0
Alder (Red)	\$0.00	2.0	3.5



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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Brand & Paint	Other	Total
Douglas - Fir									
\$76.14	\$4.15	\$2.18	\$81.55	\$1.58	\$19.87	\$3.48	\$2.00	\$0.00	\$190.95
Western Hemlock / Fir									
\$76.14	\$4.07	\$2.18	\$79.96	\$1.58	\$19.67	\$3.48	\$2.00	\$0.00	\$189.08
Alder (Red)									
\$76.14	\$4.23	\$2.18	\$142.50	\$1.58	\$27.20	\$3.48	\$2.00	\$0.00	\$259.31

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$600.00	\$409.05	\$0.00
Western Hemlock / Fir	\$0.00	\$495.59	\$306.51	\$0.00
Alder (Red)	\$0.00	\$745.41	\$486.10	\$0.00



Timber Sale Appraisal
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Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,801	\$409.05	\$2,372,899.05
Western Hemlock / Fir	17	\$306.51	\$5,210.67
Alder (Red)	224	\$486.10	\$108,886.40

Gross Timber Sale Value

Recovery: \$2,486,996.12

Prepared By: Matt Dimick

Phone: 503-325-5451

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Vesper Bell

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
3A to 3B	3.95	\$6,794.39
Move-In		\$931.29
TOTALS	3.95	\$7,726

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
I1 to I2, I3 to I4	339.00	\$54,277.46
I5 to I6, I7 to I8		
I9 to I10, I11 to I12		
I13 to I14,		
Move-In		\$7,439.71
TOTALS	339.00	\$61,717

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

<u>Description</u>	<u>Cost</u>
TOTAL	

GRAND TOTAL **\$69,443**

Compiled By: Matt Dimick

Date: 11/14/2018

Move In and Maintenance Calculator for Construction and Improvement

SALE NAME: Vesper Bell

Project No. 1: ROAD CONSTRUCTION:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
3A to 3B	3.95	\$6,794
TOTALS	3.95	\$6,794

Project No. 2: ROAD IMPROVEMENT:

<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
I1 to I2, I3 to I4	339.00	\$54,277
I5 to I6, I7 to I8		
I9 to I10, I11 to I12		
I13 to I14,		
TOTALS		\$54,277

MOVE IN (Construction & Improvement Only)

<u>Equipment</u>	<u>Cost</u>
Dozer (D8)	\$1,581.00
Excavator (C330)	\$1,581.00
Excavator (C315)	\$905.00
Dump Trucks (12cy x6)	\$1,104.00
Front End Loader (C966)	\$875.00
Backhoe (C580)	\$361.00
Grader (14G)	\$875.00
Vibratory Roller	\$875.00
Water Truck (2,500 gal)	\$214.00
TOTAL	\$8,371.00

ROAD MAINTENANCE (Construction & Improvement Only)

Project road maintenance	
TOTAL	

0.07 MILES

0.00 MILES

11

10

2. *Journal of Management Education* 34(1): 10-20

\$676

103

2,753

L

[illegible]

\$682

\$4,111

SURFACING		Description		Stations/amount	x	Rate/sta/amt	Cost
Subgrade prep:		Grade, Shape and Ditch 16' (3A to 3B)		3.95	x	\$27.91	\$110.24
		Subgrade Compaction (3A to 3B)		3.95	x	\$22.69	\$89.63

ROAD SEGMENT		3A to 3B		POINT TO POINT		Sta. to Sta.		TOTAL	Rate/	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of	0+00 to 3+00		(CY)	Sta/amt.	
Base Rock	4"-0" Crushed	0+00 to 2+00	10	54	Turnout	2	10	110	\$2.26	\$249
Turnouts	4"-0" Crushed	0+80	N/A	22	Turnout	2	2	44	\$2.26	\$99
Junctions	4"-0" Crushed	0+00	N/A	22	Junctions	1	1	22	\$2.26	\$50
Landing	6"-0" Pit-Run	3+60	N/A	70	Landing	1	1	70	\$6.72	\$470
Landing Re-enforcement	6"-0" Pit-Run	2+00 to 3+60	12	75	Stations	11	11	120	\$6.72	\$806
Total Rock for Road Segment:		3A to 3B						366	\$1,675	

Processing: Description Water, Process, & Compact (2 lifts, 4" - 0"):

No. sta	Rate/sta	Cost
2.00	\$126.96	\$253.92

SUB TOTAL FOR SURFACING		6"-0" pit run	190	4"-0" crushed	176	Total	366	\$2,129
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SPECIAL PROJECTS		Description		Cost	
		Develop pit-run		(190cy @ \$2.92/cy) \$ 554.80	

SUB TOTAL FOR SPECIAL PROJECTS		Subtotal of Surfacing & Spec. Proj.		\$555
		Subtotal of Clearing, Exc., Cultv.		\$2,683
GRAND TOTAL				\$4,111
				\$6,794

Compiled By: Matt Dimick Date: 11/01/2018

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Vesper Bell

NEW CONSTRUCTION:

STATIONS

0.00 MILES
6.43 MILES

ROAD: _____
POINTS: 11 to 12, 13 to 14, 15 to 16, 17 to 18, 19 to 110, 111 to

NEW CONSTRUCTION:
IMPROVEMENT:

STATIONS
STATIONS

0.00 MILES
6.43 MILES

CLEARING & GRUBBING

[illegible]

SUB TOTAL FOR CLEARING & GRUBBING

50

EXCAVATION

Material	Cy/amount		Rate		Cost
Install Ditch Filters (utilizing 312)	2	x	114	=	\$228
Ditchline re-establishment and outslope improve	1	x	114	=	\$114
Install Ditch Filters	2	x	114	=	\$228

SUB TOTAL FOR EXCAVATION

\$570

CULVERT MATERIALS AND INSTALLATION

Location	Dial/type	Lineal ft.	Rate	Cost
I4 to I2				
18"CP	30	\$21.95	\$658.50	
18"CDP	30	\$21.95	\$658.50	
80+50	30	\$21.95	\$658.50	
18"CP	30	\$21.95	\$658.50	
86+00				

Other/miscellaneous:

Description

Quantity

Rate

Cost

Culvert stakes & markers:

6' X 2 1/2" white fiberglass post

4

\$23.00

\$92.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

Subtotal of Clearing, Exc., Culv.

