



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Cost Summary Military Green Sale 341-05-82

District: Astoria

Date: 4/6/05

	Conifer	Hardwood	Total
<b>Gross Timber Sale Value</b>	\$5,282,259.36	\$88,578.18	\$5,370,837.54
		<b>Project Work</b>	(\$606,427.00)
		<b>Advertised Value</b>	\$4,764,410.54



# Timber Sale Appraisal Timber Description Military Green Sale 341-05-82

"STEWARDSHIP IN FORESTRY"

**District:** Astoria

**Location:** Portions of Sections 4 and 5 of T4N, R6W and portions of Sections 28, 32, 33, and 34 of T5N, R6W, W.M., Clatsop County, Oregon.

**Date:** 4/6/05

**Stand Stocking:** 60%

Species	Avg. DBH	Amortized%	Recovery%
Douglas - Fir	18	0	98
Western Hemlock / Fir	16	0	97
Sitka Spruce	24	0	97
Alder (Red)	15	0	95

Volume by Grade	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Alder (Red)	Total
2S	8,490	629	1	134	9,254
3S	3,917	739	1	57	4,714
4S	603	82	0	48	733
<b>Total</b>	<b>13,010</b>	<b>1,450</b>	<b>2</b>	<b>239</b>	<b>14,701</b>

**Comments:** Pond Values Used: 1st Quarter 2005 + Local Pond Values.

Log Markets: Mist, Clatskanie, Tillamook, Forest Grove

Cedar Stumpage: \$865/MBF (pond value) - \$272.72/MBF (logging cost) = \$592.28/MBF

Additional Costs with Profit and Risk (P&R):

100% branding and painting: \$1/MBF x 14,701 = \$14,701

Additional costs for cable thinning (bucking tops, rigging and topping or girdling tail and intermediate support trees, cable-corridor layout, etc.): \$5/MBF x 4,859 MBF = \$24,295

Additional costs for tractor thinning (skid trail layout): \$3/MBF x 3,519 MBF = \$10,557

Additional felling costs in all thinning (tree selection, bucking tops, felling to lead): \$5/MBF x 8,378 MBF = \$41,890

Top or girdle 15 marked wildlife or Type-N buffer trees per Area, scattered through Areas 6 and 7 @\$45/tree = \$1,350

Total cost with P&R = \$92,793

Costs without P&R: Slash piling in Areas 6 and 7 cable landings: \$65/hr x 3 hr/lbg x 5 ldgs = \$975

Site-prep. slash piling in Areas 6 and 7: 42 hours @ \$95/hr + \$500 move-in cost = \$4,490

Waterbar/block Road 3A to 3B beyond Station 23+50 (19.9 Stations) at \$45/sta. = \$896

Waterbar/block Road 3C to 3D, 11.9 Stations at \$45/Sta. = \$536

Total cost without P&R: \$6,897



# Timber Sale Appraisal

## Logging Conditions

### Military Green

### Sale 341-05-82

"STEWARDSHIP IN FORESTRY"

<b>Combination#: 1</b>	Douglas - Fir	15.00%	
	Western Hemlock / Fir	15.00%	
	Sitka Spruce	15.00%	
	Alder (Red)	15.00%	
<b>Yarding Distance:</b>	Long (1,500 ft)		<b>Downhill Yarding:</b> No
<b>Logging System:</b>	Cable: Large Tower >=70		<b>Process:</b> Stroke Delimber
<b>Tree Size:</b>	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
<b>Loads/Day:</b>	8		<b>Bd. Ft./Load:</b> 4,000
<b>Cost/MBF:</b>	\$117.02		
<b>Machines:</b>			
	Log Loader (A)		
	Stroke Delimber (A)		
	Tower Yarder (Large)		
<b>Combination#: 2</b>	Douglas - Fir	8.00%	
	Western Hemlock / Fir	8.00%	
	Sitka Spruce	8.00%	
	Alder (Red)	8.00%	
<b>Yarding Distance:</b>	Medium (800 ft)		<b>Downhill Yarding:</b> No
<b>Logging System:</b>	Cable: Large Tower >=70		<b>Process:</b> Stroke Delimber
<b>Tree Size:</b>	Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF		
<b>Loads/Day:</b>	11		<b>Bd. Ft./Load:</b> 4,000
<b>Cost/MBF:</b>	\$85.89		
<b>Machines:</b>			
	Log Loader (A)		
	Stroke Delimber (A)		
	Tower Yarder (Large)		
<b>Combination#: 3</b>	Douglas - Fir	35.00%	
	Western Hemlock / Fir	35.00%	
	Sitka Spruce	35.00%	
	Alder (Red)	35.00%	
<b>Yarding Distance:</b>	Short (400 ft)		<b>Downhill Yarding:</b> No
<b>Logging System:</b>	Cable: Medium Tower >40 - <70		<b>Process:</b> Manual Delimiting
<b>Tree Size:</b>	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF		
<b>Loads/Day:</b>	4		<b>Bd. Ft./Load:</b> 3,700
<b>Cost/MBF:</b>	\$224.10		
<b>Machines:</b>			
	Log Loader (A)		
	Tower Yarder (Medium)		

<b>Combination#:</b> 4	Douglas - Fir	42.00%
	Western Hemlock / Fir	42.00%
	Sitka Spruce	42.00%
	Alder (Red)	42.00%
<b>Yarding Distance:</b>	Short (400 ft)	<b>Downhill Yarding:</b> Yes
<b>Logging System:</b>	Track Skidder	<b>Process:</b> Feller Buncher
<b>Tree Size:</b>	Small / Thinning 12in (130 Bft/tree), 12-17 logs/MBF	
<b>Loads/Day:</b>	6	<b>Bd. Ft./Load:</b> 3,700
<b>Cost/MBF:</b>	\$158.51	
<b>Machines:</b>	Feller Buncher w/ Delimber	
	Log Loader (B)	
	Stroke Delimber (B)	
	Track Skidder	



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal

## Logging Costs

### Military Green

### Sale 341-05-82

Date: 4/6/05

Operating Seasons: 3.0

Profit & Risk: 13%

Project Costs: \$606,427

Other Costs (P/R): \$92,793

Slash Disposal: \$0

Other Costs: \$6,897

Miles of Road			
Dirt	Rock (Contractor)	Rock (State)	Paved
0.0	0.0	0.0	0.0

Road Maintenance: \$3.48

#### Hauling Costs

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

**Local Pond Values**

<b>Date</b>	<b>Species</b>	<b>Grade</b>	<b>Value</b>
4/6/05	Douglas - Fir	2S	\$645.00
4/6/05	Douglas - Fir	3S	\$630.00
4/6/05	Douglas - Fir	4S	\$575.00
4/6/05	Western Hemlock / Fir	2S	\$445.00
4/6/05	Western Hemlock / Fir	3S	\$440.00
4/6/05	Western Hemlock / Fir	4S	\$405.00
4/6/05	Sitka Spruce	2S	\$410.00
4/6/05	Sitka Spruce	3S	\$400.00
4/6/05	Alder (Red)	2S	\$680.00
4/6/05	Alder (Red)	3S	\$645.00
4/6/05	Alder (Red)	4S	\$595.00



"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Logging Costs Breakdown Military Green Sale 341-05-82

<b>Costs</b>	<b>Douglas - Fir</b>	<b>Western Hemlock / Fir</b>	<b>Sitka Spruce</b>	<b>Alder (Red)</b>
<b>Logging</b>	169.43	169.43	169.43	169.43
<b>Road Maintenance</b>	3.55	3.59	3.59	3.66
<b>Fire Protection</b>	0.55	0.55	0.55	0.55
<b>Hauling</b>	39.13	59.28	59.28	69.16
<b>Other (P/R appl.)</b>	6.31	6.31	6.31	6.31
<b>Profit &amp; Risk</b>	28.47	31.09	31.09	32.38
<b>Slash Disposal</b>	0.00	0.00	0.00	0.00
<b>Scaling</b>	2.00	2.00	2.00	2.00
<b>Other</b>	0.47	0.47	0.47	0.47
<b>Total</b>	249.91	272.72	272.72	283.96

<b>Amortization</b>	0.00	0.00	0.00	0.00
<b>Pond Value</b>	637.24	440.19	405.00	654.58
<b>Stumpage</b>	387.33	167.47	132.28	370.62
<b>Amortized</b>	0.00	0.00	0.00	0.00





"STEWARDSHIP IN FORESTRY"

# Timber Sale Appraisal Summary Military Green Sale 341-05-82

**Amortized**

	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Alder (Red)
<b>MBF</b>	0.00	0.00	0.00	0.00
<b>Value</b>	0.00	0.00	0.00	0.00
<b>Total</b>	0.00	0.00	0.00	0.00

**Unamortized**

	Douglas - Fir	Western Hemlock / Fir	Sitka Spruce	Alder (Red)
<b>MBF</b>	13,010.00	1,450.00	2.00	239.00
<b>Value</b>	387.33	167.47	132.28	370.62
<b>Total</b>	5,039,163.30	242,831.50	264.56	88,578.18

### Gross Timber Sale Value

**Recovery \$5,370,837.54**

Prepared by: Alan Kelso

Date: 4/6/05

District: Astoria

Phone: (503) 325-5451

**Road Maintenance Cost Summary**

Sale: Military Green  
 Date: 28-Feb-05  
 By: J. Long

MBF: 14,701  
 \$\$/MBF: \$3.48

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
							Production Rates	Miles/day	Distance (miles)	Days
Progressive Operations 1st Entry(8 mi.)	Grader 14G	\$570	1	50	\$84	\$4,770	Grader	1.5	8.0	5.3
	Dump Truck 12CY x 2	\$119	2	20	\$59	\$1,418				
	FE Loader C966	\$570	1	10	\$79	\$1,360				
Progressive Operations 2nd Entry(8 mi.)	Grader 14G	\$570	1	60	\$84	\$5,610	Grader	1.5	8.0	5.3
	Dump Truck 12CY x 2	\$119	2	40	\$59	\$2,598				
	FE Loader C966	\$570	1	20	\$79	\$2,150				
Final Road Maintenance (14 mi.)	Grader 14G	\$570	1	100	\$84	\$8,970	Grader	1.5	14.0	9.3
	Dump Truck 12CY x 4	\$119	4	120	\$59	\$7,556				
	FE Loader C966	\$570	1	30	\$79	\$2,940	Vibratory Roller*	1.5	14.0	9.3
	Vibratory Roller	\$570	1	90	\$79	\$7,680				
	Water Truck 2,500 gallon Labor	\$139	1	80	\$70	\$5,739				
<b>Total</b>										\$51,191

