"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Paper Trail
Sale 341-14-36

District: **Astoria** **Date:** **March 17, 2014**

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$2,933,732.70	$132,540.80	$3,066,273.50
		Project Work:	$(352,849.00)
		Advertised Value:	$2,713,424.50

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District: **Astoria** **Date:** **March 17, 2014**

timber description

Location: Portions of Sections 12 and 13, T6N, R7W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	22	0	97
Western Hemlock / Fir	16	0	97
Alder (Red)	15	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	5,079	1,194	220	0	6,493
Western Hemlock / Fir	411	268	38	0	717
Alder (Red)	0	0	0	388	388
Total	5,490	1,462	258	388	7,598

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comments:

Pond Values Used: 4th Quarter Calendar Year 2013.

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

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
$803.26/MBF = $1,050/MBF - $246.74/MBF

SCALING COST ALLOWANCE = $5.00/MBF

FUEL COST ALLOWANCE = $4.00/Gallon

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

Other Costs (with Profit & Risk to be added):
100% Brand and Paint: $1/MBF x 7,598/MBF = $7,598
Log Loader Slash & Landing Piling (includes Move-In and Pile Materials): (see attached appraisal) = $11,023
Machine Washing for Noxious Weed Compliance = $2,000
SLASH ENDHAUL
Endhaul Slash from Beneke Creek Road in Area 1:
8 hrs Highway Dump Truck at $79/hr = $632
8 hrs Log Loader at $86/hr = $688
TOTAL Other Costs (with Profit & Risk to be added) = $21,941

Other Costs (No Profit & Risk added):
Waterbar Dirt Roads (2A-2B and 2C-2D) at $35/station x 7.5 stations = $262.50
Snag Creation: 1 snag/acre x 60 acres = 60 snags x $40/snag = $2,400
TOTAL Other Costs (No Profit & Risk added) = $2662.50

"STEWARDSHIP IN FORESTRY"

District: **Astoria** **Date:** **March 17, 2014**

logging conditions

combination#: 1

	Douglas - Fir	26.00%
	Western Hemlock / Fir	26.00%
	Alder (Red)	26.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process**: Manual Falling/Delimbing
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 10.0 **bd. ft / load:** 4,000
cost / mbf: $86.50

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

combination#: 2

	Douglas - Fir	41.00%
	Western Hemlock / Fir	41.00%
	Alder (Red)	41.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Shovel **Process**: Manual Falling/Delimbing
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 12.0 **bd. ft / load:** 4,000
cost / mbf: $52.18

machines: Shovel Logger

combination#: 3

	Douglas - Fir	28.00%
	Western Hemlock / Fir	28.00%
	Alder (Red)	28.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Track Skidder **Process**: Manual Falling/Delimbing
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 4.0 **bd. ft / load:** 4,000
cost / mbf: $215.03

machines: Log Loader (B)
Track Skidder

combination#: 4

	Douglas - Fir	5.00%
	Western Hemlock / Fir	5.00%
	Alder (Red)	5.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process**: Manual Falling/Delimbing
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 4.0 **bd. ft / load:** 4,000
cost / mbf: $216.25

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

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Paper Trail
Sale 341-14-36

District: **Astoria** **Date:** **March 17, 2014**

logging costs

Operating Seasons:	3.00	**Profit Risk:**	14.00%
Project Costs:	$352,849.00	**Other Costs (P/R):**	$21,941.00
Slash Disposal:	$0.00	**Other Costs:**	$2,662.50

Miles of Road

Road Maintenance: $4.01

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	2.0	4.0
Western Hemlock / Fir	$0.00	3.0	4.0
Alder (Red)	$0.00	2.0	3.5

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Paper Trail
Sale 341-14-36

District: **Astoria** **Date:** **March 17, 2014**

logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
$114.90	$4.13	$1.73	$88.10	$2.89	$29.64	$0.00	$5.00	$0.35	$246.74
Western Hemlock / Fir									
$114.90	$4.13	$1.73	$58.73	$2.89	$25.53	$0.00	$5.00	$0.35	$213.26
Alder (Red)									
$114.90	$4.21	$1.73	$102.63	$2.89	$31.69	$0.00	$5.00	$0.35	$263.40

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$665.78	$419.04	$0.00
Western Hemlock / Fir	$0.00	$510.20	$296.94	$0.00
Alder (Red)	$0.00	$605.00	$341.60	$0.00

"STEWARDSHIP IN FORESTRY"

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Sale 341-14-36

District: **Astoria** **Date:** **March 17, 2014**

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	6,493	$419.04	$2,720,826.72
Western Hemlock / Fir	717	$296.94	$212,905.98
Alder (Red)	388	$341.60	$132,540.80

Gross Timber Sale Value

Recovery: $3,066,273.50

Prepared by: Nick Haile **Phone:** 503-325-5451

Site Prep Appraisal

Sale Number: 341-14-36
Sale Name: Paper Trail
Date: 01/22/2013

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.0
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	3.0

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area
1	MC	A	48	48	$110.00	$5,280.00
3	MC	A	10	20	$110.00	$2,200.00

Sub Total = *$7,480.00*

Sale Area	Number of Landings to be Piled	Cost/Landing Pile*	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area
1	3	$263.00	$789.00	144	$5.00	$720.00
3	3	$263.00	$789.00	60	$5.00	$300.00

*Cost includes separating firewood

Sub Total = *$2,598.00*

Move-In Allowance	Number of Move-In's	Total Move-In Allowance
$945.00	1	$945.00

Sub Total = *$945.00*

Grand Total = **$11,023.00**

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Paper Trail

ROAD CONSTRUCTION:

Road segment	Length/Sta	Cost
1A-1B, 1C-1D, 1E-1F, 3A, 3B, 3C,	9.5 (Rocked)	$12,475.00
2A-2B, 2C-2D	7.5(Dirt)	

TOTALS $12,475

ROAD IMPROVEMENT:

Road segment	Length/Sta	Cost
I1-I2, I3-I4, I5-I6, I7-I8,I9-I10	317.35	$110,600
I11-I12, I13-I14		

TOTALS $110,600

SPECIAL PROJECTS:

Description	Cost
Project No.3, Rock Crushing, Stockpiling, and Quarry Developmer	$188,266
Project No.4, Road Vacating	$2,154
Project Road Maintenance	$30,494

TOTAL $220,914

MOVE IN:

Equipment	Cost
Dozer (D8)	$1,406.00
Excavator (C330)	$1,406.00
Excavator (C315)	$805.00
Dump Trucks (12cy x 6)	$978.00
Dump Trucks (20cy x 2)	$382.00
Front End Loader	$778.00
Grader (14G)	$778.00
Vibratory Roller	$778.00
Rubber Tire Skidder (C518)	$717.00
Water Truck (2,500 gallon)	$190.00
Backhoe (C 580)	$321.00
Brush Cutter	$321.00

TOTAL $8,860.00

GRAND TOTAL **$352,849**

Compiled By: N. Haile & K. Kirkpatrick Date: 01/22/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Paper Trail
ROAD: 1A-1B, 1C-1D, 1E-1F, 2A-2B, 2C-2D

NEW CONSTRUCTION: 17.00 **STATIONS** 0.32 **MILES**
IMPROVEMENT: **STATIONS** **MILES**

POINTS:

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
Scatter outside of RW	1.56	x	$1,337.00	=	$2,085.72
		x		=	
		x		=	
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING $2,086

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
1A to 1B	Balanced Construction	6.80	x	$122.00	=	$829.60
	Drift Earth Up To 200ft	1.70	x	$190.00	=	$323.00
	Landing Construction 1B	1.00	x	$389.00	=	$389.00
			x		=	
1C to 1D	Balanced Construction	1.50	x	$122.00	=	$183.00
	Landing Construction 1D	1.00	x	$389.00	=	$389.00
			x		=	
1E to 1F	Balanced Construction	1.20	x	$122.00	=	$146.40
	Landing Construction 1F	1.00	x	$389.00	=	$389.00
			x		=	
2A to 2B	Balanced Construction	4.80	x	$122.00	=	$585.60
	Construct Waterbar 1+50	1.00	x	$35.00	=	$35.00
	Landing Construction 2B	1.00	x	$389.00	=	$389.00
			x		=	
2C to 2D	Balanced Construction	2.70	x	$122.00	=	$329.40
	Landing Construction 2D	1.00	x	$389.00	=	$389.00
			x		=	
3A, 3B, 3C	Landing Construction 3A, 3B, 3C	3.00	x	$389.00	=	$1,167.00
			x		=	
			x		=	

SUB TOTAL FOR EXCAVATION $2,895

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:				

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

Subtotal of Clearing, Exc., Culv. ***$4,981***

SURFACING

Subgrade prep:

Description	Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16' (1A-1B, 1C-1D, 1E-1F)	9.50	x	$21.55	$204.73
Subgrade Compaction (1A-1B, 1C-1D, 1E-1F)	9.50	x	$17.52	$166.44
Outslope (2A-2B, 2C-2D)	7.50	x	$17.52	$131.40

ROAD SEGMENT	1A to 1B			POINT TO POINT		Sta. to Sta.				
				1A to 1B		0+00 to 6+80		TOTAL		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)	Rate/ Sta./ amt.	Cost
Base Rock	4"-0" crushed	1A to 1B	8	station	50	stations	6.80	340	$5.82	$1,979
Surface Rock	1 1/2"-0 crushed	0+00 to 1+60	3	station	19	stations	1.60	30	$5.82	$177
Trurnarounds	4"-0" crushed	6+00	8	TA	11	TA's	1	11	$5.82	$64
Turnouts	4"-0" crushed	1+60, 5+00	8	TO	22	TO's	2	44	$5.82	$256
Landings	6"-0" Pit Run	1B	N/A	Landing	70	Landings	1	70	$5.98	$419
Total Rock for Road Segment:			1A to 1B					495		$2,894

ROAD SEGMENT	1C to 1D			POINT TO POINT		Sta. to Sta.				
				1C to 1D		0+00 to 1+50		TOTAL		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)		Cost
Base Rock	4"-0" crushed	1C to 1D	8	station	50	stations	1.50	75	$5.82	$437
Landings	6"-0" Pit Run	1D	N/A	Landing	70	Landings	1	70	$5.98	$419
Total Rock for Road Segment:			1C to 1D					145		$855

ROAD SEGMENT	1E to 1F			POINT TO POINT		Sta. to Sta.				
				1E to 1F		0+00 to 1+20		TOTAL		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)		Cost
Base Rock	4"-0" crushed	1E to 1F	8	station	50	stations	1.20	60	$5.82	$349
Landings	6"-0" Pit Run	1D	N/A	Landing	70	Landings	1	70	$5.98	$419
Total Rock for Road Segment:			1E to 1F					130		$768

ROAD SEGMENT	2A to 2B			POINT TO POINT		Sta. to Sta.				
				2A to 2B		0+00 to 0+50		TOTAL		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)		Cost
Base Rock	4"-0" crushed	0+00 to 0+50	8	station	50	stations	0.50	25	$5.82	$146
Total Rock for Road Segment:			2A to 2B					25		$146

ROAD SEGMENT	3A, 3B, 3C			POINT TO POINT		Sta. to Sta.				
				3A, 3B, 3C		N/A		TOTAL		
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of		VOLUME (CY)		Cost
Landings	6"-0" Pit Run	3A, 3B, 3C	N/A	Landing	70	Landings	3	210	$5.98	$1,256
Total Rock for Road Segment:			3A, 3B, 3C					210		$1,256

Processing:

Description	No.sta	Rate/sta	Cost
Water, Process & Compact:	9.50	$56.48	$537
Water, Process & Compact (Surfacing):	9.50	$56.48	$537