\$2,726
\$3,296

SURFACING										
Subgrade prep:					Description		Stations/		Rate/	Cost
					Grade, Shape and Ditch 20' 11 to 12		112.00		x	\$3,486.44
					Subgrade Compaction 20' 11 to 12		112.00		x	\$3,211.04
					Grade, Shape and Ditch 16' 13 to 14, 15 to 16, 17 to 18, 19 to 110, 111 to 112, and 113 to 114		227.50		x	\$27.91
					Subgrade Compaction 16' 13 to 14, 15 to 16, 17 to 18, 19 to 110, 111 to 112, and 113 to 114		227.50		x	\$22.69
ROAD SEGMENT										
11 to 12					POINT TO POINT		Sta. to Sta.			
					11 to 12	0+00 to 112+00				
Application	Rock Size and Type	Depth of Rock (inches)	Volume (CY) per	Stations	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Rock Filler	6" - 4" Pit Run	N/A	11	2	2	22	\$8.25	\$182		
Bedding and Backfill	1 1/2"-0" Crushed	N/A	Load	33	Loads	12	\$2.26	\$298		
Total Rock for Road Segment:					11 to 12			132		
								154		
ROAD SEGMENT										
13 to 14					POINT TO POINT		Sta. to Sta.			
					13 to 14	0+00 to 10+50				
Application	Rock Size and Type	Depth of Rock (inches)	Volume (CY) per	Stations	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock	4'-0" Crushed	4	22	11	22	242	\$2.26	\$547		
Traction Rock	1 1/2"-0" Crushed	2	11	5	55	55	\$2.26	\$124		
Landing	6'-0" Pit Run	N/A	66	1	66	66	\$6.72	\$444		
Landing	6'-0" Pit Run	N/A	55	1	55	55	\$6.72	\$370		
Junctions	1 1/2"-0" Crushed	N/A	22	1	22	22	\$2.26	\$50		
Total Rock for Road Segment:					13 to 14			440		
ROAD SEGMENT										
15 to 16					POINT TO POINT		Sta. to Sta.			
					15 to 16	0+00 to 130+00				
Application	Rock Size and Type	Depth of Rock (inches)	Volume (CY) per	Stations	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock	1 1/2"-0" Crushed	3	16	59	944	\$2.26	\$2,133			
Turnouts	1 1/2"-0" Crushed	N/A	22	10	220	\$2.26	\$487			
Landing	6'-0" Pit Run	N/A	55	1	55	\$6.72	\$370			
Transition Rock	1 1/2"-0" Crushed	N/A	22	4	44	\$2.26	\$99			
Landing	6'-0" Pit Run	N/A	66	1	66	\$6.72	\$370			
Junctions	1 1/2"-0" Crushed	N/A	22	1	22	\$2.26	\$50			
Total Rock for Road Segment:					15 to 16			1,340		
ROAD SEGMENT										
17 to 18					POINT TO POINT		Sta. to Sta.			
					17 to 18	0+00 to 12+40				
Application	Rock Size and Type	Depth of Rock (inches)	Volume (CY) per	Stations	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock	4'-0" Crushed	4	22	13	286	\$2.26	\$646			
Traction Rock	1 1/2"-0" Crushed	N/A	11	3	33	\$2.26	\$75			
Turnouts	4'-0" Crushed	N/A	22	2	44	\$2.26	\$99			
Junctions	1 1/2"-0" Crushed	N/A	22	1	22	\$2.26	\$50			
Landing	Pit Run	N/A	55	1	55	\$6.72	\$370			
Total Rock for Road Segment:					17 to 18			440		
ROAD SEGMENT										
19 to 110					POINT TO POINT		Sta. to Sta.			
					19 to 110	0+00 to 34+50				
Application	Rock Size and Type	Depth of Rock (inches)	Volume (CY) per	Stations	Number of	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost		
Base Rock	4'-0" Crushed	4	22	25	572	\$2.26	\$1,293			
Subgrade Leveling	4'-0" Crushed	N/A	11	4	44	\$2.26	\$99			
Turnouts	4'-0" Crushed	N/A	22	8	226	\$2.26	\$398			
Junctions	4'-0" Crushed	N/A	22	1	22	\$2.26	\$50			
Total Rock for Road Segment:					19 to 110			\$1,840		

ROAD SEGMENT		111 to 112		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta/ amt.	Cost
				111 to 112		0+00 to 34+30				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Stations Number of					
Base Rock	4'-0" Crushed	0+00 to 34+30	4	22	35			770	\$2.26	\$1,740
Traction Rock	1 1/2"-0" Crushed	0+00 to 3+00	2	Station	11			33	\$2.26	\$75
Junctions	4'-0" Crushed	0+00	N/A	Junction	22			22	\$2.26	\$50
Turnouts	4'-0" Crushed	N/A	N/A	Turnout	22			110	\$2.26	\$249
Landing	6'-0" Pit-Run	27+10	N/A	Landing	55			55	\$6.72	\$370
Landing	6'-0" Pit-Run	30+10	N/A	Landing	65			65	\$6.72	\$370
Landing	6'-0" Pit-Run	34+30	N/A	Landing	55			55	\$6.72	\$370
Total Rock for Road Segment:				111 to 112				1,100		\$3,222
ROAD SEGMENT		113 to 114		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta/ amt.	Cost
				113 to 114		0+00 to 5+70				
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Stations Number of					
Base Rock	4'-0" Crushed	0+00 to 5+70	4	22	6			132	\$2.26	\$298
Turnouts	4'-0" Crushed	N/A	N/A	Turnout	22			44	\$2.26	\$99
Junctions	4'-0" Crushed	0+00	N/A	Junction	22			22	\$2.26	\$50
Total Rock for Road Segment:				113 to 114				198		\$447

Processing:		Description		No. Sta.		Rate/ Sta.		Cost	
		Water, Process & Compact 13 to 14, 15 to 16, 17 to 18, 19 to 110, 111 to 112, 113 to 114, and 3A to 3B		339.50		\$56.48		\$19,175	
SUB TOTAL FOR SURFACING		6'-4" pr 22		6'-0" pr 451		4'-0" crushed 2,486		1 1/2'-0" crushed 1,560	
								Total 4,519	
								\$49,665	

SPECIAL PROJECTS		Description		Cyl/Amount		Rate		Cost	
		pit-run development		451		\$2.92		\$1,316.92	
		rip-rap development		0		\$4.83		\$0.00	
SUB TOTAL FOR SPECIAL PROJECTS								\$1,317	
								\$50,987	
								\$3,296	
GRAND TOTAL								\$54,277	

Subtotal of Surfacing & Spec. Proj.
Subtotal of Cleaning, Exc. Culv.

CRUSHED ROCK COST

SALE NAME:	Vesper Bell
PROJECT:	Nos. 1 and 2
QUARRY:	Vesper Stockpile

MATERIAL: Crushed

DATE: 11/14/2018
BY: M. Dimick

[illegible]

ROCK HAUL:

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

Ave haul:	\$1.68	/cy
Load:	\$0.10	/cy
Spread:	\$0.48	/cy

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

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

Production: cy/day = 1,504

CRUSHED ROCK HAUL COSTS 4,005 cy @ \$2.26 /cy

PIT RUN ROCK COST

SALE NAME: Vesper Bell
PROJECT: Nos. 1 and 2
QUARRY: Viewpoint

MATERIAL: Pit Run

DATE: 11/14/2018
BY: M. Dimick

[illegible]

ROCK HAUL:

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

Ave haul:	\$5.40	/cy
Load:	\$0.48	/cy
Spread:	\$0.84	/cy

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

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

Production: cy/day = 936

PIT RUN ROCK HAUL COSTS

586 cy @ \$6.72 /cy

RIP RAP ROCK COST

SALE NAME:	Vesper View
PROJECT:	Nos. 1
QUARRY:	Viewpoint

MATERIAL: 6"-4"

DATE: 11/14/2018
BY: M. Dimick

[illegible]

ROCK HAUL:

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

Ave haul: \$6.45 /cy
Load: \$1.80 /cy
Develop: _____ /cy

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

Production: cy/day = 392

RIP RAP ROCK HAUL COSTS

22 cy @ \$8.25 /cy

Site Prep Appraisal

Sale Number: 341-19-W00615-01
Sale Name: Vesper Bell
Date: 11/14/2018

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	0.5
Hemlock/Fir	B	1.5	0.8
Hemlock/Spruce	C	2.0	1.0
Hemlock	D	2.0	1.0
Conifer/Hardwood	E	1.0	0.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	53	53	\$145.00	\$7,685.00
2	MC	A	37	37	\$145.00	\$5,365.00
3	MC	A	29	29	\$145.00	\$4,205.00

Sub Total = \$17,255.00

Sale Area	Number of cable Landings	Number of acres to landing	\$ per 20 acres yarded	Cost/Area	Number of In-Piles	Material Cost/Pile	Material Cost/Area	Total Cost/Area
1	1	5	\$1,160.00	\$290.00	27	\$20.00	\$550.00	\$840.00
2	3	12	\$1,160.00	\$696.00	19	\$20.00	\$430.00	\$1,126.00
3	2	25	\$1,160.00	\$1,450.00	15	\$20.00	\$330.00	\$1,780.00

