



Timber Sale Appraisal
Emerald Isle
Sale AT-341-2017-04-

District: Astoria

Date: November 07, 2016

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,311,323.36	\$334,731.04	\$2,646,054.40
		Project Work:	(\$160,264.00)
		Advertised Value:	\$2,485,790.40



Timber Sale Appraisal Emerald Isle Sale AT-341-2017-04-

District: Astoria

Date: November 07, 2016

Timber Description

Location: Portions of Sections 22, 23, 27, and 28, T5N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	22	0	97
Western Hemlock / Fir	14	0	97
Red Cedar	26	0	95
Alder (Red)	16	0	95
Maple	16	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	4,590	950	163	0	5,703
Western Hemlock / Fir	249	228	48	0	525
Red Cedar	5	1	0	0	6
Alder (Red)	0	0	0	1,002	1,002
Maple	0	0	0	61	61
Total	4,844	1,179	211	1,063	7,297

Comments: Pond Values Used: 3rd Quarter Calendar Year 2016.

Expected Log Markets: Mist, OR; Clatskanie, OR; Tillamook, OR; Forest Grove, OR; Longview, WA; and Garibaldi, OR.

Sitka Spruce Stumpage Price = Pond Value minus Logging Cost:
 $\$242.73/\text{MBF} = \$475/\text{MBF} - \$232.27/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

BRANDING AND PAINTING COST ALLOWANCE = \$2.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE
Hauling costs equivalent to \$780 daily truck cost.

Other Costs (with Profit & Risk to be added):
Log Loader Slash & Landing Piling Areas 1 and 2 (includes Move-In and Pile Materials): (see attached appraisal) = \$3,525
Machine Washing for Noxious Weed Compliance = \$2,000
TOTAL Other Costs (with Profit & Risk to be added) = \$5,525

Other Costs (No Profit & Risk added):
Waterbar and Block Dirt Road Segments after Harvest:
 $\$15.96/\text{station} * 18.8 \text{ stations} = \$300.05$
TOTAL Other Costs (No Profit & Risk added) = \$300.05



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Logging Conditions

Combination#: 1

Douglas - Fir	31.00%
Western Hemlock / Fir	31.00%
Red Cedar	31.00%
Alder (Red)	31.00%
Maple	31.00%

Logging System: Shovel **Process:** Manual Falling/Delimbing

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

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

loads / day: 14 **bd. ft / load:** 4500

cost / mbf: \$62.50

machines: Shovel Logger

Combination#: 2

Douglas - Fir	69.00%
Western Hemlock / Fir	69.00%
Red Cedar	69.00%
Alder (Red)	69.00%
Maple	69.00%

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

yarding distance: Long (1,500 ft) **downhill yarding:** No

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

loads / day: 9 **bd. ft / load:** 4500

cost / mbf: \$167.90

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



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Logging Costs

Operating Seasons: 3.00	Profit Risk: 12%
Project Costs: \$160,264.00	Other Costs (P/R): \$5,525.00
Slash Disposal: \$0.00	Other Costs: \$300.05

Miles of Road

Road Maintenance: \$3.69

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	4.5
Western Hemlock / Fir	\$0.00	3.0	4.5
Red Cedar	\$0.00	2.0	4.0
Alder (Red)	\$0.00	2.0	3.5
Maple	\$0.00	2.0	3.3



Timber Sale Appraisal
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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
\$135.23	\$3.80	\$1.80	\$59.51	\$0.76	\$24.13	\$0.00	\$7.00	\$0.04	\$232.27
Western Hemlock / Fir									
\$135.23	\$3.80	\$1.80	\$59.51	\$0.76	\$24.13	\$0.00	\$7.00	\$0.04	\$232.27
Red Cedar									
\$135.23	\$3.87	\$1.80	\$102.38	\$0.76	\$29.28	\$0.00	\$7.00	\$0.04	\$280.36
Alder (Red)									
\$135.23	\$3.87	\$1.80	\$117.00	\$0.76	\$31.04	\$0.00	\$7.00	\$0.04	\$296.74
Maple									
\$135.23	\$3.87	\$1.80	\$124.09	\$0.76	\$31.89	\$0.00	\$7.00	\$0.04	\$304.68

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$615.36	\$383.09	\$0.00
Western Hemlock / Fir	\$0.00	\$463.40	\$231.13	\$0.00
Red Cedar	\$0.00	\$1,150.00	\$869.64	\$0.00
Alder (Red)	\$0.00	\$625.00	\$328.26	\$0.00
Maple	\$0.00	\$400.00	\$95.32	\$0.00



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Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,703	\$383.09	\$2,184,762.27
Western Hemlock / Fir	525	\$231.13	\$121,343.25
Red Cedar	6	\$869.64	\$5,217.84
Alder (Red)	1,002	\$328.26	\$328,916.52
Maple	61	\$95.32	\$5,814.52

Gross Timber Sale Value

Recovery: \$2,646,054.40

Prepared By: Dave Rygell

Phone: 503-325-5451

Road Maintenance Cost Summary

Sale: Emerald Isle
 Date: 29-Jul-16
 By: D. Bangs / D. Rygell

MBF: 7,297
 \$\$/MBF: \$ 3.69

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$778	1	10	\$ 100.00	\$ 1,778.00
	Dump Truck 12CY x 1	\$326	1	8	\$ 79.00	\$ 958.00
	FE Loader C966	\$778	1	4	\$ 83.00	\$ 1,110.00
Progressive Operations 2nd Entry	Grader 14G	\$778	1	10	\$ 100.00	\$ 1,778.00
	Dump Truck 12CY x 1	\$326	1	8	\$ 79.00	\$ 958.00
	FE Loader C966	\$778	1	4	\$ 83.00	\$ 1,110.00
	Vibratory Roller	\$778	1	10	\$ 77.00	\$ 1,548.00
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	40	\$ 100.00	\$ 4,778.00
	Dump Truck 12CY x 2	\$326	2	10	\$ 79.00	\$ 2,232.00
	Vibratory Roller	\$778	1	40	\$ 77.00	\$ 3,858.00
	Water Truck 2,500 gallon	\$190	1	40	\$ 89.00	\$ 3,750.00
	FE Loader C966	\$778	1	10	\$ 83.00	\$ 1,608.00
	Rubber Tire Backhoe	\$321	1	10	\$ 77.00	\$ 1,091.00
Total	Labor		1	10	\$ 40.00	\$ 400.00
						\$ 26,957.00

Progressive Ops. 1st Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	2.5	2.5	1.0

Progressive Ops. 2nd Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	1.5	1.5	1.0
	Vibratory Roller	1.5	1.5	1.0

Final Road Maintenance	Production Rates	Miles/day	Distance(miles)	Days
	Grader	1.5	5.6	3.7
	Vibratory Roller	1.5	5.6	3.7

Roads to maintain (final entry): Green Mountain Road (1 mi.), Stanley Creek Road (1.8 mi.), Wage Road (2.8 mi.)

Projects Road Maintenance Cost Summary

Sale: Emerald Isle
Date: 19-Jul-16
By: D. Rygell

Type	Equipment/Rationale	Hours	Rate	Cost
Projects Road Maintenance	Grader 14G	43	\$ 100.00	\$ 4,300.00
	Dump Truck 12CY	8	\$ 79.00	\$ 632.00
	FE Loader C966	8	\$ 83.00	\$ 664.00
	Vibratory Roller	43	\$ 77.00	\$ 3,311.00
	Water Truck 2,500 gallon	43	\$ 89.00	\$ 3,827.00
Total				\$ 12,734.00

Miles/day	Distance(miles)	Days
1.5	6.4	4.3
1.5	6.4	4.3

Roads to maintain: Green Mountain Road (1.2 miles), Stanley Creek Road (1.8 mi.), Buster Creek Mainline (3.4 mi.)

Site Prep Appraisal

Sale Number: 341-17-04
Sale Name: Emerald Isle
Date: 07/07/2016

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	0.5	1.0
Hemlock/Fir	B	1.5	4.5
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	4.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	10	5	\$110.00	\$550.00
2	MC	A	26	13	\$110.00	\$1,430.00
3	MC	A	7	3.5	\$110.00	\$385.00
Sub Total =						\$2,365.00
Sale Area	Number of Landings to be Piled	Cost/Landing Pile*	Total Landing Piling Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Materials Cost/Area
1	2	\$220.00	\$440.00	10	\$5.00	\$50.00
2	7	\$220.00	\$1,540.00	26	\$5.00	\$130.00
3	3	\$220.00	\$660.00	7	\$5.00	\$35.00
*Cost includes separating firewood and materials						
Sub Total =						\$215.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance				
\$945.00	1	\$945.00	Sub Total =			
						\$945.00
Grand Total =						\$3,525.00

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Emerald Isle

ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	1A-1B, 2A-2B, 2C-2D, 2E-2F (rock)	69.80	\$ 90,057.77
	3A-3B, 3C-3D, 3E-3F (dirt)	18.80	\$ 4,436.03
	TOTALS		\$ 94,493.80

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	I1-I2	56.00	\$ 41,986.07
	TOTALS		\$ 41,986.07

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
Project No. 3	Vacating	\$ 2,612.73
	Project Road Maintenance	\$ 12,734.00
	TOTAL	\$ 15,346.73

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Dozer (D8)	\$ 1,406.00
Excavator (C315)	\$ 805.00
Excavator (C330)	\$ 1,406.00
Dump Trucks (12cy x 5)	\$ 815.00
Dump Trucks (20cy x 2)	\$ 382.00
Front End Loader (C966)	\$ 778.00
Grader (14G)	\$ 778.00
Vibratory Roller	\$ 778.00
Water Truck (2,500 gallon)	\$ 190.00
Backhoe (C 580)	\$ 321.00
Secondary Move (Buster Stockpile)	
Front End Loader (C966) X 1	\$ 778.00
TOTAL	\$ 8,437.00

GRAND TOTAL \$ 160,264

Compiled By: D. Rygell

Date: 08/23/2016

SUMMARY OF CONSTRUCTION COSTS

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SALE NAME: Emerald Isle
 ROAD: 1A-1B (23.2), 2A-2B (18.6), 2C-2D (11.0),
 2E-2F (17.0), 3A-3B (5.5), 3C-3D (11.3), 3E-3F (2.0)
 POINTS: 1B, 2A-2B STA. 8+70, 2A-2B STA. 14+00, 2B, 2D, 2F, 3B, 3D, 3F

