



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Buzzard Ridge
Combination
Sale 341-10-11

District: Astoria

Date: July 13, 2009

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$513,947.21	\$251,016.60	\$764,963.81
		Project Work:	\$(181,728.00)
		Advertised Value:	\$583,235.81



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timber description

Location: Portions of Sections 13, 14, 23, and 24, T4N, R8W, W.M., Clatsop County, Oregon.

Stand Stocking: 60%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	20	0	97
Western Hemlock / Fir	19	0	96
Alder (Red)	15	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	1,815	570	74	0	2,459
Western Hemlock / Fir	1,357	542	84	0	1,983
Alder (Red)	0	0	0	1,164	1,164
Total	3,172	1,112	158	1,164	5,606



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comments: Pond Values Used: 2nd Quarter Calendar Year 2009.

Log Markets: Tillamook, Garibaldi, Mist, Clatskanie.

Western Red Cedar Stumpage Price = Pond Value minus Logging Cost
 $\$574.84/\text{MBF} = \$740/\text{MBF} - \$165.16/\text{MBF}$

SCALING COST ALLOWANCE = $\$5.00/\text{MBF}$

FUEL COST ALLOWANCE = $\$3.00/\text{Gallon}$

HAULING COST ALLOWANCE

Hauling costs equivalent to \$700 daily truck cost.

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

100% Brand and Paint: $\$1.00/\text{MBF} \times 6,995 \text{ MBF} = \$6,995$

Line Pulling in Area 1: $10\text{hrs} \times \$25/\text{hr} = \250

Traffic Control (flaggers) along County Road Area 3D: $\$24.50/\text{hr} \times 2 \text{ flaggers} \times 50 \text{ hours} = \$2,450$

Additional Rigging time for Area 3D: $80 \text{ hrs} \times \$25/\text{hr} = \$2,000$

Additional Fire Hose: $1000' \times \$1/\text{ft} = \$1,000$

TOTAL Other Costs (with Profit & Risk to be added) = $\$12,695$

Other Costs (No Profit & Risk added):

"Logger's Choice" spur roads in Areas 1 and 2: $10 \text{ stations} \times \$125/\text{station} = \$1,250$

Piling Slash at MC cable landings: $\$130 \times 8 \text{ landings} = \$1,040$

Slash piling (tractor ground) in Areas 1: $74 \text{ hrs} \times \$120/\text{hr} + \945
Move in = $\$9,873$

TOTAL Other Costs (No Profit & Risk added) = $\$12,163$



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logging conditions

combination#:	1	Douglas - Fir	20.64%
		Western Hemlock / Fir	17.21%
		Alder (Red)	6.31%
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Cable: Medium Tower >40 - <70	Process:	Stroke Delimber
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
loads / day:	8.0	bd. ft / load:	4,100
cost / mbf:	\$101.95		
machines:	Log Loader (A) Stroke Delimber (A) Tower Yarder (Medium)		
combination#:	2	Douglas - Fir	38.33%
		Western Hemlock / Fir	31.96%
		Alder (Red)	11.73%
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Track Skidder	Process:	Manual Delimiting
tree size:	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
loads / day:	7.0	bd. ft / load:	4,000
cost / mbf:	\$49.95		
machines:	Feller Buncher w/ Delimber		
combination#:	3	Douglas - Fir	18.05%
		Western Hemlock / Fir	22.37%
		Alder (Red)	36.06%
yarding distance:	Medium (800 ft)	downhill yarding:	No
logging system:	Cable: Medium Tower >40 - <70	Process:	Manual Delimiting
tree size:	Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	7.0	bd. ft / load:	4,100
cost / mbf:	\$120.56		
machines:	Log Loader (A) Tower Yarder (Medium)		
combination#:	4	Douglas - Fir	22.98%
		Western Hemlock / Fir	28.47%
		Alder (Red)	45.90%
yarding distance:	Short (400 ft)	downhill yarding:	No
logging system:	Track Skidder	Process:	Harvester Head Delimiting
tree size:	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF		
loads / day:	10.0	bd. ft / load:	4,100
cost / mbf:	\$101.34		
machines:	Forwarder Harvester		



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logging costs

Operating Seasons:	2.00	Profit Risk:	15.00%
Project Costs:	\$181,728.00	Other Costs (P/R):	\$12,695.00
Slash Disposal:	\$0.00	Other Costs:	\$12,163.00

Miles of Road

Road Maintenance: \$5.09

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	4.8
Western Hemlock / Fir	\$0.00	3.0	4.8
Alder (Red)	\$0.00	3.0	3.1



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logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$85.24	\$5.24	\$1.56	\$43.54	\$2.26	\$20.68	\$0.00	\$5.00	\$2.17	\$165.69
Western Hemlock / Fir									
\$89.32	\$5.29	\$1.56	\$43.96	\$2.26	\$21.36	\$0.00	\$5.00	\$2.17	\$170.92
Alder (Red)									
\$102.28	\$5.34	\$1.56	\$68.72	\$2.26	\$27.02	\$0.00	\$5.00	\$2.17	\$214.35

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$309.61	\$143.92	\$0.00
Western Hemlock / Fir	\$0.00	\$251.63	\$80.71	\$0.00
Alder (Red)	\$0.00	\$430.00	\$215.65	\$0.00



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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	2,459	\$143.92	\$353,899.28
Western Hemlock / Fir	1,983	\$80.71	\$160,047.93
Alder (Red)	1,164	\$215.65	\$251,016.60

Gross Timber Sale Value

Recovery: \$764,963.81

Prepared by: Kraig Kirkpatrick

Phone: 503-325-5451

SURFACING				Stations/amount	x	Rate/sta/amt	Cost
Subgrade prep:		Description		131.90	x	\$13.85	\$1,826.82
		Grade, Shape and Ditch 16'		131.90	x	\$17.52	\$2,310.89
Road Segments:		1A-1B, 1C-1D, 1E-1F, 1G-1H, 2A-2B, 2C-2D, 3A-3B, 3C-3D, 3E-3F, 3G-3H, 3I-3J					
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)	Volume (CY) per	Number of		
Base Rock	4"-0" Reclaim	0+00 to 23+50	9	station	56	stations 23.50	\$2.00 \$2,632
Base Rock	Jaw-run	23+50 to 47+25	9	station	56	stations 23.75	\$3.74 \$4,974
Traction Rock	3/4"-0" Crushed	0+00 to 38+00	4	station	25	stations 38.00	\$3.85 \$3,658
Turnouts	Jaw-run	0+90, 4+90, 7+85, 10+30, 12+80, 17+50, 21+90, 25+10, 31+10, 35+50, 37+85, 41+25	9	TO	42	junctions 12	\$3.74 \$1,885
Turnouts	3/4"-0" Crushed	0+90, 4+90, 7+85, 10+30, 12+80, 17+50, 21+90, 25+10, 31+10, 35+50, 37+85	4	TO	19	TO's 11	\$3.85 \$805
Turnarounds	Jaw-run		9	TA	15	TA's 3	\$3.74 \$168
Dissapator	24"-8" Riprap	6+00, 9+10, 43+00	N/A	culvert	12	culverts 3	\$5.06 \$182
Landings	6"-0" Pit-run	47+25	N/A	Landing	60	Landings 1	\$3.74 \$224
Total Rock for Road Segment:				1A to 1B		4,450	\$14,528
ROAD SEGMENT	1C to 1D	POINT TO POINT		Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 7.45	\$3.74 \$1,560
Traction Rock	3/4"-0" Crushed	2+00 to 6+00	2	station	13	stations 3	\$3.85 \$150
Turnouts	Jaw-run	3+20	9	TO	42	TO's 1	\$3.74 \$157
Turnarounds	Jaw-run	5+50	9	TA	15	TA's 1	\$3.74 \$56
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Landings	6"-0" Pit-run	7+45	N/A	Landing	80	Landings 1	\$3.74 \$299
Total Rock for Road Segment:				1C to 1D		653	\$2,450
ROAD SEGMENT	1E to 1F	POINT TO POINT		Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of		
Base Rock	Jaw-run		5	station	56	stations 9.90	\$3.74 \$2,073
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	3+40, 7+75	9	TO	42	TO's 2	\$3.74 \$314
Turnarounds	Jaw-run	8+85	9	TA	15	TA's 1	\$3.74 \$56
Total Rock for Road Segment:				1E to 1F		713	\$2,671
ROAD SEGMENT	1G to 1H	POINT TO POINT		Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 13.30	\$3.74 \$2,788
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	6+70	9	TO	42	TO's 1	\$3.74 \$157
Turnarounds	Jaw-run	11+90	9	TA	15	TA's 1	\$3.74 \$56
Landings	6"-0" Pit-run	13+30	N/A	Landing	60	Landings 1	\$3.74 \$224
Total Rock for Road Segment:				1G to 1H		922	\$3,450
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)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 4.50	\$3.74 \$942
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	3+60	9	TO	42	TO's 1	\$3.74 \$157
Landings	6"-0" Pit-run	4+50	N/A	Landing	60	Landings 1	\$3.74 \$224
Total Rock for Road Segment:				2A to 2B		414	\$1,551
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)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 3.30	\$3.74 \$691
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	1+70	9	TO	42	TO's 1	\$3.74 \$157
Landings	6"-0" Pit-run	3+30	N/A	Landing	60	Landings 1	\$3.74 \$224
Total Rock for Road Segment:				2C to 2D		347	\$1,300
ROAD SEGMENT	3A to 3B	POINT TO POINT		Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 14.10	\$3.74 \$2,953
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	4+30, 7+50, 11+15	9	TO	42	TO's 3	\$3.74 \$471
Turnarounds	Jaw-run	12+75	9	TA	15	TA's 1	\$3.74 \$56
Landings	6"-0" Pit-run	3+30	N/A	Landing	60	Landings 1	\$3.74 \$224
Total Rock for Road Segment:				3A to 3B		1,051	\$3,932
ROAD SEGMENT	3C to 3D	POINT TO POINT		Sta. to Sta.	TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	Number of		
Base Rock	Jaw-run		9	station	56	stations 13.60	\$3.74 \$2,848
Junctions	Jaw-run	0+00	9	junction	36	junctions 1	\$3.74 \$135
Junctions	3/4"-0" Crushed	0+00	2	junction	24	junctions 1	\$3.85 \$92
Turnouts	Jaw-run	6+00, 12+50	9	TO	42	TO's 2	\$3.74 \$314
Landings	6"-0" Pit-run	13+60	N/A	Landing	80	Landings 1	\$3.74 \$299
Total Rock for Road Segment:				3C to 3D		986	\$3,689

ROAD SEGMENT 3E to 3F				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F Volume (CY) per	0+00 to 6+25 Number of					
Base Rock	Jaw-run		9	station	56	stations	6.25	350	\$3.74	\$1,309
Traction Rock	3/4"-0" Crushed	2+00 to 4+00	2	station	13	stations	2	26	\$3.85	\$100
Junctions	Jaw-run	0+00	9	junction	36	junctions	1	36	\$3.74	\$135
Dissapator	24"-6" Riprap	Ditchout	N/A	ditchout	12	ditchout	1	12	\$5.08	\$61
Landings	6"-0" Pit-run	6+25	N/A	Landing	60	Landings	1	60	\$3.74	\$224
Total Rock for Road Segment				3E to 3F				484		\$1,829