\*Final Road Maintenance Only

**SUMMARY OF ALL PROJECT COSTS**

**SALE NAME:** Military Green

**NEW CONSTRUCTION:**

Project No.	Road segment	Length/Sta	Cost
Project No. 1	1A-1B, 1C-1D, 1E-1F, 1G-1H,	169.60	\$107,747
	1I-1J, 2A-2B, 2C-2D, 2E-2F,		
	3A-3B, 3C-3D, 3E-3F,		
	4A-4B, & 4C-4D.		
	A-B.	5.06	4,023
<b>TOTALS</b>		<b>174.66</b>	<b>\$111,770</b>

**ROAD IMPROVEMENT:**

Project No.	Road segment	Length/Sta	Cost
Project No. 1	11-12, 12-13, 14-15,	605.80	\$87,544
	& 16-17.		
	18-19, 19-110,	18.67	\$8,457
& 111-112.			
<b>TOTALS</b>		<b>624.47</b>	<b>\$96,001</b>

**SPECIAL PROJECTS:**

Project No.	Description	Cost
Project No. 2	Nettle Quarry Development & Rock Crushing	\$224,837
Project No. 3	Wage Road Bridge Construction	\$66,558
Project No. 4	Road Brushing	\$78,672
Project No. 5	Stream Enhancement	\$4,399
	Project Work Road Maintenance	\$17,220
<b>TOTALS</b>		<b>\$391,686</b>

**MOVE IN:**

Equipment	Cost
Dozer (D8)	\$1,030
Dump Trucks (12 cy) X 4	\$476
Dump Trucks (20 cy) X 4	\$560
F E Loader (C966)	\$570
Grader (14G)	\$570
Vibratory Roller	\$570
Water Truck (2,500 gallon)	\$139
Excavator (C330) X 2	\$2,060
Skidder	\$525
Brush Cutter X 2	\$470
<b>TOTAL</b>	<b>\$6,970</b>

**GRAND TOTAL** **\$606,427**

Compiled By: Long *Per*

Date: 3/2/2005

**SUMMARY OF CONSTRUCTION COSTS**

SALE NAME: Military Green (Designed Roads) NEW CONSTRUCTION: 139.90 STATIONS 2.65 MILES  
 ROADS: 1A-1B (13.0), 1C-1D (4.5), 1E-1F (20.7), 2A-2B (26.9), IMPROVEMENT: STATIONS 0.00 MILES

Method	Acres/amount	X	Rate	=	Cost
Scatter Outside of R/W	15.10	X	\$980.00	=	\$14,798.00
<b>CLEARING &amp; GRUBBING</b>					
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					<b>\$14,798</b>

Material	Cy/amount/station	X	Rate	=	Cost
Common Excavation	10.362	X	\$1.48	=	\$15,335.76
Truck End Haul from 4A-4B to 4C-4D	1.519	X	\$2.90	=	\$4,405.10
Truck End Haul from 4A-4B to waste area	2.303	X	\$2.90	=	\$6,678.70
Embankment Compaction	11,789	X	\$0.45	=	\$5,305.05
Cut Slope Rounding	21.00	X	\$31.00	=	\$651.00
Landing Construction	8.00	X	\$287.00	=	\$2,296.00
<b>EXCAVATION</b>					
<b>SUB TOTAL FOR EXCAVATION</b>					<b>\$34,672</b>

Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost	
1A-1B	18"CPP	40	\$11.00	\$440.00			\$440.00	
1A-1B	18"CPP	30	\$11.00	\$330.00			\$330.00	
1E-1F	18"CPP	30	\$11.00	\$330.00			\$330.00	
1E-1F	18"CPP	40	\$11.00	\$440.00			\$440.00	
2A-2B	18"CPP	40	\$11.00	\$440.00			\$440.00	
2A-2B	18"CPP	40	\$11.00	\$440.00			\$440.00	
3A-3B	18"CPP	40	\$11.00	\$440.00			\$440.00	
3A-3B	18"CPP	34	\$11.00	\$374.00			\$374.00	
3A-3B	18"CPP	30	\$11.00	\$330.00			\$330.00	
3A-3B	18"CPP	30	\$11.00	\$330.00			\$330.00	
4A-4B	18"CPP	30	\$11.00	\$330.00			\$330.00	
4A-4B	18"CPP	34	\$11.00	\$374.00			\$374.00	
4A-4B	18"CPP	40	\$11.00	\$440.00			\$440.00	
4C-4D	18"CPP	30	\$11.00	\$330.00			\$330.00	
<b>CULVERT MATERIALS AND INSTALLATION</b>								
Other/miscellaneous:								
Culvert stakes & markers: 6" FIBERGLASS MARKERS								
						Quantity	Rate	Cost
						14	\$14.10	\$197.40
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>							<b>5,565.40</b>	
<b>Subtotal</b>							<b>\$55,035</b>	





ROAD SEGMENT	2A to 2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cyt/ amt.	Cost	
	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B Volume (CY) per	0+00 to 26+90	Number of				
Base Rock	4'-0" Crushed	2A-2B	8	station	50	26.90	1,345	\$3.18	\$4,277	
Curve Widening	4'-0" Crushed		8	curve			40	\$3.18	\$127	
Traction Rock	1'-0" Crushed	0+50-4+50	2	station	13	4.00	52	\$3.18	\$165	
Traction Rock	1'-0" Crushed	9+00-25+00	2	station	13	16.00	208	\$3.18	\$661	
Turnouts	4'-0" Crushed		8	turnout	22	6	132	\$3.18	\$420	
Turnouts	1'-0" Crushed		2	turnout	10	4	40	\$3.18	\$127	
Junctions	4'-0" Crushed		8	junction	24	1	24	\$3.18	\$76	
Junctions	1'-0" Crushed		2	junction	10	2	20	\$3.18	\$64	
Turnaround	4'-0" Crushed		N/A	TA	24	1	24	\$3.18	\$76	
Landings	6'-0" Pit-run		N/A	landings	50	1	50	\$4.25	\$213	
Total Rock for Road Segment:								1,935		\$6,207

ROAD SEGMENT	2C to 2D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cyt/ amt.	Cost	
	Rock Size and Type	Location	Depth of Rock (inches)	2C to 2D Volume (CY) per	0+00 to 8+50	Number of				
Base Rock	4'-0" Crushed	2C-2D	8	station	50	8.50	425	\$3.18	\$1,352	
Turnouts	4'-0" Crushed		8	turnout	22	1	22	\$3.18	\$70	
Turnaround	4'-0" Crushed		N/A	TA	24	1	24	\$3.18	\$76	
Junctions	4'-0" Crushed		8	junction	24	1	24	\$3.18	\$76	
Landings	6'-0" Pit-run		N/A	landings	50	1	50	\$4.25	\$213	
Total Rock for Road Segment:								545		\$1,787

ROAD SEGMENT	2E to 2 F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cyt/ amt.	Cost	
	Rock Size and Type	Location	Depth of Rock (inches)	2E to 2 F Volume (CY) per	0+00 to 1+50	Number of				
Base Rock	4'-0" Crushed	2E-2F	8	station	50	1.50	75	\$3.18	\$239	
Junctions	4'-0" Crushed		8	junction	24	1	24	\$3.18	\$76	
Landings	6'-0" Pit-run		N/A	landings	50	1	50	\$4.25	\$213	
Total Rock for Road Segment:								149		\$527

ROAD SEGMENT	3A to 3B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cyt/ amt.	Cost	
	Rock Size and Type	Location	Depth of Rock (inches)	3A to 3B Volume (CY) per	0+00 to 23+50	Number of				
Base Rock	4'-0" Crushed	3A-3B	8	station	50	23.50	1,175	\$3.18	\$3,737	
Curve Widening	4'-0" Crushed		8	curve			30	\$3.18	\$95	
Turnouts	4'-0" Crushed		8	turnout	22	3	66	\$3.18	\$210	
Turnaround	4'-0" Crushed		N/A	TA	24	1	24	\$3.18	\$76	
Junctions	4'-0" Crushed		8	junction	40	1	40	\$3.18	\$127	
Junctions	1'-0" Crushed		2	junction	20	1	20	\$3.18	\$64	
Culvert Backfill	1'-0" Crushed	0+00	N/A	culvert	20	1	20	\$3.18	\$64	
Total Rock for Road Segment:								1,375		\$4,373

ROAD SEGMENT	3E to 3F		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cyt/ amt.	Cost	
	Rock Size and Type	Location	Depth of Rock (inches)	3E to 3F Volume (CY) per	0+00 to 2+50	Number of				
Base Rock	4'-0" Crushed	3E-3F	8	station	50	2.50	125	\$3.18	\$398	
Junctions	4'-0" Crushed		8	junction	24	1	24	\$3.18	\$76	
Landings	6'-0" Pit-run		N/A	landings	80	1	80	\$4.25	\$340	
Total Rock for Road Segment:								229		\$814