NEW CONSTRUCTION: 88.60 STATIONS
 IMPROVEMENT: STATIONS 1.68 MILES

CLEARING & GRUBBING					
Method	Acres/amount	x	Rate	=	Cost
Scatter outside of R/W (Acres)	8.00	x	\$ 1,337.00	=	\$ 10,696.00
2C-2D Endhaul Stumps, Full Bench (C330)(Hr.)	4.00	x	\$ 155.00	=	\$ 620.00
(Dump 12cy)(Hr.)	4.00	x	\$ 163.00	=	\$ 652.00
		x		=	
SUB TOTAL FOR CLEARING & GRUBBING					\$11,968

EXCAVATION					
Material	Cy/amount	x	Rate	=	Cost
1A to 1B Balanced Construction (Sta.)	7.5	x	\$ 122.00	=	\$ 915.00
Common drift (C.Y.)	1,175	x	\$ 1.80	=	\$ 2,115.00
End-haul (C.Y.)	175	x	\$ 4.00	=	\$ 700.00
Cut Slope Rounding (Sta.)	2.6	x	\$ 43.00	=	\$ 111.80
Embarkment compaction (C.Y.)	1,350	x	\$ 0.70	=	\$ 945.00
1B Landing Construction (\$/landing)	1.00	x	\$ 389.00	=	\$ 389.00
2A to 2B Common drift (C.Y.)	1,170	x	\$ 1.80	=	\$ 2,106.00
End-haul (C.Y.)	100	x	\$ 4.00	=	\$ 400.00
0+00 Const. "T" Jct. @ 0+00 (C330)(Hr.)	0.5	x	\$ 155.00	=	\$ 77.50
(DB)(Hr.)	0.5	x	\$ 158.00	=	\$ 79.00
Embarkment compaction (C.Y.)	1,270	x	\$ 0.70	=	\$ 889.00
Cut Slope Rounding (Sta.)	2.2	x	\$ 43.00	=	\$ 94.60
5+80, 16+40 Ditchout culvert outlets (C330)(Hr.)	0.5	x	\$ 155.00	=	\$ 77.50
Sta. 8+70, Sta. 14+00, 2B Landing Construction (\$/landing)	3	x	\$ 389.00	=	\$ 1,167.00
2C to 2D Common drift (C.Y.)	1,600	x	\$ 1.80	=	\$ 2,880.00
End-haul (C.Y.)	1,450	x	\$ 4.00	=	\$ 5,800.00
Embarkment compaction (C.Y.)	3,050	x	\$ 0.70	=	\$ 2,135.00
Cut Slope Rounding (Sta.)	6.2	x	\$ 43.00	=	\$ 266.60
2D Landing Construction (\$/landing)	1.00	x	\$ 389.00	=	\$ 389.00
2E to 2F Common drift (C.Y.)	1,050	x	\$ 1.80	=	\$ 1,890.00
End-haul (C.Y.)	100	x	\$ 4.00	=	\$ 400.00
Embarkment compaction (C.Y.)	1,150	x	\$ 0.70	=	\$ 805.00
16+00 Ditchouts (C330)(Hr.)	0.25	x	\$ 155.00	=	\$ 38.75
2F Landing Construction (\$/landing)	1	x	\$ 389.00	=	\$ 389.00
3A to 3B Balanced Construction (\$/Sta.)	5.0	x	\$ 122.00	=	\$ 610.00
Common Drift (\$/Sta.)	0.5	x	\$ 190.00	=	\$ 95.00
3B Landing Construction (\$/landing)	1	x	\$ 389.00	=	\$ 389.00
3C to 3D Balanced Construction (\$/Sta.)	9.3	x	\$ 122.00	=	\$ 1,134.60
Common Drift (\$/Sta.)	2.0	x	\$ 190.00	=	\$ 380.00
3D Landing Construction (\$/landing)	1	x	\$ 389.00	=	\$ 389.00
3E to 3F Common drift (\$/Sta.)	2.0	x	\$ 190.00	=	\$ 380.00
3F Landing Construction (\$/landing)	1	x	\$ 389.00	=	\$ 389.00
SUB TOTAL FOR EXCAVATION					\$28,826

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NEW CONSTRUCTION:	88.60 STATIONS	1.68 MILES
IMPROVEMENT:	STATIONS	MILES

Subtotal of Clearing, Exc., Culv.	\$52,086
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SURFACING		Stations/ amount		Rate/ sta/amt	Cost
Subgrade prep:		Description			
		Grade, Shape and Ditch 16' (1A-1B, 2A-2B, 2C-2D, 2E-2F)	69.80	x	\$24.83 \$1,733.13
		Subgrade Compaction (1A-1B, 2A-2B, 2C-2D, 2E-2F)	69.80	x	\$20.19 \$1,409.26
		Outslope 14' (3A-3B, 3C-3D, 3E-3F)	18.60	x	\$18.35 \$344.98

ROAD SEGMENT 1A to 1B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A to 1B Volume (CY) per		0+00 to 23+20 Number of				
Base Rock	4"-0" crushed	0+00 to 19+00	8	station	50	stations	23.20	1,160	\$4.50	\$5,220.00
Traction Rock	1 1/2"-0" crushed	7+10 to 21+80	4	station	25	stations	14.70	368	\$4.57	\$1,679.48
T Junction Rock	4"-0" crushed	0+00	8	t junction	33	t junctions	1.00	33	\$4.50	\$148.50
T Junction Rock	1 1/2"-0" crushed	0+00	-	t junction	33	t junctions	1.00	33	\$4.57	\$150.81
Curve Widening	4"-0" crushed	0+45 to 1+10, 7+10 to 7+90	8	curve	11	curves	2	22	\$4.50	\$99.00
Curve Widening	1 1/2"-0" crushed	7+10 to 7+90	4	curve	11	curves	1	11	\$4.57	\$50.27
Turnouts	4"-0" crushed	10+20, 13+70, 19+00	-	TO	22	TO's	3	66	\$4.50	\$297.00
Turnouts	1 1/2"-0" crushed	10+20, 13+70, 19+00	-	TO	22	TO's	3	66	\$4.57	\$301.62
Turnarounds	4"-0" crushed	21+80	-	TA	22	TA's	1	22	\$4.50	\$99.00
Turnarounds	1 1/2"-0" crushed	21+80	-	TA	22	TA's	1	22	\$4.57	\$100.54
Dissipator	24"-6" rip-rap	7+60, 10+80, 19+80	-	dissipator	11	dissipators	3	33	\$4.79	\$158.07
Landings	6"-0" pit-run	23+20	-	Landing	77	Landings	1	77	\$4.79	\$368.83
Total Rock for Road Segment:				1A to 1B				1,913		\$8,673.12

ROAD SEGMENT 2A to 2B				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B Volume (CY) per		0+00 to 18+60 Number of				
Base Rock	4"-0" crushed	0+00 to 18+60	8	station	50	stations	18.60	930	\$4.50	\$4,185.00
Traction Rock	1 1/2"-0" crushed	0+00 to 15+20	4	station	25	stations	15.20	380	\$4.57	\$1,736.60
Curve Widening	4"-0" crushed	14+00 to 14+90, 15+60 to 15+90	8	curve	11	curves	2	22	\$4.50	\$99.00
Curve Widening	1 1/2"-0" crushed	14+00 to 14+90, 15+60 to 15+90	4	curve	11	curves	2	22	\$4.57	\$100.54
T Junction Rock	4"-0" crushed	0+00	8	t junction	33	t junctions	1	33	\$4.50	\$148.50
Junctions	4"-0" crushed	2A, 2B, 2C	-	junction	22	junctions	3	66	\$4.50	\$297.00
Junctions	1 1/2"-0" crushed	2B, 2C	-	junction	22	junctions	2	44	\$4.57	\$201.08
Turnouts	4"-0" crushed	4+80, 11+50	8	TO	22	TO's	2	44	\$4.50	\$198.00
Turnouts	1 1/2"-0" crushed	4+80, 11+50	4	TO	22	TO's	2	44	\$4.57	\$201.08
Turnarounds	4"-0" crushed	16+20	8	TA	22	TA's	1	22	\$4.50	\$99.00
Turnarounds	1 1/2"-0" crushed	16+20	4	TA	22	TA's	1	22	\$4.57	\$100.54
Dissipator	24"-6" rip-rap	13+60	-	dissipator	11	dissipators	1	11	\$4.79	\$52.69
Landings	6"-0" pit-run	14+00	-	Landing	55	Landings	1	55	\$4.79	\$263.45
Landings	6"-0" pit-run	8+70, 19+00	-	Landing	77	Landings	2	154	\$4.79	\$737.66
Total Rock for Road Segment:				2A to 2B				1,849		\$8,420.14

ROAD SEGMENT 2C to 2D				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D Volume (CY) per		0+00 to 11+00 Number of				
Base Rock	4"-0" crushed	0+00 to 11+00	8	station	50	stations	11.00	550	\$4.50	\$2,475.00
Traction Rock	1 1/2"-0" crushed	0+00 to 10+50	4	station	25	stations	10.50	263	\$4.57	\$1,199.63
Curve Widening	4"-0" crushed	1+35 to 2+10, 5+30 to 6+25	8	curve	11	curves	2	22	\$4.50	\$99.00
Curve Widening	1 1/2"-0" crushed	1+35 to 2+10, 5+30 to 6+25	4	curve	11	curves	2	22	\$4.57	\$100.54
Turnouts	4"-0" crushed	1+40, 5+60, 9+50	8	TO	22	TO's	3	66	\$4.50	\$297.00
Turnouts	1 1/2"-0" crushed	1+40, 5+60, 9+50	8	TO	22	TO's	3	66	\$4.57	\$301.62
Dissipator	24"-6" rip-rap	3+80, 6+80, 10+00	-	dissipator	11	dissipators	3	33	\$4.79	\$158.07
Landing (100 foot)	6"-0" pit-run	11+00	-	Landing	99	Landings	1	99	\$4.79	\$474.21
Total Rock for Road Segment:				2C to 2D				1,121		\$5,105.07