ROAD SEGMENT 3G to 3H				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3G to 3H Volume (CY) per	0+00 to 1+20 Number of					
Base Rock	Jaw-run		9	station	56	stations	1.20	67	\$3.74	\$251
Junctions	Jaw-run	0+00	9	junction	36	junctions	1	36	\$3.74	\$135
Landings	6"-0" Pit-run	1+20	N/A	Landing	60	Landings	1	60	\$3.74	\$224
Total Rock for Road Segment				3G to 3H				163		\$610

ROAD SEGMENT 3I to 3J				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	3I to 3J Volume (CY) per	0+00 to 11+05 Number of					
Base Rock	Jaw-run		9	station	56	stations	11.05	619	\$3.74	\$2,314
Junctions	Jaw-run	0+00	9	junction	36	junctions	1	36	\$3.74	\$135
Turnouts	Jaw-run	4+50	9	TO	42	TO's	1	42	\$3.74	\$157
Turnarounds	Jaw-run	10+00	9	TA	15	TA's	1	15	\$3.74	\$56
Landings	6"-0" Pit-run	11+05	N/A	Landing	80	Landings	1	80	\$3.74	\$299
Total Rock for Road Segment				3I to 3J				792		\$2,961

Processing:

Description	No. sta	Rate/sta	Cost
Water, Process & Compact: 4"-0"			\$1,152
Grade & Compact Jaw-run	108.40	\$21.08	\$2,285
Water, Process & Compact: 3/4"-0" Traction Rock	43.00	\$49.02	\$2,108

SUB TOTAL FOR SURFACING

24"-6"	6"-0" pr.	4"-0" Reclaim	Jaw-run	3/4"-0"	Total		
48	660	1,316	7,558	1,392	10,926	5,817	\$48,654

SPECIAL PROJECTS

Description	Cost
1A to 1B Gate construction and Installation	\$6,000

SUB TOTAL FOR SPECIAL PROJECTS

\$6,000
 Subtotal of Surfacing & Spec. Proj. \$54,654
 Subtotal of Clearing, Exc., Culv. \$60,849

GRAND TOTAL

\$115,502

Compiled By: Kraig Kirkpatrick

Date: 02/27/2009

SURFACING		Stations/ amount	x	Rate/ sta/amt	Cost
Subgrade prep:	Description				
	Grade, Shape and Ditch 16'	11.40	x	\$13.85	\$157.89
	Subgrade Compaction	11.40	x	\$17.52	\$199.73

ROAD SEGMENT		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ sta/ amt	Cost	
Application	Rock Size and Type	I1 to I2	I1 to I2	0+00 to 11+40	Number of				
Subgrade Leveling	3/4"-0" Crushed		N/A			50	\$3.85	\$193	
Base Rock (Curve Widening)	Jaw-run	1+00 to 2+15	9			24	\$3.74	\$90	
Curve Widening	3/4"-0" Crushed	1+00 to 2+15	4			24	\$3.85	\$92	
Traction Rock	3/4"-0" Crushed		4	station	25	stations	11	\$3.85	\$1,097
Turnouts	3/4"-0" Crushed		4	TO	19	TO's	1	\$3.85	\$73
Junctions	3/4"-0" Crushed		4	junction	24	junctions	1	\$3.85	\$82
Total Rock for Road Segment:		I1 to I2				426		\$1,637	

Processing:		Description	No. sta	Rate/sta	Cost
		Water, Process & Compact: Traction Rock	11.40	\$49.02	\$559
SUB TOTAL FOR SURFACING					
		Jaw-run	24	3/4"-0"	Total
					426
					\$2,554

SPECIAL PROJECTS		Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS			\$0

Subtotal of Surfacing & Spec. Proj. \$2,554
Subtotal of Clearing, Exc., Culv. \$116

GRAND TOTAL \$2,670

Compiled By: Kraig Kirkpatrick

Date: 02/27/2009

SUMMARY OF VACATING COSTS

SALE NAME: Buzzard Ridge Combo
 ROADS: HP2040, HP204010 and HP204020
 POINTS: V1 to V2, V3 to V4, and V5 to V6

VACATING: 31.70 STATIONS 0.60 MILES

AGGREGATE SALVAGE					
Method	CY	x	Rate	=	Cost
Aggregate Salvage (lifting + loading) (\$/cy)	1,316.00	x	\$1.90	=	\$2,500.40
		x		=	
		x		=	
		x		=	
		x		=	
SUB TOTAL FOR AGGREGATE SALVAGE					\$2,500

EXCAVATION					
Material	Hours	x	Rate	=	Cost
Salvage Culverts - Medium Excavator (\$/hr)	3.00	x	\$120.00	=	\$360.00
Laborer - Spotter (\$/hr)	3.00	x	\$38.00	=	\$114.00
Outslope Subgrade - Medium Excavator (\$/h)	8.00	x	\$120.00	=	\$960.00
Construct Waterbars - Med. Excavator (\$/hr)	1.00	x	\$120.00	=	\$120.00
Construct Tank Trap - Med. Excavator (\$/hr)	0.50	x	\$120.00	=	\$60.00
		x		=	
		x		=	
SUB TOTAL FOR EXCAVATION					\$1,614

SEEDING AND MULCHING			Cost
Description			
Hand Grass Seeding Pasture Mix (seed, fertilizer, labor)	1.4 ac @ \$545/ac		\$763.00
Straw Bales	42 bales @ \$10.00 per bale		\$420.00
Labor	3.5 hours @ \$38.00 per hour		\$133.00
SUB TOTAL FOR SEEDING AND MULCHING			\$1,316

MISCELLANEOUS		Cost
Description		
SUB TOTAL FOR MISCELLANEOUS		

GRAND TOTAL \$5,430

Compiled By: S. Bushnell Date: 12/08/2008

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3 Timber Sale Name: Buzzard Ridge Combination
 Quarry: Cougar Mountain Swell: _____
 Location: Sw 1/4, SE 1/4, Sec. 14, T4N, R9W Shrink: 16%
 County: Clatsop
 By: S. Bushnell Loading Hopper: Yes
 Date: 03/10/2009

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
6"-0"	8%	CR		7,582	7,582
6"-0"		PR		660	660
24"-6"		RR		48	48
TOTAL CUBIC YARDS OF ROCK:				8,290	8,290

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Dump Trucks	2	\$141	\$282				
D6 Cat	1	\$675	\$675				
Drill and Compressor	1	\$1,180	\$1,180				
Powder	1	\$327	\$327				
Loader	1	\$699	\$699				
1 Stage Crusher	1	\$1,348	\$1,348				
Excavator	1	\$1,220	\$1,220				
Loading Hopper	1	\$515	\$515				

SUB TOTAL FOR MOBILIZATION \$6,246

EQUIPMENT SET UP	TIMES	RATE	COST
1 Stage Crusher	1	\$937	\$937
Loading Hopper	1	\$273	\$273

SUB TOTAL FOR SET UP COSTS \$1,210

TOTAL MOBILIZATION & SET UP COSTS **\$7,456**

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear, Load, Haul to Waste Area	2.0	hr	\$217	\$434
Slash and Stumps (1 truck, 1 exc.)				

TOTAL CLEARING & GRUBBING COSTS **\$434**

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread)	935	bcy	\$2.95	\$2,758

TOTAL EXCAVATION COSTS \$2,758

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	60%	4,974	\$2.20	\$10,943
crushed	7,582	91%	Drill & shoot	40%	3,559	\$2.30	\$8,185
pit run	660	8%	Oversize red	2%	165	\$5.80	\$956
rip rap	48	1%	Other				
Total	8,290						
reject	607	7.3%					

TOTAL ROCK DEVELOPMENT COSTS \$20,084

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	1	\$507.00	\$507

TOTAL CALIBRATION & TESTING COSTS \$507

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	8,189	\$0.59	\$4,862

TOTAL FEEDING & LOADING COSTS \$4,862

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
6"-0"	crushed	7,582	1 stage	160	\$0.94	\$7,108

TOTAL ROCK CRUSHING COSTS \$7,108

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total

Rock for Floor (CY)	\$/CY Haul	Total

SUB TOTAL

HAUL & STOCKPILE

STOCKPILE LOCATION	SIZE	# of TRUCKS	CU. YDS.	RATE	COST
1. _____					
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					

SUB TOTAL

TOTAL STOCKPILING COSTS

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	\$1,225
\$2.02 /CY 607 CY	
Seed and Mulch Waste Area	\$745
Final Quarry Dev., Access Road Const., Waterbarring, Drainage, Block Quarry Access	\$2,565

TOTAL MISCELLANEOUS COSTS

\$4,535

10) GRAND TOTAL:

\$47,744

\$/Cubic Yard

\$6.30

Footnotes:

Projects Road Maintenance Cost Summary

Sale: Buzzard Ridge Combination
Date: February 17, 2009
By: Kraig Kirkpatrick

Type	Equipment/Rationale	Hours	Rate	Cost
Post-Projects Road	Grader 14G	13	\$93	\$1,209
	Dump Truck 12CY (2 trucks)	5	\$73	\$365
	FE Loader C966	5	\$77	\$385
	Vibratory Roller	13	\$72	\$936
	Water Truck 2500 gallon	13	\$83	\$1,079
Total				\$3,974

Interim Maintenance

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours

Final Road Maintenance

Production Rates

Grader

Vibratory Roller

Miles/day	Distance(miles)	Days	Hours
1.5	2.0	1.3	13.00
1.5	2.0	1.3	13.00

***Maintenance calculations were determined as follows:**

Maintain from Cougar Mountain Quarry; Cougar Mountain Road, Beaver Ridge Road, Buzzard Ridge Road to Pt. 1A.

Total Miles: 2.0 miles.

**BUZZARD RIDGE
FY 2009
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, 3A, 3B, 3C, 3D, and 4R/W are located in portions of Sections 13, 14, 23, and 24, T4N, R8W; W.M., Clatsop County, Oregon.

All timber sale areas are posted with ODF "Timber Sale Boundary", "Area Boundary" signs and pink ribbon. Areas 4 R/W is posted with ODF "Right-of-Way Boundary" signs.