*Cost includes separating firewood

Sub Total = \$3,746.00

Grand Total = \$21,001.00

Road Maintenance Cost Summary

Sale: Vesper Bell
Date: 14-Nov-18
By: M. Dimick

MBF: 6,042
\$/MBF: \$4.03

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost	
Progressive Operations 1st Entry	Grader 14G	\$778	1	16	\$113	\$2,586	
	Dump Truck 12CY x 2	\$326	2	8	\$89	\$2,076	
	FE Loader C966	\$778	1	8	\$94	\$1,530	
	Vibratory Roller	\$778	1	4	\$87	\$1,126	
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	36	\$113	\$4,846	
	Dump Truck 12CY x 2	\$326	2	16	\$89	\$3,500	
	Vibratory Roller	\$778	1	18	\$87	\$2,344	
	Water Truck 2,500 gallon	\$190	1	18	\$101	\$2,008	
	FE Loader C966	\$778	1	16	\$94	\$2,282	
	Rubber Tire Backhoe	\$321	1	16	\$87	\$1,713	
	Laborer	\$0	1	8	\$45	\$360	
Total							\$24,371

Progressive Ops. 1st Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	1.5	1.0	0.7
	Vibratory Roller	1.5	1.0	0.7

Final Road Maintenance	Production Rates	Miles/day	Distance(miles)	Days
	Grader	1.5	6.5	4.3
	Vibratory Roller	1.5	6.5	4.3

Vesper Bell
TIMBER CRUISE REPORT
FY 2019

1. Sale Area Location: Areas 1, 2, and 3 are located in portions of Sections 2, 3, 11, 12, 13, and 14, T6N, R6W, W.M., Clatsop County, OR.

2. Fund Distribution: BOF 100%
Tax Code 8-01 (100%)

3. Sale Acreage by Area:

Area	Treatment	Gross Acres	Stream Buffer	Existing Surface Roads	New Road Construction	Net Acres	Survey Method
1	Modified Clearcut	68	2	8	-	58	GIS
2	Modified Clearcut	59	5	5	-	49	GIS
3	Modified Clearcut	64	5	4	1	54	GIS
4	R/W	1				1	GIS
TOTALS		192	12	17	1	162	

4. Cruisers and Cruise Dates:

The areas were cruised by Matt Dimick during November 2018.

5. Cruise Method and Computation:

Areas 1 and 2 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 5 chain by 4.5 chain grid, with 2 to 1 count plots to grade and measure plots. A total of 48 plots were sampled, with 19 graded plots, and 29 count plots.

Area 3 is a modified clearcut unit and was variable plot cruised using a 40 BAF. These plots are located on a 5 chain by 4.5 chain grid, with 2 to 1 count plots to grade and measure plots. A total of 20 plots were sampled, with 7 graded plots, and 13 count plots.

Data was collected on Allegro 2 data collectors, and downloaded to the Atterbury Super A.C.E. program for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE	ACRES
1 & 2	VESBELL	A12	TAKE	107
3	VESBELL	AREA 3	TAKE	54
4	VESBELL	ROW	TAKE	1

6. Timber Description:

Areas 1 and 2 are modified clearcut units, approximately 69 to 77 years-old, consisting of Douglas-fir and red alder. The average Douglas-fir tree size is 29.7 inches DBH, with an average bole height of 97 feet. The average red alder tree size 17.2 inches DBH with an average height of 42 feet to a merchantable top (7 inch d.o.b). The net volume per acre to be harvested is 35.2 MBF/acre.

Area 3 is a modified clearcut unit, approximately 69 to 77 years-old, consisting of Douglas-fir and western hemlock. The average Douglas-fir tree size is 21.2 inches DBH, with an average bole height of 74 feet. The average Hemlock tree size is 24.0 inches DBH, with an average bole height of 84 feet. The net volume per acre to be harvested is 40.4 MBF/acre.

Area 4 R/W is similar to the timber description mentioned above in Area 3. The average volume per acre to be harvested is 40.4 MBF/acre.

7. Statistical Analysis and Stand Summary

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1 and 2	40.0	8%	34.3	4.9%
3	40.0	8%	38.1	8.7%

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. MBF	2 Saw	3 Saw	4 Saw	% D & B	% Sale
Douglas-fir	24.9	5,801	4,999	613	189	2.4%	96%
Hemlock	24.0	17	14	3	0	<1%	>1%

Hardwoods

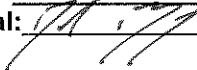
Species	DBH	Net Vol. MBF	12"+	10-12"	8-10"	6-8"	% D & B	% Sale
Red Alder	17.2"	224	85	37	58	44	2.2%	4%

Species	Net Vol. MBF
Douglas-fir	5,801
Hemlock	17
Red alder	224
Total	6,042

9. Approvals:

Prepared by: Matt Dimick

Date: 11/13/2018

Unit Forester Approval: 

Date: 1/23/19

10. Attachments:

Cruise Designs and Maps – 6 pages
Volume Reports – 4 pages
Statistics Report -4 pages
Stand Table Summary – 1 page
Log Stock Tables – 2 pages

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Vesper Bell **Area(s)** 1 and 2

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 107 **Estimated CV%** 40 Net BF or
BA/Acre **SE% Objective** 9

Planned Sale Volume: 3.5 MMBF **Estimated Sale Area Value/Acre:** \$ 11,200.00

A. Cruise Goals: (a) Grade minimum 60 trees:

Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

- 1. Plot Cruises:** BAF 104 Full point
Cruise Line Direction(s) N, S, E, W
Cruise Line Spacing 4.5 chains (297 Feet)
Cruise Plot Spacing 5 chains (330 Feet)
Grade/Count Ratio 1:2

Record all cedar as leave. Record all snags as SN and record diameter & total height. If plot lands in buffer then offset at least 1/2 chain outside the buffer.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" 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" or 40% of dob at 16' form point. Generally, use 7" outside bark for trees less than 18" dbh and 40% of dob @ FP for trees greater than 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; Hardwood form factors are a Standard 87.
- 5. Tree Segments:** Record log segments in "standard" 32" and 40' log lengths whenever possible. Do not record odd segments just to maximize grade. The maximum segment length is 40'. The minimum segment length is 12' for conifer and 8' for hardwoods. Minimum merchantable diameter for conifer is 8" dbh and 10" dbh for hardwoods. One foot of trim is assumed for each merchantable segment.

- 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); DL (Douglas-fir over 30" dbh); HL (Western hemlock over 30" dbh); SL (Sitka spruce over 30" dbh); CL (Western red cedar over 30" dbh); NFL (Noble fir over 30" dbh); SFL (Silver fir over 30" dbh)
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; 0 = Cull
Hardwoods: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill; 0 = Cull.
- 7. Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
- 8. Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points. On "measure/grade" plots paint the tree diameter on each tree starting with the first tree right of the cruise line direction and continuing clockwise.
- 9. Cruising Equipment:** Relaskop, Rangefinder, Biltmore Stick, Compass, Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging.
- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, BAF or plot size, measure/count plot ratio, north arrow, and scale bar.