Date: 07/28/2016

Subtotal of Clearing, Exc., Culv.	\$	4,601.40
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SURFACING		Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:	Description				
	Grade, Shape and Ditch 16'	56.00	x	\$24.83	\$ 1,390.48
	Sod Removal - Extra Grder Hours (14G hrs.)	10.00	x	\$100.00	\$ 1,000.00
	Subgrade Compaction	56.00	x	\$20.19	\$ 1,130.64
	Road widening ((C330 hrs.)	3.00	x	\$155.00	\$ 465.00
	Road widening (11cy Dump hrs.)	3.00	x	\$79.00	\$ 237.00
	Ditch Reconstruction (14G hrs.)	20.00	x	\$100.00	\$ 2,000.00
	Ditch Reconstruction (C315 hrs.)	20.00	x	\$101.00	\$ 2,020.00
	Ditch Reconstruction (11cy Dump hrs.)	20.00	x	\$79.00	\$ 1,580.00
	Ditch Reconstruction (Scatter ditch waste, \$/Sta.)	12.50	x	\$12.41	\$ 155.13
	Ditch Reconstruction (Load & haul ditch waste, \$/Sta.)	43.50	x	\$22.92	\$ 997.02

ROAD SEGMENT		11 to 12		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta/ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	11 to 12 Volume (CY) per	0+00 to 56+00 Number of						
Subgrade Leveling	4"-0" Crushed	n/a	-	load	11	loads	20	220	\$ 8.25	\$ 1,815.00	
Surfacing	4"-0" Crushed	n/a	6	station	38	stations	56	2,128	\$ 8.25	\$ 17,556.00	
		4+00, 8+00, 13+20, 24+00, 31+30, 41+40, 60+20	6	TO	22	TO's	7	154	\$ 8.25	\$ 1,270.50	
Turnouts	4"-0" Crushed	42+00	-	dissipator	11	dissipators	1	11	\$ 4.79	\$ 52.69	
Dissipator	24" - 6" Riprap	9+00, 14+30, 32+70, 38+50	-	filter	11	filters	4	44	\$ 4.79	\$ 210.76	
Ditch filters	6"-4" Pit-run	1 1/2"-0" Crushed	42+00	-	culvert	33	culverts	1	33	\$ 4.57	\$ 150.81
Culvert Bedding/Backfill	1 1/2"-0" Crushed	42+00	-	location	11	locations	1	11	\$ 8.25	\$ 90.75	
Road Widening	4"-0" Crushed	14+70 - 16+20	6	load	11	loads	17	187	\$ 4.79	\$ 895.73	
Cutbank Armor	24"-6" Riprap	10+30-10+50, 12+40-12+90	-	junction	44	junctions	1	44	\$ 4.57	\$ 201.08	
Junctions	1 1/2"-0" Crushed	11	-								
Total Rock for Road Segment:		11 to 12							2,832		\$ 22,243.32
Processing:		Description						No.sta	Rate/sta	Cost	
		Water, Process & Compact:						56.00	\$ 56.48	\$ 3,162.88	

SPECIAL PROJECTS		Description	Cost
		6"-4" Pit-run development 44CY X \$3.45/CY =	\$ 151.80
		Riprap development 198CY X \$4.30/CY =	\$ 851.40
SUB TOTAL FOR SPECIAL PROJECTS			\$ 1,003.20
		Subtotal of Surfacing & Spec. Proj.	\$ 37,384.67
		Subtotal of Clearing, Exc., Culv.	\$ 4,601.40
GRAND TOTAL			\$ 41,986.07

Compiled By: Dave Rygeil

Date: 08/23/2016

CRUSHED ROCK COST

SALE NAME:	Emerald Isle
PROJECT:	No. 1
QUARRY:	Military Stockpile

MATERIAL: 1 1/2"-0" Crushed

DATE: 07/28/2016
BY: Rygell

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>2</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$3.31	/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 = 1,438

CRUSHED ROCK HAUL COSTS 1,983 cy @ \$4.57 /cy

CRUSHED ROCK COST

SALE NAME:	Emerald Isle
PROJECT:	No. 2
QUARRY:	Buster Stockpile

MATERIAL: 4"-0" crushed

DATE: 07/28/2016
BY: Rygell

[illegible]

ROCK HAUL:

Truck type:	D20	No. trucks:	2
Delay min.:	8	Efficiency:	85%

Ave haul:	\$6.56	/cy
Load:	\$0.60	/cy
Spread:	\$1.08	/cy

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

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

Production: cy/day = 725

CRUSHED ROCK HAUL COSTS 2,513 cy @ \$8.25 /cy

CRUSHED ROCK COST

SALE NAME:	Emerald Isle
PROJECT:	No. 1
QUARRY:	Green Mountain Stockpile

MATERIAL: 4"-0" crushed

DATE: 07/28/2016
BY: Rygell

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 2
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$3.24	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,468

CRUSHED ROCK HAUL COSTS 4,194 cy @ \$4.50 /cy

PIT RUN ROCK COST

SALE NAME:	Emerald Isle
PROJECT:	1
QUARRY:	Green Mountain

MATERIAL: Pit Run, Rip Rap

DATE: 07/28/2016
BY: Rygel

[illegible]

ROCK HAUL:

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

Ave haul:	\$3.47	/cy
Load:	\$0.48	/cy
Spread:	\$0.84	/cy

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

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

Production: cy/day = 911

PIT RUN ROCK HAUL COSTS

792 cy @ \$4.79 /cy

**Emerald Isle
Project No. 3
Vacating Costs V1 to V2**

Work Description	Station	Pump	C330	C315	D24 trk	D10/12 trk	D-8	Labor	Straw-bales	Seed-lbs
V1 to V2										
Walk equipment to V1			0.25							
Haul off old culverts						3				
Walk equipment out via V1			0.25							
V1										
	0+00									
Construct waterbar	7+50		0.25							
Remove fill and culvert	8+00		2.00					2	5	5
Construct waterbar	7+50		0.25							
Repair waterbar	9+30		0.25							
Repair waterbar	10+30		0.25							
Repair waterbar	14+30		0.25							
Remove fill and culvert	14+80		2.00					3	8	10
Remove fill and culvert	15+30		2.00					3	8	10
Repair waterbar	15+70		0.25							
Repair waterbar	17+50		0.25							
Remove fill and x-drain culvert	18+00		2.00					2	5	5
V2	19+60									
Total Quantity (Hours)		0.00	10.25	0.00	0	3	0	10	26	30
Rates		\$10.00	\$155.00	\$101.00	\$127.00	\$99.00	\$158.00	\$40.00	\$10.73	\$1.60
Total Dollars		\$0	\$1,589	\$0	\$0	\$297	\$0	\$400	\$279	\$48

Total Cost

\$2,612.73

Projects Road Maintenance Cost Summary

Sale: Emerald Isle
 Date: 19-Jul-16
 By: D. Rygell FL

Type	Equipment/Rationale	Hours	Rate	Cost
Projects Road Maintenance	Grader 14G	43	\$ 100.00	\$ 4,300.00
	Dump Truck 12CY	8	\$ 79.00	\$ 632.00
	FE Loader C966	8	\$ 83.00	\$ 664.00
	Vibratory Roller	43	\$ 77.00	\$ 3,311.00
	Water Truck 2,500 gallon	43	\$ 89.00	\$ 3,827.00
Total				\$ 12,734.00

Miles/day	Distance(miles)	Days
1.5	6.4	4.3
1.5	6.4	4.3

Roads to maintain: Green Mountain Road (1.2 miles), Stanley Creek Road (1.8 mi.), Buster Creek Mainline (3.4 mi.)

**Cruise Report
Emerald Isle
FY 2017**

1. Sale Area Location: Areas 1, 2, and 3 are located in portions of Sections 22, 23, 27, and 28, T5N, 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	New R/W	Existing R/W	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	96	0.5	1	27.2	67	GIS
2	Modified Clearcut	69	2.6	0	15.3	51	GIS
3	Modified Clearcut	33	0.9	0	11.5	21	GIS
4 R/W	Right-of-way	4	-	-	-	4	GIS
5 R/W	Out of Sale Right-of-way	4	-	-	-	4	GIS
TOTALS		206	4	1	54	147	

4. **Cruisers and Cruise Dates:**

Areas 1, 2, and 3 were cruised by Dave Rygell, Kevin Berry on June 14, 15, 21 and 22, 2016.

5. **Cruise Method and Computation:**

Areas 1, 2, and 3 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 3 chain by 7 chain grid, with every third plot measured and graded. A total of 65 plots were sampled, with 24 measured and graded plots, and 41 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.

* Statistic report "cruise" and "count" plot totals for 00MC vary due to one count plot with two measured and graded Cedar Leave trees.

AREA	CRUISE	TRACT	TYPE	ACRES
1-5	EMERALD	A123	00MC	147
1-3	EMERALD	A123	TAKE	139
4-5	EMERALD	A123	ROW	8

6. **Timber Description:**

Areas 1, 2, and 3 are modified clearcut units, approximately 75 years-old, consisting of Douglas-fir, with minor amounts of red alder, western hemlock, and big leaf maple. The average Douglas-fir tree size to be harvested is 22 inches DBH, with an average height of 100 feet to a merchantable top. The average western hemlock tree size is 14 inches DBH and 49 feet to a merchantable top (7 inch d.o.b). The average red alder tree size 16 inches DBH and 54 feet to a merchantable top. The average bigleaf maple tree size 16 inches DBH and 49 feet to a merchantable top. The net volume per acre to be harvested is 49.6 MBF/acre.

Areas 4 and 5 are right-of-way units, approximately 75 years-old, consisting of Douglas-fir, with minor amounts of red alder, western hemlock, big leaf maple, and western red cedar. The average Douglas-fir tree size to be harvested is 22 inches DBH, with an average height of 100 feet to a merchantable top. The average western hemlock tree size is 14 inches DBH and 49 feet to a merchantable top (7 inch d.o.b). The average red alder tree size 16 inches DBH and 54 feet to a merchantable top. The average big leaf maple tree size 16 inches DBH and 49 feet to a merchantable top. The average western redcedar tree size 26 inches DBH and 60 feet to a merchantable top. The net volume per acre to be harvested is 50.4 MBF/acre.