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

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acreage	New R/W Acreage	Stream Buffer Acreage	Wildlife Tree Area/	Net Acreage
1	MC	51.9	0.0	-0.4	0.0	51.5
2	PC	51.6	-0.7	-1.0	0.0	49.9
3A	PC	73.9	-4.5	-2.1	0.0	67.3
3B	PC	34.7	-1.7	0.0	0.0	33.0
3C	PC	15.8	-1.6	0.0	0.0	14.2
3D	MC	41.6	-0.3	0.0	0.0	41.3
4	R/W	8.8	0.0	0.0		8.8
TOTALS		278.3	-8.8	-3.5	0.0	266

4. **Cruisers and Cruise Dates:** Areas 1 was cruised by Bryce Rodgers, Derek Bangs, David Horning, Jay Morey, Peter Stone and Kraig Kirkpatrick. Area 2 was cruised by Jay Morey, Bryce Rodgers and Kraig Kirkpatrick. Area 3A, 3B, 3C, and 3D was cruised by Bryce Rodgers, David Horning, Jay Morey, Ed Holloran and Kraig Kirkpatrick. Cruise for Area 4 R/W was calculated using total cruise per acre volumes for partial harvest Areas 2, 3A, 3B, 3C, and 3D, and applying road R/W acreage. Acreage for R/W in modified-clearcut Areas 1 was included in the total net acreage for those sale areas.
5. **Cruise Method and Computation:** Cruises used Corvallis MicroTechnology (CMT) and Juniper Allegro data collectors, and were downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria District office.

Area 1 (Modified Clear Cut), were variable plot cruised with a 40.0 BAF for conifers and 33.6 for hardwoods. 35 plots were sampled on a cruise grid of 2.5 chains by 2.5 chains, with a count/cruise ratio of 3:1.

Area 2 (Partial Cut), were variable plot cruised with a 33.6 BAF for conifers and 27.78 for hardwoods. 32 plots were sampled on a cruise grid of 4 chains by 3.5 chains, with a count/cruise plot ratio of 2:1.

Areas 3A, 3B, 3C (Partial Cut), and 3D (Modified Clearcut), were variable plot cruised with a 33.61 BAF. 76 plots were sampled on a cruise grid of 4.5 chains by 4.5 chains, with a count/cruise plot ratio of 2:1.

All "take" and "leave" trees were measured and graded, on cruise plots.

<u>AREAS</u>	<u>PROJECT</u>	<u>CRUISE TYPE</u>
1	BUZZARD	0001, LEAV, TAKE
2	BUZZARD	0002, LEAV, TAKE
3A	BUZZARD	003A, LEAV, TAKE
3B	BUZZARD	003B, LEAV, TAKE
3C	BUZZARD	003C, LEAV, TAKE
3D	BUZZARD	003D, LEAV, TAKE
4 R/W	BUZZARD	RW

6. Timber Description:

Areas 1 (Modified Clearcut) – These stand is approximately 61 years old, consisting of conifer stands with patches of hardwoods. This stand averages 19.4 inches in DBH, with an average merchantable height of 67 feet to a merchantable top (6" d.i.b.). The average volume (net) to be harvested is 44.7 MBF/acre.

Area 2 (Partial Cut) – This stand is approximately 55 to 61 years old, consisting of mixed conifer stands with patches of hardwoods. This stand will be harvested to an SDI of 30, with a basal area target of 140ft², while removing approximately 80 trees per acre and 12.5 MBF/acre. The average "take" tree size is 15.4" DBH and 51 feet to a merchantable top (6" d.i.b.).

Areas 3A, 3B, and 3C (Partial Cut) – These stands are approximately 55 to 61 years old, consisting of Douglas-fir dominated mixed conifer stands with patches of hardwoods. These stands will be harvested to an SDI of 25-30, with a target basal area of 130 ft², while removing approximately 70 trees per acre and 15.1 MBF/acre. The average "take" tree size is 17.0" DBH and 56 feet to a merchantable top (6" d.i.b.).

Area 3D (Modified Clearcut) – This stand is approximately 57-62 years old, consisting of scattered clumps of hardwoods and conifers. This stand averages 16.7 inches in DBH, with an average merchantable height of 48 feet to a merchantable top (6" d.i.b.). The average volume (net) to be harvested is 12.0 MBF/acre.

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

Area	Target CV	Target SE%	Actual CV	Actual SE%
1	50	10	56	9.5
2	40	10	50.1	8.8
3A, 3B, 3C, and 3D	40	10	70.7	8.1

The statistics for Areas 1, 2, 3A, 3B, 3C and 3D are "Take" and "Leave" stands combined.

8. Volumes by Species and Log Grades for All Sale Areas by MBF: (See "Species, Sort, Grade, Length % Type Reports" attached, of the thinning and regeneration harvest areas combined.) Volumes do not include "ingrowth." The majority of defect and breakage was culled out during the cruise.

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	19.7	2,459	1,815	570	74	0	1.7	44
Hemlock / fir/ Spruce	18.7	1,983	1,357	542	84	0	1.3	35
Hardwoods	15.0	1,164				1,164	.1	20
TOTAL		5,606						

9. Prepared by: Kraig Kirkpatrick

Date: February 26, 2009

10. Approved by: 

Date: 6/22/09

11. Attachments: Species, Sort, Grade Reports (5 pages)
Statistics Stand Summary Reports (18 pages)
Log Stock Table Reports (4 pages)
Leave Tree Stand Table Reports (4 pages)
Cruise Plans & Maps (10 pages)

Species, Sort Grade - Board Foot Volumes (Project)

T04N R07W S13 TyTAKE
THRU
T04N R07W S24 TyRW

Project: **BUZZARD**
Acres **266.00**

Page **1**
Date **6/2/2009**
Time **7:10:53AM**

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net		Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre		
								Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf			
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
H	DOCU				100.0	302										9		0.00	2.4		
H	DO2S	69			1.4	5,135	5,063	1,347		0	51	49		1		32	66	36	335	2.08	15.1
H	DO3S	26			1.0	1,946	1,927	512		91	8	1		2	9	34	55	34	92	0.81	21.0
H	DO4S	5			.6	319	317	84		100				49	47	4		20	30	0.50	10.4
H	Totals			35	5.1	7,701	7,307	1,943		29	37	34		3	4	32	60	30	149	1.22	49.0
D	DOCU				100.0	201												11		0.00	2.7
D	DO2S	73			1.9	6,956	6,823	1,815		2	53	45		2	0	22	75	37	343	2.06	19.9
D	DO3S	24			1.3	2,173	2,144	570		90	8	2		2	11	42	46	34	90	0.79	23.8
D	DO4S	3			.5	279	277	74		3	97			54	40	2	4	20	27	0.46	10.4
D	Totals			44	3.8	9,608	9,244	2,459		0	25	41	34	4	4	26	66	31	163	1.26	56.8
A	DOCU				100.0	184												15		0.00	5.4
A	DOCR	100			.1	4,196	4,192	1,115		0	67	29	4	11	26	24	39	29	83	0.87	50.8
A	Totals			20	4.3	4,380	4,192	1,115		0	67	29	4	11	26	24	39	27	75	0.82	56.1
M	DOCU				100.0	181												23		0.00	2.5
M	DOCR	100			8.1	200	184	49		33	67			49		51		23	74	1.01	2.5
M	Totals			1	51.8	381	184	49		33	67			49		51		23	37	0.50	4.9
S	DOCU				100.0	42												35		0.00	.5
S	DO2S	24				36	36	10			100					87	13	33	286	2.15	.1
S	DO3S	75			2.4	114	111	30		100					8	44	48	35	57	0.77	2.0
S	DO4S	1				0	0	0		100				100				18	30	0.72	.0
S	Totals			1	23.4	193	147	40		76	24			0	6	54	40	35	57	0.69	2.6
Totals					5.3	22,263	21,074	5,606		0	35	37	27	6	8	28	58	30	124	1.09	169.5

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)								Page 1											
		Project: BUZZARD								Date 6/2/2009											
										Time 7:12:31AM											
T04N R07W S13 TTAKE										T04N R07W S13 TTAKE											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
04N	07W	13	AREA 1	TAKE	51.50	35	188	1	W												
Spp	Sort	Grade	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre		
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/Lf			
D	DO	CU		00.0	416												4		0.00	6.3	
D	DO	2S	74	1.9	18,763	18,415	948		2	48	50		3	0	23	73	36	344	2.05	53.5	
D	DO	3S	23	.6	5,774	5,737	295		88	8	4		2	15	37	46	33	92	0.80	62.5	
D	DO	4S	3		635	635	33		100				78	13		9	18	24	0.43	26.6	
D	Totals		55	3.1	25,588	24,787	1,277		24	38	38		5	4	26	65	30	166	1.29	149.0	
H	DO	CU		00.0	704												8		0.00	6.5	
H	DO	2S	78	1.3	13,772	13,597	700		1	41	58				39	61	36	363	2.21	37.5	
H	DO	3S	18	.5	3,035	3,018	155		78	17	4		6	20	36	39	32	85	0.82	35.4	
H	DO	4S	4		645	645	33		100				62	27	10		20	31	0.56	21.0	
H	Totals		39	4.9	18,156	17,261	889		18	35	47		3	4	38	55	29	172	1.41	100.4	
A	DO	CU		00.0	82												4		0.00	2.6	
A	DO	CR	100		2,502	2,502	129		1	66	33		17	26	32	26	27	84	0.95	29.8	
A	Totals		6	3.2	2,584	2,502	129		1	66	33		17	26	32	26	26	77	0.93	32.4	
M	DO	CU		00.0	107												42		0.00	1.3	
M	Totals			00.0	107												42		0.00	1.3	
S	DO	CU		00.0	68												18		0.00	.5	
S	DO	2S	100		147	147	8			100					100		32	280	1.97	.5	
S	Totals		0	31.7	215	147	8			100					100		25	140	1.26	1.0	
Type Totals				4.2	46,650	44,697	2,302		0	24	37	39		5	5	31	59	29	157	1.29	284.2

T04N R07W S24 TTAKE									T04N R07W S24 TTAKE			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt			
04N	07W	24	AREA2	TAKE	49.90	32	56	1	W			

Spp	So	Gr	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
A	DO	CU		00.0	241											12		0.00	11.3	
A	DO	CR	100		5,043	5,043	252	84	16			15	34	32	19	27	75	0.80	67.0	
A	Totals		40	4.6	5,285	5,043	252	84	16			15	34	32	19	25	64	0.74	78.3	
D	DO	CU		00.0	287											19		0.00	4.1	
D	DO	2S	78	.6	4,028	4,004	200	6	63	30				34	66	37	313	1.89	12.8	
D	DO	3S	16		820	820	41	91	9				19	31	50	36	83	0.79	9.8	
D	DO	4S	6		271	271	14	100				12	88			23	28	0.46	9.6	
D	Totals		41	5.8	5,406	5,095	254	25	51	24		1	8	32	60	31	140	1.14	36.3	
H	DO	CU		00.0	150											7		0.00	1.3	
H	DO	2S	46	7.7	1,154	1,065	53		80	20				64	36	34	288	2.01	3.7	
H	DO	3S	40	2.6	939	915	46	100					2	38	60	37	102	0.86	9.0	
H	DO	4S	14	2.7	309	300	15	100				30	70			21	29	0.48	10.4	
H	Totals		18	10.6	2,552	2,280	114	53	38	9		4	10	46	41	28	94	0.94	24.3	
S	DO	CU		00.0	111											40		0.00	1.6	
S	DO	3S	100		49	49	2	100						100		32	50	0.69	1.0	
S	Totals		0	69.4	161	49	2	100						100		37	19	0.23	2.6	
M	DO	CU		00.0	39											15		0.00	1.3	
M	DO	CR	100		28	28	1	100						100		20	30	0.60	.9	
M	Totals		0	58.3	68	28	1	100						100		17	13	0.29	2.3	
Type Totals					7.2	13,471	12,496	624	54	34	11		7	19	35	39	27	87	0.88	143.8