	6"-0"pr	4"-0"	1 1/2"-0"	Total		
SUB TOTAL FOR SURFACING	420	555	30	1,005	1,005	**$7,494**

SPECIAL PROJECTS

Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS $0

Subtotal of Surfacing & Spec. Proj. *$7,494*

Subtotal of Clearing, Exc.,Culv. *$4,981*

GRAND TOTAL **$12,475**

Compiled By: N. Haile

Date: 01/22/2013

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Paper Trail
ROAD: I1-I2 (182.15), I3-I4 (15.05), I5-I6 (11.8), I7-I8 (40+80), I9-I9-I10 (21.60), I11-I12 (41.75), I13-I14 (4.2)

NEW CONSTRUCTION: _____ STATIONS _____ MILES
IMPROVEMENT: 317.35 STATIONS 6.01 MILES

POINTS:

CLEARING & GRUBBING

	Method	Acres/amount	x	Rate	=	Cost
I3-I4, I13-I14	Establishing Turnarounds	0.1	x	$ 1,337	=	$134
			x		=	
			x		=	
			x		=	

SUB TOTAL FOR CLEARING & GRUBBING $134

EXCAVATION

	Material	Cy/amount	x	Rate	=	Cost
I1-I2	Additional grader time for ditchline establishment $\hr	15		$100.00		$1,500.00
	Load & haul ditch waste material $/sta.	40.00	x	$22.92	=	$916.80
	Scatter ditch waste material $\sta	142.15	x	$12.41	=	$1,764.08
	Install check dams w/315 $\hr	4.00	x	$101.00	=	$404.00
I3-I4	Scatter ditch waste material $\sta	15.05	x	$12.41	=	$186.77
I5-I6	Scatter ditch waste material $\sta	11.80	x	$12.41	=	$146.44
I7-I8	Scatter ditch waste material $\sta	40.80	x	$12.41	=	$506.33
	Additional grader time for sod removal & ditchline establishment $\hr	8.00	x	$100.00	=	$800.00
31+05	Fill reconstruction	See Cost Sheet				$1,979.30
I9-I10	Additional grader time for sod removal $\hr	8.00	x	$100.00	=	$800.00
	Scatter sod waste material $\sta	21.60	x	$12.41	=	$268.06
	Additional excavator (315) time for clear/grub existing Landing $\hr	8.00	x	$101.00	=	$808.00
I11-I12	Additional grader time for sod removal $\hr	10.00	x	$100.00	=	$1,000.00
	Scatter sod waste material $\sta	41.75	x	$12.41	=	$518.12
I13-I14	Additional grader time for sod removal $\hr	2.00	x	$100.00	=	$200.00
	Scatter sod waste material $\sta	4.20	x	$12.41	=	$52.12

SUB TOTAL FOR EXCAVATION $11,850

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost
I1-I2				
0+00	18 CPP	30	$19.53	$585.90
38+25	18 CPP	30	$19.53	$585.90
140+40	18 CPP	30	$19.53	$585.90
148+35	18 CPP	30	$19.53	$585.90
I3-I4				
0+65	18 CPP	30	$19.53	$585.90
5+00	18 CPP	30	$19.53	$585.90
12+50	18 CPP	30	$19.53	$585.90
I5-I6				
0+20	18 CPP	40	$19.53	$781.20
I7-I8				
2+40	24 CPP	30	$27.04	$811.20
9+70	18 CPP	40	$19.53	$781.20
11+30	24 CPP	30	$27.04	$811.20
20+65	18 CPP	30	$19.53	$585.90
24+70	24 CPP	40	$27.04	$1,081.60
31+05	30 ASCP	40	See Cost Sheet	$2,811.96
37+70	18 CPP	30	$19.53	$585.90

Location	Dia/type	Lineal ft.	Rate	Cost
I11-I12				
11+05	18 CPP	30	$19.53	$585.90

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:		14	$20.00	$280.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION $13,217

Subtotal of Clearing, Exc., Culv. ***$25,201***

SURFACING

Subgrade prep:

Description		Stations/ amount	x	Rate/ sta/amt	Cost
Grade, Shape and Ditch 16'	All Road Segments	317.35	x	$24.83	$7,879.80
Subgrade Compaction	I1-I2(182.15), I7-I8(4.65), I9-I10 (21.6), I11-I12(41.75)	250.55	x	$20.19	$5,058.60

ROAD SEGMENT	I1 to I2			POINT TO POINT I1 to I2		Sta. to Sta. 0+00 to 182+15		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	1 1/2"-0" crushed	N/A	N/A					440	$5.82	$2,560.80	
Surface Rock	1 1/2"-0" crushed	0+00-182+15	4	station	25	stations	182.15	4,554	$5.82	$26,502.83	
Curve Widening	1 1/2"-0" crushed		4	curve	n/a	curves	n/a	220	$5.82	$1,280.40	
Junctions	1 1/2"-0" crushed	0+00, 8+00, 29+15, 65+15, 77+70, 127+55, 130+45, 151+45,	4	junction	22	junctions	8	176	$5.82	$1,024.32	
Turnouts	1 1/2"-0" crushed	2+50, 12+55, 22+25, 36+70, 40+70, 44+55, 50+70, 56+20, 61+50, 66+45, 74+15, 82+45, 89+90, 95+50, 98+05, 103+60, 113+90, 119+70, 124+75, 135+85, 145+95, 147+85, 149+70, 161+80, 169+00, 178+80	4	TO	11	TO's	29	319	$5.82	$1,856.58	
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+00, 38+25, 140+40, 148+35,	N/A	culvert	33	culverts	4	132	$5.82	$768.24	
Check Dams	6"-4" Pit-run	10+00, 117+10, 156+40, 164+90	N/A	dam		dam		88	$5.98	$526.24	
Culvert Dissipator	24"-6"	148+35	N/A	diss.	11	diss.	1	11	$9.15	$100.65	
Total Rock for Road Segment:			I1 to I2					5,940			$32,059

ROAD SEGMENT	I3 to I4			POINT TO POINT I3 to I4		Sta. to Sta. 0+00 to 15+05		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	4"-0" crushed	N/A	N/A					110	$5.82	$640.20	
Surface Rock	4"-0" crushed	0+00-15+05	4	station	25	stations	15.05	376	$5.82	$2,189.78	
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+65, 5+00, 12+50	N/A	culvert	33	culverts	3	99	$5.82	$576.18	
Turnarounds	4"-0" crushed	9+35, 15+05	N/A	TA	44	TA's	2	88	$5.82	$512.16	
Junctions	4"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.82	$128.04	
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.82	$128.04	
Total Rock for Road Segment:			I3 to I4					717			$4,174

ROAD SEGMENT	I5 to I6			POINT TO POINT I5 to I6		Sta. to Sta. 0+00 to 11+80		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	4"-0" crushed	N/A	N/A					110	$5.82	$640.20	
Surface Rock	4"-0" crushed	0+00-11+80	4	station	25	stations	11.80	295	$5.82	$1,716.90	
Turnouts	4"-0" crushed	5+50	4	turnout	11	turnouts	1	11	$5.82	$64.02	
Turnarounds	4"-0" crushed	8+45	4	turnaround	11	turnarounds	1	11	$5.82	$64.02	
Traction Rock	1 1/2"-0" crushed	0+00 - 5+00	2	station	13	stations	5	65	$5.82	$378.30	
Junctions	4"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.82	$128.04	
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.82	$128.04	
Culvert Bedding/Backfill	1 1/2"-0" crushed	0+20	N/A	culvert	44	culverts	1	44	$5.82	$256.08	
Total Rock for Road Segment:			I5 to I6					580			$3,376

ROAD SEGMENT	I7 to I8			POINT TO POINT I7 to I8		Sta. to Sta. 0+00 to 40+80		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	4"-0" crushed	N/A	N/A					220	$5.82	$1,280.40	
Surface Rock	4"-0" crushed	4+65-40+80	4	station	25	stations	36.15	904	$5.82	$5,259.83	
Turnouts	4"-0" crushed	6+75, 15+85, 21+75, 26+40, 34+25, 36+25	4	turnout	11	turnouts	6	66	$5.82	$384.12	
Turnarounds	4"-0" crushed	36+25	4	turnaround	33	turnarounds	1	33	$5.82	$192.06	
Traction Rock	1 1/2"-0" crushed		2	station	13	stations		44	$5.82	$256.08	
Junctions	1 1/2"-0" crushed	0+00	N/A	junction	22	junctions	1	22	$5.82	$128.04	
Culvert Bedding/Backfill	1 1/2"-0" crushed	2+40, 9+70, 11+30, 20+65, 24+70, 31+05, 37+70	N/A	culvert	44	culverts	1	44	$5.82	$256.08	
Base Rock @ Fill	4"-0" crushed	31+05	8	station	n/a	stations	n/a	33	$5.82		
Culvert Bedding/Backfill	1 1/2"-0" crushed	31+05	N/A	culvert	88	culverts	1	88	$5.82	$512.16	
Culvert Dissipator	24"-6"	31+05	N/A	diss.	33	diss.	1	33	$9.15	$301.95	
Fill Armor	24"-6"	31+05	N/A	fill	77	fills	1	77	$9.15	$704.55	
Total Rock for Road Segment:			I7 to I8					1,564			$8,269

ROAD SEGMENT	I9 to I10			POINT TO POINT I9 to I10		Sta. to Sta. 0+00 to 21+60		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	1 1/2"-0" crushed	N/A						286	$5.82	$1,664.52	
Turnouts	1 1/2"-0" crushed	6+30, 11+65, 17+10	2	turnout	11	turnouts	7	77	$5.82	$448.14	
Turnarounds	4"-0" crushed	20+35	4	turnaround	22	turnarounds	1	22	$5.82	$128.04	
Total Rock for Road Segment:			I9 to I10					385			$2,241

ROAD SEGMENT	I11 to I12			POINT TO POINT I11 to I12		Sta. to Sta. 0+00 to 41+75		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	1 1/2"-0" crushed	N/A						484	$5.82	$2,816.88	
Turnouts	1 1/2"-0" crushed	3+35, 7+80, 11+45, 16+85, 23+90, 33+10	2	turnout	11	turnouts	6	66	$5.82	$384.12	
Turnouts	4"-0" crushed	33+10	2	turnout	11	turnouts	6	66	$5.82	$384.12	
Culvert Bedding/Backfill	1 1/2"-0" crushed	11+05	N/A	culvert	33	culverts	1	33	$5.82	$192.06	
Total Rock for Road Segment:			I11 to I12					649			$3,777

ROAD SEGMENT	I13 to I14			POINT TO POINT I13 to I14		Sta. to Sta. 0+00 to 4+20		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per		Number of					
Subgrade Leveling	4"-0" crushed	N/A						55	$5.82	$320.10	
Turnarounds	4"-0" crushed	4+20	4	turnaround	55	turnarounds	1	55	$5.82	$320.10	
Total Rock for Road Segment:			I13 to I14					110			$640

Processing:

Description	No.sta	Rate/sta	Cost

	Water, Process & Compact:					317.35	$56.48	$17,924

	24"-6"	6"-4"pr	4"-0"	1 1/2"-0"		Total		
SUB TOTAL FOR SURFACING	121	88	2,499	7,237		9,945	9,945	$85,398

SPECIAL PROJECTS

Description	Cost

SUB TOTAL FOR SPECIAL PROJECTS $0

Subtotal of Surfacing & Spec. Proj. *$85,398*
Subtotal of Clearing, Exc., Culv. *$25,201*

GRAND TOTAL **$110,600**

Compiled By: Kraig Kirkpatrick Date: 01/14/2014

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3 **Timber Sale Name: Paper Trail**

Quarry: Wild Goose Quarry Swell:

Location: NE 1/4, Sec. 1, T6N, R7W, W.M. Shrink: 16%

County: Clatsop

By: Kraig Kirkpatrick Loading Hopper: Yes

Date: 01/22/2014

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"		CR			
1-1/2"-0"	25%	CR		7,267	7,267
4"-0"	25%	CR	5,000	3,054	8,854
6"-0"		PR		508	508
24"-6"		RR		121	121
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			5,000	10,950	**16,750**

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Dump Trucks	2	$163	$326	Off Highway Dump Truck	1	$774	$774
Screening Plants	2	$553	$1,106	Screening Plant	1	$553	$553
D8 Cat	1	$1,406	$1,406	Loading Hopper	1	$553	$553
D6 Cat		$778		Loader	1	$805	$805
Drill & Compressor	1	$1,406	$1,406				
Powder	1	$351	$351	3 Stage Crusher	1	$2,891	$2,891
Dump Trucks		$163					
Excavator	1	$1,406	$1,406	Excavator		$1,406	

SUB TOTAL FOR MOBILIZATION $11,576

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher	1	$3,439	$3,439
Screening Plants	2	$293	$586
Loading Hopper	2	$293	$586
Original Calibration	2	$544	$1,088

SUB TOTAL FOR SET UP COSTS $5,699

TOTAL MOBILIZATION & SET UP COSTS $17,275

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear, Load, Haul to Waste Area		hr		
Slash and Stumps (1 truck, 1 exc.)				
Pile & Burn Slash and Stumps(1 exc)	2.9	acres	$2,702	$7,836
Move-in Fire Truck for the burning of the Clearing Debris	1.0	ea	$190	$190

TOTAL CLEARING & GRUBBING COSTS $8,026

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread)	5,000	bcy	$2.60	$13,000

TOTAL EXCAVATION COSTS $13,000

4) DEVELOP ROCK

ROCK SUMMARY

Type	Cu. yd. Vol.	Weight
crushed	16,121	96%
pit run	508	3%
rip rap	121	1%
Total	16,750	
reject	4,030	24.1%

METHOD	%	QUANTITY	RATE	COST
Ripping	50%	8,375	$2.20	$18,425
Drill & shoot	50%	10,390	$2.60	$27,014
Oversize red	10%	1,663	$5.80	$9,645
Other				

TOTAL ROCK DEVELOPMENT COSTS $55,084

5) CALIBRATION & TESTING

DESCRIPTION	NO.	$/TEST	COST
Calibrate	2	$507.00	$1,014
Calibrate			
Test	23	$57.30	$1,318
Test			

TOTAL CALIBRATION & TESTING COSTS $2,332

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	20,151	$0.83	$16,769

TOTAL FEEDING & LOADING COSTS $16,769

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed		3 stage w/s			
1-1/2"-0"	crushed	7,267	3 stage w/s	120	$3.24	$23,557
4"-0"	crushed	8,854	2 stage w/s	140	$2.48	$21,945

TOTAL ROCK CRUSHING COSTS $45,502

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer	2	$120.00	$240.00
Compactor		$72.00	
Grader		$90.00	
Excavator		$138.00	

SUB TOTAL $240.00

Rock for Floor (CY)	$/CY Haul	Total

$240

HAUL & STOCKPILE STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1.					
2.					
3. Wild Goose Stockpile Site	4"-0"	2	5,800	$2.11	$12,239
4.					
5.					
6.					

SUB TOTAL $12,239

TOTAL STOCKPILING COSTS $12,479

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	$15,234
$3.78 /CY 4,030 CY	
Final Quarry Dev., Access Road Const., Waterbarring, Drainage,	$2,565
Block Quarry Access	

TOTAL MISCELLANEOUS COSTS $17,799

10) GRAND TOTAL: **$188,266**

$/Cubic Yard $11.68

Footnotes:

Paper Trail

Location/Description	C330 Excavator	C330 Excavator	Labor	Seeding	Straw Mulch	Total
V1 to V2 0+00-2+80						
Fill Removal	10 hrs					
Waterbar		5 Waterbars				
Total	10 hrs	5	0.25 ac	50 lb	20 Bales	
Rate	$155 /hr	### ea	$628 /ac	$1.15 /lb	$10.73 /Bale	
Cost	$1,550	$175	$157	$58	$214.60	**$2,154**

Prepared by: Kraig Kirkpatrick Date:

CRUSHED ROCK COST

SALE NAME: Paper Trail
PROJECT: No.1 and No. 2
QUARRY: Wild Goose

MATERIAL: Crushed
4"-0" & 1 1/2"-0"

DATE: 01/15/2014
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
I1-I2	182.15	5,841				2.00	1.75	0.80	0.05	4.60
I3-I4	17.85	717				2.00	1.65	0.80	0.05	4.50
I5-I6	11.80	580				2.00	1.35	0.80	0.05	4.20
I7-I8	40.80	1,454				2.00	0.95	0.30	0.05	3.30
I9-I10	21.60	385				2.00	0.85	0.30	0.05	3.20
I11-I12	41.75	649				2.00	1.10	0.30	0.05	3.45
I13-I14	4.20	110				2.00	1.25	0.30	0.05	3.60
1A-1B	6.80	425				2.00	1.35	0.20	0.05	3.60
1C-1D	1.50	75				2.00	1.50	0.20	0.05	3.75
1E-1F	1.20	60				2.00	1.50	0.20	0.05	3.75
2A-2B	0.50	25				2.00	1.65	0.10	0.05	3.80
TOTAL	330.15	10,321								AVERAGE HAUL
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL						**2.00**	**1.51**	**0.64**	**0.05**	**4.20**
						Average Round Trip Distance (miles)			8.40	

ROCK HAUL:

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

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

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

Ave haul: $4.56 /cy
Load: $0.48 /cy
Spread: $0.78 /cy

Production: cy/day = 1,182

CRUSHED ROCK HAUL COSTS 10,321 cy @ **$5.82 /cy**

PIT RUN ROCK COST

SALE NAME: Paper Trail
PROJECT: No.1 and No. 2
QUARRY: Wild Goose

MATERIAL: Pit Run

DATE: 01/15/2014
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
I1-I2	182.15	88				2.00	1.75	0.80	0.05	4.60
1A-1B	6.80	70				2.00	1.50	0.20	0.05	3.75
1C-1D	1.50	70				2.00	1.50	0.20	0.05	3.75
1E-1F	1.20	70				2.00	1.50	0.20	0.05	3.75
3A, 3B, 3C	n/a	210				2.00	0.50	0.20	0.05	2.75
TOTAL	191.65 STA./NO.	508 CU. YD.								AVERAGE HAUL
CUBIC YARD WEIGHTED HAUL						2.00	1.13	0.30	0.05	3.48

Average Round Trip Distance (miles) 6.97

ROCK HAUL:

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

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

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

Ave haul: $4.00 /cy
Load: $0.72 /cy
Spread: $1.26 /cy

Production: cy/day = 632

PIT RUN ROCK HAUL COSTS 508 cy @ **$5.98 /cy**

RIP RAP ROCK COST

SALE NAME: Paper Trail
PROJECT: No.1 and No. 2
QUARRY: Wild Goose

MATERIAL: Rip Rap

DATE: 01/15/2014
BY: Kraig Kirkpatrick

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES 50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	Total Haul
I1-I2	182.15	11				2.00	1.75	0.80	0.05	4.60
I7-I8	40.80	110				2.00	0.95	0.30	0.05	3.30
TOTAL	222.95 STA./NO.	121 CU. YD.								
CUBIC YARD WEIGHTED HAUL						2.00	1.02	0.35	0.05	AVERAGE HAUL 3.42

Average Round Trip Distance (miles) 6.84

ROCK HAUL:

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

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

Ave haul: $3.95 /cy
Load: $0.90 /cy
Develop: $4.30 /cy

Production: cy/day = 639

RIP RAP ROCK HAUL COSTS 121 cy @ **$9.15 /cy**

Road Maintenance Cost Summary

Sale: Paper Trail
Date: 28-Jan-14
By: N. Haile

MBF: 7,598
$$/MBF: $4.01

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	$778	1	16	$100	$2,378
	Dump Truck 12CY x 2	$163	2	8	$79	$1,590
	FE Loader C966	$778	1	8	$83	$1,442
Progressive Operations 2nd Entry	Grader 14G	$778	1	16	$100	$2,378
	Dump Truck 12CY x 2	$163	2	8	$79	$1,590
	FE Loader C966	$778	1	8	$83	$1,442
Final Road Maintenance	Grader 14G	$778	1	40	$100	$4,778
	Dump Truck 12CY x 2	$163	2	24	$79	$4,118
	FE Loader C966	$778	1	24	$83	$2,770
	Vibratory Roller	$778	1	40	$77	$3,858
	Water Truck 2,500 gallon	$190	1	40	$89	$3,750
	Labor			10	$40	$400
Total						$30,494

Production Rates

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.0	1.2

Production Rates	Miles/day	Distance(miles)	Days
Grader	2.5	3.0	1.2

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	5.8	3.9
Vibratory Roller	1.5	5.8	3.9

Paper Trail
TIMBER CRUISE REPORT
FY 2014

1. **Sale Area Location:** Areas 1, 2, 3, and 4 (R/W) are located in T6N, R7W, W.M. Sections 12 and 13, Clatsop County, Oregon.

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Non-thinnable	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Modified Clear Cut	100	0	3	1	16	80	GIS
2	Partial Cut	82	8	1	1	12	60	GIS
3	Modified Clear Cut	61	0	3	0	12	46	GIS
4	Right-of-Way	2	0	0	0	0	2	GIS
TOTALS		**245**	**8**	**7**	**2**	**40**	**188**	

4. Cruisers and Cruise Dates: Areas 1, 2, and 3 were cruised by Derek Bangs, Kevin Berry, Nick Haile, and Dave Rygell during January of 2014.

5. Cruise Method and Computation:
Areas 1 and 3 are modified clear cut units and were variable plot cruised with a 40 BAF on a 4 by 9 chain grid, with every third plot measured and graded. A total of 37 plots were sampled in the two areas 14 grade plots and 23 count plots. Minor species were graded on several of the count plots; this meant that those count plots were regarded as grade plots. Cedar is a reserve species and was recorded as leave trees in all sale areas.

Area 2 was cruised with a 40 BAF on a 2 by 5 chain grid, with every third plot measured and graded. A total of 58 plots were sampled in Area 2, with 27 measured and graded plots, and 31 count plots. Minor species were graded on several of the count plots; this meant that those count plots were regarded as cruise plots. In Area 2 Alder is a leave species but did not count towards the residual basal area. Cedar is a reserve species and was recorded as leave trees in all sale areas.

Area 4 (Right-of-Way) was not cruised but the cruise for Areas 1 and 3 was applied to the right-of-way acres to generate the volume for this area.

All cruisers used Corvallis MicroTechnology (CMT) data collectors. Data was downloaded to the Atterbury Super A.C.E. program for computations. 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 and 3	T6NR7W13	1&3	MC	126
2	T6NR7W12	2	PC	60
4(R/W)	T6NR7W13	RIGHT-OF-WAY	ROW	2

6. Timber Description:
Areas 1 and 3 are modified clear cut units, ranging from 63 to 75 years old. These stands consist of Douglas-fir with minor amounts of western hemlock, red alder, and big-leaf maple. The average Douglas-fir tree size to be harvested is 22.5 inches DBH, with an average height of 97 feet to a merchantable top (40% of DBH). The average volume (net) is approximately 49.8 MBF/acre.