7. Statistical Analysis and Stand Summary

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 2, and 3	50%	8%	51.8%	6.4%

8. Volumes by Species and Log Grade:

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

Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	CR	% D & B	% Sale
Douglas-fir	22.2	5,703	4,590	950	163		2.8%	78%
Western hemlock	14.3	525	249	228	48		10%	7%
Red alder	16.2	1,002				1,002	5.4%	14%
Bigleaf maple	15.8	61				61	1.2%	<1%
Western redcedar	25.6	6	5	1			17%	<1%
TOTALS		7,297	4,844	1,179	211	1,063	4.1%	100%

9. Approvals:

Prepared by: Dave Rygell

Date: 7/12/16

Unit Forester Approval: 

Date: 7/12/16

10. Attachments:

Cruise Designs and Maps - 4 pages
Volume Reports - 3 page
Statistics Reports - 4 pages
Stand Table Summary - 2 pages
Log Stock Tables - 3 pages

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Emerald Isle **Area(s)** 1, 2 and 3

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 147 **Estimated CV%** 50 Net BF or
BA/Acre **SE% Objective** 8

Planned Sale Volume: 7.8 MMBF **Estimated Sale Area Value/Acre:** \$
17,757

- A. Cruise Goals:** (a) Grade minimum 90 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 40 Full point
Cruise Line Direction(s) Areas 1 & 2 – East-West (90 degrees)
Area 3 - North-South (0 degrees)
Cruise Line Spacing 7 chains
Cruise Plot Spacing 3 chains
Grade/Count Ratio 1:2

Record all hardwood as camp run. 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; R = Camp Run; 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: Dave Rygell
Approved by: [Signature]
Date: 6/7/16

TIMBER CRUISE

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE

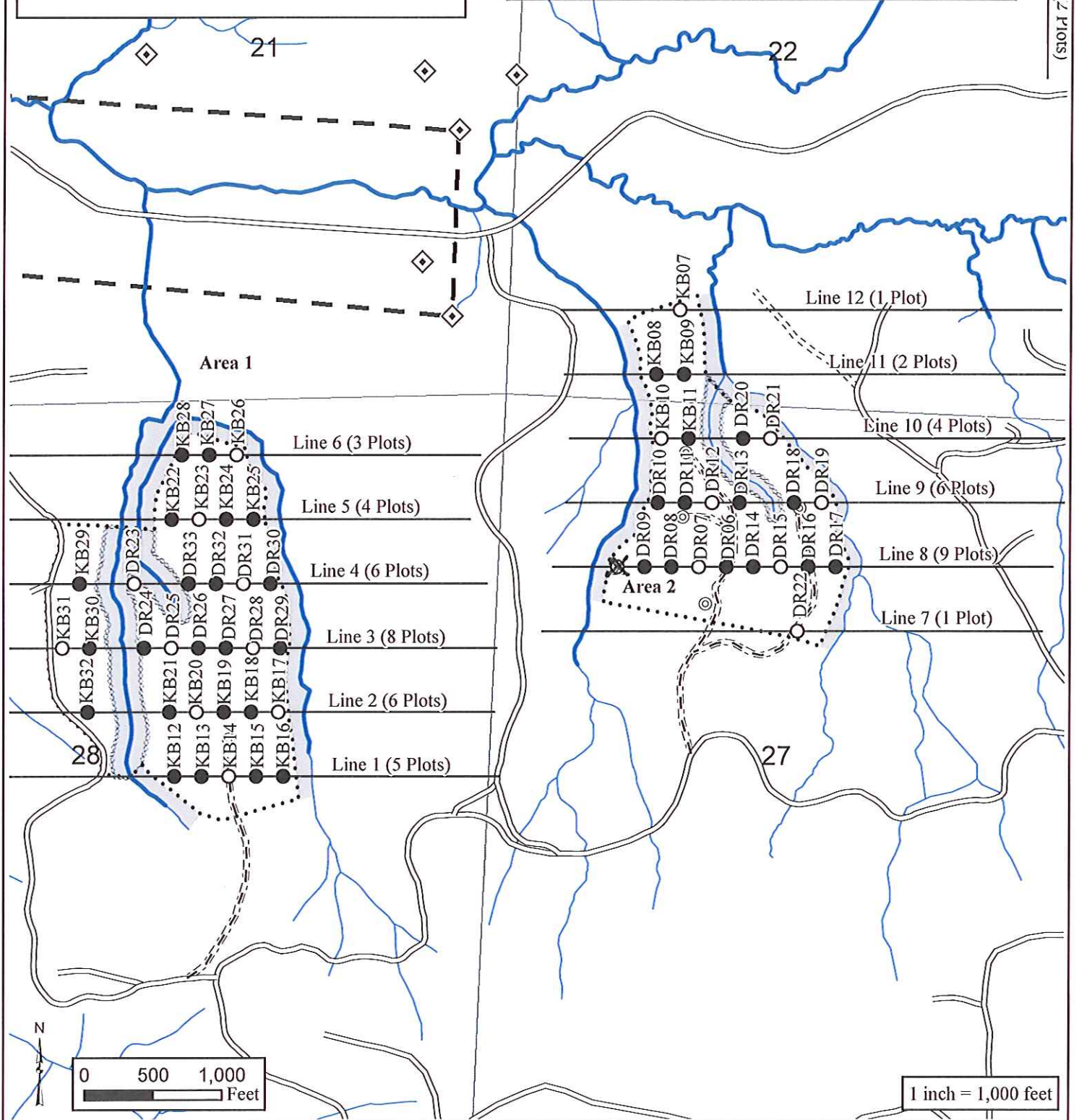
Portions of Sections 22, 23, 27, & 28,
T5N, R6W, W.M., Clatsop County, OR

Area 1 (MC) = 67 Acres
Area 2 (MC) = 51 Acres
Area 3 (MC) = 21 Acres
Area 4 R/W = 8 Acre
Total MC Acres = 147

Legend

Page 1 of 2

- | | |
|------------------------------|---------------------------|
| Ownership Boundary | Right of Way Boundary |
| Timber Sale Boundary | New Construction Landings |
| Pt. A Point for Project Work | Type F Stream |
| Pt. A Point for Project Work | Type N Stream |
| Paved Road | Posted Stream Buffer |
| Existing Surfaced Road | Buffer Zone |
| Unsurfaced Road | Quarry |
| Road Road Construction | Stockpile |



TIMBER CRUISE

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE

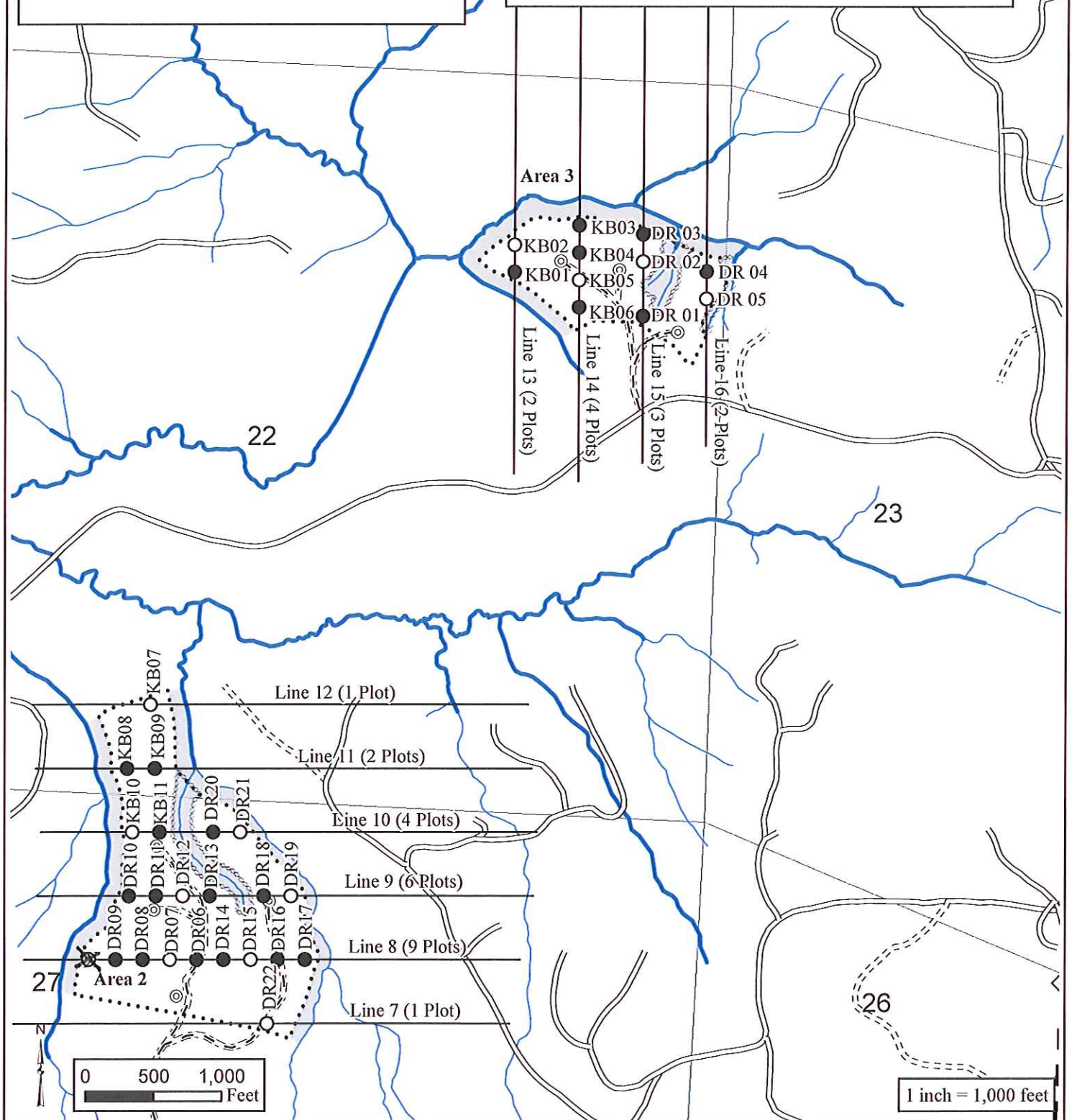
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Page 2 of 2

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| Ownership Boundary | Right of Way Boundary |
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| Unsurfaced Road | Quarry |
| Road Road Construction | Stockpile |



TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T05N R06W S22 TyROW8.00 T05N R06W S22 TyTAKE139.00						Project: EMERALD						Page 1									
						Acres147.00						Date6/23/2016 Time12:35:51PM									
S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre Def%GrossNet			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		DOCU			100.0	275											19	13		0.00	4.2
A		DOCR	100		1.7	6,935	6,818	1,002	1	48	47	3	5	10	75	10	28	9	90	0.93	75.9
A Totals			14		5.4	7,210	6,818	1,002	1	48	47	3	5	10	75	10	27	9	85	0.90	80.1
H		DOCU			100.0	277											9	17		0.00	3.3
H		DO2S	47		3.5	1,759	1,696	249			75	25			22	78	38	14	293	1.91	5.8
H		DO3S	43		2.0	1,583	1,551	228		100				1	39	60	36	7	76	0.63	20.5
H		DO4S	10		7.5	350	323	48		100			24	60	16		23	6	31	0.49	10.6
H Totals			7		10.0	3,969	3,571	525		52	36	12	2	6	29	63	31	9	89	0.81	40.1
D		DOCU			100.0	755											6	13		0.00	15.1
D		DO2S	80		.9	31,503	31,222	4,590		1	38	61	1	2	7	91	39	16	418	2.31	74.7
D		DO3S	17		1.0	6,527	6,461	950	0	97	2		3	6	32	59	34	8	92	0.75	70.1
D		DO4S	3			1,111	1,111	163	7	93			16	19	3	62	26	7	41	0.47	27.1
D Totals			78		2.8	39,896	38,793	5,703	0	20	31	49	1	3	11	85	33	12	207	1.44	187.0
M		DOCR	100		1.3	419	414	61		76	24		7	4	69	20	28	8	80	0.89	5.2
M Totals			1		1.3	419	414	61		76	24		7	4	69	20	28	8	80	0.89	5.2
C		DOCU			100.0	8											15	27		0.00	.0
C		DO2S	78		5.3	36	34	5			14	86	3		12	86	34	18	466	3.61	.1
C		DO3S	22			9	9	1		100				13	24	62	35	9	93	1.07	.1
C Totals			0		18.0	53	44	6		21	11	67	2	3	15	81	33	14	232	2.06	.2
Totals					3.7	51,548	49,640	7,297	0	26	34	40	2	4	22	72	31	11	159	1.23	312.6

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)														Page 1				
		Project: EMERALD														Date 9/1/2016				
																Time 8:54:18AM				
T05N R06W S22 TTAKE										T05N R06W S22 TTAKE										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
05N	06W	22	A123	TAKE	139.00	65	139	1	W											
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
								Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf	
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
D	DO	CU		00.0	755											6	13		0.00	15.1
D	DO	2S	80	.9	31,503	31,222	4,340		1	38	61	1	2	7	91	39	16	418	2.31	74.7
D	DO	3S	17	1.0	6,527	6,461	898	0	97	2		3	6	32	59	34	8	92	0.75	70.1
D	DO	4S	3		1,111	1,111	154	7	93			16	19	3	62	26	7	41	0.47	27.1
D Totals			78	2.8	39,896	38,793	5,392	0	20	31	49	1	3	11	85	33	12	207	1.44	187.0
A	DO	CU		00.0	275											19	13		0.00	4.2
A	DO	CR	100	1.7	6,935	6,818	948	1	48	47	3	5	10	75	10	28	9	90	0.93	75.9
A Totals			14	5.4	7,210	6,818	948	1	48	47	3	5	10	75	10	27	9	85	0.90	80.1
H	DO	CU		00.0	277											9	17		0.00	3.3
H	DO	2S	47	3.5	1,759	1,696	236			75	25			22	78	38	14	293	1.91	5.8
H	DO	3S	43	2.0	1,583	1,551	216	100					1	39	60	36	7	76	0.63	20.5
H	DO	4S	10	7.5	350	323	45	100				24	60	16		23	6	31	0.49	10.6
H Totals			7	10.0	3,969	3,571	496	52	36	12		2	6	29	63	31	9	89	0.81	40.1
M	DO	CR	100	1.3	419	414	58	76	24			7	4	69	20	28	8	80	0.89	5.2
M Totals			1	1.3	419	414	58	76	24			7	4	69	20	28	8	80	0.89	5.2
Type Totals				3.7	51,495	49,597	6,894	0	26	34	40	2	4	22	72	31	10	159	1.23	312.4

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1	
				Project: EMERALD												Date		9/1/2016	
																Time		8:54:18AM	
T05N R06W S22 TROW												T05N R06W S22 TROW							
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt	
05N		06W		22		A123		ROW		8.00		65		143		1		W	
S So Gr T rt ad Spp			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
								Log Scale Dia.				Log Length				Ln Dia Bd CF/			
			Net	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf
D DO CU				00.0	755											6	13		0.00
D DO 2S			80	.9	31,503	31,222	250		1	38	61	1	2	7	91	39	16	418	2.31
D DO 3S			17	1.0	6,527	6,461	52	0	97	2		3	6	32	59	34	8	92	0.75
D DO 4S			3		1,111	1,111	9	7	93			16	19	3	62	26	7	41	0.47
D Totals			77	2.8	39,896	38,793	310	0	20	31	49	1	3	11	85	33	12	207	1.44
A DO CU				00.0	275											19	13		0.00
A DO CR			100	1.7	6,935	6,818	55	1	48	47	3	5	10	75	10	28	9	90	0.93
A Totals			14	5.4	7,210	6,818	55	1	48	47	3	5	10	75	10	27	9	85	0.90
H DO CU				00.0	277											9	17		0.00
H DO 2S			47	3.5	1,759	1,696	14			75	25			22	78	38	14	293	1.91
H DO 3S			43	2.0	1,583	1,551	12		100				1	39	60	36	7	76	0.63
H DO 4S			10	7.5	350	323	3		100			24	60	16		23	6	31	0.49
H Totals			7	10.0	3,969	3,571	29		52	36	12	2	6	29	63	31	9	89	0.81
C DO CU				00.0	141											15	27		0.00
C DO 2S			78	5.3	667	632	5			14	86	3		12	86	34	18	466	3.61
C DO 3S			22		169	169	1		100				13	24	62	35	9	93	1.07
C Totals			2	18.0	977	801	6		21	11	67	2	3	15	81	33	14	232	2.06
M DO CR			100	1.3	419	414	3		76	24		7	4	69	20	28	8	80	0.89
M Totals			1	1.3	419	414	3		76	24		7	4	69	20	28	8	80	0.89
Type Totals				4.0	52,472	50,398	403	0	26	33	40	2	4	22	72	31	11	160	1.24

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	EMERALD	DATE 6/23/2016				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	22	A123	00MC	147.00	65	466	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL				65	466	7.2				
CRUISE				24	153	6.4	20,890	.7		
DBH COUNT										
REFOREST										
COUNT				41	300	7.3				
BLANKS										
100 %										
STAND SUMMARY										
		SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS
		TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC
DOUG FIR		78	63.2	22.2	100	36.0	169.2	39,896	38,793	8,948
R ALDER		36	42.5	16.2	54	15.1	60.9	7,210	6,818	2,054
WHEMLOCK		21	26.5	14.3	49	7.8	29.5	3,969	3,571	1,054
SNAG		9	4.2	20.7	76	2.2	9.8	196	192	46
CEDLEAV		4	2.1	25.6	60	1.5	7.4	977	801	262
DOUGLEAV		1	.4	52.0	125	0.8	5.5	1,975	1,754	329
BL MAPLE		4	3.2	15.8	49	1.1	4.3	419	414	129
TOTAL		153	142.1	19.2	75	65.4	286.8	54,644	52,344	12,822
12,494										
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		75.4	8.5	868	949	1,030				
R ALDER		56.1	9.4	178	197	215				
WHEMLOCK		105.7	23.6	191	250	309				
SNAG		300.0	105.9		102	210				
CEDLEAV		74.1	42.3	376	653	929				
DOUGLEAV										
BL MAPLE		40.0	22.9	112	145	178				
TOTAL		116.9	9.4	563	622	681	545	136	61	
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		87.1	10.8	56	63	70				
R ALDER		124.3	15.4	36	43	49				
WHEMLOCK		168.4	20.9	21	27	32				
SNAG		272.4	33.8	3	4	6				
CEDLEAV		257.7	31.9	1	2	3				
DOUGLEAV		636.8	78.9	0	0	1				
BL MAPLE		475.7	59.0	1	3	5				
TOTAL		43.5	5.4	134	142	150	76	19	8	
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		80.8	10.0	152	169	186				
R ALDER		123.4	15.3	52	61	70				
WHEMLOCK		174.7	21.7	23	30	36				
SNAG		269.0	33.3	7	10	13				
CEDLEAV		251.4	31.2	5	7	10				
DOUGLEAV		636.8	78.9	1	6	10				
BL MAPLE		495.8	61.4	2	4	7				
TOTAL		35.4	4.4	274	287	299	50	13	6	
CL: 68.1 %		COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15	

TC TSTATS				STATISTICS				PAGE	2
				PROJECT		EMERALD		DATE	6/23/2016
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
05N	06W	22	A123	00MC	147.00	65	466	1	W
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		80.1	9.9	34,943	38,793	42,644			
R ALDER		123.7	15.3	5,773	6,818	7,864			
WHEMLOCK		182.2	22.6	2,765	3,571	4,377			
SNAG		481.9	59.7	77	192	307			
CEDLEAV		264.4	32.8	539	801	1,064			
DOUGLEAV		636.8	78.9	370	1,754	3,138			
BL MAPLE		508.2	63.0	153	414	675			
TOTAL		51.8	6.4	48,985	52,344	55,703	107	27	12