Species, Sort Grade - Board Foot Volumes (Project)

T04N R07W S24 TyTAKE
THRU
T04N R07W S24 TyTAKE

Project: BUZZARD
Acres 155.80

Page 1
Date 6/2/2009
Time 7:13:54AM

S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
H	DOCU			100.0	217											10		0.00	1.5
H	DO2S		62	.9	3,480	3,448	537			61	39	3		20	77	37	305	1.94	11.3
H	DO3S		34	.9	1,913	1,895	295		96	4			5	33	62	35	94	0.79	20.1
H	DO4S		4		211	211	33		100			46	54			21	31	0.46	6.8
H	Totals		37	4.6	5,821	5,554	865		36	39	24	4	4	23	69	32	140	1.12	39.7
A	DOCU			100.0	187											20		0.00	3.9
A	DOCR		100	.1	4,197	4,192	653	0	61	32	7	8	22	19	50	30	85	0.88	49.3
A	Totals		28	4.4	4,384	4,192	653	0	61	32	7	8	22	19	50	29	79	0.83	53.2
M	DOCU			100.0	260											22		0.00	3.3
M	DOCR		100	8.4	331	303	47		31	69		47		53		23	78	1.05	3.9
M	Totals		2	48.7	590	303	47		31	69		47		53		22	42	0.58	7.2
S	DO3S		100	2.7	176	171	27		100				9	38	54	35	57	0.78	3.0
S	Totals		1	2.7	176	171	27		100				9	38	54	35	57	0.78	3.0
D	DOCU			100.0	73											13		0.00	.9
D	DO2S		68	3.0	3,419	3,316	517			63	37	2		16	82	37	332	2.07	10.0
D	DO3S		28	2.6	1,410	1,373	214		93	7		2	4	50	44	35	89	0.77	15.5
D	DO4S		4	1.4	160	158	25	10	90			48	46	5		21	30	0.49	5.2
D	Totals		32	4.2	5,062	4,848	755	0	29	45	25	4	3	25	68	32	153	1.20	31.6
Totals				6.0	16,033	15,068	2,348	0	42	39	19	6	8	24	62	31	112	1.00	134.6

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)								Page 1										
		Project: BUZZARD								Date 6/2/2009										
										Time 7:14:18AM										
T04N R07W S24 TRW									T04N R07W S24 TRW											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
04N	07W	24	AREA4RW	RW	8.80	32	130	1	W											
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Logs Per /Acre			
					Net BdFt	Def%	Gross		Net	Net MBF	Log Scale Dia.				Log Length				Average Log	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ln Ft	Bd Ft	CF/Lf	
D	DO	CU		100.0		718											16		0.00	5.8
D	DO	2S	86	.1	17,081	17,059	150		3	37	59		0	20	80		38	433	2.42	39.4
D	DO	3S	12	.4	2,262	2,253	20		86	6	8		10	42	48		35	97	0.88	23.2
D	DO	4S	2		332	332	3		7	93			35	65			21	27	0.48	12.3
D	Totals			52	3.7	20,392	19,643	173	0	14	33	52	1	2	22	75	33	244	1.68	80.6
A	DO	CU		100.0		406											12		0.00	13.7
A	DO	CR	100	.1	9,275	9,263	82		60	38	2		15	32	23	30	27	86	0.91	107.8
A	Totals			25	4.3	9,681	9,263	82	60	38	2		15	32	23	30	26	76	0.86	121.5
H	DO	CU		100.0		301											7		0.00	2.4
H	DO	2S	74	1.5	6,468	6,369	56		2	44	54				39	61	37	383	2.25	16.6
H	DO	3S	21	1.4	1,864	1,837	16		100				1	6	34	59	36	93	0.88	19.8
H	DO	4S	5	2.4	375	366	3		100				36	64			20	28	0.47	13.1
H	Totals			23	4.8	9,009	8,573	75	27	33	40		2	4	36	58	31	165	1.33	51.9
S	DO	CU		100.0		250											37		0.00	2.5
S	DO	2S	76		222	222	2			100					38	62	36	312	2.86	.7
S	DO	3S	20		59	59	1		100						100		32	50	0.69	1.2
S	DO	4S	4		11	11	0		100			100					18	30	0.72	.4
S	Totals			1	46.1	542	292	3	24	76			4		49	47	34	61	0.64	4.8
M	DO	CU		100.0		39											15		0.00	1.3
M	DO	CR	100		28	28	0		100				100				20	30	0.60	.9
M	Totals			0	58.3	68	28	0	100				100				17	13	0.29	2.3
Type Totals					4.8	39,691	37,798	333	0	29	35	37	4	10	26	60	29	145	1.24	261.1

TC PSTATS		PROJECT STATISTICS								PAGE 1
		PROJECT BUZZARD								DATE 2/24/2009
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
04N	07	13	AREA 1	TAKE	THR	266.00	175	880	1	W
04N	07W	24	AREA4RW	RW						
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		175	880	5.0						
CRUISE		97	531	5.5	23,845	2.2				
DBH COUNT										
REFOREST										
COUNT		59	312	5.3						
BLANKS		19								
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	190	25.1	19.7	74		53.1	9,407	9,244	2,240	2,237
R ALDER	151	34.9	15.0	46		42.7	4,196	4,192	1,264	1,264
WHEMLOCK	157	23.6	18.7	67		45.2	7,400	7,307	1,823	1,823
BL MAPLE	12	3.4	17.6	34		5.8	200	184	57	57
S SPRUCE	16	2.5	15.1	40		3.0	150	147	62	62
WR CEDAR	5	.1	19.5	53		.2	18	18	6	6
TOTAL	531	89.6	17.5	59		150.0	21,371	21,092	5,452	5,449
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		94.9	6.9	618	664	710				
R ALDER		64.8	5.3	157	166	174				
WHEMLOCK		79.1	6.3	468	500	531				
BL MAPLE		149.2	44.9	23	43	62				
S SPRUCE		122.2	31.5	64	94	123				
WR CEDAR		126.3	62.8	156	420	684				
TOTAL		171.5	4.8	419	441	462	496	124	55	
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		173.0	13.1	22	25	28				
R ALDER		172.3	13.0	30	35	39				
WHEMLOCK		186.2	14.1	20	24	27				
BL MAPLE		399.3	30.2	2	3	4				
S SPRUCE		560.7	42.4	1	2	3				
WR CEDAR		648.6	49.0	0	0	0				
TOTAL		92.3	7.0	83	90	96	340	85	38	
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		141.9	10.7	47	53	59				
R ALDER		155.2	11.7	38	43	48				
WHEMLOCK		170.0	12.8	39	45	51				
BL MAPLE		404.2	38.5	4	6	8				
S SPRUCE		566.3	42.8	2	3	4				
WR CEDAR		617.3	46.6	0	0	0				
TOTAL		83.4	6.3	141	150	159	278	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		151.0	11.4	8,190	9,244	10,299				
R ALDER		156.5	11.8	3,697	4,192	4,688				
WHEMLOCK		184.5	13.9	6,288	7,307	8,325				
BL MAPLE		495.4	37.4	115	184	252				

PROJECT STATISTICS
PROJECT BUZZARD

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
04N	07	13	AREA 1	TAKE	THR	266.00	175	880	1	W
04N	07W	24	AREA4RW	RW						
CL	68.1		COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
S SPRUCE			566.9	42.8	84	147	211			
WR CEDAR			615.2	46.5	10	18	27			
TOTAL			102.5	7.7	19,459	21,092	22,725	420	105	47

TC TSTATS			STATISTICS				PAGE	1		
			PROJECT BUZZARD				DATE	2/24/2009		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	13	AREA 1	TAKE	51.50	35	240	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		35	240	6.9						
CRUISE DBH COUNT		27	188	7.0	6,756	2.8				
REFOREST COUNT		7	45	6.4						
BLANKS		1								
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	96	61.8	19.8	76		132.6	25,172	24,787	5,831	5,827
WHEMLOCK	71	47.8	19.8	65		101.7	17,452	17,261	4,125	4,122
R ALDER	19	19.8	16.3	44		28.8	2,502	2,502	773	773
BL MAPLE	1	1.3	23.0	42		3.8				
S SPRUCE	1	.5	20.0	52		1.1	147	147	33	33
TOTAL	188	131.2	19.4	67		268.1	45,272	44,697	10,762	10,755
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	59.6	6.1	568	605	642					
WHEMLOCK	70.0	8.3	553	603	653					
R ALDER	59.0	13.9	129	149	170					
BL MAPLE										
S SPRUCE										
TOTAL	71.0	5.2	525	554	582	201	50	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	110.3	18.6	50	62	73					
WHEMLOCK	100.2	16.9	40	48	56					
R ALDER	180.2	30.4	14	20	26					
BL MAPLE	463.6	78.3	0	1	2					
S SPRUCE	591.6	99.9	0	1	1					
TOTAL	62.7	10.6	117	131	145	157	39	17		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	74.2	12.5	116	133	149					
WHEMLOCK	83.3	14.1	87	102	116					
R ALDER	181.5	30.7	20	29	38					
BL MAPLE	463.6	78.3	1	4	7					
S SPRUCE	591.6	99.9	0	1	2					
TOTAL	45.9	7.8	247	268	289	84	21	9		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	84.1	14.2	21,267	24,787	28,308					
WHEMLOCK	87.2	14.7	14,719	17,261	19,803					
R ALDER	177.8	30.0	1,750	2,502	3,253					
BL MAPLE										
S SPRUCE	591.6	99.9	0	147	293					
TOTAL	56.9	9.6	40,398	44,697	48,995	129	32	14		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT BUZZARD		DATE 2/9/2009				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	24	AREA2	TAKE	49.90	32	108	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		32	108	3.4						
CRUISE		14	56	4.0	4,008	1.4				
DBH COUNT										
REFOREST										
COUNT		10	46	4.6						
BLANKS		8								
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
R ALDER	26	42.4	14.1	47		46.0	5,043	5,043	1,433	1,433
DOUG FIR	15	20.8	17.7	57		35.7	5,119	5,095	1,286	1,286
WHEMLOCK	11	12.3	16.3	60		17.9	2,402	2,280	639	639
S SPRUCE	2	2.6	12.2	43		2.1	49	49	22	22
BL MAPLE	2	2.3	11.9	16		1.7	28	28	11	11
TOTAL	56	80.3	15.4	51		103.4	12,642	12,496	3,391	3,391
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	
R ALDER		47.8	9.6	130	144	158				
DOUG FIR		108.6	29.0	322	454	586				
WHEMLOCK		62.6	19.8	212	265	317				
S SPRUCE		141.4	132.4		25	58				
BL MAPLE		141.4	132.4		15	35				
TOTAL		123.8	16.5	202	242	282	612	153	68	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
R ALDER		140.5	24.8	32	42	53				
DOUG FIR		177.7	31.4	14	21	27				
WHEMLOCK		246.7	43.6	7	12	18				
S SPRUCE		405.1	71.5	1	3	4				
BL MAPLE		565.7	99.9	0	2	5				
TOTAL		94.6	16.7	67	80	94	358	89	40	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
R ALDER		133.4	23.6	35	46	57				
DOUG FIR		160.3	28.3	26	36	46				
WHEMLOCK		197.0	34.8	12	18	24				
S SPRUCE		393.5	69.5	1	2	4				
BL MAPLE		565.7	99.9	0	2	3				
TOTAL		86.2	15.2	88	103	119	297	74	33	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
R ALDER		136.8	24.2	3,825	5,043	6,262				
DOUG FIR		154.0	27.2	3,709	5,095	6,481				
WHEMLOCK		193.6	34.2	1,501	2,280	3,060				
S SPRUCE		565.7	99.9	0	49	98				
BL MAPLE		565.7	99.9	0	28	56				
TOTAL		93.2	16.5	10,439	12,496	14,553	347	87	39	