Cruise Design by: Matt Dimick
Approved by: [Signature]
Date: Revised 1/23/19

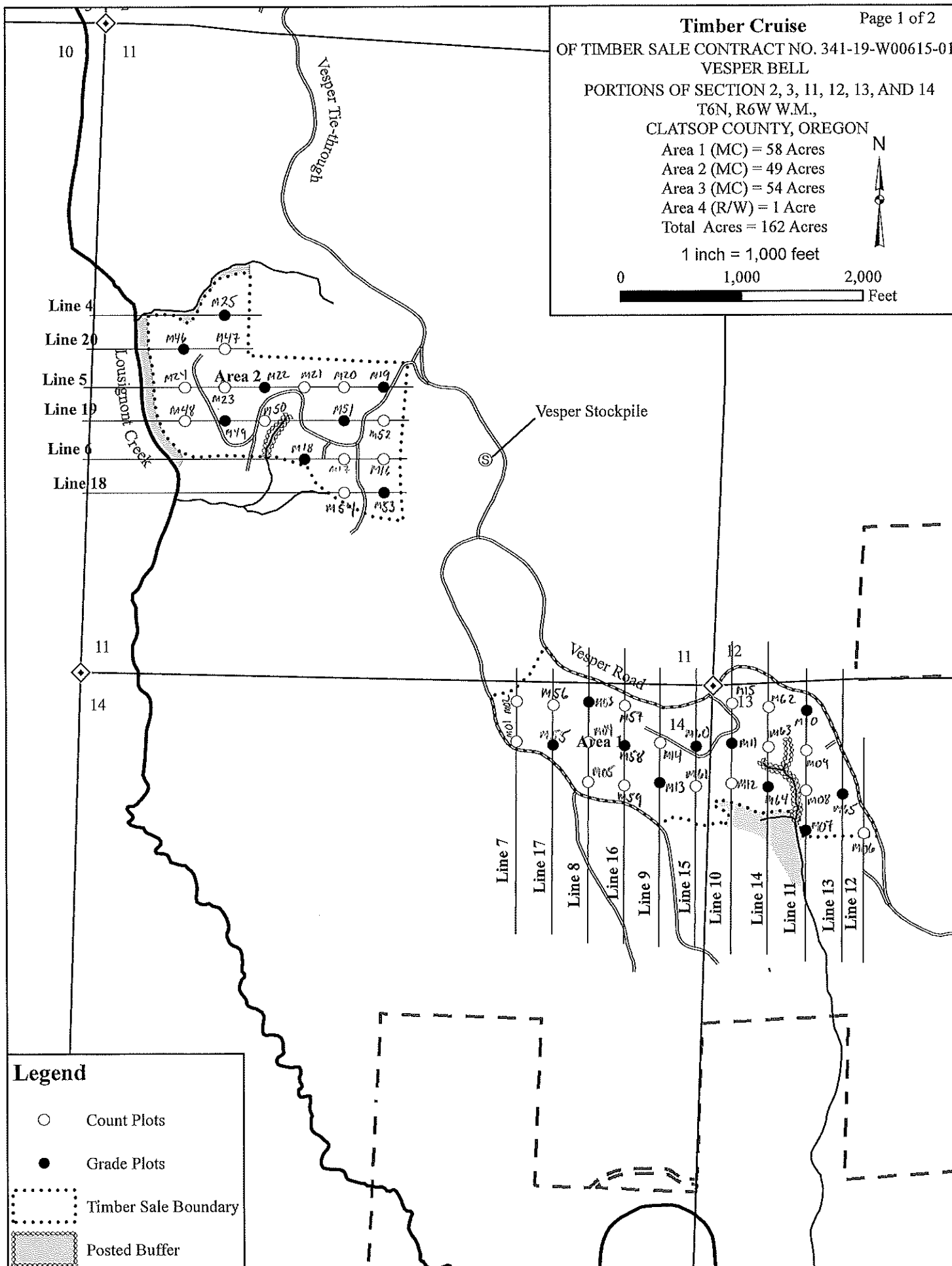
Timber Cruise

OF TIMBER SALE CONTRACT NO. 341-19-W00615-01
VESPER BELL
 PORTIONS OF SECTION 2, 3, 11, 12, 13, AND 14
 T6N, R6W W.M.,
 CLATSOP COUNTY, OREGON

Area 1 (MC) = 58 Acres
 Area 2 (MC) = 49 Acres
 Area 3 (MC) = 54 Acres
 Area 4 (R/W) = 1 Acre
 Total Acres = 162 Acres

1 inch = 1,000 feet

0 1,000 2,000 Feet



Legend

- Count Plots
- Grade Plots
- ⋯ Timber Sale Boundary
- ▨ Posted Buffer

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Vesper Bell **Area(s)** 3

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 54 **Estimated CV%** 40 Net BF or
BA/Acre **SE% Objective** 9

Planned Sale Volume: 2.1 MMBF **Estimated Sale Area Value/Acre:** \$ 16,100.00

A. Cruise Goals: (a) Grade minimum 40 trees:

Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

- 1. Plot Cruises:** BAF 104 Full point
Cruise Line Direction(s) N, S, E, W
Cruise Line Spacing 4.5 chains (297 Feet)
Cruise Plot Spacing 5 chains (330 Feet)
Grade/Count Ratio 1:2

Record all cedar as leave. Record all snags as SN and record diameter & total height. If plot lands in buffer then offset at least ½ chain outside the buffer.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" 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 " or 40% of dob at 16' form point. Generally, use 7" outside bark for trees less than 18" dbh and 40% of dob @ FP for trees greater than 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; Hardwood form factors are a Standard 87.
- 5. Tree Segments:** Record log segments in "standard" 32" and 40' log lengths whenever possible. Do not record odd segments just to maximize grade. The maximum segment length is 40'. The minimum segment length is 12' for conifer and 8' for hardwoods. Minimum merchantable diameter for conifer is 8" dbh and 10" dbh for hardwoods. One foot of trim is assumed for each merchantable segment.

- 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); DL(Douglas-fir over 30"dbh); HL(Western hemlock over 30" dbh); SL(Sitka spruce over 30" dbh); CL (Western red cedar over 30" dbh); NFL (Noble fir over 30" dbh); SFL (Silver fir over 30" dbh)
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; 0 = Cull
Hardwoods: 12" + = 1 Sawmill; 10"-12" = 2 Sawmill; 10"-8" = 3 Sawmill; and 8"-6" 4 Sawmill; 0 = Cull.
- 7. Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
- 8. Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points. On "measure/grade" plots paint the tree diameter on each tree starting with the first tree right of the cruise line direction and continuing clockwise.
- 9. Cruising Equipment:** Relaskop, Rangefinder, Biltmore Stick, Compass, Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging.
- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, BAF or plot size, measure/count plot ratio, north arrow, and scale bar.

Cruise Design by: Matt Dimick
Approved by: [Signature]
Date: 1/23/19 (Revised)