TC TSTATS				STATISTICS PROJECT EMERALD				PAGE 1 DATE 6/27/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	22	A123	TAKE	139.00	65	429	1	W	
				TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
		PLOTS	TREES							
TOTAL		65	429	6.6						
CRUISE		23	139	6.0						
DBH COUNT										
REFOREST										
COUNT		42	281	6.7						
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		78	63.2	22.2	100	36.0	169.2	39,896	38,793	8,948
R ALDER		36	42.5	16.2	54	15.1	60.9	7,210	6,818	2,054
WHEMLOCK		21	26.5	14.3	49	7.8	29.5	3,969	3,571	1,054
BL MAPLE		4	3.2	15.8	49	1.1	4.3	419	414	129
TOTAL		139	135.5	18.9	75	60.7	264.0	51,495	49,597	12,185
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		75.4	8.5	868	949	1,030				
R ALDER		56.1	9.4	178	197	215				
WHEMLOCK		105.7	23.6	191	250	309				
BL MAPLE		40.0	22.9	112	145	178				
TOTAL		105.4	8.9	570	625	681	444	111	49	
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		87.1	10.8	56	63	70				
R ALDER		124.3	15.4	36	43	49				
WHEMLOCK		168.4	20.9	21	27	32				
BL MAPLE		475.7	59.0	1	3	5				
TOTAL		47.5	5.9	127	135	143	90	22	10	
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		80.8	10.0	152	169	186				
R ALDER		123.4	15.3	52	61	70				
WHEMLOCK		174.7	21.7	23	30	36				
BL MAPLE		495.8	61.4	2	4	7				
TOTAL		41.6	5.2	250	264	278	69	17	8	
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		80.1	9.9	34,943	38,793	42,644				
R ALDER		123.7	15.3	5,773	6,818	7,864				
WHEMLOCK		182.2	22.6	2,765	3,571	4,377				
BL MAPLE		508.2	63.0	153	414	675				
TOTAL		52.8	6.5	46,354	49,597	52,839	111	28	12	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	EMERALD			DATE	6/27/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
05N	06W	22	A123	ROW	8.00	65	441	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		65	441	6.8							
CRUISE		24	143	6.0	1,100		13.0				
DBH COUNT											
REFOREST											
COUNT		41	285	7.0							
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		78	63.2	22.2	100	36.0	169.2	39,896	38,793	8,948	8,809
R ALDER		36	42.5	16.2	54	15.1	60.9	7,210	6,818	2,054	1,978
WHEMLOCK		21	26.5	14.3	49	7.8	29.5	3,969	3,571	1,054	998
WR CEDAR		4	2.1	25.6	60	1.5	7.4	977	801	262	237
BL MAPLE		4	3.2	15.8	49	1.1	4.3	419	414	129	129
TOTAL		143	137.5	19.0	74	62.2	271.4	52,472	50,398	12,447	12,151
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		75.4	8.5	868	949	1,030					
R ALDER		56.1	9.4	178	197	215					
WHEMLOCK		105.7	23.6	191	250	309					
WR CEDAR		74.1	42.3	376	653	929					
BL MAPLE		40.0	22.9	112	145	178					
TOTAL		104.4	8.7	572	626	681	435	109	48		
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		87.1	10.8	56	63	70					
R ALDER		124.3	15.4	36	43	49					
WHEMLOCK		168.4	20.9	21	27	32					
WR CEDAR		257.7	31.9	1	2	3					
BL MAPLE		475.7	59.0	1	3	5					
TOTAL		46.8	5.8	130	138	145	88	22	10		
CL: 68.1 %		COEFF		BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		80.8	10.0	152	169	186					
R ALDER		123.4	15.3	52	61	70					
WHEMLOCK		174.7	21.7	23	30	36					
WR CEDAR		251.4	31.2	5	7	10					
BL MAPLE		495.8	61.4	2	4	7					
TOTAL		39.6	4.9	258	271	285	63	16	7		
CL: 68.1 %		COEFF		NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD: 1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUG FIR		80.1	9.9	34,943	38,793	42,644					
R ALDER		123.7	15.3	5,773	6,818	7,864					
WHEMLOCK		182.2	22.6	2,765	3,571	4,377					
WR CEDAR		264.4	32.8	539	801	1,064					
BL MAPLE		508.2	63.0	153	414	675					
TOTAL		51.1	6.3	47,209	50,398	53,587	104	26	12		

TC		PSTNDSUM		Stand Table Summary										Page		1	
														Date:		6/23/2016	
T05N R06W S22 TyROW8.00 T05N R06W S22 TyTAKE139.00				Project						EMERALD				Time:		12:36:42PM	
				Acres						147.00				Grown Year:			
S Spec	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	T o t a l s			
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
D		11	2	89	101	3.288	2.17	3.29	19.0	70.0		62	230		92	34	
D		12	6	86	111	8.287	6.51	16.57	14.7	51.7		243	856		357	126	
D		14	4	83	126	4.059	4.34	8.12	22.5	85.0		183	690		269	101	
D		16	4	86	125	3.108	4.34	7.77	25.6	96.0		199	746		292	110	
D		17	2	85	137	1.376	2.17	4.13	26.7	100.0		110	413		162	61	
D		18	4	84	137	2.456	4.34	7.37	29.3	106.7		216	786		318	116	
D		19	2	86	140	1.102	2.17	3.31	35.0	136.7		116	452		170	66	
D		20	16	83	131	7.956	17.36	21.88	36.4	140.0		796	3,063		1,170	450	
D		21	2	82	153	.902	2.17	2.71	44.0	176.7		119	478		175	70	
D		22	10	84	145	4.109	10.85	12.33	45.8	186.0		565	2,293		830	337	
D		23	6	84	146	2.256	6.51	6.77	50.6	202.2		342	1,369		503	201	
D		24	14	85	146	4.834	15.19	15.19	52.5	217.7		797	3,308		1,172	486	
D		25	2	86	140	.636	2.17	1.91	59.3	233.3		113	446		167	65	
D		26	16	86	149	4.708	17.36	14.71	63.5	282.8		934	4,160		1,373	612	
D		27	10	84	150	2.728	10.85	8.73	66.1	292.5		577	2,554		849	375	
D		28	18	85	153	4.567	19.53	14.21	76.0	351.8		1,080	4,998		1,587	735	
D		29	4	87	143	.946	4.34	2.84	82.7	366.7		235	1,041		345	153	
D		30	6	87	158	1.326	6.51	4.86	76.2	382.7		370	1,861		544	274	
D		31	4	88	170	.828	4.34	2.48	107.2	553.3		266	1,374		391	202	
D		32	2	80	166	.388	2.17	1.55	78.5	352.5		122	548		179	81	
D		33	6	87	148	1.096	6.51	3.65	97.0	485.0		354	1,772		521	260	
D		34	6	88	160	1.032	6.51	3.44	111.1	584.0		382	2,010		562	295	
D		35	4	90	150	.649	4.34	1.95	126.0	650.0		245	1,266		361	186	
D		44	4	90	156	.411	4.34	1.44	176.6	970.0		254	1,395		373	205	
D		46	2	89	159	.188	2.17	.75	170.8	912.5		128	686		189	101	
D		Totals	156	85	136	63.237	169.23	171.95	51.2	225.6		8,809	38,793		12,950	5,703	
A		11	4	84	52	5.129	3.38	5.13	15.5	45.0		79	231		117	34	
A		12	4	87	65	4.309	3.38	6.46	15.0	46.7		97	302		143	44	
A		14	6	86	76	4.749	5.08	7.92	16.2	60.0		128	475		188	70	
A		15	10	87	75	6.895	8.46	13.79	20.7	72.0		285	993		420	146	
A		16	6	86	68	3.636	5.08	7.27	19.8	65.0		144	473		212	69	
A		17	10	86	80	5.368	8.46	9.66	31.3	106.7		303	1,031		445	152	
A		18	8	87	74	3.831	6.77	7.66	31.8	107.5		243	824		358	121	
A		19	4	87	76	1.719	3.38	3.44	34.5	112.5		119	387		174	57	
A		20	8	87	81	3.103	6.77	6.98	35.0	124.4		244	869		359	128	
A		21	4	87	63	1.407	3.38	2.81	35.5	122.5		100	345		147	51	
A		22	6	87	77	1.923	5.08	3.85	44.2	160.0		170	615		250	90	
A		26	2	86	84	.459	1.69	.92	70.5	300.0		65	275		95	40	
A		Totals	72	86	71	42.528	60.92	75.89	26.1	89.8		1,978	6,818		2,907	1,002	
H		9	6	87	71	9.552	4.22	9.55	12.7	50.0		121	478		178	70	
H		10	2	81	17	2.579	1.41	2.58	7.0	20.0		18	52		27	8	
H		13	4	90	55	3.052	2.81	3.05	22.0	65.0		67	198		99	29	
H		14	6	84	74	3.947	4.22	6.58	20.6	60.0		136	395		199	58	
H		16	2	86	114	1.007	1.41	2.01	33.5	125.0		67	252		99	37	
H		17	2	82	98	.892	1.41	1.78	18.0	75.0		32	134		47	20	
H		20	8	84	83	2.579	5.63	5.16	36.7	125.0		190	645		279	95	
H		21	4	87	104	1.170	2.81	2.34	50.0	192.5		117	450		172	66	
H		22	2	85	110	.533	1.41	1.07	50.0	185.0		53	197		78	29	
H		23	2	87	91	.488	1.41	.98	55.5	175.0		54	171		80	25	
H		25	2	88	101	.413	1.41	.83	79.0	285.0		65	235		96	35	
H		29	2	86	135	.307	1.41	.92	84.3	396.7		78	365		114	54	

TC PSTNDSUM		Stand Table Summary										Page 2		
												Date: 6/23/2016		
T05N R06W S22 TyROW8.00 T05N R06W S22 TyTAKE139.00					Project EMERALD					Time: 12:36:42PM				
					Acres 147.00					Grown Year:				
S Spec T	Tot Sample FF Av DBH Trees 16' Ht				Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Net Cu.Ft. Bd.Ft.		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons Cunits MBF	
H	Totals	42	86	72	26.518	29.54	36.84	27.1	96.9		998	3,571	1,467	525
M	13	2	87	64	1.168	1.08	1.17	26.0	70.0		30	82	45	12
M	16	2	86	63	.771	1.08	1.54	20.5	70.0		32	108	46	16
M	17	2	87	62	.683	1.08	1.37	23.5	80.0		32	109	47	16
M	19	2	86	65	.547	1.08	1.09	32.0	105.0		35	115	51	17
M	Totals	8	87	63	3.170	4.31	5.17	25.0	80.0		129	414	190	61
C	17	1	83	70	.064	.10	.06	40.0	90.0		3	6	4	1
C	30	1	80	86	.020	.10	.04	82.5	260.0		3	11	5	2
C	35	1	80	122	.015	.10	.03	87.0	375.0		3	11	4	2
C	38	1	81	122	.013	.10	.04	113.7	416.7		4	16	6	2
C	Totals	4	82	86	.112	.40	.17	74.5	252.0		13	44	19	6
Totals		282	86	101	135.565	264.40	290.03	41.1	171.2		11,927	49,640	17,533	7,297