ROAD SEGMENT	4A to 4B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cy/ amt.	Cost
	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	0+00 to 26+90	Number of			
Base Rock	4'-0" Crushed	4A-4B	8	station	50	stations	1,345	\$3.18	\$4,277
Curve Widening	4'-0" Crushed		8	curve		curves	60	\$3.18	\$191
Traction Rock	1'-0" Crushed	16+00-25+00	2	station	13	stations	117	\$3.18	\$372
Turnouts	4'-0" Crushed		8	turnout	22	turnouts	110	\$3.18	\$350
Turnouts	1'-0" Crushed		2	turnout	10	turnouts	20	\$3.18	\$64
Junctions	4'-0" Crushed		8	junction	24	junctions	24	\$3.18	\$76
Turnaround	4'-0" Crushed		N/A	TA	24	TA	24	\$3.18	\$76
Landings	6'-0" Pit-run		N/A	landing	80	landings	80	\$4.25	\$340
Energy Dissipator	24"-6" Riprap	17+70	N/A	dissipator	10	dissipators	10	\$4.25	\$43
Total Rock for Road Segment:							1,790		\$5,789
ROAD SEGMENT	4C to 4D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Cy/ amt.	Cost
	Rock Size and Type	Location	Depth of Rock (inches)	Volume (CY) per	0+00 to 4+50	Number of			
Base Rock	4'-0" Crushed	4C-4D	8	station	50	stations	225	\$3.18	\$716
Traction Rock	1'-0" Crushed	0+00-3+00	2	station	13	stations	39	\$3.18	\$124
Turnouts	4'-0" Crushed		8	turnout	22	turnouts	22	\$3.18	\$70
Turnaround	4'-0" Crushed		N/A	TA	24	TA	24	\$3.18	\$76
Junctions	4'-0" Crushed		8	junction	24	junctions	24	\$3.18	\$76
Landings	1'-0" Crushed		2	junction	10	junctions	10	\$3.18	\$32
Landings	6'-0" Pit-run		N/A	landing	50	landings	50	\$4.25	\$213
Total Rock for Road Segment:							394		\$1,306

Description	No. sta/Jct	Rate/sta	Cost
Water, Process & Compact Crushed Rock (8' roads in one lift)	137.80	\$41.10	\$5,664
1"-0" Traction Rock Water Process & Compaction	48.00	\$41.10	\$1,973
			\$44,020

SPECIAL PROJECTS	
Description	Cost
SUB TOTAL FOR SPECIAL PROJECTS	
GRAND TOTAL	\$107,747.04

Processing: Description: Cost per Mile \$33,544  
 Total Rock for Road Segment: \$1,306  
 Cost per Mile \$33,544  
 GRAND TOTAL \$107,747.04  
 Compiled By: J. Long Date: 2/18/2005



**SUMMARY OF CONSTRUCTION COSTS**

SALE NAME: Military Green      Road Improvement      NEW CONSTRUCTION: 0.00 STATIONS      0.00 MILES  
 ROADS: 11-12, 12-13, 14-15, & 16-17      IMPROVEMENT: 605.80 STATIONS      11.47 MILES

Method	Acres/amount	X	Rate	=	Cost
Scatter Outside of RW	0.00	X	\$980.00	=	\$0.00
		X		=	
<b>SUB TOTAL FOR CLEARING &amp; GRUBBING</b>					<b>\$0</b>

Material	Quantity (hrs)	X	Rate	=	Cost
C330 excavator for fill reconstruction (14-15 Sta. 62+85)	8	X	\$136.00	=	\$1,088.00
D-8 cat for fill reconstruction (14-15 Sta. 62+85)	4	X	\$126.00	=	\$504.00
Skidder w/operator for fill compaction	4	X	\$62.00	=	\$248.00
Dump truck for fill reconstruction (14-15 Sta. 62+85)	6	X	\$59.00	=	\$354.00
Mechanical tamper w/operator	2	X	\$36.00	=	\$72.00
<b>SUB TOTAL FOR EXCAVATION</b>					<b>\$2,266</b>

Location	Dia/type	Lineal ft.	Rate	Cost	No. bands	Rate	Cost
11-12	88+65	18"CPP	36	\$11.00	\$396.00		\$396.00
12-13	10+55	18"CPP	30	\$11.00	\$330.00		\$330.00
12-13	12+80	18"CPP	30	\$11.00	\$330.00		\$330.00
12-13	33+45	18"CPP	30	\$11.00	\$330.00		\$330.00
12-13	41+60	18"CPP	30	\$11.00	\$330.00		\$330.00
12-13	67+00	18"CPP	40	\$11.00	\$440.00		\$440.00
12-13	72+90	18"CPP	36	\$11.00	\$396.00		\$396.00
12-13	89+80	18"CPP	32	\$11.00	\$352.00		\$352.00
14-15	5+20	18"CPP	40	\$11.00	\$440.00		\$440.00
14-15	16+55	18"CPP	40	\$11.00	\$440.00		\$440.00
* 14-15	62+85	18"CPP	42	\$11.45	\$480.90		\$480.90
* Cost for materials only. Installation costs are included in the fill re-construction costs above.							
Other/miscellaneous:		Bevel culvert inlets on 24" culverts.		Quantity	1	Rate	\$35.00
Culvert stakes & markers:		6" FIBERGLASS MARKERS		Quantity	17	Rate	\$14.10
<b>SUB TOTAL FOR CULVERT MATERIALS &amp; INSTALLATION</b>							<b>4,539.60</b>
Subtotal							<b>\$6,806</b>

SURFACING	Subgrade prep:		Description		Stations/ amount	Rate/ sta/amt	Cost
	1 to 12	11 to 12	POINT TO POINT	Sta. to Sta.			
			Grade, Shape and Ditch 16' (All rocked roads)	0+00 to 148+00	605.80	\$18.20	\$11,025.56
			Subgrade Compaction (All rocked roads)		605.80	\$14.80	\$8,965.84
<b>ROAD SEGMENT</b>	<b>11 to 12</b>	<b>POINT TO POINT</b>	<b>11 to 12</b>	<b>0+00 to 148+00</b>	<b>TOTAL</b>	<b>Rate/ Cyl amt</b>	<b>Cost</b>
Application	Rock Size and Type	Location	Volume (CY) per	Number of	VOLUME (CY)		
Leveling Rock	1"-0" Crushed	I1-12	32	stations	500	\$2.94	\$1,470
Surfacing	1"-0" Crushed	I1-12	4	station curves	4,736	\$2.94	\$13,924
Curve Widening	1"-0" Crushed	I1-12	4	turnouts	190	\$2.94	\$559
Turnouts	1"-0" Crushed	I1-12	4	junctions	176	\$2.94	\$517
Junctions	1"-0" Crushed	I1-12	4	culverts	160	\$2.94	\$470
Culvert Backfill	1"-0" Crushed	I1-12	4	culverts	1	\$2.94	\$59
Total Rock for Road Segment:					5,782		\$16,999
<b>ROAD SEGMENT</b>	<b>1C to 1D</b>	<b>POINT TO POINT</b>	<b>12 to 13</b>	<b>0+00 to 149+50</b>	<b>TOTAL</b>	<b>Rate/ Cyl amt</b>	<b>Cost</b>
Application	Rock Size and Type	Location	Volume (CY) per	Number of	VOLUME (CY)		
Culvert Backfill	1"-0" Crushed	I2-13	20	culverts	140	\$2.94	\$412
Leveling Rock	1"-0" Crushed	I2-13	10	dissipators	900	\$2.94	\$2,646
Energy Dissipator	24"-6" Riprap	I2-13	10	dissipators	20	\$4.25	\$85
Total Rock for Road Segment:					1,060		\$3,143
<b>ROAD SEGMENT</b>	<b>14 to 15</b>	<b>POINT TO POINT</b>	<b>14 to 15</b>	<b>0+00 to 186+10</b>	<b>TOTAL</b>	<b>Rate/ Cyl amt</b>	<b>Cost</b>
Application	Rock Size and Type	Location	Volume (CY) per	Number of	VOLUME (CY)		
Leveling Rock	1"-0" Crushed	I1-12	19	stations	300	\$2.94	\$882
Surfacing	1"-0" Crushed	I1-12	3	station	3,536	\$2.94	\$10,396
Curve Widening	1"-0" Crushed	I1-12	3	turnouts	140	\$2.94	\$412
Turnouts	1"-0" Crushed	I1-12	3	junctions	165	\$2.94	\$485
Junctions	1"-0" Crushed	I1-12	3	culverts	220	\$2.94	\$647
Culvert Backfill	1"-0" Crushed	I1-12	3	culverts	40	\$2.94	\$118
Culvert Bedding	1"-0" Crushed	I1-12	3	culverts	24	\$2.94	\$71
Fill Surfacing Rock	4"-0" Crushed	I1-12	3	dissipator	46	\$2.94	\$135
Energy Dissipator	24"-6" Riprap	I1-12	3	dissipator	10	\$4.25	\$43
Fill Armor	24"-6" Riprap	I1-12	3	dissipator	26	\$4.25	\$111
Total Rock for Road Segment:					4,507		\$13,297
<b>ROAD SEGMENT</b>	<b>16 to 17</b>	<b>POINT TO POINT</b>	<b>16 to 17</b>	<b>0+00 to 122+20</b>	<b>TOTAL</b>	<b>Rate/ Cyl amt</b>	<b>Cost</b>
Application	Rock Size and Type	Location	Volume (CY) per	Number of	VOLUME (CY)		
Leveling Rock	1"-0" Crushed	I6-17	19	stations	100	\$2.94	\$294
Surfacing	1"-0" Crushed	I6-17	3	station	2,322	\$2.94	\$6,826
Curve Widening	1"-0" Crushed	I6-17	3	turnouts	110	\$2.94	\$323
Turnouts	1"-0" Crushed	I6-17	3	junctions	231	\$2.94	\$679
Junctions	1"-0" Crushed	I6-17	3	junctions	100	\$2.94	\$294
Total Rock for Road Segment:					2,863		\$8,417