Timber Cruise

Page 2 of 2

OF TIMBER SALE CONTRACT NO. 341-19-W00615-01
VESPER BELL

PORTIONS OF SECTION 2, 3, 11, 12, 13, AND 14
T6N, R6W W.M.,

CLATSOP COUNTY, OREGON

Area 1 (MC) = 58 Acres

Area 2 (MC) = 49 Acres

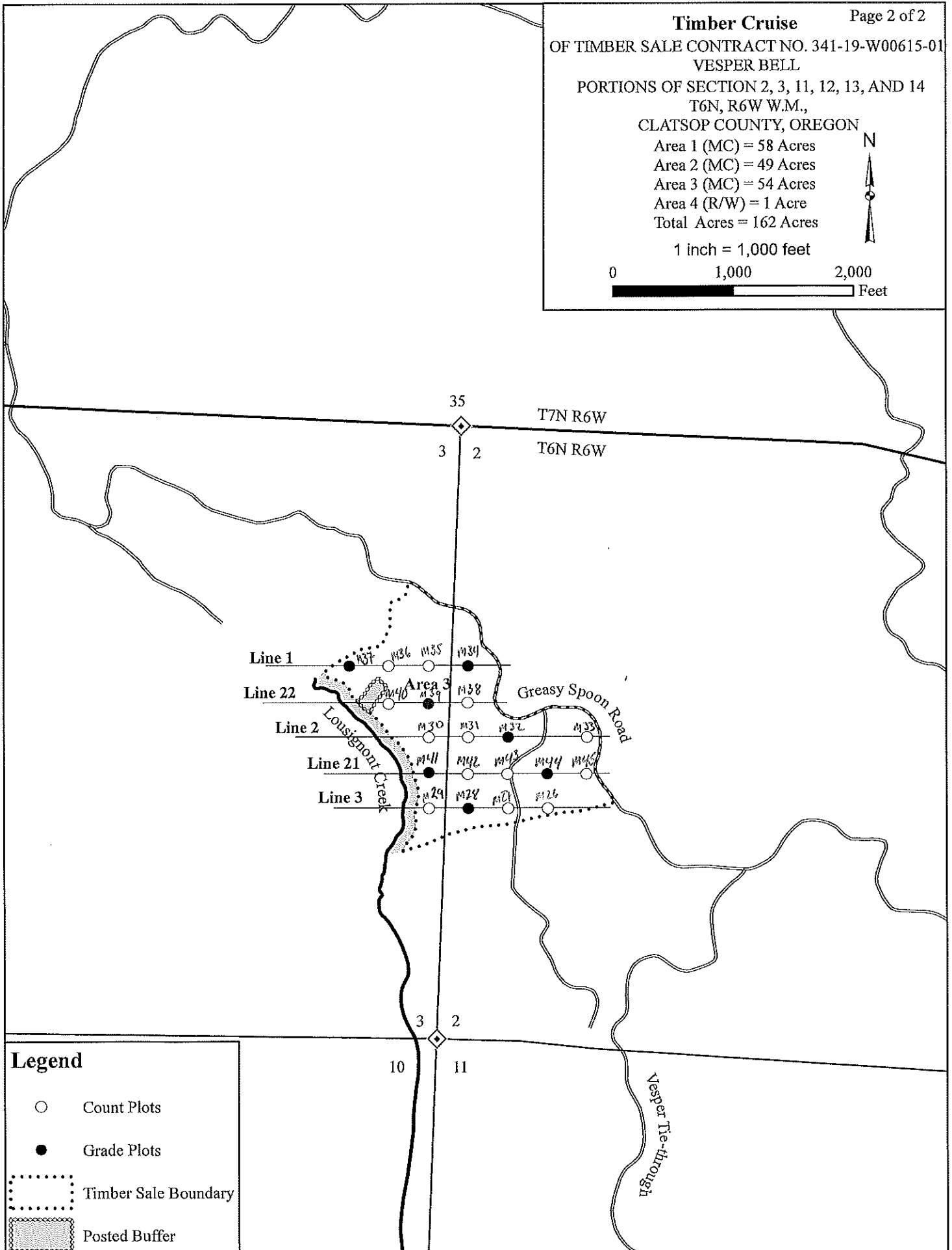
Area 3 (MC) = 54 Acres

Area 4 (R/W) = 1 Acre

Total Acres = 162 Acres

1 inch = 1,000 feet

0 1,000 2,000 Feet



Species, Sort Grade - Board Foot Volumes (Project)

TT6N RR6W S11 TyTAK	107.00
TT6N RR6W S11 TyTAK	54.00
TT6N RR6W S11 TyTAK	1.00

Project: VESBELL
Acres 162.00

Page 1
Date 1/23/2019
Time 1:00:01PM

Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
							4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
A	DO1S	38	3.0	542	526	85	100				100				32	14	222	1.80	2.4
A	DO2S	16		230	230	37	100				68 32				35	10	133	1.35	1.7
A	DO3S	26		355	355	58	100				8 92				35	8	90	1.07	3.9
A	DO4S	20		272	272	44	100				42 30 29				24	7	43	0.71	6.4
A Totals		4	1.2	1,399	1,383	224	62 38				10 55 35				30	9	96	1.11	14.4
D	DOCU		100.0	526											28	33		0.00	.4
D	DO2S	86	1.2	31,225	30,859	4,999	28 72				0 2 5 92				38	17	505	2.85	61.1
D	DO3S	10	.2	3,789	3,782	613	90 10				5 13 54 28				32	9	100	0.93	37.8
D	DO4S	4		1,167	1,167	189	100				49 15 35				23	8	44	0.66	26.6
D Totals		96	2.4	36,707	35,808	5,801	13 25 62				2 4 10 84				33	13	284	1.96	125.9
H	DO2S	81		86	86	14	100				100				40	16	400	2.43	.2
H	DO3S	19		19	19	3	100				100				40	8	90	0.93	.2
H Totals		0		106	106	17	18 82				100				40	12	245	1.68	.4
Totals			2.4	38,213	37,297	6,042	15 26 59				3 4 12 82				33	12	265	1.88	140.8

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1					
				Project: VESBELL										Date		1/23/2019					
														Time		1:00:53PM					
TT6N RR6W S11 TTAKE										TT6N RR6W S11 TTAKE											
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt			
T6N		R6W		11		A12		TAKE		107.00		48		78		1		W			
S So Gr T rt ad Spp				% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
									Log Scale Dia.				Log Length				Ln Dia Bd CF/ Ft In Ft Lf				
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D DO CU					100.0	563											35	31	0.00	.4	
D DO 2S				90	1.4	30,873	30,453	3,258			18	82	1	2	5	92	38	19	596	3.30	51.1
D DO 3S				8	.4	2,731	2,719	291		79	21		8	22	42	28	30	10	106	1.08	25.6
D DO 4S				2		454	454	49		100			64	36			19	8	45	0.75	10.1
D Totals				94	2.9	34,620	33,626	3,598		8	18	74	2	4	8	85	34	15	385	2.53	87.2
A DO 1S				38	3.0	821	797	85		100					100		32	14	222	1.80	3.6
A DO 2S				16		348	348	37		100					68	32	35	10	133	1.35	2.6
A DO 3S				26		538	538	58		100			8			92	35	8	90	1.07	6.0
A DO 4S				20		412	412	44		100			42		30	29	24	7	43	0.71	9.7
A Totals				6	1.2	2,119	2,094	224		62	38		10		55	35	30	9	96	1.11	21.8
Type Totals					2.8	36,739	35,720	3,822		11	19	70	3	4	11	82	33	14	327	2.27	109.1

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1							
				Project: VESBELL										Date		1/23/2019							
														Time		1:01:04PM							
TT6N RR6W S11 TTAKE										TT6N RR6W S11 TTAKE													
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt					
T6N		R6W		11		AREA 3		TAKE		54.00		20		42		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		
									Log Scale Dia.				Log Length				Ln Dia Bd CF/						
					4-5	6-11	12-16		17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf						
D		DO		CU			00.0	454									15	38		0.00	.5		
D		DO		2S		79	.8	31,910	31,650	1,709		47	53	0	2	4	94	39	16	394	2.31	80.4	
D		DO		3S		14		5,848	5,848	316	100			1	5	64	29	34	9	95	0.82	61.5	
D		DO		4S		7		2,556	2,556	138	100			44	8		48	25	7	43	0.64	58.9	
D		Totals				99	1.8	40,768	40,054	2,163		21	37	42	3	3	13	81	33	11	199	1.48	201.2
H		DO		2S		81		255	255	14		100					100	40	16	400	2.43	.6	
H		DO		3S		19		57	57	3	100						100	40	8	90	0.93	.6	
H		Totals				1		312	312	17		18	82				100	40	12	245	1.68	1.3	
Type Totals							1.7	41,080	40,366	2,180		21	37	42	3	3	13	81	33	11	199	1.48	202.5

T		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
TSPCSTGR		Project: VESBELL										Date		1/23/2019				
												Time		1:01:15PM				
TT6N RR6W S11 TTAKE										TT6N RR6W S11 TTAKE								
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt									
T6N	R6W	11	ROW	TAKE	1.00	20	42	1	W									
S So Gr		%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
Spp	T	Net BdFt	Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Dia	Bd	CF/ Lf	
						4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft In	Ft			
D	DO	CU		00.0	454									15 38		0.00	.5	
D	DO	2S	79	.8	31,910	31,650		47	53	0	2	4	94	39 16	394	2.31	80.4	
D	DO	3S	14		5,848	5,848		100		1	5	64	29	34 9	95	0.82	61.5	
D	DO	4S	7		2,556	2,556		100		44	8		48	25 7	43	0.64	58.9	
D	Totals		99	1.8	40,768	40,054	40	21	37	42	3	3	13	81	33 11	199	1.48	201.2
H	DO	2S	81		255	255	0	100					100	40 16	400	2.43	.6	
H	DO	3S	19		57	57	0	100					100	40 8	90	0.93	.6	
H	Totals		1		312	312	0	18	82				100	40 12	245	1.68	1.3	
Type Totals				1.7	41,080	40,366	40	21	37	42	3	3	13	81	33 11	199	1.48	202.5