Log Stock Table - MBF

T05N R06W S22 TyROW 8.00
T05N R06W S22 TyTAKE 139.00

Project: EMERALD
Acres 147.00

Page 2
Date 6/23/2016
Time 12:32:05PM

Spp	S T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spe	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
H		DO 4S	32	12	33.3	8	1.5			8									
H		Totals		583	10.0	525	7.2			163	70	42	77	92	46	34			
D		DO CU	4	10	100.0														
D		DO CU	6	66	100.0														
D		DO CU	10	4	100.0														
D		DO CU	12	30	100.0														
D		DO 2S	20	32		32	.6							9	23				
D		DO 2S	23	22		22	.4								22				
D		DO 2S	24	16		16	.3								16				
D		DO 2S	28	34		34	.6								34				
D		DO 2S	32	284		284	5.0					78		34	122		49		
D		DO 2S	34	44		44	.8									44			
D		DO 2S	37	19		19	.3					9		10					
D		DO 2S	40	4,181		4,139	72.6					41	614	691	1379	811	435	170	
D		DO 3S	15	5		5	.1				2	3							
D		DO 3S	20	20		20	.4				20								
D		DO 3S	24	5		5	.1					5							
D		DO 3S	26	4		4	.1				4								
D		DO 3S	27	33		33	.6				28	6							
D		DO 3S	30	13		13	.2			6		7							
D		DO 3S	31	15		15	.3				15								
D		DO 3S	32	198	3.4	191	3.4			6	92	93							
D		DO 3S	33	35		35	.6			35									
D		DO 3S	34	49		49	.9				28	20							
D		DO 3S	35	15		15	.3			15									
D		DO 3S	36	7		7	.1				7								
D		DO 3S	37	104		104	1.8			71	33								
D		DO 3S	39	18		18	.3			18									
D		DO 3S	40	438		435	7.6		4	29	118	264	21						
D		DO 4S	15	9		9	.2			3	7								
D		DO 4S	19	8		8	.1			8									
D		DO 4S	20	8		8	.1		4	5									
D		DO 4S	22	4		4	.1			4									
D		DO 4S	25	15		15	.3			15									
D		DO 4S	28	12		12	.2			12									
D		DO 4S	31	5		5	.1				5								

Log Stock Table - MBF

T05N R06W S22 TyROW 8.00
T05N R06W S22 TyTAKE 139.00

Project: EMERALD
Acres 147.00

Page 3
Date 6/23/2016
Time 12:32:05PM

S T Spp	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D	DO	4S	37	31		31	.5	7	24										
D	DO	4S	40	70		70	1.2		34	36									
D	Totals			5,865	2.8	5,703	78.1	15	285	394	440	721	744	1596	855	484	170		
M	DO	CR	16	4		4	7.0		4										
M	DO	CR	21	2		2	4.0		2										
M	DO	CR	32	43	1.9	42	69.3				28	14							
M	DO	CR	40	12		12	19.8		12										
M	Totals			62	1.3	61	.8		19		28	14							
C	DO	CU	15	1	100.0														
C	DO	2S	15	0		0	2.0				0								
C	DO	2S	32	1		1	9.4						1						
C	DO	2S	40	5	6.1	4	67.4						3		2				
C	DO	3S	23	0		0	2.8		0										
C	DO	3S	33	0		0	5.2				0								
C	DO	3S	40	1		1	13.2		1										
C	Totals			8	18.0	6	.1		1		0	0	3		2				
Total	All Species			7,578	3.7	7,297	100.0	23	641	506	780	1102	1023	1677	889	486	170		

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE

Portions of Sections 22, 23, 27, & 28,
T5N, R6W, W.M., Clatsop County, Oregon

Area 1 (MC) = 67 Acres

Area 2 (MC) = 51 Acres

Area 3 (MC) = 21 Acres

Area 4 R/W = 8 Acres

Total MC Acres = 147

Legend

Ownership Boundary

Timber Sale Boundary

Surfaced Road

Seasonally Restricted Road

Road Construction - Unsurfaced

Road Construction - Surfaced

Landing Construction

Type F Stream

Type N Stream

Posted Stream Buffer

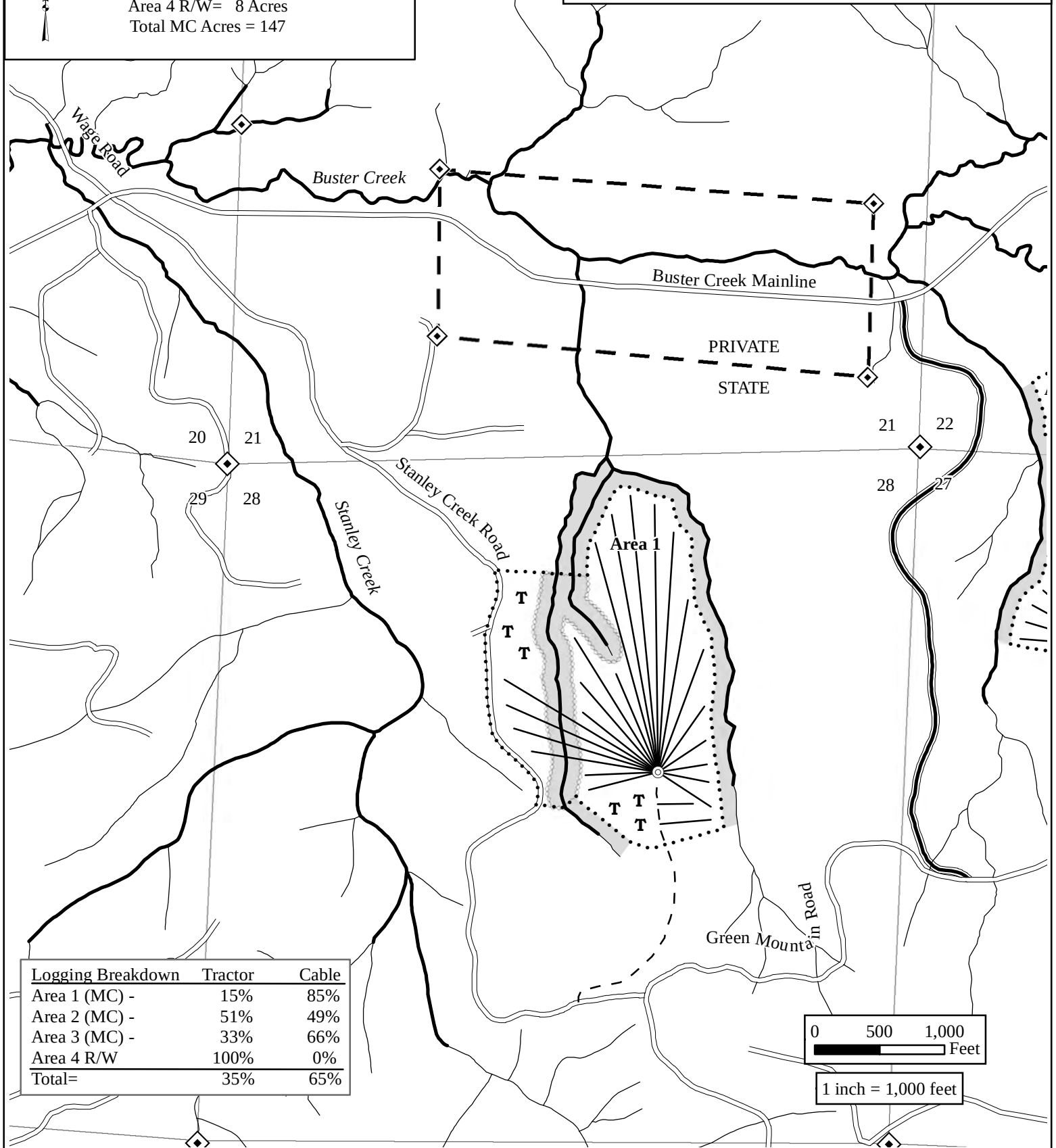
Buffer Zone

Survey Monument

Yarding Area - Tractor

Yarding Area - Cable

Page 1 of 4



LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE

Portions of Sections 22, 23, 27, & 28,
T5N, R6W, W.M., Clatsop County, Oregon

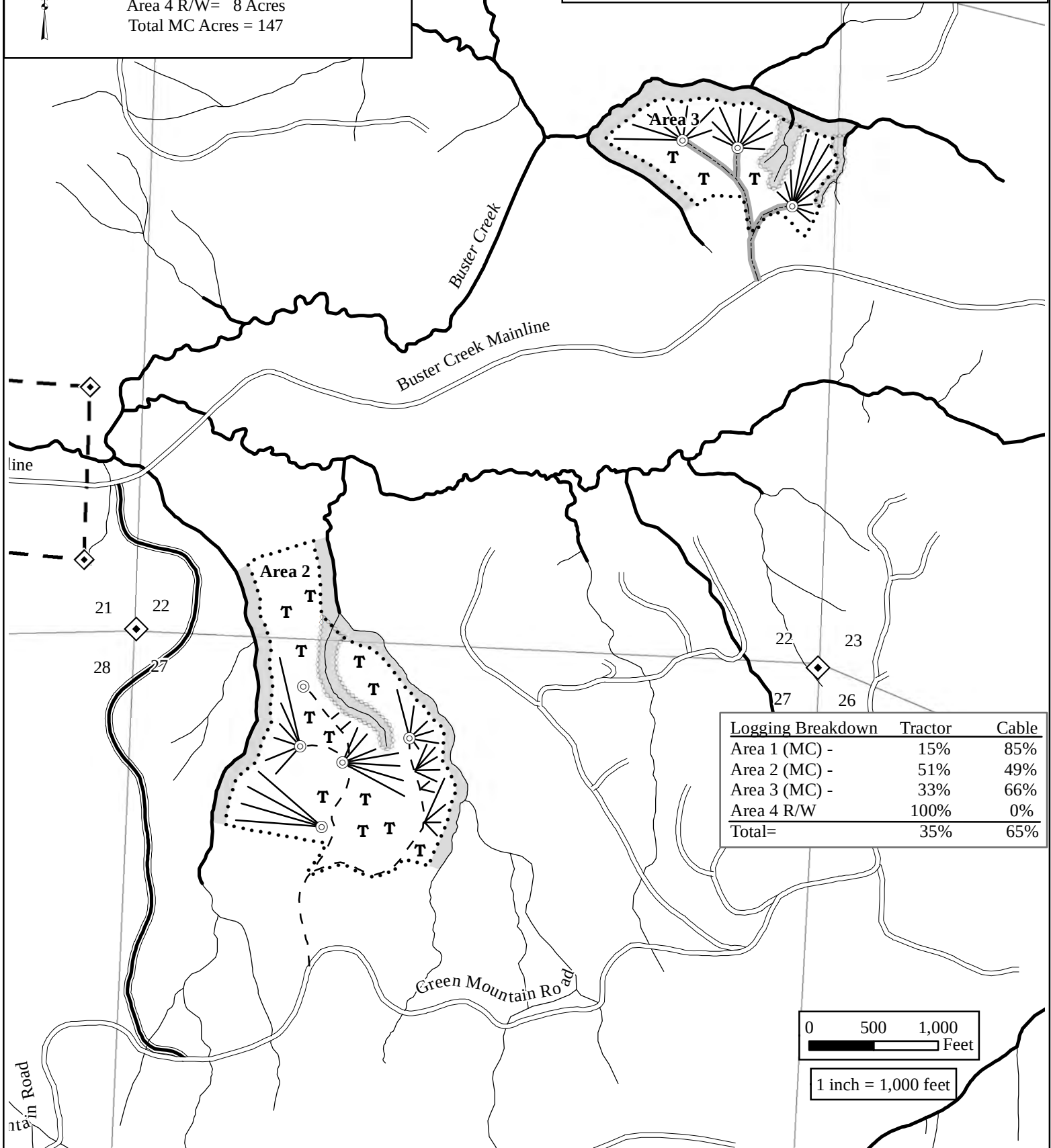
Area 1 (MC) = 67 Acres
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Area 3 (MC) = 21 Acres
Area 4 R/W = 8 Acres
Total MC Acres = 147