**SURFACING**

Subgrade prep.	Description	Sta/amount	x	Rate/sta/amt	Cost
Grade, shape, & ditch (all roads)		23.73	x	\$18.20	\$431.89
Roll and compact (all roads)		23.73	x	\$14.80	\$351.20

ROAD SEGMENT:		18 to 19		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	0-00 to 2+50	Number of			
Base Course	4'-0" crushed	0+66-2+50	10	station	63	stations	1.82	115	\$2.94	\$337.10
Curve Widening	4'-0" crushed		10	curve	24	curves	1	24	\$2.94	\$70.56
Surface Course	1'-0" crushed	0+66-2+50	4	station	25	stations	1.82	46	\$2.94	\$133.77
Curve Widening	1'-0" crushed		4	curve	10	curves	1	10	\$2.94	\$29.40
Bedding Rock	1'-0" crushed		4					20	\$2.94	\$58.80
Total Rock for Road Segment:				18 to 19				214		\$629.63

ROAD SEGMENT:		19 to 110		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	2+50 to 18+76	Number of			
Base Course	4'-0" crushed		4	station	25	stations	16.26	407	\$2.94	\$1,195.11
Curve Widening	4'-0" crushed		4	curve	25	curves	5	125	\$2.94	\$367.50
Turnouts	4'-0" crushed		4	turnout	11	turnouts	2	22	\$2.94	\$64.68
Turnouts	4'-0" crushed		8	turnout	22	turnouts	1	22	\$2.94	\$64.68
Turnaround	4'-0" crushed		4	TA	7	TA	1	7	\$2.94	\$20.58
Surface Course	1'-0" crushed		4	station	25	stations	16.26	407	\$2.94	\$1,195.11
Curve Widening	1'-0" crushed		4	curve	25	curves	5	125	\$2.94	\$367.50
Turnouts	1'-0" crushed		4	turnout	11	turnouts	3	33	\$2.94	\$97.02
Turnaround	1'-0" crushed		4	TA	7	TA	1	7	\$2.94	\$20.58
Total Rock for Road Segment:				19 to 110				1164		\$3,392.76

ROAD SEGMENT:		111 to 112		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	0-00 to 0+59	Number of			
Base Course	4'-0" crushed		8	station	50	stations	0.59	30	\$2.94	\$86.73
Surface Course	1'-0" crushed		4	station	25	stations	0.59	15	\$2.94	\$43.37
Tapers	4'-0" crushed		8	taper	12	tapers	2	24	\$2.94	\$70.56
Tapers	1'-0" crushed		4	taper	6	tapers	2	12	\$2.94	\$14.94
Total Rock for Road Segment:				111 to 112				80		\$216.80

ROAD SEGMENT:		A to B		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	0-00 to 5+86	Number of			
Base Course	4'-0" crushed	0+80-5+86	10	station	63	stations	5.06	319	\$3.18	\$1,013.72
Surface Course	1'-0" crushed	0+80-5+86	4	station	25	stations	5.06	127	\$3.18	\$402.27
Total Rock for Road Segment:								445		\$1,415.99

Processing:

Description	Stations	\$/Sta	Cost
water, process, and compact 4'-0" crushed (one lift)	16.26	\$41.40	\$673.16
water, process, and compact 4'-0" crushed (two lifts)	6.88	\$82.80	\$569.66
water, process, and compact 1'-0" crushed (one lift)	23.73	\$41.40	\$982.42

TOTAL ROCK QUANTITY	2'-0"	4'-0"	1 1/2'-0"	1'-0"	Total
	1093	1014			2108

**SUBTOTAL SURFACING**

\$8,662.32

**SPECIAL PROJECTS**

Description	Cost

**SUB TOTAL SPECIAL PROJECTS**

**\$12,480**

**GRAND TOTAL**

Total New Construction \$4,023  
Total Improvement \$8,457

Compiled By: d.mellison

Date: 1/16/05

**SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS**

PROJECT NO. 2

**Timber Sale Name**

**Military Green**

Quarry: Nettle Quarry  
 Location: NE 1/4, Sec 29, T5N, R6W  
 County: Clatsop  
 By: d.mellison  
 Date: 1/6/05

Swell: \_\_\_\_\_  
 Shrink: 16%  
 Reject: 2%

ROCK SIZE	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
1"-0"	CR	2,500	15,819	18,719
1 1/2"-0"	CR			
4"-0"	CR	2,500	9,407	12,307
6"-0"	PR		1,595 *	1,595
24"-6", 24"-12", 36"-12"	RR		360	360

\* This is 720 cy for project 1 and 875 cy for Project 2 (Stockpile site).

**TOTAL CUBIC YARDS OF ROCK:** 5,000 27,181 **32,981**

**1) MOBILIZATION & SET UP:**

EQUIPMENT MOBILIZATION	DISTANCE IN MILES	DIST. FACTOR	BASE RATE	COST
3 Stage Crusher	75	1.40	\$2,220	\$3,108
Screening Plants (2)	75	1.40	\$900	\$1,260
D8 Cat	75	1.40	\$1,080	\$1,512
Loader	75	1.40	\$590	\$826
Drill & Compressor (2)	75	1.40	\$1,080	\$1,512
Powder	75	1.40	\$270	\$378
5 Dump Trucks	75	1.40	\$670	\$938
Fire Truck	75	1.40	\$132	\$185
Excavator	75	1.40	\$945	\$700
SUB TOTAL FOR MOBILIZATION				\$10,419

EQUIPMENT SET UP	TIMES	RATE	COST
3 Stage Crusher	1	\$2,530	\$2,530
Screening Plants (2)	1	\$425	\$425
Change Gradation	1	\$400	\$400
SUB TOTAL FOR SET UP COSTS			\$3,355

**TOTAL MOBILIZATION & SET UP COSTS** \$13,774

**2) CLEARING & GRUBBING**

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Pile & Burn Crusher site/Rock Source site	0.53	acre	\$1,980	\$1,049
Pile & Burn Stockpile site	0.45	acre	\$1,980	\$891
Pile & Burn Waste Area	0.29	acre	\$1,980	\$574

**TOTAL CLEARING & GRUBBING COSTS** \$2,515

**3) EXCAVATION**

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Crusher site Overburden *	5,330	bcy	\$1.76	\$9,381
Rock Source Overburden **	7,423	bcy	\$1.35	\$10,021

\* Haul to and incorporate in the construction of the stockpile site.

\*\* Push with a cat to the waste area shown on Exhibit "F" and windrow.

**TOTAL EXCAVATION COSTS**

\$19,402

**4) DEVELOP ROCK**

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping			\$1.95	
crushed	31,026	94%	Drill & shoot	100%	33,602	\$1.95	\$65,523
pit run	1,595	5%	Oversize red	1%	326	\$6.50	\$2,120
rip rap	360	1%	Other				
Total	32,981						
reject	621						

**TOTAL ROCK DEVELOPMENT COSTS**

\$67,643

**5) CALIBRATION & TESTING**

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	2	\$400	\$800
Calibrate			
Test	15	\$50	\$750
Test			

**TOTAL CALIBRATION & TESTING COSTS**

\$1,550

**6) FEEDING & LOADING**

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig and Feed Rock	31,647	\$0.75	\$23,735

**TOTAL FEEDING & LOADING COSTS**

\$23,735

**7) ROCK CRUSHING**

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTIC	RATE CU. YD.	TOTAL COST
1"-0" crushed		18,719	3 stage w/s	117	\$2.78	\$51,997
3/4"-0" crushed		18,703	3 stage w/s	110	\$2.95	\$55,259 *
1 1/2"-0" crushed		18,703	3 stage w/s	125	\$2.60	\$48,628 **
4"-0" crushed		12,307	2 stage w/s	140	\$2.07	\$25,493
		31,026				

\* Not included in the totals, used to calculate 3/4"-0" rate only

**TOTAL ROCK CRUSHING COSTS** \*\* Not included in the totals, used to calculate 1 1/2"-0" rate only

\$77,490



**8) STOCKPILING**

STOCKPILE PREPARATION OR CONST			COST
Blade & compact hauled overburden			\$4,920
Load,haul, and spread pitrun	875	\$2.18	\$1,908
Process pitrun 875 cy/50 cy/sta = 17.5 sta	17.5	\$38.75	\$678

SUB TOTAL \$7,506

HAUL & STOCKPILE STOCKPILE LOCATION	SIZE	# of 10CY TRUCKS	CU. YDS.	RATE	COST
Nettle Stockpile site	1"-0"	3	2,900	\$1.64	\$4,756
Nettle Stockpile site	4"-0"	3	2,900	\$1.64	\$4,756

SUB TOTAL \$9,512

**TOTAL STOCKPILING COSTS** **\$17,018**

**9) MISCELLANEOUS COSTS**

DESCRIPTION	COST
Final Quarry maintenance	
3 hrs D-8 cat @ \$126/hr = \$378	\$378
2 hrs Exc @ \$120/hr = \$240	\$240
Reject Disposal 621 bcy @ \$1.76 = \$1,093	\$1,093

**TOTAL MISCELLANEOUS COSTS** **\$1,711**

**Total Fixed Costs: (Mobilization/Set Up, Clear & Grub, Excavation, Rock Dev, Haul & Stockpile, Misc)** \$122,062  
**Total Variable Costs: (Calibration & Testing, Feed & Load, Rock Crushing)** \$102,775

**10) GRAND TOTAL:** **\$224,837**

	\$/Cubic Yard	\$6.82
	Fixed cost \$/CY:	\$3.93
\$84,205.09	4"-0" Crushing cost \$/CY:	\$6.84
\$140,755.12	1"-0" Crushing cost \$/CY:	\$7.52
\$224,960.20		