TC PSTATS		PROJECT STATISTICS							PAGE 1		
		PROJECT BUZZARD							DATE 2/9/2009		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07	24	AREA3A	TAKE	THR	155.80	76	275	1	W	
04N	07W	24	AREA3D	TAKE							
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES		PERCENT SAMPLE TREES				
TOTAL		76	275	3.6							
CRUISE		36	152	4.2	11,888		1.3				
DBH COUNT											
REFOREST											
COUNT		30	123	4.1							
BLANKS		10									
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
R ALDER		57	35.7	15.0	45		43.8	4,197	4,192	1,291	1,291
WHEMLOCK		47	19.2	18.3	71		35.0	5,604	5,554	1,426	1,426
DOUG FIR		33	13.8	19.8	77		29.7	4,989	4,848	1,234	1,231
BL MAPLE		7	4.5	17.9	36		7.9	331	303	93	93
S SPRUCE		8	3.0	15.3	37		3.8	176	171	82	82
TOTAL		152	76.3	17.0	56		120.2	15,297	15,068	4,126	4,123
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		
R ALDER		72.5	9.7	151	167	183					
WHEMLOCK		67.4	9.8	323	359	394					
DOUG FIR		135.2	23.5	370	483	597					
BL MAPLE		119.1	48.5	33	64	95					
S SPRUCE		8.1	3.0	56	58	59					
TOTAL		128.9	10.5	255	285	315	663	166	74		
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		156.6	18.0	29	36	42					
WHEMLOCK		197.9	22.7	15	19	24					
DOUG FIR		173.2	19.9	11	14	17					
BL MAPLE		295.8	33.9	3	5	6					
S SPRUCE		486.7	55.8	1	3	5					
TOTAL		85.6	9.8	69	76	84	293	73	33		
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		137.5	15.8	37	44	51					
WHEMLOCK		187.9	21.5	27	35	43					
DOUG FIR		158.7	18.2	24	30	35					
BL MAPLE		301.3	34.5	5	8	11					
S SPRUCE		490.7	56.2	2	4	6					
TOTAL		75.7	8.7	110	120	131	229	57	25		
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
R ALDER		139.8	16.0	3,520	4,192	4,864					
WHEMLOCK		210.8	24.2	4,213	5,554	6,896					
DOUG FIR		157.6	18.1	3,972	4,848	5,723					
BL MAPLE		330.1	37.8	188	303	417					
S SPRUCE		483.4	55.4	76	171	266					
TOTAL		98.4	11.3	13,368	15,068	16,768	387	97	43		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT		BUZZARD		DATE	2/24/2009	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	24	AREA4RW	RW	8.80	32	257	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		32	257	8.0						
CRUISE		20	135	6.8	1,193		11.3			
DBH COUNT										
REFOREST										
COUNT		12	98	8.2						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	46	35.6	22.7	78		99.8	19,674	19,643	4,442	4,442
R ALDER	49	67.0	15.4	48		86.8	9,275	9,263	2,687	2,687
WHEMLOCK	28	23.7	19.8	71		50.4	8,707	8,573	2,114	2,114
WR CEDAR	5	3.0	19.5	53		6.3	553	553	195	195
S SPRUCE	5	3.9	17.2	46		6.3	292	292	104	104
BL MAPLE	2	2.3	11.9	16		1.7	28	28	11	11
TOTAL	135	135.5	18.4	60		251.3	38,530	38,351	9,553	9,553
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	94.3	13.9	848	985	1,122					
R ALDER	62.6	8.9	166	182	198					
WHEMLOCK	86.9	16.7	472	566	661					
WR CEDAR	126.3	62.8	156	420	684					
S SPRUCE	126.6	62.9	53	142	231					
BL MAPLE	141.4	132.4		15	35					
TOTAL	128.0	11.0	481	540	600	654	164	73		
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	115.1	20.3	28	36	43					
R ALDER	112.2	19.8	54	67	80					
WHEMLOCK	149.1	26.3	17	24	30					
WR CEDAR	265.5	46.9	2	3	4					
S SPRUCE	291.3	51.5	2	4	6					
BL MAPLE	565.7	99.9	0	2	5					
TOTAL	56.3	9.9	122	136	149	126	32	14		
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	97.4	17.2	83	100	117					
R ALDER	107.8	19.0	70	87	103					
WHEMLOCK	122.1	21.6	40	50	61					
WR CEDAR	251.2	44.4	4	6	9					
S SPRUCE	251.2	44.4	4	6	9					
BL MAPLE	565.7	99.9	0	2	3					
TOTAL	41.8	7.4	233	251	270	70	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	96.8	17.1	16,285	19,643	23,001					
R ALDER	114.9	20.3	7,382	9,263	11,143					
WHEMLOCK	127.7	22.6	6,639	8,573	10,507					
WR CEDAR	250.2	44.2	309	553	797					

TC TSTATS				STATISTICS			PAGE 2		
PROJECT BUZZARD							DATE 2/24/2009		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	07W	24	AREA4RW	RW	8.80	32	257	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	
S SPRUCE	288.9	51.0	143	292	441				
BL MAPLE	565.7	99.9	0	28	56				
TOTAL	52.3	9.2	34,806	38,351	41,896	109	27	12	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT BUZZARD				DATE	2/24/2009	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	13	AREA1	0001	51.50	35	259	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		35	259	7.4						
CRUISE		27	201	7.4	7,080		2.8			
DBH COUNT										
REFOREST										
COUNT		7	50	7.1						
BLANKS		1								
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	96	61.8	19.8	76		132.6	25,172	24,787	5,831	5,827
WHEMLOCK	71	47.8	19.8	65		101.7	17,452	17,261	4,125	4,122
R ALDER	19	19.8	16.3	44		28.8	2,502	2,502	773	773
SNAG	7	4.5	22.8	35		12.6				
DOUGLEAV	5	1.6	30.7	95		8.0	1,581	1,549	339	339
BL MAPLE	1	1.3	23.0	42		3.8				
S SPRUCE	1	.5	20.0	52		1.1	147	147	33	33
SFIRLEAV	1	.3	27.0	125	0	1.1	351	351	70	70
TOTAL	201	137.5	19.7	66		289.8	47,204	46,596	11,172	11,164
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	59.6	6.1	568	605	642					
WHEMLOCK	70.0	8.3	553	603	653					
R ALDER	59.0	13.9	129	149	170					
SNAG										
DOUGLEAV	43.0	21.4	895	1,138	1,381					
BL MAPLE										
S SPRUCE										
SFIRLEAV										
TOTAL	74.9	5.3	523	552	581	224	56	25		
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	110.3	18.6	50	62	73					
WHEMLOCK	100.2	16.9	40	48	56					
R ALDER	180.2	30.4	14	20	26					
SNAG	213.8	36.1	3	4	6					
DOUGLEAV	247.0	41.7	1	2	2					
BL MAPLE	463.6	78.3	0	1	2					
S SPRUCE	591.6	99.9	0	1	1					
SFIRLEAV	591.6	99.9	0	0	1					
TOTAL	59.4	10.0	124	137	151	141	35	16		
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	74.2	12.5	116	133	149					
WHEMLOCK	83.3	14.1	87	102	116					
R ALDER	181.5	30.7	20	29	38					
SNAG	185.4	31.3	9	13	17					
DOUGLEAV	236.4	39.9	5	8	11					
BL MAPLE	463.6	78.3	1	4	7					
S SPRUCE	591.6	99.9	0	1	2					
SFIRLEAV	591.6	99.9	0	1	2					

TC TSTATS				STATISTICS			PAGE 2		
				PROJECT BUZZARD			DATE 2/24/2009		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	07W	13	AREA1	0001	51.50	35	259	1	W
CL: 68.1%		COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.		LOW	AVG	HIGH	5	10	15
TOTAL		41.9	7.1	269	290	310	70	18	8
CL: 68.1%		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR.%		LOW	AVG	HIGH	5	10	15
DOUG FIR		84.1	14.2	21,267	24,787	28,308			
WHEMLOCK		87.2	14.7	14,719	17,261	19,803			
R ALDER		177.8	30.0	1,750	2,502	3,253			
SNAG									
DOUGLEAV		240.0	40.5	921	1,549	2,177			
BL MAPLE									
S SPRUCE		591.6	99.9	0	147	293			
SFIRLEAV		591.6	99.9	0	351	701			
TOTAL		56.0	9.5	42,190	46,596	51,002	125	31	14

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT BUZZARD		DATE 2/9/2009				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07W	24	AREA2	0002	49.90	32	272	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		32	272	8.5						
CRUISE		21	147	7.0	6,965		2.1			
DBH COUNT										
REFOREST										
COUNT		11	97	8.8						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUGLEAV	31	15.9	27.2	102		64.1	14,301	14,293	3,117	3,117
R ALDER	26	42.4	14.1	47		46.0	5,043	5,043	1,433	1,433
ALDRLEAV	23	24.6	17.4	50		40.8	4,231	4,219	1,254	1,254
DOUG FIR	15	20.8	17.7	57		35.7	5,119	5,095	1,286	1,286
HEMLEAV	17	10.7	23.6	87		32.6	6,428	6,428	1,494	1,494
WHEMLOCK	11	12.3	16.3	60		17.9	2,402	2,280	639	639
SNAG	12	4.1	26.3	43		15.6				
CEDLEAV	5	3.0	19.5	53		6.3	553	553	195	195
SPRUCELV	3	.9	28.9	59		4.2	259	259	86	86
S SPRUCE	2	2.6	12.2	43		2.1	49	49	22	22
BL MAPLE	2	2.3	11.9	16		1.7	28	28	11	11
TOTAL	147	139.6	18.7	59		266.9	38,415	38,248	9,537	9,537
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	79.4	14.2	1,065	1,242	1,418					
R ALDER	47.8	9.6	130	144	158					
ALDRLEAV	61.6	13.1	196	225	255					
DOUG FIR	108.6	29.0	322	454	586					
HEMLEAV	70.5	17.6	627	761	895					
WHEMLOCK	62.6	19.8	212	265	317					
SNAG										
CEDLEAV	126.3	62.8	156	420	684					
SPRUCELV	92.3	63.8	80	220	360					
S SPRUCE	141.4	132.4		25	58					
BL MAPLE	141.4	132.4		15	35					
TOTAL	136.8	11.3	440	496	552	748	187	83		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	91.2	16.1	13	16	18					
R ALDER	140.5	24.8	32	42	53					
ALDRLEAV	128.2	22.6	19	25	30					
DOUG FIR	177.7	31.4	14	21	27					
HEMLEAV	138.2	24.4	8	11	13					
WHEMLOCK	246.7	43.6	7	12	18					
SNAG	198.5	35.1	3	4	6					
CEDLEAV	265.5	46.9	2	3	4					
SPRUCELV	287.0	50.7	0	1	1					
S SPRUCE	405.1	71.5	1	3	4					
BL MAPLE	565.7	99.9	0	2	5					
TOTAL	56.4	10.0	126	140	153	127	32	14		