Legend

- Ownership Boundary
- Timber Sale Boundary
- Surfaced Road
- Seasonally Restricted Road
- Road Construction - Unsurfaced
- Road Construction - Surfaced
- Landing Construction
- Type F Stream
- Type N Stream
- Posted Stream Buffer
- Buffer Zone
- Survey Monument
- Yarding Area - Tractor
- Yarding Area - Cable

Page 2 of 4



Logging Breakdown	Tractor	Cable
Area 1 (MC) -	15%	85%
Area 2 (MC) -	51%	49%
Area 3 (MC) -	33%	66%
Area 4 R/W	100%	0%
Total=	35%	65%



1 inch = 1,000 feet

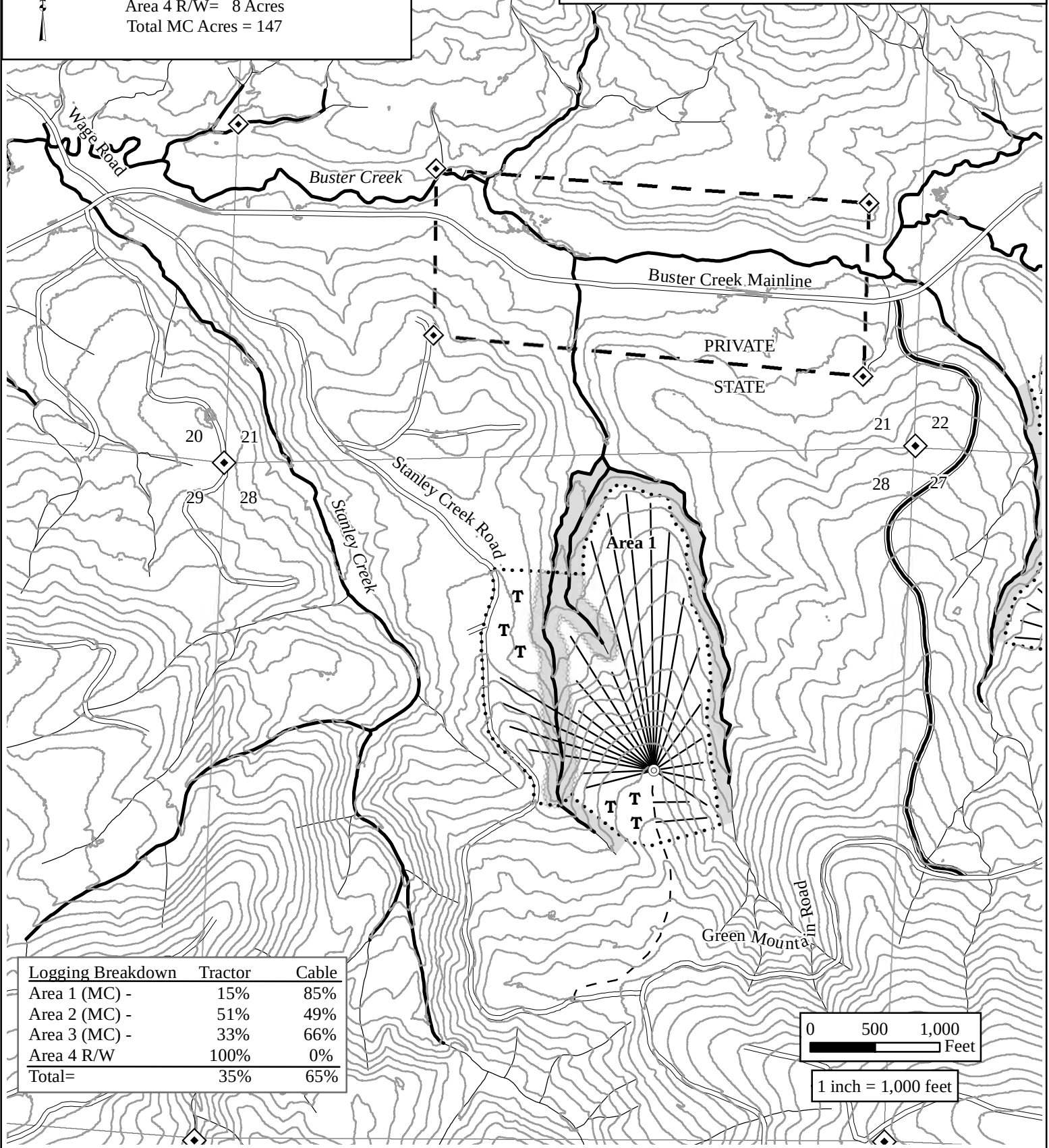
LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE
Portions of Sections 22, 23, 27, & 28,
T5N, R6W, W.M., Clatsop County, Oregon

Area 1 (MC) = 67 Acres
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Area 4 R/W= 8 Acres
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Legend

- Ownership Boundary
- Timber Sale Boundary
- Surfaced Road
- Seasonally Restricted Road
- Road Construction - Unsurfaced
- Road Construction - Surfaced
- Landing Construction
- Type F Stream
- Type N Stream
- Posted Stream Buffer
- Buffer Zone
- Survey Monument
- Yarding Area - Tractor
- Yarding Area - Cable



Logging Breakdown	Tractor	Cable
Area 1 (MC) -	15%	85%
Area 2 (MC) -	51%	49%
Area 3 (MC) -	33%	66%
Area 4 R/W	100%	0%
Total=	35%	65%

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-17-04
EMERALD ISLE

Portions of Sections 22, 23, 27, & 28,
T5N, R6W, W.M., Clatsop County, Oregon

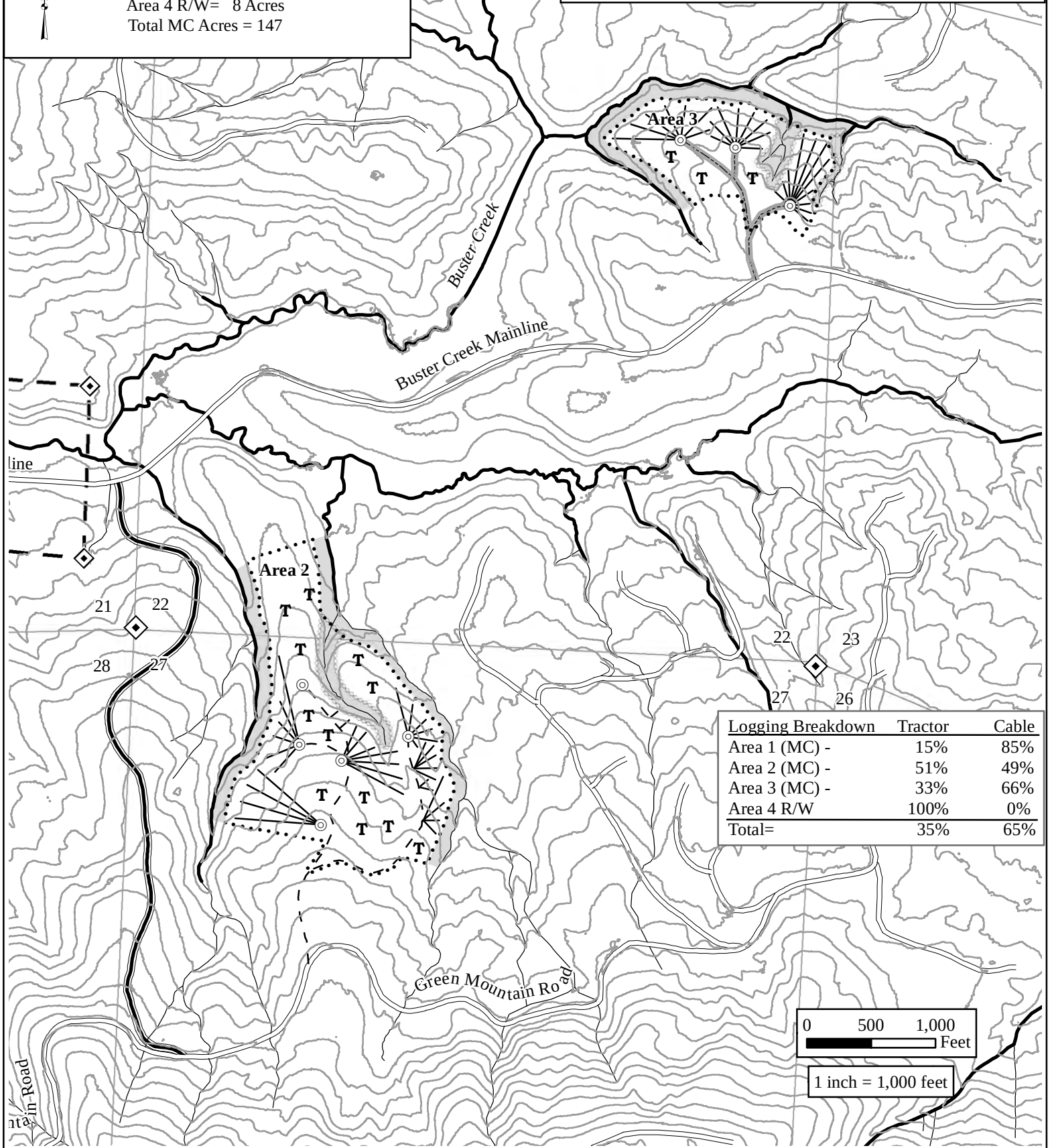
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Legend

- Ownership Boundary
- Timber Sale Boundary
- Surfaced Road
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- Road Construction - Unsurfaced
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- Type F Stream
- Type N Stream
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- Buffer Zone
- Survey Monument
- Yarding Area - Tractor
- Yarding Area - Cable

Page 4 of 4



Logging Breakdown	Tractor	Cable
Area 1 (MC) -	15%	85%
Area 2 (MC) -	51%	49%
Area 3 (MC) -	33%	66%
Area 4 R/W	100%	0%
Total=	35%	65%