\*\*\* To be used in the event STATE opts to crush 3/4"-0" rock. 3/4"-0" Crushing cost \$/CY:\*\*\* \$7.73  
 \*\*\*\* To be used in the event STATE opts to crush 1 1/2"-0" rock 1 1/2"-0" Crushing cost \$/CY:\*\*\*\* \$7.32

**Footnotes:**

Construct/Reconstruct Stockpile Floor

Equipment	Hours	Rate	Total
Dozer	24	\$126.00	\$3,024.00
Compactor	24	\$79.00	\$1,896.00
Grader		\$80.00	
Excavator		\$130.00	
<b>Total</b>			<b>\$4,920.00</b>

**Bridge Cost Estimate**

Frank Lertora  
2/18/2005

Location: Wage Road/Walker Creek

Materials	Quantity		\$	Total
2 piece Modular Steel Bridge 16' running surface x50', Weathering Steel Guardrail, Galv. Corr. Deck				\$43,500.00
Precast Concrete Footing 30"x18"x18', 2ea.				\$3,200.00
36"-12" Riprap Armor	242	cy	\$5.69	\$1,376.98
24"-12" Riprap for Footing	52	cy	\$5.69	\$295.88
1"-0" Crushed Rock for Footing	10	cy	\$2.94	\$29.40
1"-0" Crushed Rock for Bridge Deck and Road	73	cy	\$2.94	\$214.62
4"-0" Crushed Rock for 100' for southern approach	98	cy	\$2.94	\$288.12
4"-0" Crushed Rock for 25' for northern approach	25	cy	\$2.94	\$73.50
Erosion Control Mulch, seed and fert.	0.25	ac	\$1,315.00	\$328.75

**\$49,307.25**

Equipment/Labor Costs	Quantity		\$/Hr.	Hours	Total
Excavator, Large					
Operating	2		\$136.00	54	\$7,344.00
Stand-By	2		\$81.60	10	\$816.00
Dump Truck					
Operating	2		\$59.00	54	\$3,186.00
Stand-By	2		\$35.40	10	\$354.00
Vibratory Roller					
Operating	1		\$79.00	6	\$474.00
Stand-By	1		\$47.40	2	\$94.80
Front-End Loader, Medium					
Operating	1		\$79.00	5	\$395.00
Stand-By	1		\$47.40	3	\$142.20
Hand Held Tamper					
Operating	1		\$7.00	4	\$28.00
Stand-By	1		\$4.20	4	\$16.80
Engineering					\$4,000.00
Laborer	2		\$25.00	16	\$400.00

**\$17,250.80**

<b>Project Total</b>	<b>\$66,558</b>
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## Project No. 4 Military Green Road Brushing

Segment	Length (Miles)	Brush Type	Cost/Mile	Cost
B1-B2	4.90	L	\$1,150	\$5,635.00
B2-B3	1.00	M	\$1,350	\$1,350.00
B4	0.60	L	\$1,150	\$690.00
B6	0.10	L	\$1,150	\$115.00
B5	0.30	L	\$1,150	\$345.00
B7	0.20	M	\$1,350	\$270.00
B8	0.70	H	\$1,650	\$1,155.00
B9	0.10	H	\$1,650	\$165.00
B10	0.45	H	\$1,650	\$742.50
B11	0.10	H	\$1,650	\$165.00
B12	0.30	VH	\$2,300	\$2,300.00
B13	0.20	M	\$1,350	\$270.00
B14	1.20	L	\$1,150	\$1,380.00
B15	0.10	L	\$1,150	\$115.00
B16	0.20	L	\$1,150	\$230.00
B17	0.16	M	\$1,350	\$216.00
B18	0.48	L	\$1,150	\$552.00
B19	0.25	L	\$1,150	\$287.50
B20	0.25	L	\$1,150	\$287.50
B21	0.70	L	\$1,150	\$805.00
B22	0.35	H	\$1,650	\$577.50
B23	0.40	H	\$1,650	\$660.00
B24	0.30	H	\$1,650	\$495.00
B25	0.10	H	\$1,650	\$165.00
B26	0.70	M	\$1,350	\$945.00
B27	0.10	M	\$1,350	\$135.00
B28-B29	4.90	L	\$1,150	\$5,635.00
B30	0.50	L	\$1,150	\$575.00
B31	0.60	L	\$1,150	\$690.00
B32-B33	1.90	L	\$1,150	\$2,185.00
B34	0.45	L	\$1,150	\$517.50
B34A	0.30	L	\$1,150	\$345.00
B35	0.41	L	\$1,150	\$471.50
B36	0.25	H	\$1,650	\$412.50
B37	0.98	L	\$1,150	\$1,127.00
B38	0.65	L	\$1,150	\$747.50
B39	0.25	L	\$1,150	\$287.50
B40	0.10	L	\$1,150	\$115.00
B41	0.90	M	\$1,350	\$1,215.00
B42-B43	2.80	M	\$1,350	\$3,780.00
B44-B45	1.00	L	\$1,150	\$1,150.00
B46	0.80	VH	\$2,300	\$1,840.00
B47	0.60	VH	\$2,300	\$1,380.00
B48	0.10	L	\$1,150	\$115.00
B49	0.35	VH	\$2,300	\$805.00
B50	0.20	VH	\$2,300	\$460.00
B51	1.10	VH	\$2,300	\$2,530.00
B52	0.10	VH	\$2,300	\$230.00

B53	0.10	VH	\$2,300	\$230.00
B54	0.20	VH	\$2,300	\$460.00
B55-B56	7.20	M	\$1,350	\$9,720.00
B57-B58	3.50	L	\$1,150	\$4,025.00
B59	1.00	M	\$1,350	\$1,350.00
B60	0.70	L	\$1,150	\$805.00
B61	0.10	L	\$1,150	\$115.00
B62	0.10	L	\$1,150	\$115.00
B63-B64	1.10	H	\$1,650	\$1,815.00
B65	0.10	H	\$1,650	\$165.00
B66	0.10	H	\$1,650	\$165.00
B67	0.70	H	\$1,650	\$1,155.00
B68	0.15	H	\$1,650	\$247.50
B69	0.35	H	\$1,650	\$577.50
B70	0.10	L	\$1,150	\$115.00
B71	0.20	M	\$1,350	\$270.00
B72	0.10	M	\$1,350	\$135.00
B73	0.50	M	\$1,350	\$675.00
B74	0.80	M	\$1,350	\$1,080.00
B75	0.10	M	\$1,350	\$135.00
B76-B77	2.00	M	\$1,350	\$2,700.00
B78-B79	0.10	M	\$1,350	\$135.00
B80	1.90	M	\$1,350	\$2,565.00
B81	1.10	M	\$1,350	\$1,485.00
B82	0.20	M	\$1,350	\$270.00
B83	0.10	M	\$1,350	\$135.00
B84	0.10	M	\$1,350	\$135.00
B85-B86	0.10	H	\$1,650	\$165.00
B87	0.60	M	\$1,350	\$810.00
B88	0.10	M	\$1,350	\$135.00
B89	0.10	L	\$1,150	\$115.00

**Total Miles**      57.08                      **Total Project Cost**      **\$78,672**

L = Light Brush \$1,150  
M = Medium Brush \$1,350  
H = Heavy Brush \$1,650  
VH= Very Heavy \$ 2,300  
(1-11-05)

**Military Green**

**Project No. 5  
Stream Enhancement**

Location/Description	Excavator C 330	Truck/Trailer	Labor	Straw Bales		Total
Tree/log processing 8 trees	4 hr		2 hr			
Transport logs to site SE1, SE2, & SE3 24 logs	6 hr	6 hr				
Log Placement 24 logs *	8 hr		8 hr	9 bales		
<b>Total</b>	18 hr	6 hr	10 hr	9		
<b>Rate</b>	\$136 /hr	\$78 /hr	\$25 /hr	\$5 /bale		
<b>Cost</b>	\$2,448	\$468	\$250	\$45		<b>\$3,211</b>

\* Cost includes site cleanup and straw mulching.

<b>Subtotal</b>	<b>\$3,211</b>
<b>Move-in Cost</b>	
Excavator	\$1,030
Truck/Trailer	\$158
<b>Project Total</b>	<b>\$4,399</b>



## CRUSHED ROCK COST

SALE NAME: Military Green  
 PROJECT: No. 1  
 QUARRY: Nettle

ROCK TYPE: Pit and Riprap

DATE: 2/18/2005  
 BY: J. Long

Segment	Stations	Cubic Yards							Total
		Landing	Running	Turnout	Turnaround	Junction	Curves	Misc	
1A-1B	13.00	160							160
1C-1D	4.50	50							50
1E-1F	20.70	50							50
1G-1H	2.50	50							50
1I-1J	2.80	50							50
2A-2B	26.90	50							50
2C-2D	8.50	50							50
2E-2F	1.50	50							50
3E-3F	23.50	80							80
4A-4B	2.50	80						10	90
4C-4D	26.90	50							50
I2-I3	149.50							20	20
I4-I5	186.10							36	36
<b>Grand Total</b>	<b>468.90</b>	<b>720</b>						<b>66</b>	<b>786</b>

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
1A-1B	13.00	160			2.00	0.50	0.30	0.30	0.10	3.20
1C-1D	4.50	50			2.00	0.50	0.30	0.20	0.10	3.10
1E-1F	20.70	50			2.00	0.50	0.40	0.40	0.10	3.40
1G-1H	2.50	50			2.00	0.50	0.30	0.20	0.10	3.10
1I-1J	2.80	50			2.00	0.50	0.30	0.30	0.10	3.20
2A-2B	26.90	50			2.00	0.50	0.50	0.50	0.10	3.60
2C-2D	8.50	50			2.00	0.50	0.30	0.50	0.10	3.40
2E-2F	1.50	50			2.00	0.50	0.20	0.30	0.10	3.10
3E-3F	23.50	80			3.00	0.80	0.40	0.30	0.10	4.60
4A-4B	2.50	90			3.00	2.40	0.60	0.50	0.10	6.60
4C-4D	26.90	50			3.00	2.40	0.60	0.50	0.10	6.60
I2-I3	149.50	20			3.00	1.00	0.90	0.20	0.10	5.20
I4-I5	186.10	36			0.20	0.50	0.40	0.20	0.10	1.40
<b>TOTAL</b>	<b>468.90</b>	<b>786</b>								
<b>CUBIC YARD WEIGHTED HAUL</b>					<b>2.22</b>	<b>0.88</b>	<b>0.40</b>	<b>0.35</b>	<b>0.10</b>	<b>AVERAGE HAUL 3.95</b>
Average Round Trip Distance (miles)										<b>7.90</b>