TC TSTATS				STATISTICS			PAGE 2		
				PROJECT BUZZARD			DATE 2/9/2009		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
04N	07W	24	AREA2	0002	49.90	32	272	1	W
CL: 68.1%		COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.
SD: 1.0		VAR. S.E.%		LOW	AVG	HIGH	5	10	15
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		83.6	14.8	55	64	74			
R ALDER		133.4	23.6	35	46	57			
ALDRLEAV		113.4	20.0	33	41	49			
DOUG FIR		160.3	28.3	26	36	46			
HEMLEAV		132.4	23.4	25	33	40			
WHEMLOCK		197.0	34.8	12	18	24			
SNAG		133.2	23.5	12	16	19			
CEDLEAV		251.2	44.4	4	6	9			
SPRUCELV		268.8	47.5	2	4	6			
S SPRUCE		393.5	69.5	1	2	4			
BL MAPLE		565.7	99.9	0	2	3			
TOTAL		36.7	6.5	250	267	284	54	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
DOUGLEAV		88.0	15.5	12,071	14,293	16,514			
R ALDER		136.8	24.2	3,825	5,043	6,262			
ALDRLEAV		114.8	20.3	3,363	4,219	5,074			
DOUG FIR		154.0	27.2	3,709	5,095	6,481			
HEMLEAV		137.3	24.3	4,869	6,428	7,988			
WHEMLOCK		193.6	34.2	1,501	2,280	3,060			
SNAG									
CEDLEAV		250.2	44.2	309	553	797			
SPRUCELV		325.7	57.5	110	259	408			
S SPRUCE		565.7	99.9	0	49	98			
BL MAPLE		565.7	99.9	0	28	56			
TOTAL		50.1	8.8	34,864	38,248	41,632	100	25	11

TC PSTATS		PROJECT STATISTICS								PAGE	1
		PROJECT BUZZARD								DATE	2/9/2009
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
04N	07	24	AREA3A	003A	THR	155.80	76	535	1	W	
04N	07W	24	AREA3D	003D							
		PLOTS	TREES	TREES PER PLOT		ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		76	535	7.0							
CRUISE		46	309	6.7		18,453	1.7				
DBH COUNT											
REFOREST											
COUNT		29	197	6.8							
BLANKS		1									
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	59	16.0	24.0	89		50.0	9,769	9,608	2,274	2,274	
R ALDER	57	35.7	15.0	45		43.8	4,197	4,192	1,291	1,291	
HEMLEAV	40	8.6	25.1	82		29.5	5,523	5,485	1,299	1,297	
WHEMLOCK	47	19.2	18.3	71		35.0	5,604	5,554	1,426	1,426	
DOUG FIR	32	14.1	19.5	77		29.2	4,736	4,607	1,196	1,193	
ALDRLEAV	29	12.1	17.6	56		20.3	2,250	2,240	668	668	
SNAG	15	1.5	32.7	41		8.9					
BL MAPLE	7	4.5	17.9	36		7.9	331	303	93	93	
SPRUCELV	9	1.6	24.3	44		5.2	500	491	148	148	
S SPRUCE	8	3.0	15.3	37		3.8	176	171	82	82	
CEDLEAV	4	1.8	13.4	37		1.8	161	161	50	50	
BLMLEAVE	1	.2	20.0	35		.5					
WR CEDAR	1	.1	32.0	41		.5	6	6	9	9	
TOTAL	309	118.4	19.1	62		236.4	33,253	32,819	8,536	8,531	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV		78.0	10.1	726	808	890					
R ALDER		72.5	9.7	151	167	183					
HEMLEAV		52.7	8.3	714	779	844					
WHEMLOCK		67.4	9.8	323	359	394					
DOUG FIR		72.0	12.7	331	380	428					
ALDRLEAV		45.2	8.5	185	202	219					
SNAG											
BL MAPLE		119.1	48.5	33	64	95					
SPRUCELV		189.8	67.0	337	1,021	1,705					
S SPRUCE		8.1	3.0	56	58	59					
CEDLEAV		95.6	54.6	70	155	240					
BLMLEAVE											
WR CEDAR											
TOTAL		126.9	7.2	403	435	466	643	161	71		
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV		110.0	12.6	14	16	18					
R ALDER		156.6	18.0	29	36	42					
HEMLEAV		171.8	19.7	7	9	10					
WHEMLOCK		197.9	22.7	15	19	24					
DOUG FIR		173.2	19.9	11	14	17					
ALDRLEAV		176.9	20.3	10	12	15					
SNAG		279.3	32.0	1	2	2					
BL MAPLE		295.8	33.9	3	5	6					
SPRUCELV		551.8	63.2	1	2	3					

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
04N	07	24	AREA3A	003A	THR	155.80	76	535	1	W
04N	07W	24	AREA3D	003D						
CL	68.1		COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
S SPRUCE			486.7	55.8	1	3	5			
CEDLEAV			563.8	64.6	1	2	3			
BLMLEAVE			871.8	99.9	0	0	0			
WR CEDAR			871.8	99.9	0	0	0			
TOTAL			57.7	6.6	111	118	126	133	33	15
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			101.0	11.6	44	50	56			
R ALDER			137.5	15.8	37	44	51			
HEMLEAV			159.9	18.3	24	30	35			
WHEMLOCK			187.9	21.5	27	35	43			
DOUG FIR			161.7	18.5	24	29	35			
ALDRLEAV			154.6	17.7	17	20	24			
SNAG			218.0	25.0	7	9	11			
BL MAPLE			301.3	34.5	5	8	11			
SPRUCELV			429.9	49.3	3	5	8			
S SPRUCE			490.7	56.2	2	4	6			
CEDLEAV			537.3	61.6	1	2	3			
BLMLEAVE			871.8	99.9	0	1	1			
WR CEDAR			871.8	99.9	0	0	1			
TOTAL			47.8	5.5	223	236	249	91	23	10
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			103.2	11.8	8,471	9,608	10,745			
R ALDER			139.8	16.0	3,520	4,192	4,864			
HEMLEAV			183.4	21.0	4,332	5,485	6,638			
WHEMLOCK			210.8	24.2	4,213	5,554	6,896			
DOUG FIR			161.2	18.5	3,756	4,607	5,459			
ALDRLEAV			150.9	17.3	1,853	2,240	2,628			
SNAG										
BL MAPLE			330.1	37.8	188	303	417			
SPRUCELV			442.6	50.7	242	491	740			
S SPRUCE			483.4	55.4	76	171	266			
CEDLEAV			639.7	73.3	43	161	279			
BLMLEAVE										
WR CEDAR			871.8	99.9	0	6	12			
TOTAL			70.7	8.1	30,161	32,819	35,477	199	50	22

Log Stock Table - MBF

T04N R07W S13 TyTAKE
THRU
T04N R07W S24 TyRW

Project: BUZZARD
Acres 266.00

Spp	S T	So Gr rt de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
H		DO 4S	30	5		5	.2			5									
H		DO 4S	31	2		2	.1			2									
H		DO 4S	32	2		2	.1			2									
H		Totals		2,049	5.1	1,944	34.7			185	140	231	322	294	452	266	54		
D		DO CU	2	0	100.0														
D		DO CU	4	1	100.0														
D		DO CU	6	20	100.0														
D		DO CU	10	8	100.0														
D		DO CU	19	5	100.0														
D		DO CU	20	13	100.0														
D		DO CU	24	5	100.0														
D		DO 2S	12	4		4	.2									4			
D		DO 2S	14	4		4	.2					4							
D		DO 2S	16	29	13.8	25	1.0					9		4		13			
D		DO 2S	20	11		11	.5					5				6			
D		DO 2S	24	5	5.5	5	.2					0		5					
D		DO 2S	32	407	1.3	401	16.3				14	82	75	110	97		24		
D		DO 2S	40	1,389	1.8	1,364	55.5				22	186	395	497	190	62	12		
D		DO 3S	10	2	16.7	2	.1					2							
D		DO 3S	12	2		2	.1						2						
D		DO 3S	15	1		1	.0				1								
D		DO 3S	16	3		3	.1				2	1							
D		DO 3S	17	1		1	.0					1							
D		DO 3S	18	1		1	.0					1							
D		DO 3S	21	3		3	.1			2	1								
D		DO 3S	22	2		2	.1				1	1							
D		DO 3S	23	1		1	.1			1									
D		DO 3S	24	15		15	.6			9	5	1							
D		DO 3S	25	1		1	.0					1							
D		DO 3S	26	1		1	.0			1									
D		DO 3S	28	10	5.7	10	.4			3						7			
D		DO 3S	29	1		1	.0				1								
D		DO 3S	30	29		29	1.2			0	7	17		5					
D		DO 3S	32	239	2.0	234	9.5			33	62	106	22	4	6				
D		DO 3S	33	3		3	.1			3									
D		DO 3S	35	1		1	.1			1									
D		DO 3S	36	14		14	.6			8	5	0							

Log Stock Table - MBF

T04N R07W S13 TyTAKE
THRU
T04N R07W S24 TyRW

Project: **BUZZARD**
Acres **266.00**

Page **4**
Date **6/2/2009**
Time **7:17:17AM**

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
A		DO	CR	30	218		218	19.5			52	18	76	52	4	16				
A		DO	CR	32	268		267	24.0			64	16	126	56	6					
A		DO	CR	36	4		4	.4			4									
A		DO	CR	40	429		429	38.5			81		168	111	53	17				
A		Totals			1,165	4.3	1,115	19.9		3	308	48	390	229	85	52				
M		DO	CU	4	3	100.0														
M		DO	CU	15	7	100.0														
M		DO	CU	19	7	100.0														
M		DO	CU	32	18	100.0														
M		DO	CU	38	7	100.0														
M		DO	CU	42	5	100.0														
M		DO	CR	16	24	5.2	22	45.7			2	4			15					
M		DO	CR	20	2		2	3.4			2									
M		DO	CR	32	28	11.1	25	50.9			8			17						
M		Totals			101	51.8	49	.9			12	4		17	15					
S		DO	CU	14	0	100.0														
S		DO	CU	18	4	100.0														
S		DO	CU	26	0	100.0														
S		DO	CU	40	8	100.0														
S		DO	2S	32	8		8	21.2						8						
S		DO	2S	40	1		1	3.1							1					
S		DO	3S	30	2		2	5.9			2									
S		DO	3S	32	9	8.0	9	21.7			9									
S		DO	3S	34	4		4	11.3			4									
S		DO	3S	36	5		5	13.3			5									
S		DO	3S	40	9		9	23.2			9									
S		DO	4S	18	0		0	.2			0									
S		Totals			51	23.4	39	.7			30				8	1				
Total		All Species			5,922	5.3	5,606	100.0		6	737	362	868	882	893	1122	577	122		36