TC PSTATS				PROJECT VESBELL				PAGE 1		DATE 1/23/2019			
TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt				
T6N	R6	11	A12	TAKE	162.00	88	452	1	W				
T6N	R6W	11	AREA 3	TAKE									
T6N	R6W	11	ROW	TAKE									
				TREES	ESTIMATED	PERCENT							
				PER PLOT	TOTAL	SAMPLE							
					TREES	TREES							
TOTAL				88	452	5.1							
CRUISE				33	162	4.9	10,455	1.5					
DBH COUNT													
REFOREST													
COUNT				55	290	5.3							
BLANKS													
100 %													
STAND SUMMARY													
SAMPLE				TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES				/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR				150	53.4	24.9	83	36.2	180.7	36,707	35,808	8,324	8,225
R ALDER				10	10.9	17.2	42	4.2	17.6	1,399	1,383	476	476
WHEMLOCK				2	.2	24.0	84	0.1	.7	106	106	29	29
TOTAL				162	64.5	23.8	76	40.8	199.0	38,213	37,297	8,828	8,730
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		75.8	6.2	942	1,004	1,066							
R ALDER		61.4	20.4	123	154	185							
WHEMLOCK				490	490	490							
TOTAL		80.7	6.3	885	945	1,005	260	65	29				
CL	68.1	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.				
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15				
DOUG FIR		120.9	12.9	47	53	60							
R ALDER		291.0	31.0	8	11	14							
WHEMLOCK		921.0	98.1	0	0	0							
TOTAL		105.6	11.2	57	65	72	445	111	49				
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		79.4	8.5	165	181	196							
R ALDER		283.4	30.2	12	18	23							
WHEMLOCK		921.0	98.1	0	1	1							
TOTAL		73.8	7.9	183	199	215	218	54	24				
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		71.7	7.6	33,074	35,808	38,542							
R ALDER		304.6	32.4	935	1,383	1,832							
WHEMLOCK		921.0	98.1	2	106	210							
TOTAL		68.9	7.3	34,559	37,297	40,036	190	47	21				

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	VESBELL	DATE 1/23/2019					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
T6N	R6W	11	A12	TAKE	107.00	48	216	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		48	216	4.5							
CRUISE		19	78	4.1	5,171	1.5					
DBH COUNT											
REFOREST											
COUNT		29	138	4.8							
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
DOUG FIR		68	31.8	29.7	97	28.1	153.3	34,620	33,626	7,515	7,405
R ALDER		10	16.6	17.2	42	6.4	26.7	2,119	2,094	720	720
TOTAL		78	48.3	26.1	78	35.2	180.0	36,739	35,720	8,235	8,125
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		56.8	6.9	1,294	1,390	1,486					
R ALDER		61.4	20.4	123	154	185					
TOTAL		68.8	7.8	1,136	1,231	1,327		189	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		43.1	6.2	30	32	34					
R ALDER		204.9	29.6	12	17	21					
TOTAL		66.3	9.6	44	48	53		176	44	20	
CL:	68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR		38.6	5.6	145	153	162					
R ALDER		198.9	28.7	19	27	34					
TOTAL		33.7	4.9	171	180	189		45	11	5	
CL:	68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR		40.0	5.8	31,688	33,626	35,564					
R ALDER		215.5	31.1	1,443	2,094	2,745					
TOTAL		34.3	4.9	33,952	35,720	37,488		47	12	5	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT VESBELL				DATE	1/23/2019		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
T6N	R6W	11	AREA 3	TAKE	54.00	20	118	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		20	118	5.9							
CRUISE		7	42	6.0	5,187	.8					
DBH COUNT											
REFOREST											
COUNT		13	76	5.8							
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR		41	95.4	21.2	74	50.8	234.0	40,768	40,054	9,896	9,822
WHEMLOCK		1	.6	24.0	84	0.4	2.0	312	312	85	85
TOTAL		42	96.1	21.2	74	51.2	236.0	41,080	40,366	9,981	9,907
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		83.3	13.0	595	684	773					
WHEMLOCK											
TOTAL		82.9	12.8	592	679	766	275	69	31		
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		60.7	13.9	82	95	109					
WHEMLOCK		447.2	102.5		1	1					
TOTAL		60.5	13.9	83	96	109	154	39	17		
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		43.1	9.9	211	234	257					
WHEMLOCK		447.2	102.5		2	4					
TOTAL		43.6	10.0	212	236	260	80	20	9		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15			
DOUG FIR		37.2	8.5	36,635	40,054	43,473					
WHEMLOCK		447.2	102.5		312	632					
TOTAL		38.1	8.7	36,844	40,366	43,888	61	15	7		

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	VESBELL			DATE	1/23/2019		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
T6N	R6W	11	ROW	TAKE	1.00	20	118	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		20	118	5.9							
CRUISE		7	42	6.0	96		43.7				
DBH COUNT											
REFOREST											
COUNT		13	76	5.8							
BLANKS											
100 %											
STAND SUMMARY											
		SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
		TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR		41	95.4	21.2	74	50.8	234.0	40,768	40,054	9,896	9,822
WHEMLOCK		1	.6	24.0	84	0.4	2.0	312	312	85	85
TOTAL		42	96.1	21.2	74	51.2	236.0	41,080	40,366	9,981	9,907
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		83.3	13.0	595	684	773					
WHEMLOCK											
TOTAL		82.9	12.8	592	679	766	275	69	31		
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		60.7	13.9	82	95	109					
WHEMLOCK		447.2	102.5		1	1					
TOTAL		60.5	13.9	83	96	109	154	39	17		
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		43.1	9.9	211	234	257					
WHEMLOCK		447.2	102.5		2	4					
TOTAL		43.6	10.0	212	236	260	80	20	9		
CL:	68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5		10	15	
DOUG FIR		37.2	8.5	36,635	40,054	43,473					
WHEMLOCK		447.2	102.5		312	632					
TOTAL		38.1	8.7	36,844	40,366	43,888	61	15	7		