**ROCK HAUL:**

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

Ave haul: \$3.35 /cy  
 Load: \$0.70 /cy  
 Spread: \$0.20 /cy

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

Truck type D10 No. trucks: 4  
 Delay min. 5 Efficiency: 85%

Production: cy/day = 544

CRUSHED ROCK HAUL COSTS      786 cy @      \$4.25 /cy

## CRUSHED ROCK COST

SALE NAME: Military Green  
 PROJECT: Nos. 1 & 3 Road Improvement  
 QUARRY: Nettle

ROCK TYPE: 1"and 4" Crushec

DATE: 2/18/2005  
 BY: J. Long

Segment	Stations	Cubic Yards							
		Base	Running	Turnout	Turnaround	Junction	Curves	Misc	Total
I1-I2	148.00	500	4,736	176		160	190	226	5,988
I2-I3	149.50	900						140	1,040
I4-I5	186.10	300	3,536	165		220	140	110	4,471
I6-I7	122.20	100	2,322	231		100	110		2,863
I8-I9	1+82	115	46				34		195
I9-I10	16+26	407	407	77	14		250		1,155
I11-I12	0+59	30	15					36	81
Grand Total	605.80	2,352	11,062	649	14	480	724	512	15,793

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH	
I1-I2	148.00	5,988			3.00	1.40	0.50	0.20	0.10	5.20
I2-I3	149.50	1,040			3.00	1.00	0.90	0.20	0.10	5.20
I4-I5	186.10	4,471			0.20	0.50	0.40	0.20	0.10	1.40
I6-I7	122.20	2,863			3.00	2.00	1.30	0.20	0.10	6.60
I8-I9	1+82	195				0.14	0.10	0.10	0.10	0.44
I9-I10	16+26	1,155					0.07	0.10	0.10	0.27
I11-I12	0+59	81				0.18	0.10	0.10	0.10	0.48
TOTAL	605.80	15,793								
CUBIC YARD WEIGHTED HAUL					1.94	1.10	0.60	0.19	0.10	AVERAGE HAUL 3.93
Average Round Trip Distance (miles) 7.87										

**ROCK HAUL:**

Truck type	<u>D20</u>	No. trucks:	<u>3</u>
Delay min.	<u>8</u>	Efficiency:	<u>85%</u>
Truck type	<u>D12</u>	No. trucks:	<u>1</u>
Delay min.	<u>6</u>	Efficiency:	<u>85%</u>
Truck type	<u>D10</u>	No. trucks:	<u>        </u>
Delay min.	<u>5</u>	Efficiency:	<u>85%</u>

Ave haul: \$2.24 /cy  
 Load: \* /cy  
 Spread: \$0.70 /cy

Production: cy/day = 919

**CRUSHED ROCK HAUL COSTS 15,793 cy @ \$2.94 /cy**

\* No cost for loading off the belt.



**CRUSHED ROCK COST**

SALE NAME:           Military Green            
 PROJECT:           No. 1 New Road Const.            
 QUARRY:           Nettle          

ROCK TYPE: 1" and 4" Crusher

DATE:           2/18/2005            
 BY:           J. Long          

Segment	Stations	Cubic Yards							Total
		Base	Traction	Turnout	Turnaround	Junction	Curves	Misc	
1A-1B	13.00	650	141	88	24	24	70		997
1C-1D	4.50	225		22	24	24	30		325
1E-1F	20.70	1,035	137	66	24	24			1,286
1G-1H	2.50	125				24			149
1I-1J	2.80	140				24			164
2A-2B	26.90	1,345	320	132	24	24	40		1,885
2C-2D	8.50	425		22	24	24			495
2E-2F	1.50	75				24			99
3A-3B	23.50	1,175		66	24	40	30	20	1,355
3E-3F	2.50	125				24			149
4A-4B	26.90	1,345	137	110	24	24	60		1,700
4C-4D	4.50	225	49	22	24	24			344
A-B	5.06	319	127						446
<b>Grand Total</b>	<b>142.86</b>	<b>7,209</b>	<b>784</b>	<b>528</b>	<b>192</b>	<b>304</b>	<b>230</b>	<b>20</b>	<b>8,948</b>

Road Segment	Stations	Cubic Yards	ONE WAY HAUL IN MILES							Total Haul	
			50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH		
1A-1B	13.00	997			2.00	0.50	0.30	0.20	0.10	3.10	
1C-1D	4.50	325			2.00	0.50	0.30	0.20	0.10	3.10	
1E-1F	20.70	1,286			2.00	0.50	0.40	0.20	0.10	3.20	
1G-1H	2.50	149			2.00	0.50	0.30	0.20	0.10	3.10	
1I-1J	2.80	164			2.00	0.50	0.30	0.30	0.10	3.20	
2A-2B	26.90	1,885			2.00	0.50	0.40	0.40	0.10	3.40	
2C-2D	8.50	495			2.00	0.50	0.30	0.50	0.10	3.40	
2E-2F	1.50	99			2.00	0.50	0.20	0.30	0.10	3.10	
3A-3B	23.50	1,355			3.00	0.90	0.40	0.20	0.10	4.60	
3E-3F	2.50	149			3.00	0.80	0.40	0.30	0.10	4.60	
4A-4B	26.90	1,700			3.00	2.40	0.60	0.30	0.10	6.40	
4C-4D	4.50	344			3.00	2.40	0.60	0.50	0.10	6.60	
A-B	5.06	446						0.01	0.05	0.06	
<b>TOTAL</b>	<b>142.86</b>	<b>9,394</b>									
<b>CUBIC YARD WEIGHTED HAUL</b>		<b>STA./NO.</b>	<b>CU. YD.</b>			<b>2.28</b>	<b>0.95</b>	<b>0.40</b>	<b>0.28</b>	<b>0.10</b>	<b>AVERAGE HAUL</b>
Average Round Trip Distance (miles)											<b>8.03</b>

**ROCK HAUL:**

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

Ave haul: \$2.53 /cy  
 \* Load: /cy  
 Spread: \$0.65 /cy

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

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

Production: cy/day = 1,142

**CRUSHED ROCK HAUL COSTS    9,267 cy @    \$3.18 /cy**

\* No loading cost for loading off the belt.

**Road Maintenance Cost Summary**

Sale: Military Green  
 Date: 28-Feb-05  
 By: J. Long

MBF: 14,701  
 \$\$/MBF: \$3.48

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
							Production Rates	Miles/day	Distance(miles)	Days
Progressive Operations 1st Entry(8 mi.)	Grader 14G	\$570	1	50	\$84	\$4,770	Grader	1.5	8.0	5.3
	Dump Truck 12CY x 2	\$119	2	20	\$59	\$1,418				
	FE Loader C966	\$570	1	10	\$79	\$1,360				
Progressive Operations 2nd Entry(8 mi.)	Grader 14G	\$570	1	60	\$84	\$5,610	Grader	1.5	8.0	5.3
	Dump Truck 12CY x 2	\$119	2	40	\$59	\$2,598				
	FE Loader C966	\$570	1	20	\$79	\$2,150				
Final Road Maintenance (14 mi.)	Grader 14G	\$570	1	100	\$84	\$8,970	Grader	1.5	14.0	9.3
	Dump Truck 12CY x 4	\$119	4	120	\$59	\$7,556	Vibratory Roller*	1.5	14.0	9.3
	FE Loader C966	\$570	1	30	\$79	\$2,940				
	Vibratory Roller	\$570	1	90	\$79	\$7,680				
	Water Truck 2,500 gallon	\$139	1	80	\$70	\$5,739				
	Labor			16	\$25	\$400				
<b>Total</b>										\$51,191

\*Final Road Maintenance Only

**Road Maintenance after completion of Projects 1 (New Construction, & Rock Haul)**

**Sale:** Military green  
**Date:** 18-Feb-05  
**By:** Wolfgram / Long

Type	Equipment/Rationale	Hours	Rate	Cost
Final Haul	Grader 14G	60	\$84	\$5,040
Road	Dump Truck 12CY x 2	40	\$59	\$2,360
Maintenance	FE Loader C966	20	\$79	\$1,580
Haul Route	Vibratory Roller	60	\$79	\$4,740
	Water Truck 2,500 gallon	50	\$70	\$3,500
<b>Total</b>				<b>\$17,220</b>

Miles/day	Distance(miles)	Days
1.5	8.0	5.3
1.5	8.0	5.3

Production Rates  
 Grader  
 Vibratory Roller

**TIMBER CRUISE REPORT**  
**Military Green**  
**FY 2005**

1. **Sale Area Location:** Areas 1, 2, 3, 4, 5, 6, 7, and 8 are located in Portions of Sections 4 and 5, T4N, R6W; and Portions of Sections 28, 32, 33, and 34, T5N, R6W, W.M., Clatsop County, Oregon.
2. **Fund Distribution:** BOF 100%  
 Tax Code 8-01 (100%)

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Partial Cut	62	0	3	3	56	GIS
2	Partial Cut	70	1	4	2	63	GIS
3	Partial Cut	149	7	5	4	133	GIS
4	Partial Cut	131	3	4	4	120	GIS
5	Partial Cut	54	0	1	6	47	GIS
6	Modified Clearcut	109	0	0	15	94	GIS
7	Modified Clearcut	50	0	1	1	48	GIS
8	Right-of-Way	18	0	0	0	18	L X W
<b>TOTALS</b>		<b>643</b>	<b>11</b>	<b>18</b>	<b>35</b>	<b>579</b>	

4. **Cruisers and Cruise Dates:** Areas 1 - 8 were cruised by Derek Bangs, Kevin Berry, Lanny Freeman, Alan Kelso, Jenny Laughman, Jon Long, Eric Perkins, Ty Williams, and Dave Wolfgram, in December, 2004.