Project: BUZZARD
 WN: 04N RGE: 07W
 EC: B TYPE: 0001 TRACT: AREA 1&4
 CREES: 155
 31: 40 (conifer) B2: 33.6 (Hardwoods)
 H: 55

Revised August, 2002

**CRUISE DESIGN
 ASTORIA DISTRICT**

Sale Name: Buzzard Ridge Comb. Area(s) 1 and 4

Harvest Type: CC PC CT "Automark Thinning" (circle one)

Approx. Cruise Acres: 155 Estimated CV% 50% ^{(Net BF or} BAF/Acre SE% Objective 10% ^{Net BF or} BAF/Acre

Planned Sale Volume: MMBF Estimated Sale Area Value/Acre: \$6,500
Area

- A. Cruise Goals:** (a) Grade minimum 100 conifer and 100 hardwood trees:
 (b) Sample 58 cruise plots; (c) Other goals (Determine "automark" thinning standards; Determine log grades for sale value; Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)

Basal Area leave target sq. ft. Cruiser needs to select or leave trees per plot.

Cruise Grade Plots as shown on map. Cruise Hardwoods as Camp run. All conifer is Reserve.

B. Cruise Design:

1. Plot Cruises: BAF ((Full point; Half point) (circle one) BAF 40: Conifer, 33.6 Hardwoods
 Fixed Plot Size Plot Radius feet
 Cruise Line Direction(s) AREA 1: 140°, AREA 4: 90°
 Cruise Line Spacing 5 (chains) (feet)
 Cruise Plot Spacing 5 (chains) (feet)
 Grade/Count Ratio 1:2

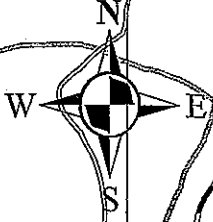
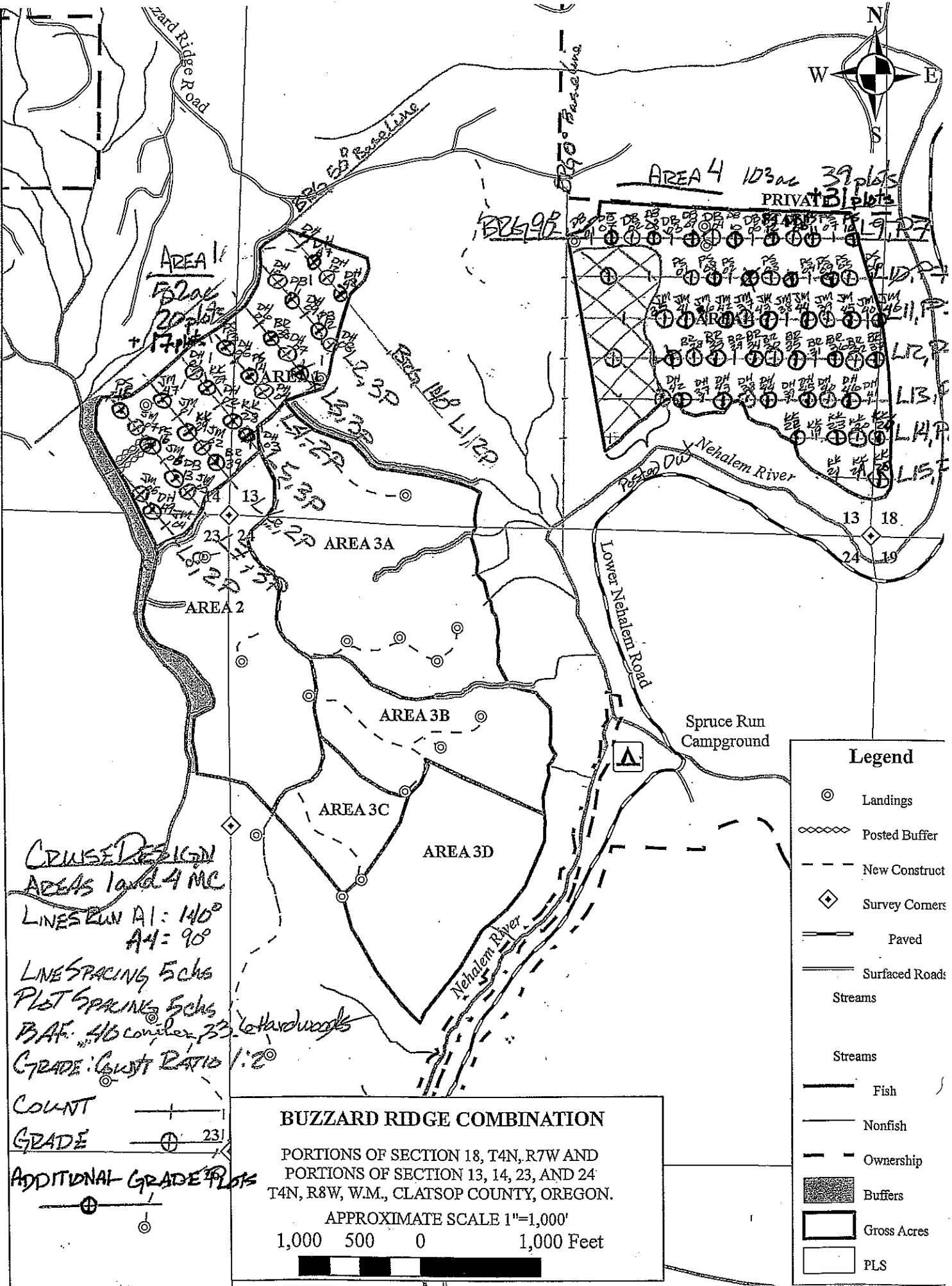
2. ITS (Sample Tree) Cruises: Measure-grade ratios: D-fir Hemlock
 Spruce True Fir Cedar Hardwood

C. Tree Measurements:

1. **Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
2. **Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
3. **Top Cruise Diameter (TCD):** Minimum top outside bark for conifer is 7" 7" for "hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for 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). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
 B. Sort: Use code "1" (Domestic).
 C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull ; 9 = Utility
 Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"
- 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, Yellow Paint.
- 10. Attachments:** A. Cruise Map (showing cruise unit boundaries, roads, streams, approx. acres/unit, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale.

Cruise Design by: Frazer Kirkpatrick
 Approved by: [Signature]
 Date: _____



AREA 4 103 ac 39 plots
PRIVATE 31 plots

AREA 1
52 ac
20 plots

AREA 3A

AREA 2

AREA 3B

AREA 3C

AREA 3D

Spruce Run Campground

CRUISE DESIGN
AREAS 1 and 4 MC
LINES RUN A1: 140°
A4: 90°
LINE SPACING 5 chs
PLOT SPACING 5 chs
BAF: 4/6 complex 33' to hardwoods
GRADE: CONST RATIO 1:2

COUNT ——— |
GRADE ——— ⊕ 231

ADDITIONAL GRADE PLOTS
——— ⊕

BUZZARD RIDGE COMBINATION

PORTIONS OF SECTION 18, T4N, R7W AND
PORTIONS OF SECTION 13, 14, 23, AND 24
T4N, R8W, W.M., CLATSOP COUNTY, OREGON.

APPROXIMATE SCALE 1"=1,000'

1,000 500 0 1,000 Feet



Legend

- ⊙ Landings
- ⊞ Posted Buffer
- - - New Construct
- ◇ Survey Corners
- Paved
- Surfacted Roads
- Streams
- Streams
- Fish
- Nonfish
- - - Ownership
- ▨ Buffers
- Gross Acres
- PLS

TWN: 01N 10E. 01W
 SEC: 24 TYPE: 0002
 TRACT: AREA 2
 ACRES: 52
 B1: 33.6 B2: 27.78
 A1: 50

**CRUISE DESIGN
 ASTORIA DISTRICT**

Sale Name: Buzzard Ridge Comb. Area(s) 2

Harvest Type: CO PC CT "Automark Thinning" (circle one)

Approx. Cruise Acres: 52 Estimated CV% 40% ^{Net BF or} BAF/Acre SE% Objective 10% ^{Net BF or} BAF/Acre

Planned Sale Volume: 33,200 _(Area 2) MMBF Estimated Sale Area Value/Acre: \$7,800

- A. **Cruise Goals:** (a) Grade minimum 80 conifer and 40 hardwood trees;
 (b) Sample cruise plots; (c) Other goals (Determine "automark" thinning standards; Determine log grades for sale value; Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)

Basal Area leave target 150 sq. ft. Cruiser needs to select 3 to 4 leave trees per plot.
 Leave Biggest & Best including Alder, Cedar axe leave, Cruise all snags $\geq 15"$ DBH, All Alder $> 20"$ DBH are leave trees. Cruise all hardwoods as Camp 2 in.

B. Cruise Design:

1. **Plot Cruises:** BAF (Full point) (Full point, Half point) (circle one) 33.6 (conifers) 27.78 (hardwoods)
 Fixed Plot Size Plot Radius feet
 Cruise Line Direction(s) 2350
 Cruise Line Spacing 4 (chains) (feet)
 Cruise Plot Spacing 3.5 (chains) (feet)
 Grade/Count Ratio 1:2

2. **ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
 Spruce True Fir Cedar Hardwood

C. Tree Measurements:

1. **Diameter:** Minimum DBH to cruise is 8" for conifers and 8" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
2. **Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
3. **Top Cruise Diameter (TCD):** Minimum top outside bark for conifer is 7" 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for 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). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
 B. Sort: Use code "1" (Domestic). BML
 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 ; 9 = Utility
 Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"

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.