Area 2 is a partial cut unit, approximately 63 years-old, consisting of Douglas-fir, with minor amounts of western hemlock. The average Douglas-fir tree size to be harvested is 17.7 inches DBH, with an average height of 77 feet to a merchantable top (40% of DBH). The Average Volume (net) is approximately 20.4 MBF/acre

Area 4 (Right-of-Way) totals two acres of in-sale right-of-way. The timber type is similar to Sale Areas 1 and 3 therefore the average cruise volume (net) from these areas was applied to these acres. The average volume per acre to be harvested is 49.8 mbf.

7. Statistical Analysis and Stand Summary: See "Statistics" - Type Reports, attached
Statistics for Stand B.F. volumes

Areas	Estimated CV	Target SE%	Actual CV	Actual SE%
1 & 3 (MC)	40.0	8.0	47.0	7.7
2 (PC)	50.0	8.0	37.9	5.0

8. Volumes by Species and Log Grade: (See "Species, Sort, Grade" - Project Report, attached).
Volumes by Species and Grade for All Sale Areas: (MBF) Volumes do not include "in-growth."

Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	21.6"	6,493	5,079	1,194	220	0	3.5%	85%
Hemlock/True-fir	15.5"	717	411	268	38	0	6.5%	9%
Red alder/Other Hardwoods	14.5"	388	0	0	0	388	3.2%	6%
TOTALS		**7,598**						**100%**

9. Approvals:

Prepared by: Nick Haile **Date:** 01-10-14

Unit Forester Approval: [signature] **Date:** 1/10/13

10. Attachments:

Cruise Design and Map – 4 pages
Volume Report - 3 pages
Statistics Reports - 5 pages
Stand Table Summary – 2 pages
Log Stock Table - 2 pages

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Paper Trail **Area** 2

Harvest Type: (PC)

Approx. Cruise Acres: 65 **Estimated CV%** 50 Net BF or BA/Acre **SE% Objective** 8

Planned Sale Volume: 1170MBF **Estimated Sale Area Value/Acre:** $6,210/Ac

A. Cruise Goals: (a) Grade minimum 100 conifer 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 40BAF (Full point; Half point) (circle one)
Cruise Line Direction(s) Area 2 90 degrees
Cruise Line Spacing 5 chains
Cruise Plot Spacing 2 chains
Grade/Count Ratio 1:2

The BA target is 140 sq. ft. **Select 3 to 4 leave trees per plot, leaving 4 every other plot**. Mark Leave trees with an "L" using yellow paint on graded plots only. Cruise all take and leave trees. If a cruise line ends up paralleling or a plot ends up in a buffer or a road offset by 1 chain and continue. Plots that would have landed within an unthinnable area through the systematic design have been dropped; pace through these dropped plots. All cedars are leave trees and **will** count towards the leave tree basal area. Hardwoods are also a reserve species, but **will not** count towards the leave tree BA. Grade alder as camprun-sawlogs. Record all snags as SN and estimate diameter and total height.

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 < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

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

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

6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple); 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

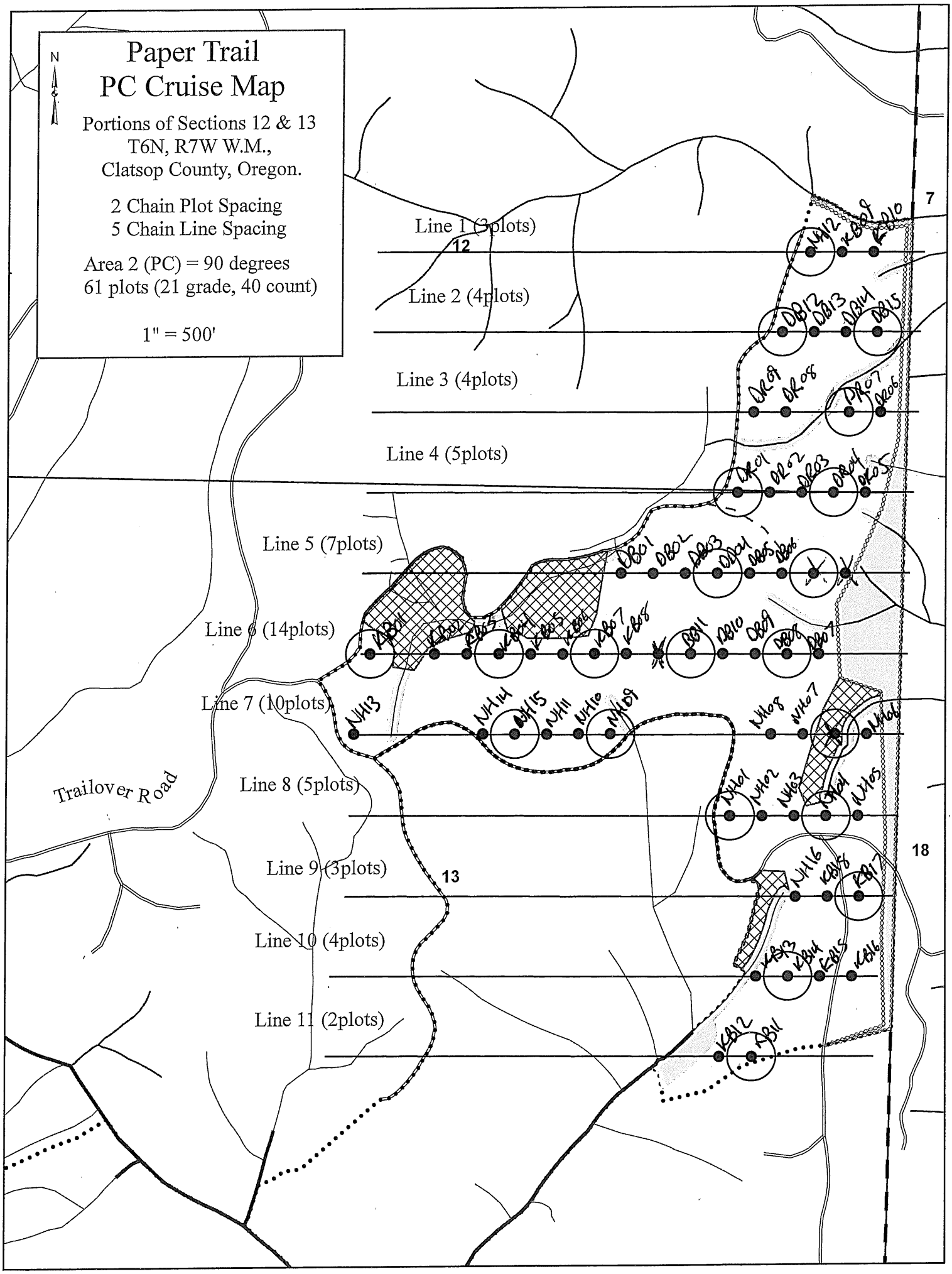
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
   ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.

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

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

Cruise Design by: Nick Haile
Approved by: _____
Date: 01/01/14


Paper Trail
PC Cruise Map
Portions of Sections 12 & 13
T6N, R7W W.M.,
Clatsop County, Oregon.
2 Chain Plot Spacing
5 Chain Line Spacing
Area 2 (PC) = 90 degrees
61 plots (21 grade, 40 count)
1" = 500'
N
Line 1 (3plots)
Line 2 (4plots)
Line 3 (4plots)
Line 4 (5plots)
Line 5 (7plots)
Line 6 (14plots)
Line 7 (10plots)
Line 8 (5plots)
Line 9 (3plots)
Line 10 (4plots)
Line 11 (2plots)
Trailover Road
12
13
7
18

Revised August, 2002

CRUISE DESIGN
ASTORIA DISTRICT

Sale Name: Paper Trail **Area(s)** 1 & 3

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 130 **Estimated CV%** 40 Net BF or BA/Acre **SE% Objective** 8

Planned Sale Volume: 6,194 MBF **Estimated Sale Area Value/Acre:** $ 16,438/ac

A. **Cruise Goals:** (a) Grade minimum 100 conifer 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; Half point) (circle one)
Cruise Line Direction(s) Areas 1 & 3 90degrees (E/W)
Cruise Line Spacing 9 chains
Cruise Plot Spacing 4 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 < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

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

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

6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple); 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

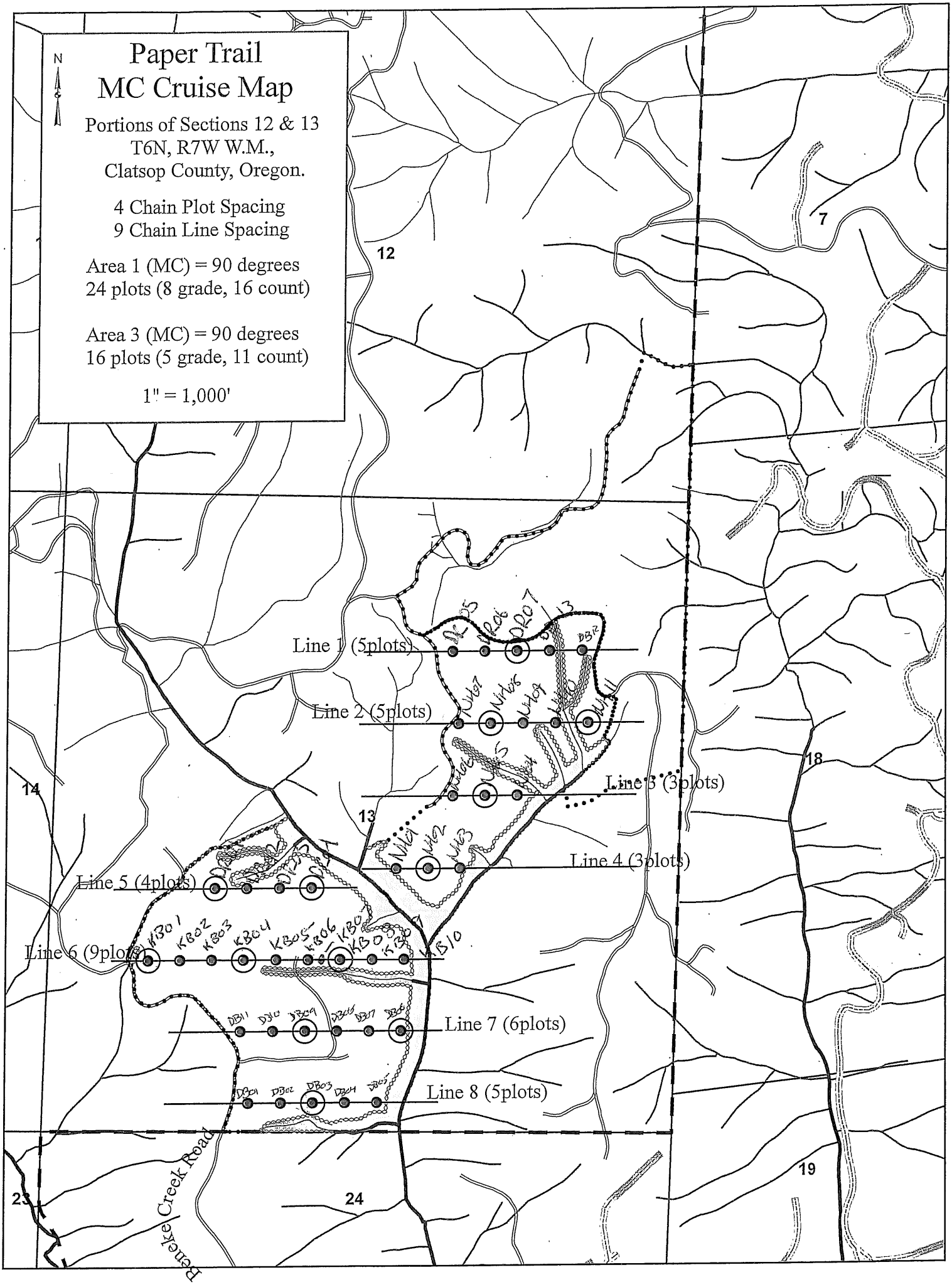
7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally 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, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
   ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.