TC		PSTNDSUM		Stand Table Summary										Page Date:		1 1/23/2019	
<div>TT6N RR6W S11 TyTAK107.00 TT6N RR6W S11 TyTAK54.00 TT6N RR6W S11 TyTAK1.00</div>					ProjectVESBELL					Time:1:02:27PM							
					Acres162.00					Grown Year:							
S Spec T	DBH	Sample Trees	Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals				
			FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF		
D	12	2	85	50	2.467	1.94	2.47	16.0	50.0		39	123		64	20		
D	13	2	85	53	2.102	1.94	2.10	20.0	60.0		42	126		68	20		
D	14	2	86	51	1.813	1.94	1.81	22.0	60.0		40	109		65	18		
D	15	4	85	57	3.158	3.88	3.16	28.0	65.0		88	205		143	33		
D	16	7	86	79	5.230	7.30	9.07	23.8	80.4		216	729		350	118		
D	18	1	86	96	.843	1.49	1.69	32.5	115.0		55	194		89	31		
D	19	3	84	96	1.741	3.43	4.47	29.0	102.5		129	458		210	74		
D	20	4	85	115	1.776	3.88	4.44	38.4	138.0		171	613		276	99		
D	21	4	85	98	2.044	4.92	4.09	44.5	148.0		182	605		295	98		
D	22	12	85	109	4.798	12.67	12.36	43.3	170.3		536	2,105		868	341		
D	23	11	85	118	3.874	11.18	10.43	47.0	186.7		491	1,948		795	316		
D	24	1	86	116	.474	1.49	1.42	46.3	190.0		66	270		107	44		
D	25	7	86	119	2.448	8.34	6.77	55.7	226.3		377	1,533		611	248		
D	26	11	85	122	3.032	11.18	9.09	56.3	231.4		512	2,104		829	341		
D	27	4	86	125	1.236	4.92	3.71	61.6	259.9		228	964		370	156		
D	28	5	86	129	1.498	6.41	4.49	69.3	296.9		312	1,334		505	216		
D	29	9	85	129	2.241	10.28	6.72	75.3	331.9		506	2,232		820	362		
D	30	5	85	145	1.305	6.41	3.91	88.2	401.6		345	1,572		559	255		
D	31	9	85	129	2.359	12.36	6.51	91.2	402.8		593	2,621		961	425		
D	32	6	86	135	1.414	7.90	4.24	94.3	438.1		400	1,858		648	301		
D	33	9	86	139	2.081	12.36	6.24	103.2	491.4		644	3,069		1,044	497		
D	34	4	85	137	.945	5.96	2.83	107.3	493.3		304	1,398		492	227		
D	35	5	86	140	.959	6.41	2.88	115.3	539.6		332	1,552		537	251		
D	36	2	86	143	.421	2.98	1.26	124.3	615.0		157	777		255	126		
D	37	2	86	143	.399	2.98	1.20	132.3	663.3		158	794		257	129		
D	38	4	86	153	.624	4.92	1.87	146.0	743.3		273	1,392		443	226		
D	39	3	85	147	.539	4.47	1.44	158.2	791.2		227	1,136		368	184		
D	41	3	85	146	.487	4.47	1.46	164.7	815.6		241	1,192		390	193		
D	43	2	84	152	.295	2.98	1.03	159.0	754.3		164	780		266	126		
D	45	3	83	150	.405	4.47	1.08	152.0	753.7		164	813		266	132		
D	48	3	84	143	.273	3.43	.82	176.4	896.6		144	734		234	119		
D	51	1	85	166	.105	1.49	.42	208.7	1110.0		88	466		142	76		
D	Totals	150	85	106	53.386	180.72	125.51	65.5	285.3		8,225	35,808		13,325	5,801		
A	11	1	87	18	2.669	1.76	2.67	8.0	30.0		21	80		35	13		
A	16	1	86	58	1.261	1.76	1.26	37.0	90.0		47	114		76	18		
A	17	2	86	60	2.235	3.52	3.35	29.0	80.0		97	268		157	43		
A	19	3	87	60	2.684	5.28	3.58	41.0	115.0		147	411		238	67		
A	20	1	87	79	.807	1.76	1.61	39.5	130.0		64	210		103	34		
A	22	1	87	77	.667	1.76	1.33	46.5	170.0		62	227		101	37		
A	23	1	87	51	.610	1.76	.61	62.0	120.0		38	73		61	12		
A	Totals	10	87	51	10.934	17.61	14.42	33.0	95.9		476	1,383		771	224		
H	24	2	86	102	.216	.68	.43	67.0	245.0		29	106		47	17		
H	Totals	2	86	102	.216	.68	.43	67.0	245.0		29	106		47	17		
Totals		162	86	97	64.536	199.01	140.36	62.2	265.7		8,730	37,297		14,142	6,042		

TC PLOGSTVB				Log Stock Table - MBF																
TT6N RR6W S11 TyTAK 107.00 TT6N RR6W S11 TyTAK 54.00 TT6N RR6W S11 TyTAK 1.00				Project: VESBELL Acres 162.00										Page 1 Date 1/23/2019 Time 1:02:39PM						
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+	
A		DO 1S	32	88	3.0	85	38.0					28	58							
A		DO 2S	32	25		25	11.3				25									
A		DO 2S	40	12		12	5.3			12										
A		DO 3S	18	4		4	1.9			4										
A		DO 3S	40	53		53	23.7			53										
A		DO 4S	16	13		13	5.8			13										
A		DO 4S	18	5		5	2.4			5										
A		DO 4S	32	13		13	5.8			13										
A		DO 4S	40	13		13	5.7			13										
A		Totals		227	1.2	224	3.7			44	69	25	28	58						
D		DO CU	12	12	100.0															
D		DO CU	15	25	100.0															
D		DO CU	58	48	100.0															
D		DO 2S	16	17		17	.3										17			
D		DO 2S	18	4		4	.1							4						
D		DO 2S	24	13		13	.2					13								
D		DO 2S	30	92		92	1.6					30	26	26	10					
D		DO 2S	32	254		254	4.4					120	45	72	17					
D		DO 2S	36	5		5	.1					5								
D		DO 2S	40	4,672	1.3	4,613	79.5					269	663	1205	1414	877	184			
D		DO 3S	16	9		9	.1					6		3						
D		DO 3S	18	20		20	.3			5	9	3	3							
D		DO 3S	24	57		57	1.0			13	35	8								
D		DO 3S	26	4		4	.1				4									
D		DO 3S	30	21		21	.4				21									
D		DO 3S	32	329		328	5.7			55	14	233	26							
D		DO 3S	36	12		12	.2				6		6							
D		DO 3S	40	162		162	2.8			54	15	79	13							
D		DO 4S	16	28		28	.5			7	22									
D		DO 4S	18	65		65	1.1			17	41	8								
D		DO 4S	24	17		17	.3			4		12								
D		DO 4S	30	12		12	.2					12								
D		DO 4S	36	38		38	.7			38										
D		DO 4S	40	29		29	.5			29										

Log Stock Table - MBF

Page 2
 Date 1/23/2019
 Time 1:02:39PM

TT6N RR6W S11 TyTAK 107.00
 TT6N RR6W S11 TyTAK 54.00
 TT6N RR6W S11 TyTAK 1.00

Project: VESBELL
 Acres 162.00

S Spp	T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		Totals		5,947	2.4	5,801	96.0			204	110	426	489	743	1310	1441	877	202	
H		DO	2S 40	14		14	81.6							14					
H		DO	3S 40	3		3	18.4			3									
H		Totals		17		17	.3			3				14					
Total		All Species		6,190	2.4	6,042	100.0			248	182	452	516	801	1324	1441	877	202	