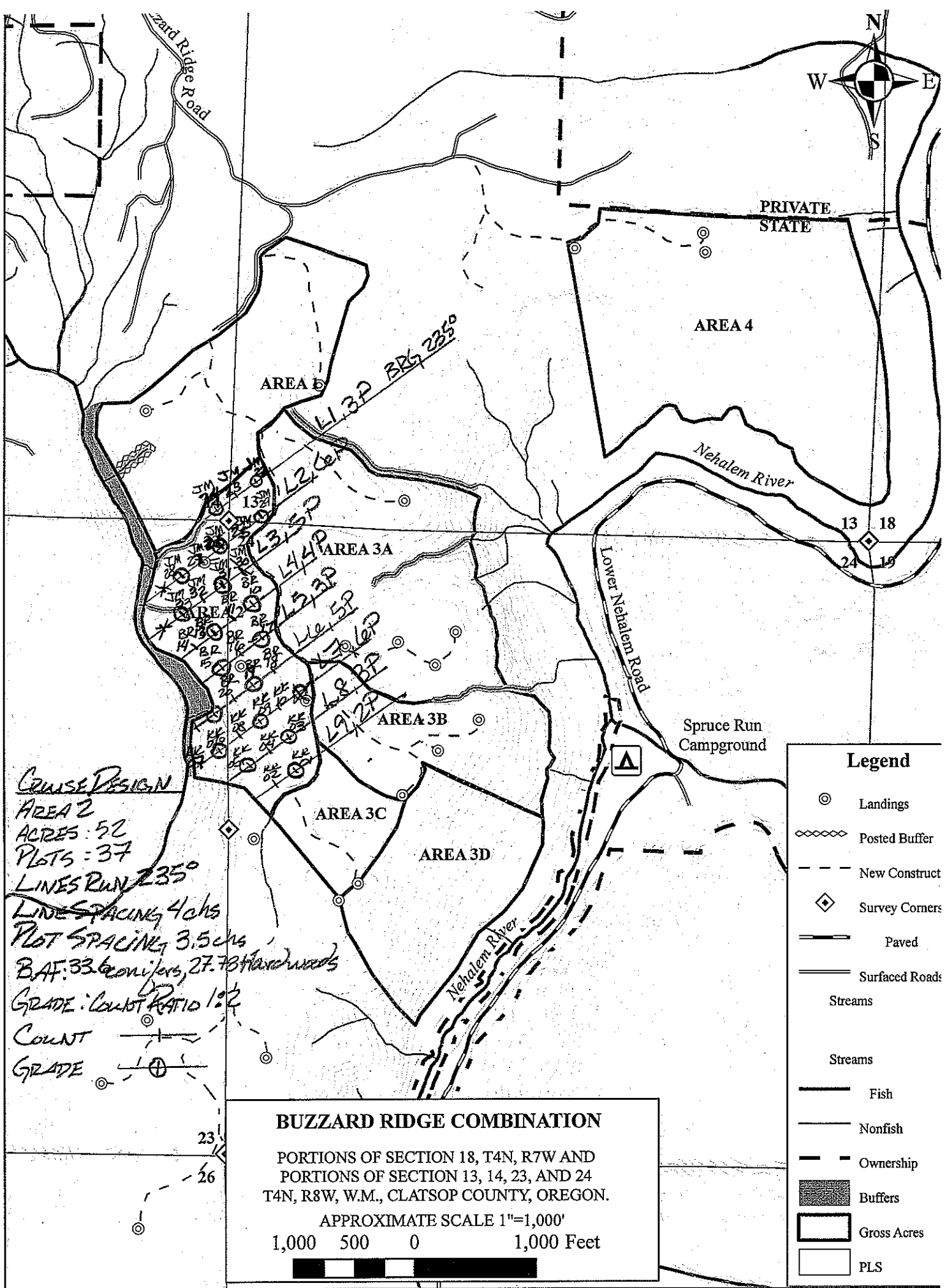
8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy 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, Yellow Paint.

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

Cruise Design by: Kraie Kirkpatrick
 Approved by: [Signature]
 Date: _____



TWN: 04N KLB-04W
 Sec: 24 TYPE: 003A, 003B, 003C, 003D
 TRACT: AREA 3A, AREA 3B, AREA 3C, AREA 3D
 Acres: 54
 B1: 33.61 B2: 7.78
 A1: 50

Revised August, 2002

**CRUISE DESIGN
 ASTORIA DISTRICT**

Sale Name: Buzzard Ridge Comb. Area(s) 3A-3D

Harvest Type: CC PC CT "Automark Thinning" (circle one)
 Net BF or Net BF or

Approx. Cruise Acres: 166 Estimated CV% 40 BA/Acre SE% Objective 10% BA/Acre

Planned Sale Volume: 1,400 MBF Estimated Sale Area Value/Acre: \$6,240

- A. Cruise Goals:** (a) Grade minimum 100 conifer and 100 hardwood trees:
 (b) Sample cruise plots; (c) Other goals (Determine "automark" thinning standards; Determine log grades for sale value; Determine snag and leave tree species and sizes; Determine LWD (down wood) cubic feet and decay classes; Determine "diameter limit" harvest parameters;)

Basal Area leave target See below sq. ft. Cruiser needs to select or leave trees per plot.

Area 3A: Leave "Biggest/Best" including Hardwoods to a BAF of 120-140 ft². Cruise all snags ≥15"DBH and Cedar are reserve.

Area 3B: Leave "Biggest/Best" conifers to a BAF of 120-140 ft² while retaining 20ft² of Hardwood per acre where available. Cruise all snags ≥15"DBH and Cedar are reserve.

Area 3C: Leave "Biggest/Best" conifers to a BAF of 120-140 ft². All **Hardwoods** and Cedars are reserve. Cruise all snags ≥15"DBH.

Area 3D: Remove all Hardwoods except for "Open Grown" decadent hardwoods. Thin conifers to a BAF of 80-100 ft² where available leaving "Biggest/Best". Cruise all snags ≥15"DBH and Cedar are reserve.

B. Cruise Design:

- 1. Plot Cruises:** BAF 33.6 (Full point Half point) (circle one)
 Fixed Plot Size Plot Radius feet
 Cruise Line Direction(s) 120°
 Cruise Line Spacing 4.5 (chains) (feet)
 Cruise Plot Spacing 4.5 (chains) (feet)
 Grade/Count Ratio 1:2

- 2. ITS (Sample Tree) Cruises:** Measure-grade ratios: D-fir Hemlock
 Spruce True Fir Cedar Hardwood

C. Tree Measurements:

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

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

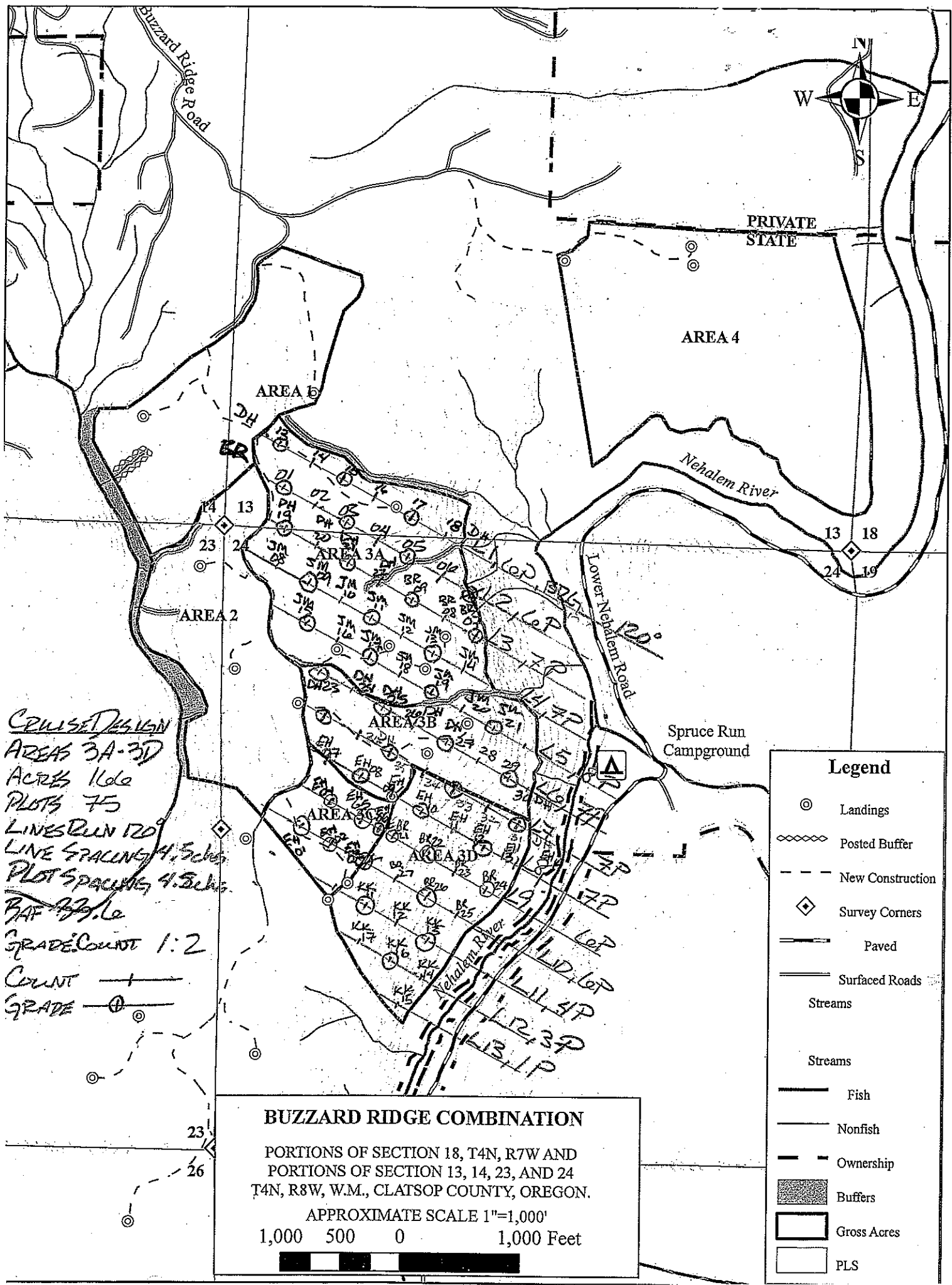
3. **Top Cruise Diameter (TCD):** Minimum top outside bark for conifer is 7 ", 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
4. **Form Factors:** (1) Measure or estimate a 16' form factor for every conifer 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). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
B. Sort: Use code "1" (Domestic).
C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull ; 9 = Utility
Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"
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.
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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, Yellow Paint.

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

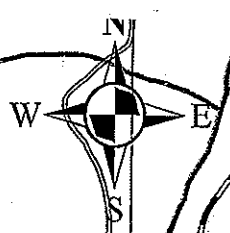
Cruise Design by: Kraig Kirkpatrick

Approved by: [Signature]

Date: _____



CRUISE DESIGN
 AREAS 3A-3D
 ACRES 160
 PLOTS 75
 LINES RUN TO
 LINE SPACING 4.5ches
 PLOT SPACING 4.5ches
 BAF 33.6
 GRADE COUNT 1:2
 COUNT +
 GRADE ⊕



PRIVATE
STATE

AREA 4

AREA 2

AREA 3A

AREA 3B

AREA 3C

AREA 3D

Spruce Run
Campground

Legend	
⊙	Landings
⊞	Posted Buffer
- - -	New Construction
◇	Survey Corners
—	Paved
—	Surfaced Roads
—	Streams
—	Streams
—	Fish
—	Nonfish
- - -	Ownership
▨	Buffers
□	Gross Acres
□	PLS

Buzzard Ridge Road

Nehalem River

Lower Nehalem Road

14

13

23

24

13

18

24

19

23

23

26