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

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

Cruise Design by: Nick Haile
Approved by: _____
Date: 12/31/13


Paper Trail
MC Cruise Map
Portions of Sections 12 & 13
T6N, R7W W.M.,
Clatsop County, Oregon.
4 Chain Plot Spacing
9 Chain Line Spacing
Area 1 (MC) = 90 degrees
24 plots (8 grade, 16 count)
Area 3 (MC) = 90 degrees
16 plots (5 grade, 11 count)
1" = 1,000'
N
Line 1 (5plots)
Line 2 (5plots)
Line 3 (3plots)
Line 4 (3plots)
Line 5 (4plots)
Line 6 (9plots)
Line 7 (6plots)
Line 8 (5plots)
12
13
14
18
19
23
24
7
Brake Creek Road

TC PSPCSTGR

Species, Sort Grade - Board Foot Volumes (Project)

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project: PAPRTRAL

Acres 188.00

Page 1
Date 1/9/2014
Time 2:22:34PM

Spp	S T	So Gr rt ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent of Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
H		DOCU		100.0	208											24		0.00	6.7
H		DO2S	57	1.0	2,206	2,185	411		4	75	21		11	16	72	36	245	1.67	8.9
H		DO3S	37	1.7	1,450	1,425	268		100				3	33	64	36	92	0.76	15.4
H		DO4S	6	5.4	216	205	38	16	84			49	51			20	25	0.42	8.2
H	**Totals**		9	6.5	4,080	3,814	717	1	44	43	12	3	11	22	65	31	97	0.85	39.3
D		DOCU		100.0	701											8		0.00	9.1
D		DO2S	78	1.5	27,438	27,013	5,079		1	50	49		1	5	94	39	362	2.10	74.6
D		DO3S	18	2.0	6,481	6,350	1,194		95	5		1	5	27	67	36	97	0.79	65.4
D		DO4S	4		1,171	1,171	220	11	89			29	38	11	22	23	35	0.50	33.4
D	**Totals**		85	3.5	35,792	34,535	6,493	0	21	40	38	1	3	9	87	34	189	1.37	182.5
A		DOCU		100.0	39											25		0.00	3.9
A		DOCR	100	1.4	2,066	2,038	383	1	99				11	46	43	32	65	0.62	31.6
A	**Totals**		5	3.2	2,105	2,038	383	1	99				11	46	43	32	57	0.57	35.5
M		DOCR	100		30	30	5		100			100				20	50	0.85	.6
M	**Totals**		0		30	30	5		100			100				20	50	0.85	.6
Totals				3.8	42,006	40,417	7,598	0	27	39	34	1	4	12	82	33	157	1.19	257.9

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: PAPRTRAL

Page 1
Date 1/9/2014
Time 2:23:09PM

T06N R07W S13 T00MC

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	13	1&3	00MC	126.00	37	113	1	W

T06N R07W S13 T00MC

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU		100.0	895											7		0.00	12.2
D		DO	2S	81	1.4	37,472	36,940	4,654		1	48	51		1	4	95	39	372	2.14	99.3
D		DO	3S	16	2.0	7,231	7,088	893		93	7		1	6	25	68	36	96	0.79	74.0
D		DO	4S	3		1,285	1,285	162	13	87			29	35	9	27	23	37	0.54	34.4
D	**Totals**			91	3.4	46,884	45,313	5,709	0	17	40	42	1	3	7	89	34	206	1.46	220.0
A		DO	CU		100.0	57											25		0.00	5.7
A		DO	CR	100	1.4	3,035	2,993	377	1	99				11	46	43	32	65	0.62	46.4
A	**Totals**			6	3.2	3,092	2,993	377	1	99				11	46	43	32	57	0.57	52.1
H		DO	CU		100.0	60											25		0.00	4.2
H		DO	2S	60	1.3	883	871	110			81	19			25	75	37	257	1.70	3.4
H		DO	3S	31	1.2	461	455	57		100					24	76	37	82	0.71	5.5
H		DO	4S	9		123	123	16		100			21	79			21	27	0.39	4.5
H	**Totals**			3	5.1	1,527	1,450	183		40	48	12	2	7	22	69	30	82	0.74	17.7
M		DO	CR	100		44	44	6		100			100				20	50	0.85	.9
M	**Totals**			0		44	44	6		100			100				20	50	0.85	.9
Type Totals					3.4	51,547	49,800	6,275	0	23	38	38	1	3	10	86	33	171	1.27	290.7

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: PAPRTRAL

Page 1
Date 1/9/2014
Time 2:23:09PM

T06N R07W S12 TTAKE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	12	2	TAKE	60.00	58	69	1	W

T06N R07W S12 TTAKE

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU		100.0	287											21		0.00	2.3
D		DO	2S	50	3.2	6,032	5,837	350		5	81	15			21	79	38	266	1.73	22.0
D		DO	3S	41	2.2	4,880	4,775	286		100				3	35	62	36	101	0.80	47.1
D		DO	4S	9		930	930	56	6	94			28	48	18	6	23	30	0.43	31.2
D	**Totals**			57	4.8	12,128	11,542	693	0	51	41	7	2	5	26	66	32	112	0.94	102.6
H		DO	CU		100.0	522											23		0.00	11.8
H		DO	2S	56	.8	5,029	4,987	299		5	73	21		16	13	71	36	241	1.66	20.7
H		DO	3S	39	1.9	3,560	3,494	210		100				4	36	60	36	95	0.77	36.6
H		DO	4S	5	8.8	414	378	23	27	73			69	31			19	23	0.44	16.2
H	**Totals**			43	7.0	9,525	8,858	531	1	46	41	12	3	12	22	64	31	104	0.90	85.3
Type Totals					5.8	21,653	20,400	1,224	1	49	41	9	3	8	24	65	32	109	0.92	187.9

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: PAPRTRAL

Page 1
Date 1/9/2014
Time 2:23:09PM

T06N R07W S13 TROW

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
06N	07W	13	1&3	ROW	2.00	37	113	1	W

T06N R07W S13 TROW

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Bd Ft	CF/ Lf	Logs Per /Acre
D		DO	CU		100.0	895											7		0.00	12.2
D		DO	2S	81	1.4	37,472	36,940	74		1	48	51		1	4	95	39	372	2.14	99.3
D		DO	3S	16	2.0	7,231	7,088	14		93	7		1	6	25	68	36	96	0.79	74.0
D		DO	4S	3		1,285	1,285	3	13	87			29	35	9	27	23	37	0.54	34.4
D	**Totals**			91	3.4	46,884	45,313	91	0	17	40	42	1	3	7	89	34	206	1.46	220.0
A		DO	CU		100.0	57											25		0.00	5.7
A		DO	CR	100	1.4	3,035	2,993	6	1	99				11	46	43	32	65	0.62	46.4
A	**Totals**			6	3.2	3,092	2,993	6	1	99				11	46	43	32	57	0.57	52.1
H		DO	CU		100.0	60											25		0.00	4.2
H		DO	2S	60	1.3	883	871	2			81	19			25	75	37	257	1.70	3.4
H		DO	3S	31	1.2	461	455	1		100					24	76	37	82	0.71	5.5
H		DO	4S	9		123	123	0		100			21	79			21	27	0.39	4.5
H	**Totals**			3	5.1	1,527	1,450	3		40	48	12	2	7	22	69	30	82	0.74	17.7
M		DO	CR	100		44	44	0		100			100				20	50	0.85	.9
M	**Totals**			0		44	44	0		100			100				20	50	0.85	.9
Type Totals					3.4	51,547	49,800	100	0	23	38	38	1	3	10	86	33	171	1.27	290.7

TC PSTATS

PROJECT STATISTICS

PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	12	2	00PC	186.00	95	735	1	W
06N	07W	13	1&3	00MC					

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	95	735	7.7		
CRUISE	41	280	6.8	27,917	1.0
DBH COUNT					
REFOREST					
COUNT	54	405	7.5		
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	127	70.3	21.6	92		178.5	35,672	34,419	8,498	8,374
DOUGLEAV	46	8.8	25.2	98		30.3	6,379	6,017	1,446	1,417
WHEMLOCK	40	23.8	15.5	54		31.3	4,107	3,840	1,114	1,035
R ALDER	20	26.4	14.0	51		28.1	2,732	2,665	864	830
SNAG	26	14.7	15.0	66		18.0				
HEMLEAV	15	3.7	23.1	84		10.7	2,031	1,975	490	485
ALDRLEAV	1	1.5	15.0	71		1.8	276	276	75	75
BL MAPLE	4	.8	17.4	30		1.4	119	119	31	31
CEDLEAV	1	.3	20.0	67		.7	55	55	18	18
TOTAL	*280*	*150.1*	*19.2*	*76*		*300.7*	*51,370*	*49,364*	*12,536*	*12,266*

CONFIDENCE LIMITS OF THE SAMPLE

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

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	SAMPLE TREES - BF LOW	AVG	HIGH	# OF TREES REQ. 5	10	INF. POP. 15
DOUG FIR	71.2	6.3	553	591	628			
DOUGLEAV	48.7	7.2	751	809	867			
WHEMLOCK	86.5	13.7	211	245	278			
R ALDER	55.8	12.8	117	134	151			
SNAG								
HEMLEAV	53.3	14.2	533	621	710			
ALDRLEAV								
BL MAPLE	83.0	47.4	175	333	490			
CEDLEAV								
TOTAL	*87.8*	*5.2*	*459*	*485*	*510*	*308*	*77*	*34*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	TREES/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	116.9	12.0	62	70	79			
DOUGLEAV	117.2	12.0	8	9	10			
WHEMLOCK	199.0	20.4	19	24	29			
R ALDER	255.2	26.2	19	26	33			
SNAG	218.7	22.4	11	15	18			
HEMLEAV	198.9	20.4	3	4	4			
ALDRLEAV	447.1	45.8	1	1	2			
BL MAPLE	714.0	73.2	0	1	1			
CEDLEAV	556.7	57.1	0	0	0			
TOTAL	*69.1*	*7.1*	*139*	*150*	*161*	*190*	*48*	*21*

CL 68.1 SD: 1.0	COEFF VAR.%	S.E.%	BASAL AREA/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	124.8	12.8	156	178	201			
DOUGLEAV	113.8	11.7	27	30	34			
WHEMLOCK	184.6	18.9	25	31	37			
R ALDER	230.2	23.6	21	28	35			

TC PSTATS

PROJECT STATISTICS

PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07	12	2	00PC	186.00	95	735	1	W
06N	07W	13	1&3	00MC					

CL 68.1 SD: 1.00

BASAL AREA/ACRE

	COEFF VAR.	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
SNAG	217.0	22.2	14	18	22			
HEMLEAV	199.7	20.5	8	11	13			
ALDRLEAV	447.1	45.8	1	2	3			
BL MAPLE	611.5	62.7	1	1	2			
CEDLEAV	556.7	57.1	0	1	1			
TOTAL	*69.0*	*7.1*	*279*	*301*	*322*	*190*	*47*	*21*

CL 68.1 SD: 1.0

NET BF/ACRE

	COEFF VAR.%	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUG FIR	132.1	13.5	29,757	34,419	39,081			
DOUGLEAV	116.1	11.9	5,301	6,017	6,733			
WHEMLOCK	190.6	19.5	3,089	3,840	4,590			
R ALDER	239.9	24.6	2,009	2,665	3,320			
SNAG								
HEMLEAV	200.2	20.5	1,569	1,975	2,380			
ALDRLEAV	447.1	45.8	149	276	402			
BL MAPLE	608.1	62.3	45	119	192			
CEDLEAV	556.7	57.1	24	55	86			
TOTAL	*80.7*	*8.3*	*45,281*	*49,364*	*53,447*	*260*	*65*	*29*