LOGGING PLAN

Page 1 of 2

OF TIMBER SALE CONTRACT NO. 341-19-W00615-01

VESPER BELL

PORTIONS OF SECTION 2, 3, 11, 12, 13, AND 14

T6N, R6W W.M.,

CLATSOP COUNTY, OREGON

Area 1 (MC) = 58 Acres

Area 2 (MC) = 49 Acres

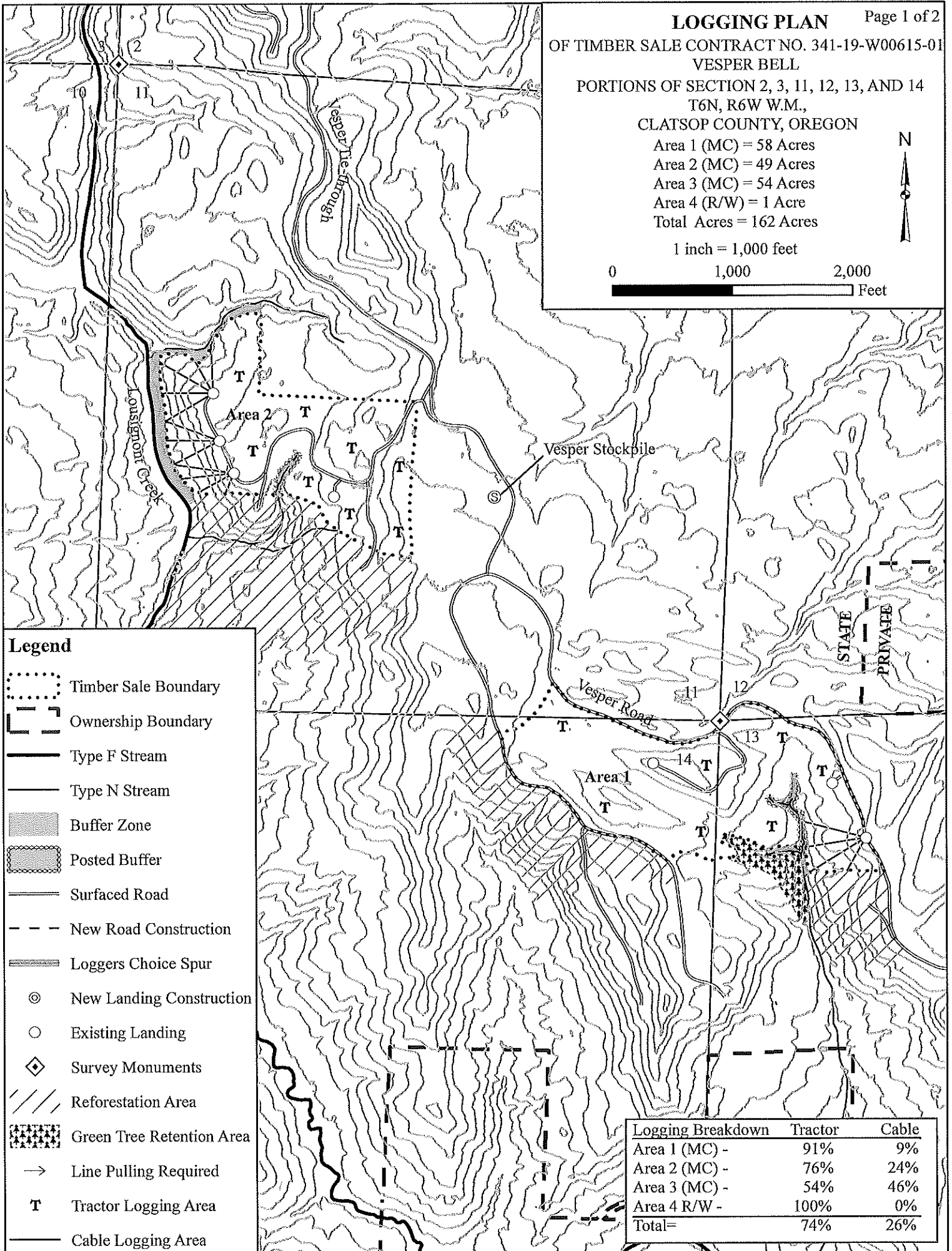
Area 3 (MC) = 54 Acres

Area 4 (R/W) = 1 Acre

Total Acres = 162 Acres

1 inch = 1,000 feet

0 1,000 2,000 Feet



LOGGING PLAN

Page 2 of 2

OF TIMBER SALE CONTRACT NO. 341-19-W00615-01

VESPER BELL

PORTIONS OF SECTION 2, 3, 11, 12, 13, AND 14

T6N, R6W W.M.,

CLATSOP COUNTY, OREGON

Area 1 (MC) = 58 Acres

Area 2 (MC) = 49 Acres

Area 3 (MC) = 54 Acres

Area 4 (R/W) = 1 Acre


















Total Acres = 162 Acres

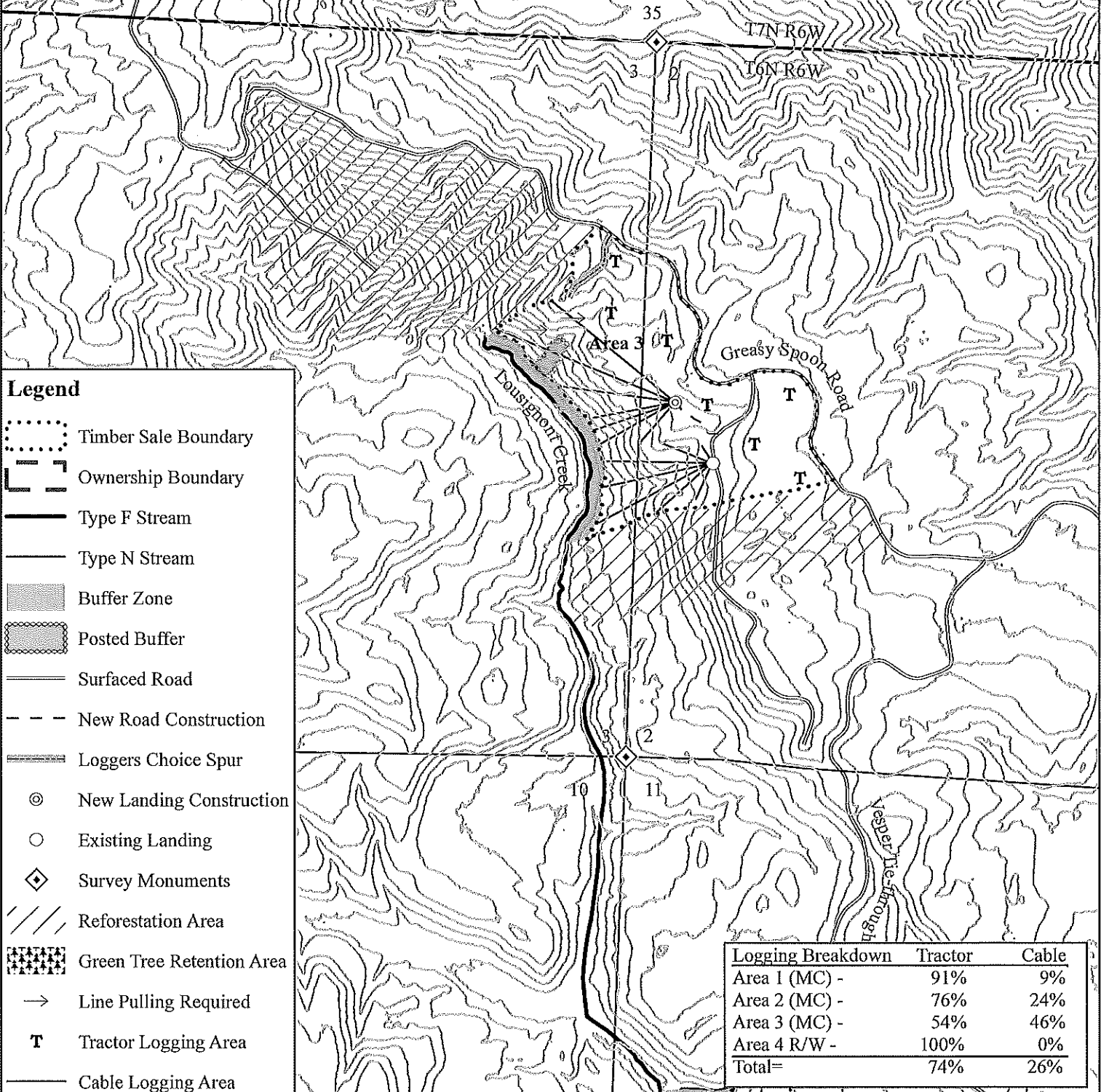
1 inch = 1,000 feet

0 1,000 2,000 Feet



Legend

-  Timber Sale Boundary
-  Ownership Boundary
-  Type F Stream
-  Type N Stream
-  Buffer Zone
-  Posted Buffer
-  Surfaced Road
-  New Road Construction
-  Loggers Choice Spur
-  New Landing Construction
-  Existing Landing
-  Survey Monuments
-  Reforestation Area
-  Green Tree Retention Area
-  Line Pulling Required
-  Tractor Logging Area
-  Cable Logging Area



Logging Breakdown	Tractor	Cable
Area 1 (MC) -	91%	9%
Area 2 (MC) -	76%	24%
Area 3 (MC) -	54%	46%
Area 4 R/W -	100%	0%
Total=	74%	26%