TC TSTATS

STATISTICS

PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	13	1&3	00MC	126.00	37	269	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	37	269	7.3		
CRUISE	14	113	8.1	18,040	.6
DBH COUNT					
REFOREST					
COUNT	23	151	6.6		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	87	82.3	22.5	97		227.0	46,884	45,313	11,040	10,884
R ALDER	7	32.6	13.3	52		31.4	3,092	2,993	986	934
SNAG	7	15.3	14.9	72		18.4				
WHEMLOCK	11	12.1	14.0	46		13.0	1,527	1,450	434	396
BL MAPLE	1	.9	15.0	22		1.1	44	44	15	15
TOTAL	*113*	*143.2*	*19.3*	*79*		*290.8*	*51,547*	*49,800*	*12,474*	*12,229*

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	61.5	6.6	666	713	760			
R ALDER	58.7	23.9	72	94	117			
SNAG								
WHEMLOCK	98.7	31.2	151	220	289			
BL MAPLE								
TOTAL	*80.7*	*7.6*	*533*	*577*	*621*	*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	60.5	9.9	74	82	91			
R ALDER	176.6	29.0	23	33	42			
SNAG	176.2	28.9	11	15	20			
WHEMLOCK	303.9	49.9	6	12	18			
BL MAPLE	608.3	99.9	0	1	2			
TOTAL	*39.8*	*6.5*	*134*	*143*	*153*	*63*	*16*	*7*

CL: 68.1 % COEFF — **BASAL AREA/ACRE** — # OF PLOTS REQ. — INF. POP.

SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR	55.3	9.1	206	227	248			
R ALDER	175.7	28.9	22	31	40			
SNAG	182.1	29.9	13	18	24			
WHEMLOCK	308.8	50.7	6	13	20			
BL MAPLE	608.3	99.9	0	1	2			
TOTAL	*37.8*	*6.2*	*273*	*291*	*309*	*57*	*14*	*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
DOUG FIR	56.9	9.3	41,081	45,313	49,545			
R ALDER	183.0	30.1	2,093	2,993	3,893			
SNAG								
WHEMLOCK	320.0	52.6	688	1,450	2,212			
BL MAPLE	608.3	99.9	0	44	88			
TOTAL	*47.0*	*7.7*	*45,956*	*49,800*	*53,644*	*88*	*22*	*10*

TC TSTATS

STATISTICS

PAGE 1

PROJECT PAPRTRAL DATE 1/9/2014

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	12	2	TAKE	60.00	58	212	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	58	212	3.7		
CRUISE	16	69	4.3	5,595	1.2
DBH COUNT					
REFOREST					
COUNT	30	143	4.8		
BLANKS	12				
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	40	45.0	17.7	77		76.6	12,128	11,542	3,161	3,104
WHEMLOCK	29	48.3	16.3	58		69.7	9,525	8,858	2,542	2,377
TOTAL	*69*	*93.3*	*17.0*	*67*		*146.2*	*21,653*	*20,400*	*5,703*	*5,481*

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	62.0	9.8	292	324	356			
WHEMLOCK	83.7	15.8	214	254	294			
TOTAL	*70.4*	*8.5*	*270*	*294*	*319*	*198*	*49*	*22*

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	114.0	15.0	38	45	52			
WHEMLOCK	130.0	17.0	40	48	56			
TOTAL	*84.2*	*11.0*	*83*	*93*	*104*	*283*	*71*	*31*

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	110.9	14.5	65	77	88			
WHEMLOCK	131.6	17.3	58	70	82			
TOTAL	*83.4*	*10.9*	*130*	*146*	*162*	*277*	*69*	*31*

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	112.5	14.8	9,838	11,542	13,245			
WHEMLOCK	143.9	18.9	7,186	8,858	10,531			
TOTAL	*87.7*	*11.5*	*18,052*	*20,400*	*22,748*	*307*	*77*	*34*

TC TSTATS

STATISTICS

PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	12	2	00PC	60.00	58	466	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	58	466	8.0		
CRUISE	27	167	6.2	9,877	1.7
DBH COUNT					
REFOREST					
COUNT	31	254	8.2		
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
DOUGLEAV	46	27.1	25.2	98		93.8	19,774	18,652	4,481	4,394
DOUG FIR	40	45.0	17.7	77		76.6	12,128	11,542	3,161	3,104
WHEMLOCK	29	48.3	16.3	58		69.7	9,525	8,858	2,542	2,377
HEMLEAV	15	11.3	23.1	84		33.1	6,296	6,121	1,518	1,504
R ALDER	13	13.3	17.2	49		21.4	1,975	1,975	610	610
SNAG	19	13.4	15.4	52		17.2				
ALDRLEAV	1	4.5	15.0	71		5.5	854	854	234	234
CEDLEAV	1	.9	20.0	67		2.1	171	171	57	57
BL MAPLE	3	.8	22.2	49		2.1	275	275	63	63
TOTAL	*167*	*164.6*	*18.9*	*71*		*321.4*	*50,998*	*48,449*	*12,666*	*12,343*

CONFIDENCE LIMITS OF THE SAMPLE

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

CL: 68.1 %	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	48.7	7.2	751	809	867			
DOUG FIR	62.0	9.8	292	324	356			
WHEMLOCK	83.7	15.8	214	254	294			
HEMLEAV	53.3	14.2	533	621	710			
R ALDER	49.4	14.2	133	155	178			
SNAG								
ALDRLEAV								
CEDLEAV								
BL MAPLE	57.9	40.1	256	427	598			
TOTAL	*91.3*	*7.1*	*393*	*422*	*452*	*333*	*83*	*37*

CL: 68.1 %	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	66.9	8.8	25	27	30			
DOUG FIR	114.0	15.0	38	45	52			
WHEMLOCK	130.0	17.0	40	48	56			
HEMLEAV	142.6	18.7	9	11	13			
R ALDER	181.8	23.8	10	13	17			
SNAG	179.9	23.6	10	13	17			
ALDRLEAV	344.9	45.2	2	4	7			
CEDLEAV	431.9	56.7	0	1	1			
BL MAPLE	533.8	70.0	0	1	1			
TOTAL	*38.4*	*5.0*	*156*	*165*	*173*	*59*	*15*	*7*

CL: 68.1 %	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	63.2	8.3	86	94	102			
DOUG FIR	110.9	14.5	65	77	88			
WHEMLOCK	131.6	17.3	58	70	82			
HEMLEAV	143.4	18.8	27	33	39			
R ALDER	172.5	22.6	17	21	26			

STATISTICS

PROJECT PAPRTRAL

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	12	2	00PC	60.00	58	466	1	W

BASAL AREA/ACRE

CL: 68.1 % COEFF
SD: 1.0 VAR.

	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
SNAG	19.0	14	17	21			
ALDRLEAV	45.2	3	6	8			
CEDLEAV	56.7	1	2	3			
BL MAPLE	73.9	1	2	4			
TOTAL	*4.3*	*308*	*321*	*335*	*43*	*11*	*5*

NET BF/ACRE

CL: 68.1 % COEFF
SD: 1.0 VAR.%

	S.E.%	LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
DOUGLEAV	8.6	17,044	18,652	20,260			
DOUG FIR	14.8	9,838	11,542	13,245			
WHEMLOCK	18.9	7,186	8,858	10,531			
HEMLEAV	18.9	4,966	6,121	7,276			
R ALDER	22.6	1,529	1,975	2,421			
SNAG							
ALDRLEAV	45.2	468	854	1,241			
CEDLEAV	56.7	74	171	267			
BL MAPLE	76.5	65	275	485			
TOTAL	*5.0*	*46,039*	*48,449*	*50,859*	*57*	*14*	*6*

TC TSTATS

STATISTICS

PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	13	1&3	ROW	2.00	37	269	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	37	269	7.3		
CRUISE	14	113	8.1	286	39.5
DBH COUNT					
REFOREST					
COUNT	23	151	6.6		
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	87	82.3	22.5	97		227.0	46,884	45,313	11,040	10,884
R ALDER	7	32.6	13.3	52		31.4	3,092	2,993	986	934
SNAG	7	15.3	14.9	72		18.4				
WHEMLOCK	11	12.1	14.0	46		13.0	1,527	1,450	434	396
BL MAPLE	1	.9	15.0	22		1.1	44	44	15	15
TOTAL	*113*	*143.2*	*19.3*	*79*		*290.8*	*51,547*	*49,800*	*12,474*	*12,229*

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	61.5	6.6	666	713	760			
R ALDER	58.7	23.9	72	94	117			
SNAG								
WHEMLOCK	98.7	31.2	151	220	289			
BL MAPLE								
TOTAL	*80.7*	*7.6*	*533*	*577*	*621*	*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	60.5	9.9	74	82	91			
R ALDER	176.6	29.0	23	33	42			
SNAG	176.2	28.9	11	15	20			
WHEMLOCK	303.9	49.9	6	12	18			
BL MAPLE	608.3	99.9	0	1	2			
TOTAL	*39.8*	*6.5*	*134*	*143*	*153*	*63*	*16*	*7*

CL: 68.1 %	COEFF		**BASAL AREA/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR	55.3	9.1	206	227	248			
R ALDER	175.7	28.9	22	31	40			
SNAG	182.1	29.9	13	18	24			
WHEMLOCK	308.8	50.7	6	13	20			
BL MAPLE	608.3	99.9	0	1	2			
TOTAL	*37.8*	*6.2*	*273*	*291*	*309*	*57*	*14*	*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
DOUG FIR	56.9	9.3	41,081	45,313	49,545			
R ALDER	183.0	30.1	2,093	2,993	3,893			
SNAG								
WHEMLOCK	320.0	52.6	688	1,450	2,212			
BL MAPLE	608.3	99.9	0	44	88			
TOTAL	*47.0*	*7.7*	*45,956*	*49,800*	*53,644*	*88*	*22*	*10*

TC TSTATS

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PROJECT PAPRTRAL

DATE 1/9/2014

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	12	2	LEAV	60.00	58	254	1	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	58	254	4.4		
CRUISE	27	98	3.6	4,240	2.3
DBH COUNT					
REFOREST					
COUNT	31	130	4.2		
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
DOUGLEAV	46	27.1	25.2	98		93.8	19,774	18,652	4,481	4,394
HEMLEAV	15	11.3	23.1	84		33.1	6,296	6,121	1,518	1,504
ALDRLEAV	14	17.1	17.0	51		26.9	2,605	2,605	794	794
SNAG	19	13.4	15.4	52		17.2				
CEDLEAV	1	.9	20.0	67		2.1	171	171	57	57
MAPLELV	3	.8	22.2	49		2.1	275	275	63	63
TOTAL	*98*	*70.7*	*21.3*	*75*		*175.2*	*29,121*	*27,824*	*6,913*	*6,812*

CONFIDENCE LIMITS OF THE SAMPLE

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

CL: 68.1 %	COEFF		**SAMPLE TREES - BF**			# OF TREES REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	48.7	7.2	751	809	867			
HEMLEAV	53.3	14.2	533	621	710			
ALDRLEAV	47.1	13.0	137	158	178			
SNAG								
CEDLEAV								
MAPLELV	57.9	40.1	256	427	598			
TOTAL	*88.2*	*8.9*	*467*	*512*	*558*	*311*	*78*	*35*

CL: 68.1 %	COEFF		**TREES/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	66.9	8.8	25	27	30			
HEMLEAV	142.6	18.7	9	11	13			
ALDRLEAV	148.8	19.5	14	17	20			
SNAG	179.9	23.6	10	13	17			
CEDLEAV	431.9	56.7	0	1	1			
MAPLELV	533.8	70.0	0	1	1			
TOTAL	*35.5*	*4.7*	*67*	*71*	*74*	*50*	*13*	*6*

CL: 68.1 %	COEFF		**BASAL AREA/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	63.2	8.3	86	94	102			
HEMLEAV	143.4	18.8	27	33	39			
ALDRLEAV	143.1	18.8	22	27	32			
SNAG	144.9	19.0	14	17	21			
CEDLEAV	431.9	56.7	1	2	3			
MAPLELV	563.6	73.9	1	2	4			
TOTAL	*17.0*	*2.2*	*171*	*175*	*179*	*12*	*3*	*1*

CL: 68.1 %	COEFF		**NET BF/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUGLEAV	65.7	8.6	17,044	18,652	20,260			
HEMLEAV	143.8	18.9	4,966	6,121	7,276			
ALDRLEAV	140.7	18.5	2,124	2,605	3,086			
SNAG								

STATISTICS

PROJECT PAPRTRAL

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	07W	12	2	LEAV	60.00	58	254	1	W

CL: 68.1 %
SD: 1.0

	COEFF VAR.	S.E.%	NET BF/ACRE LOW	AVG	HIGH	# OF PLOTS REQ. 5	10	INF. POP. 15
CEDLEAV	431.9	56.7	74	171	267			
MAPLELV	583.1	76.5	65	275	485			
TOTAL	*26.2*	*3.4*	*26,866*	*27,824*	*28,782*	*27*	*7*	*3*

TC PSTNDSUM

Stand Table Summary

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Date: 1/9/2014

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project PAPRTRAL
Acres 188.00

Time: 2:54:37PM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
D		12	3	90	76	3.040	2.39	3.82	17.5	59.8		67	228		126	43
D		13	4	87	94	3.253	3.00	6.51	16.3	53.1		106	346		200	65
D		14	4	85	85	2.285	2.44	4.00	19.6	65.7		78	263		147	49
D		15	4	84	111	2.443	3.00	4.89	24.3	83.0		119	405		223	76
D		16	10	87	105	5.567	7.77	11.13	27.6	101.0		307	1,125		578	211
D		17	4	87	109	1.902	3.00	2.68	32.1	118.3		86	317		161	60
D		18	9	86	109	4.053	7.16	9.11	32.4	110.6		295	1,008		555	189
D		19	15	86	114	6.345	12.49	15.42	35.9	129.0		554	1,990		1,042	374
D		20	12	87	112	3.868	8.44	8.86	39.5	143.6		350	1,272		658	239
D		21	15	85	120	5.425	13.05	14.06	40.7	151.6		572	2,131		1,076	401
D		22	12	87	131	3.618	9.55	9.95	47.1	194.5		469	1,935		881	364
D		23	22	85	127	6.774	19.54	19.71	47.6	188.4		938	3,713		1,763	698
D		24	23	87	131	6.239	19.60	17.39	55.6	229.3		968	3,988		1,819	750
D		25	13	87	145	3.306	11.27	9.92	61.0	259.3		605	2,572		1,138	484
D		26	11	87	130	2.575	9.49	7.24	60.3	249.5		437	1,807		821	340
D		27	12	85	145	2.681	10.66	7.60	68.1	294.1		517	2,234		972	420
D		28	8	87	139	1.662	7.11	4.99	74.8	340.8		373	1,699		701	319
D		29	9	87	153	1.682	7.72	5.43	79.5	376.6		432	2,047		813	385
D		30	6	86	153	1.086	5.33	2.90	100.0	473.7		290	1,372		544	258
D		31	2	88	142	.339	1.78	1.02	93.0	436.7		95	444		178	83
D		32	2	89	133	.318	1.78	.95	86.3	423.3		82	404		155	76
D		33	4	85	160	.598	3.55	2.09	98.4	478.6		206	1,002		387	188
D		34	6	87	130	.845	5.33	2.25	116.1	546.2		262	1,231		492	232
D		35	2	89	146	.266	1.78	.80	122.0	630.0		97	503		183	94
D		36	2	88	140	.251	1.78	.75	127.0	660.0		96	498		180	94
D		Totals	214	86	120	70.422	179.00	173.46	48.4	199.1		8,401	34,535		15,794	6,493
H		9	2	88	38	1.818	.80	1.82	7.0	30.0		13	55		24	10
H		11	6	88	39	4.757	3.14	2.38	11.6	40.5		28	96		52	18
H		12	3	87	36	1.998	1.57	.98	15.0	50.0		15	49		28	9
H		13	1	82	17	.832	.77									
H		14	2	88	60	1.434	1.53	1.43	20.0	75.0		29	108		54	20
H		15	6	86	77	3.153	3.87	4.40	29.4	95.5		130	421		244	79
H		16	2	87	88	1.098	1.53	2.20	26.5	97.5		58	214		109	40
H		17	2	85	111	.973	1.53	2.43	29.8	108.0		72	263		136	49
H		18	8	87	106	2.644	4.67	6.61	31.8	116.8		210	772		395	145
H		19	8	86	89	2.373	4.67	4.76	36.9	139.8		176	666		330	125
H		20	4	87	90	1.071	2.34	2.14	42.5	143.7		91	308		171	58
H		21	1	86	94	.319	.77	.64	50.5	175.0		32	112		61	21
H		24	3	85	107	.732	2.30	1.71	54.0	230.0		92	393		173	74
H		25	1	89	145	.225	.77	.67	70.0	323.3		47	218		89	41
H		26	2	85	103	.218	.80	.44	81.5	325.0		35	142		67	27
H		Totals	51	87	69	23.643	31.06	32.61	31.5	117.0		1,028	3,814		1,932	717
A		11	2	87	98	4.621	3.05	9.24	13.0	50.0		120	462		226	87
A		12	2	86	27	3.883	3.05									
A		13	2	87	114	3.308	3.05	6.62	20.5	80.0		136	529		255	100
A		14	4	86	71	5.705	6.10	8.56	23.3	66.7		200	571		375	107
A		15	2	86	73	2.485	3.05	4.97	21.0	65.0		104	323		196	61
A		16	2	87	55	2.184	3.05	2.18	35.0	70.0		76	153		144	29
A		Totals	14	86	74	22.185	21.35	31.57	20.2	64.6		636	2,038		1,196	383
M		15	2	87	25	.600	.74	.60	17.0	50.0		10	30		19	6

TC PSTNDSUM

Stand Table Summary

Page 2
Date: 1/9/2014

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project PAPRTRAL
Acres 188.00

Time: 2:54:37PM
Grown Year:

Spc	S T	DBH	Sample Trees	FF 16'	Tot Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
M		Totals	2	87	25	.600	.74	.60	17.0	50.0		10	30		19	6
SN		11	2	88	85	2.709	1.79									
SN		12	2	86	25	2.276	1.79									
SN		14	4	85	85	3.344	3.58									
SN		20	2	86	120	.819	1.79									
SN		22	2	88	98	.677	1.79									
SN		24	2	85	56	.569	1.79									
SN		Totals	14	86	74	10.394	12.51									
Totals			295	86	98	127.244	244.66	238.24	42.3	169.6		10,075	40,417		18,941	7,598

TC TSTNDSUM

Stand Table Summary

Project PAPRTRAL

T06N R07W S12 TLEAV

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	12	2	LEAV	60.00	58	98

T06N R07W S12 TLEA

Page: 1
Date: 01/09/20
Time: 2:53:50PM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DL		19	3	84	112	3.107	6.12	8.28	32.2	101.2		267	839		160	50
DL		20	2	86	117	1.869	4.08	5.61	31.8	123.3		179	692		107	41
DL		21	4	84	118	3.391	8.16	9.32	39.5	139.1		368	1,297		221	78
DL		22	4	85	121	3.090	8.16	8.50	44.4	172.7		377	1,468		226	88
DL		23	2	86	123	1.413	4.08	4.24	43.5	171.7		184	728		111	44
DL		24	1	85	120	.649	2.04	1.95	47.3	196.7		92	383		55	23
DL		25	3	86	116	1.794	6.12	4.79	53.5	210.0		256	1,005		154	60
DL		26	4	87	123	2.212	8.16	6.08	62.1	261.8		378	1,593		227	96
DL		27	2	86	103	1.026	4.08	2.56	59.2	248.0		152	636		91	38
DL		28	6	88	139	2.861	12.23	8.11	78.4	363.5		635	2,947		381	177
DL		29	2	85	144	.889	4.08	2.67	82.5	371.7		220	991		132	59
DL		30	6	87	145	2.492	12.23	7.48	85.6	407.8		640	3,049		384	183
DL		32	4	86	141	1.460	8.16	4.02	98.5	460.9		396	1,851		237	111
DL		33	1	85	133	.343	2.04	1.03	100.7	463.3		104	477		62	29
DL		37	1	85	120	.273	2.04	.82	95.7	460.0		78	377		47	23
DL		38	1	85	120	.259	2.04	.52	132.0	620.0		68	321		41	19
DL		Totals	46	86	125	27.129	93.79	75.97	57.8	245.5		4,394	18,652		2,636	1,119
HL		18	1	88	46	1.249	2.21	1.25	27.0	50.0		34	62		20	4
HL		20	2	87	89	2.023	4.41	4.05	42.3	145.0		171	587		103	35
HL		21	1	88	91	.918	2.21	1.84	48.0	195.0		88	358		53	21
HL		22	2	85	104	1.672	4.41	4.18	47.8	186.0		200	777		120	47
HL		24	2	86	116	1.405	4.41	4.21	52.0	220.0		219	927		132	56
HL		25	3	88	121	1.942	6.62	5.83	58.1	245.6		339	1,431		203	86
HL		26	1	85	122	.599	2.21	1.80	61.0	250.0		110	449		66	27
HL		27	1	86	124	.555	2.21	1.67	68.0	286.7		113	477		68	29
HL		28	1	85	104	.516	2.21	1.03	92.5	375.0		95	387		57	23
HL		30	1	89	145	.450	2.21	1.35	100.7	493.3		136	665		81	40
HL		Totals	15	87	102	11.328	33.10	27.19	55.3	225.1		1,504	6,121		903	367
AL		14	2	87	53	3.594	3.84	5.39	17.0	53.3		92	288		55	17
AL		15	2	87	88	3.131	3.84	6.26	24.3	87.5		152	548		91	33
AL		16	1	86	85	1.376	1.92	2.75	23.5	90.0		65	248		39	15
AL		17	2	87	69	2.438	3.84	4.88	24.5	82.5		119	402		72	24
AL		18	2	86	68	2.174	3.84	3.26	38.0	113.3		124	370		74	22
AL		19	1	87	66	.976	1.92	1.95	32.0	115.0		62	224		37	13
AL		20	3	86	50	2.642	5.76	3.52	36.5	92.5		129	326		77	20
AL		21	1	86	52	.799	1.92	1.60	32.0	125.0		51	200		31	12
AL		Totals	14	87	66	17.130	26.90	29.61	26.8	88.0		794	2,605		476	156
ML		18	1	86	69	.390	.69	1.17	19.7	66.7		23	78		14	5
ML		24	1	87	70	.220	.69	.22	87.0	390.0		19	86		11	5
ML		28	1	86	78	.161	.69	.32	65.5	345.0		21	111		13	7
ML		Totals	3	86	71	.771	2.07	1.71	36.9	160.5		63	275		38	16
CL		20	1	83	89	.948	2.07	.95	60.0	180.0		57	171		34	10
CL		Totals	1	83	89	.948	2.07	.95	60.0	180.0		57	171		34	10
SN		10	3	88	48	4.991	2.72									
SN		11	1	89	60	1.375	.91									
SN		13	2	88	42	1.969	1.81									
SN		14	1	85	72	.849	.91									
SN		15	1	89	50	.739	.91									

TC TSTNDSUM

Stand Table Summary

Project PAPRTRAL

T06N R07W S12 TLEAV

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
06N	07W	12	2	LEAV	60.00	58	98

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
SN		18	2	86	100	1.027	1.81									
SN		19	2	89	60	.922	1.81									
SN		20	2	87	38	.832	1.81									
SN		28	2	85	24	.424	1.81									
SN		35	1	87	25	.136	.91									
SN		50	1	85	74	.067	.91									
SN		70	1	86	57	.034	.91									
SN		Totals	19	88	53	13.365	17.24									
Totals			98	86	92	70.671	175.17	135.43	50.3	205.4		6812	27,824		4,087	1,669

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project: PAPRTRAL
Acres 188.00

Date 1/9/2014
Time 2:55:22PM

Spp	ST	Sort	Grade	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
H		DO	CU	6	3	100.0														
H		DO	CU	8	1	100.0														
H		DO	CU	12	16	100.0														
H		DO	CU	28	3	100.0														
H		DO	CU	30	6	100.0														
H		DO	CU	32	4	100.0														
H		DO	CU	37	5	100.0														
H		DO	2S	21	6		6	.8						6						
H		DO	2S	24	14		14	1.9							14					
H		DO	2S	26	14		14	1.9							14					
H		DO	2S	29	13		13	1.8						13						
H		DO	2S	32	68	1.1	68	9.4						51		17				
H		DO	2S	40	300	1.1	296	41.3					16	85	127	68				
H		DO	3S	28	9		9	1.3			9									
H		DO	3S	32	81	3.5	78	10.9			20	21	38							
H		DO	3S	34	7		7	.9				7								
H		DO	3S	35	3		3	.5				3								
H		DO	3S	36	9		9	1.2			9									
H		DO	3S	37	5		5	.8			5									
H		DO	3S	40	149	1.3	147	20.4			34	62	51							
H		DO	3S	41	9		9	1.3			9									
H		DO	4S	15	1		1	.2			1									
H		DO	4S	16	7	33.3	4	.6			4									
H		DO	4S	17	6		6	.9			5	1								
H		DO	4S	18	7		7	1.0		2	5									
H		DO	4S	21	10		10	1.4			10									
H		DO	4S	26	4		4	.6		4										
H		DO	4S	27	2		2	.3			2									
H		DO	4S	29	3		3	.4			3									
H		Totals			767	6.5	717	9.4		6	117	94	105	155	155	85				
D		DO	CU	4	3	100.0														
D		DO	CU	6	72	100.0														
D		DO	CU	10	11	100.0														
D		DO	CU	18	31	100.0														
D		DO	CU	20	11	100.0														
D		DO	CU	33	3	100.0														

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project: PAPRTRAL
Acres 188.00

Date 1/9/2014
Time 2:55:22PM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	2S	27	6		6	.1						6						
D		DO	2S	29	6		6	.1					6							
D		DO	2S	30	32	6.7	30	.5						30						
D		DO	2S	32	216	3.0	209	3.2					20	99	33	57				
D		DO	2S	34	38		38	.6							38					
D		DO	2S	36	75	1.9	74	1.1						31	43					
D		DO	2S	40	4,785	1.5	4,716	72.6					17	881	725	2112	750	229		
D		DO	3S	15	4		4	.1				2	3							
D		DO	3S	17	3		3	.0				3								
D		DO	3S	23	1		1	.0			1									
D		DO	3S	25	7		7	.1				7								
D		DO	3S	26	28		28	.4			2	9			17					
D		DO	3S	27	7		7	.1			2	5								
D		DO	3S	28	2		2	.0			2									
D		DO	3S	29	6		6	.1					6							
D		DO	3S	30	13	4.2	12	.2			6		6							
D		DO	3S	31	6		6	.1				6								
D		DO	3S	32	290	1.0	287	4.4				74	165	48						
D		DO	3S	33	14		14	.2			8	7								
D		DO	3S	34	6		6	.1			6									
D		DO	3S	35	10		10	.2			3	8								
D		DO	3S	37	72		72	1.1			19	46	8							
D		DO	3S	38	34		34	.5			34									
D		DO	3S	39	25		25	.4			25									
D		DO	3S	40	676	3.1	655	10.1			147	185	323							
D		DO	3S	41	13		13	.2				13								
D		DO	4S	10	1		1	.0			1									
D		DO	4S	12	5		5	.1			3		2							
D		DO	4S	13	3		3	.0			3									
D		DO	4S	14	7		7	.1			7									
D		DO	4S	15	4		4	.1	1		1	2								
D		DO	4S	16	2		2	.0			2									
D		DO	4S	17	20		20	.3			9	11								
D		DO	4S	18	2		2	.0			2									
D		DO	4S	19	1		1	.0			1									
D		DO	4S	20	18		18	.3			11	7								

TC PLOGSTVB

Log Stock Table - MBF

T06N R07W S12 TyTAKE	60.00
T06N R07W S13 Ty00MC	126.00
T06N R07W S13 TyROW	2.00

Project: PAPRTRAL
Acres 188.00

Date 1/9/2014
Time 2:55:22PM

Spp	ST	Sort	Grade	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches 2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D		DO	4S	21	3		3	.1			3									
D		DO	4S	22	21		21	.3			16	5								
D		DO	4S	23	2		2	.0			2									
D		DO	4S	24	7		7	.1					7							
D		DO	4S	25	5		5	.1			5									
D		DO	4S	26	14		14	.2			14									
D		DO	4S	27	19		19	.3			19									
D		DO	4S	28	9		9	.1			9									
D		DO	4S	30	4		4	.1			4									
D		DO	4S	31	4		4	.1			4									
D		DO	4S	32	14		14	.2		7	6									
D		DO	4S	33	7		7	.1			7									
D		DO	4S	36	10		10	.2			10									
D		DO	4S	40	24		24	.4		3			21							
D		DO	4S	41	13		13	.2		13										
D		Totals			6,729	3.5	6,493	85.4	1	24	393	390	585	1095	856	2170	750	229		
A		DO	CU	25	7	100.0														
A		DO	CR	21	26		26	6.8			26									
A		DO	CR	22	16		16	4.2			16									
A		DO	CR	32	178		178	46.3	5			117	56							
A		DO	CR	40	125	4.3	120	31.3			61	59								
A		DO	CR	41	44		44	11.4			44									
A		Totals			396	3.2	383	5.0	5		147	176	56							
M		DO	CR	20	6		6	100.0				6								
M		Totals			6		6	.1				6								
Total		All Species			7,897	3.8	7,598	100.0	6	30	657	665	747	1249	1011	2255	750	229		

Logging Plan Map

OF TIMBER SALE CONTRACT NO. 341-14-36
PAPER TRAIL
PORTIONS OF SECTIONS 12 & 13
T6N, R7W W.M.,
CLATSOP COUNTY, OREGON.

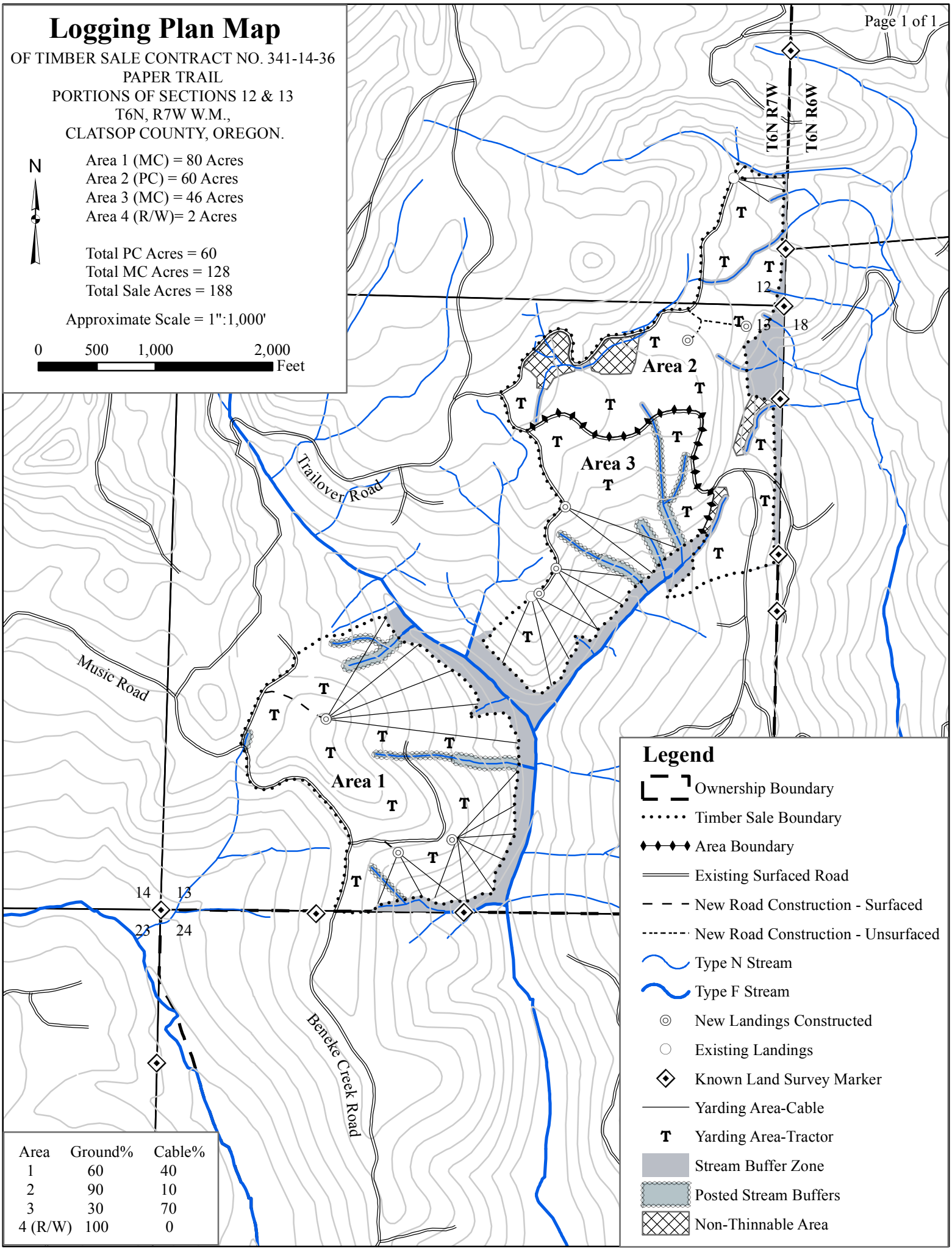
N

Area 1 (MC) = 80 Acres
Area 2 (PC) = 60 Acres
Area 3 (MC) = 46 Acres
Area 4 (R/W)= 2 Acres

Total PC Acres = 60
Total MC Acres = 128
Total Sale Acres = 188

Approximate Scale = 1":1,000'

0 500 1,000 2,000 Feet



Area	Ground%	Cable%
1	60	40
2	90	10
3	30	70
4 (R/W)	100	0

Legend

- Ownership Boundary
- Timber Sale Boundary
- Area Boundary
- Existing Surfaced Road
- New Road Construction - Surfaced
- New Road Construction - Unsurfaced
- Type N Stream
- Type F Stream
- New Landings Constructed
- Existing Landings
- Known Land Survey Marker
- Yarding Area-Cable
- T Yarding Area-Tractor
- Stream Buffer Zone
- Posted Stream Buffers
- Non-Thinnable Area