5. **Cruise Method and Computation:**

AREAS 1, 2, 3, and 5 are "auto-mark" thinning units (SDI 30), and were variable plot cruised using a 33.6 BAF. These plots are located on a 4 chain by 10 chain grid, with every third plot measured and graded. A total of 81 plots were sampled, with 28 measured and graded plots, and 53 count plots. Cedar and alder are reserve species, and were recorded as "leave" trees. The "biggest and best" trees were recorded as "leave" trees to meet a target residual basal area of 130 ft<sup>2</sup>/acre. Hardwoods do not count towards the residual basal area.

AREA 4 is an "auto-mark" thinning unit (SDI 25), and was variable plot cruised using a 40 BAF. These plots are located on a 3 chain by 10 chain grid, with every third plot measured and graded. A total of 40 plots were sampled, with 14 measured and graded plots, and 26 count plots. Cedar and alder are reserve species, and were recorded as "leave" trees. The target residual basal area is 120 ft<sup>2</sup>/acre. Hardwoods do not count towards the residual basal area.

AREAS 6 and 7 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 3 chain by 15 chain grid, with every other plot measured and graded. A total of 44 plots were sampled, with 22 measured and graded plots, and 22 count plots. Cedar is a reserve species.

AREA 8 R/W. The Right-of Way volume was calculated by multiplying the R/W acreage and the average volume per acre from the plots in Areas 1-7. In-sale right of way from Project No. 1 totals 18 acres.

All cruises used Corvallis MicroTechnology (CMT) 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.

<u>AREA</u>	<u>CRUISE</u>	<u>CRUISE TYPE</u>
1, 2, 3, & 5	SDI 30	05N06W SEC33 TYPE:TAKE
4	SDI 25	05N06W SEC33 TYPE:TAKE
6 & 7	Clearcuts	05N06W SEC33 TYPE:TAKE
8	Right-of-way	05N06W SEC33 TYPE:8RW

**6. Timber Description:** Areas 1, 2, 3, and 5 are “auto-mark” thinning units, approximately 60 years old, consisting of dense Douglas-fir stands mixed with western hemlock, noble fir, red alder, with an occasional western redcedar. These stands will be thinned to an SDI of 25-35 (target SDI 30), removing approximately 88 trees per acre and 20 MBF/acre. The average conifer “take” tree size is 17.2” DBH and 62 feet to a merchantable top (6” d.i.b.).

Area 4 is also an “auto-mark” thinning unit, approximately 60 years old, consisting of dense Douglas-fir stands mixed with western hemlock, noble fir, red alder, with an occasional western redcedar. About half of Area 4 was previously thinned about 25 years ago. Area 4 will be thinned to an SDI of 20-30 (target SDI 25), removing approximately 89 trees per acre and 23 MBF/acre. The average conifer “take” tree size is 17.5” DBH and 71 feet to a merchantable top (6” d.i.b.).

Areas 6 & 7 are clearcut units, approximately 60 years old, consisting of Douglas-fir, hemlock, red alder, with a minor component of western redcedar. The Douglas-fir averages 20.4” DBH, with an average height of 80 feet to a merchantable top (6” d.i.b.). The average hemlock tree size is 16.4” DBH and 58 feet to a merchantable top (6” d.i.b.). The average alder tree size is 15.1” DBH and 41 feet to a merchantable top (6” d.i.b.). The average volume per acre to be harvested (net) is 41 MBF.

Area 8 R/W is similar to the timber description mentioned above for Areas 1-7. The average volume (net) is 41 MBF/acre.

**7. Statistical Analysis and Stand Summary:** (See “Statistics” - Type Reports, attached)

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 2, 3, and 5	50%	7%	24.6%	2.7%
4	45%	7%	34.2%	5.4%
6 and 7	55%	10%	34.3%	5.2%

\* Statistics for the thinning units are for the current stand (Take and leave trees combined).


**8. Volumes by Species and Log Grade:** (See “Species, Sort, Grade - Type and Project Reports, attached, of individual sale areas and combined areas and five cruise types).

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

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	% D & B	% Sale
Douglas-fir	18”	13,010	8,490	3,917	603	2.0	88
Hemlock	16”	1,435	615	738	82	1.5	10
Alder	15”	239	134	57	48	0.6	2
Noble fir	28”	15	14	1	0	0	0
Spruce	24”	2	1	< 1	< 1	0	0
<b>TOTALS</b>		<b>14,701</b>	<b>9,254</b>	<b>4,714</b>	<b>733</b>		

**9. Approvals:**

Prepared by: Jon Long Date: January 14, 2005

Reviewed by:  Date: 1/14/05

10. **Attachments:**
- Cruise Designs (3)
  - Cruise Maps (3)
  - Volume Reports - 5 pages
  - Statistics Reports - 8 pages
  - Stand Tables - 2 pages
  - Log Stock Tables – 5 pages

*X:\Jewell Unit\Timber Sales\2005\Military Green\Sale Prep\Cruise Report, Military Green.doc*

LOGGING BREAKDOWN		
Area	Cable	Tractor
1	61%	39%
2	83%	17%
3	30%	70%
4	38%	62%
5	97%	3%
6	96%	4%
7	93%	7%

**LOGGING MAP**  
 OF TIMBER SALE CONTRACT NO. 341-05-82  
 MILITARY GREEN  
 PORTIONS OF SECTIONS 4 & 5 OF T4N, R6W  
 AND PORTIONS OF SECTIONS 28, 32,  
 33, & 34 OF T5N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON

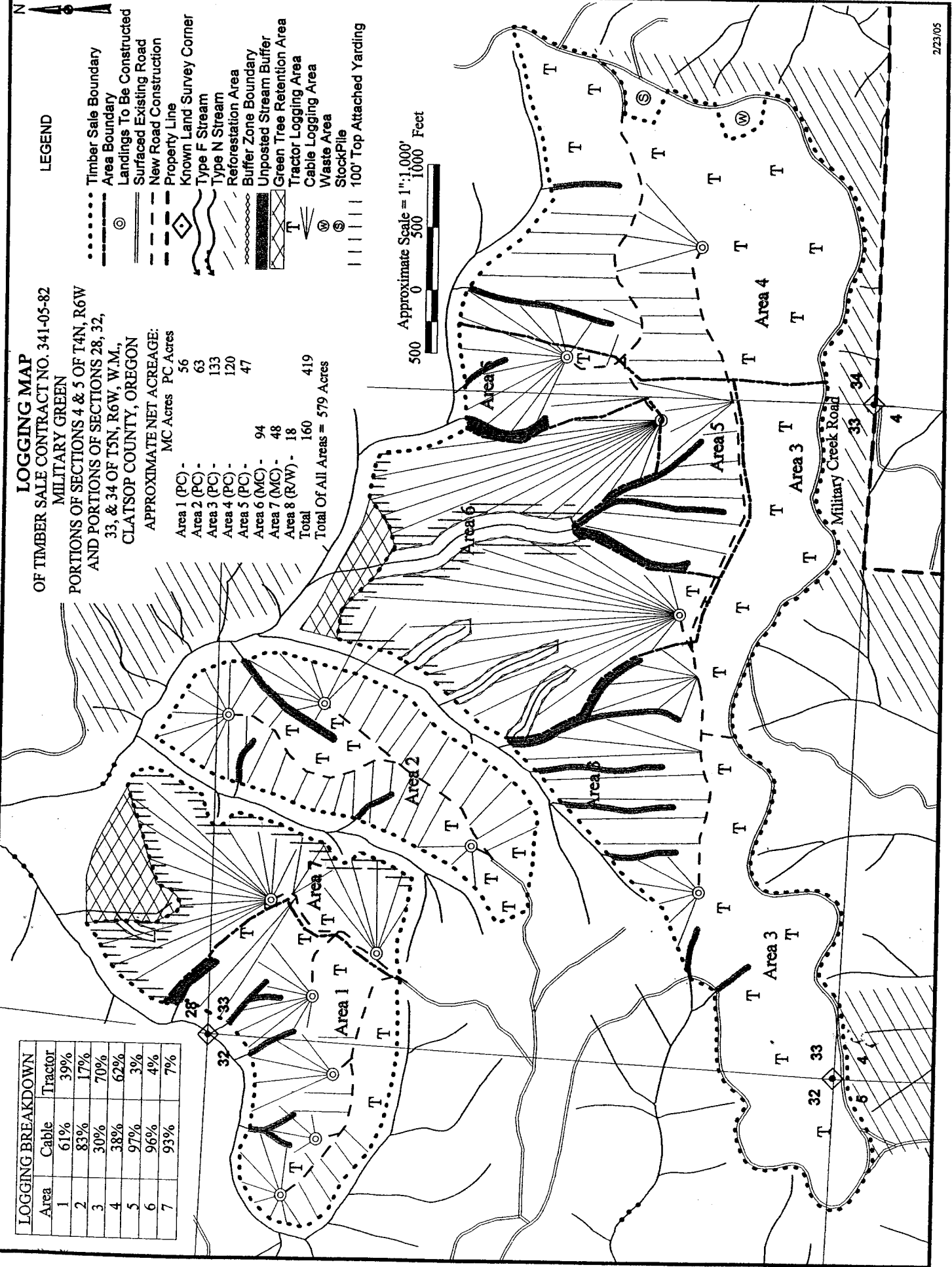
APPROXIMATE NET ACREAGE:

MC Acres	PC Acres
Area 1 (PC) -	56
Area 2 (PC) -	63
Area 3 (PC) -	133
Area 4 (PC) -	120
Area 5 (PC) -	47
Area 6 (MC) -	94
Area 7 (MC) -	48
Area 8 (R/W) -	18
<b>Total</b>	<b>160</b>
<b>Total Of All Areas =</b>	<b>579 Acres</b>

LEGEND

- Timber Sale Boundary
- Area Boundary
- ⊙ Landings To Be Constructed
- Surfaced Existing Road
- New Road Construction
- Property Line
- ◇ Known Land Survey Corner
- Type F Stream
- Type N Stream
- Reforestation Area
- Buffer Zone Boundary
- Unposted Stream Buffer
- Green Tree Retention Area
- Tractor Logging Area
- Cable Logging Area
- ⊙ Waste Area
- ⊙ StockPile
- ||| 100' Top Attached Yarding

Approximate Scale = 1"=1,000'  
 0 500 1000 Feet



**CRUISE DESIGN  
ASTORIA DISTRICT**

**Sale Name:** Military Green **Area(s)** 1, 2, 3, & 5

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

**Approx. Cruise Acres:** 305 **Estimated CV%** 50 BA/Acre **SE% Objective** 7 BA/Acre  
Net BF or Net BF or

**Planned Sale Volume :** 5,185 MMBF **Estimated Sale Area Value/Acre:** \$4,760  
(Areas 1,2, 3, 5) (17 MBF/Ac.)

**A. Cruise Goals:** (a) Grade minimum 100 conifer and 20 hardwood trees:  
(b) Sample 82 cruise plots (28 grade/54count); (c) Other goals (     Determine "automark" thinning standards; X Determine log grades for sale value; X Determine snag and leave tree species and sizes.

**B. Cruise Design:**

- 1. Plot Cruises:** BAF 33.6 (Full point; Half point) (circle one)  
Cruise Line Direction(s) See Map  
Cruise Line Spacing 10 (chains) (feet)  
Cruise Plot Spacing 4 (chains) (feet)  
Grade/Count Ratio 1:2

Basal Area leave target 130 sq. ft. Cruiser needs to select 4 leave trees per plot. Cruise all take and leave trees. Do not take plots in stream buffers shown on cruise map. Alder will not be thinned. Record alder as leave trees. All cedar are leave trees and count towards the leave tree basal area. Alder will not count towards the leave tree BA.

**C. Tree Measurements:**

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 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  
 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: Jon Long  
 Approved by: \_\_\_\_\_  
 Date: 12/1/04

Areas 1, 2, 3, 4 & 5

**Cruising Map**  
 OF TIMBER SALE CONTRACT NO.  
 MILITARY GREEN  
 PORTIONS OF SECTIONS 4 & 5 OF T4N, R6W  
 AND PORTIONS OF SECTIONS 32, 33, & 34  
 OF T5N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON

**APPROXIMATE NET ACREAGE:**

- Area 1 (PC) - 55 Acres
- Area 2 (PC) - 63 Acres
- Area 3 (PC) - 133 Acres
- Area 4 (PC) - 120 Acres
- Area 5 (PC) - 54 Acres
- Area 6 (CC) - 87 Acres
- Area 7 (CC) - 49 Acres
- Area 8 (R/W) - Acres
- Total PC Acres = 425 Acres
- Total CC Acres = 136 Acres
- Total Acres = 561 Acres

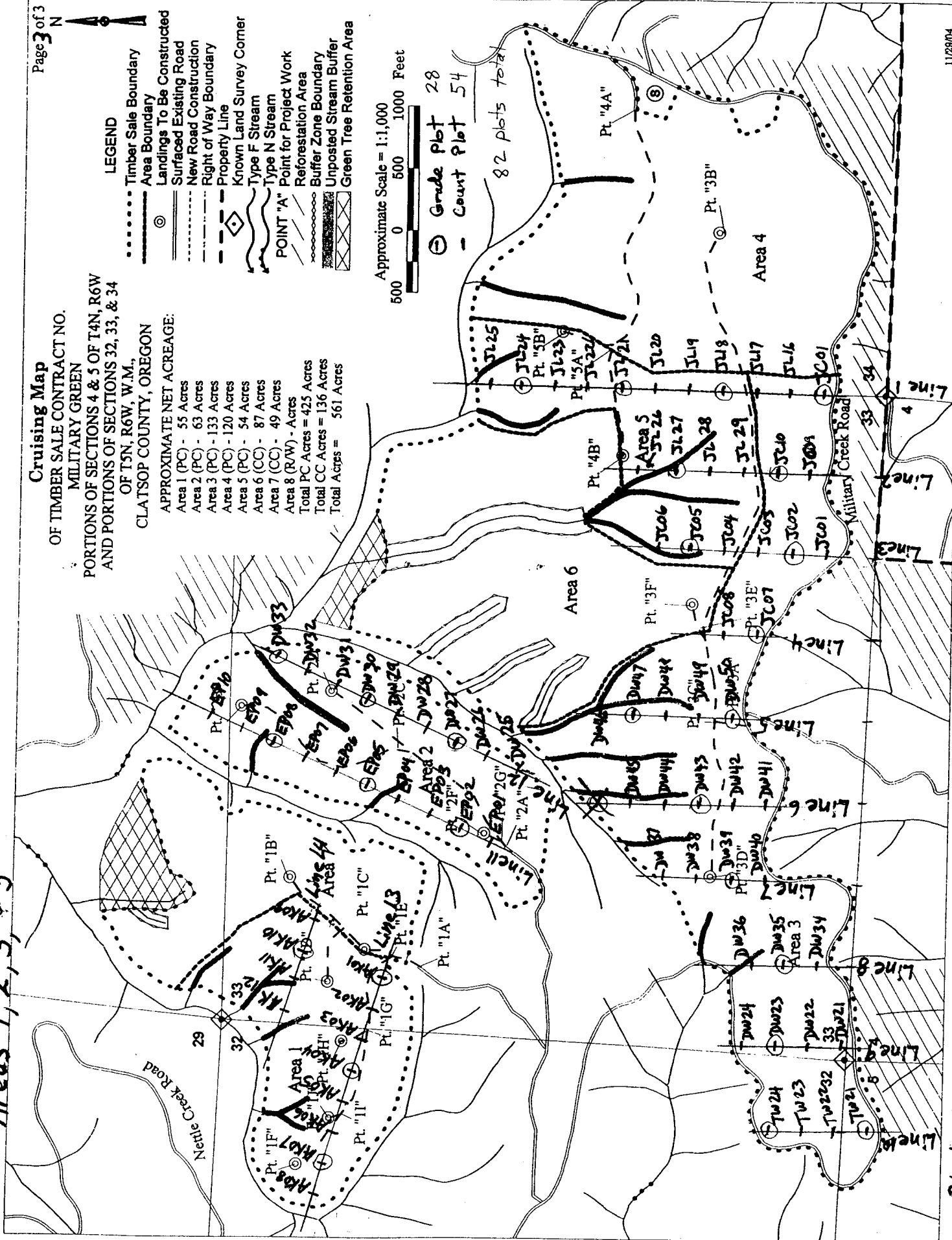
**LEGEND**

- Timber Sale Boundary
- Area Boundary
- ⊙ Landings To Be Constructed
- Surfaced Existing Road
- New Road Construction
- Right of Way Boundary
- Property Line
- ◇ Known Land Survey Corner
- ~ Type F Stream
- ~ Type N Stream
- POINT "A" Point for Project Work
- Reforestation Area
- Buffer Zone Boundary
- Unposted Stream Buffer
- Green Tree Retention Area

Approximate Scale = 1:1,000  
 0 500 1000 Feet

⊙ Grade Plot 28  
 --- Count Plot 54

82 plots total



Plot Spacing 4 chains

Line Spacing 10 chains

**CRUISE DESIGN  
ASTORIA DISTRICT**

**Sale Name:** Military Green **Area(s)** 4

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

**Approx. Cruise Acres:** 120 **Estimated CV%** 45 BA/Acre **SE% Objective** 7 BA/Acre

**Planned Sale Volume :** 2.4 MMBF **Estimated Sale Area Value/Acre:** \$5,600  
(Area 4) (20 MBF/Ac.)

**A. Cruise Goals:** (a) Grade minimum 75 conifer and 10 hardwood trees:  
(b) Sample 40 cruise plots (14 grade/26count); (c) Other goals (      Determine  
"automark" thinning standards; X Determine log grades for sale value; X  
Determine snag and leave tree species and sizes.

**B. Cruise Design:**

**1. Plot Cruises:** BAF 40 (Full point; Half point) (circle one)  
Cruise Line Direction(s) E - W  
Cruise Line Spacing 10 (chains) (feet)  
Cruise Plot Spacing 3 (chains) (feet)  
Grade/Count Ratio 1:2

Basal Area leave target 120 sq. ft. Cruiser needs to select 3 leave trees per plot. Cruise all take and leave trees. Do not take plots in stream buffers shown on cruise map. Alder will not be thinned. Record alder as leave trees. All cedar are leave trees and count towards the leave tree basal area. Alder will not count towards the leave tree BA.

**C. Tree Measurements:**

- 1. Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods. Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
- 2. Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
- 3. Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 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  
 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: Jon Long

Approved by: \_\_\_\_\_

Date: 12/1/04

Area 4



**Cruising Map**  
 OF TIMBER SALE CONTRACT NO.  
 MILITARY GREEN  
 PORTIONS OF SECTIONS 4 & 5 OF T4N, R6W  
 AND PORTIONS OF SECTIONS 32, 33, & 34  
 OF T5N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON

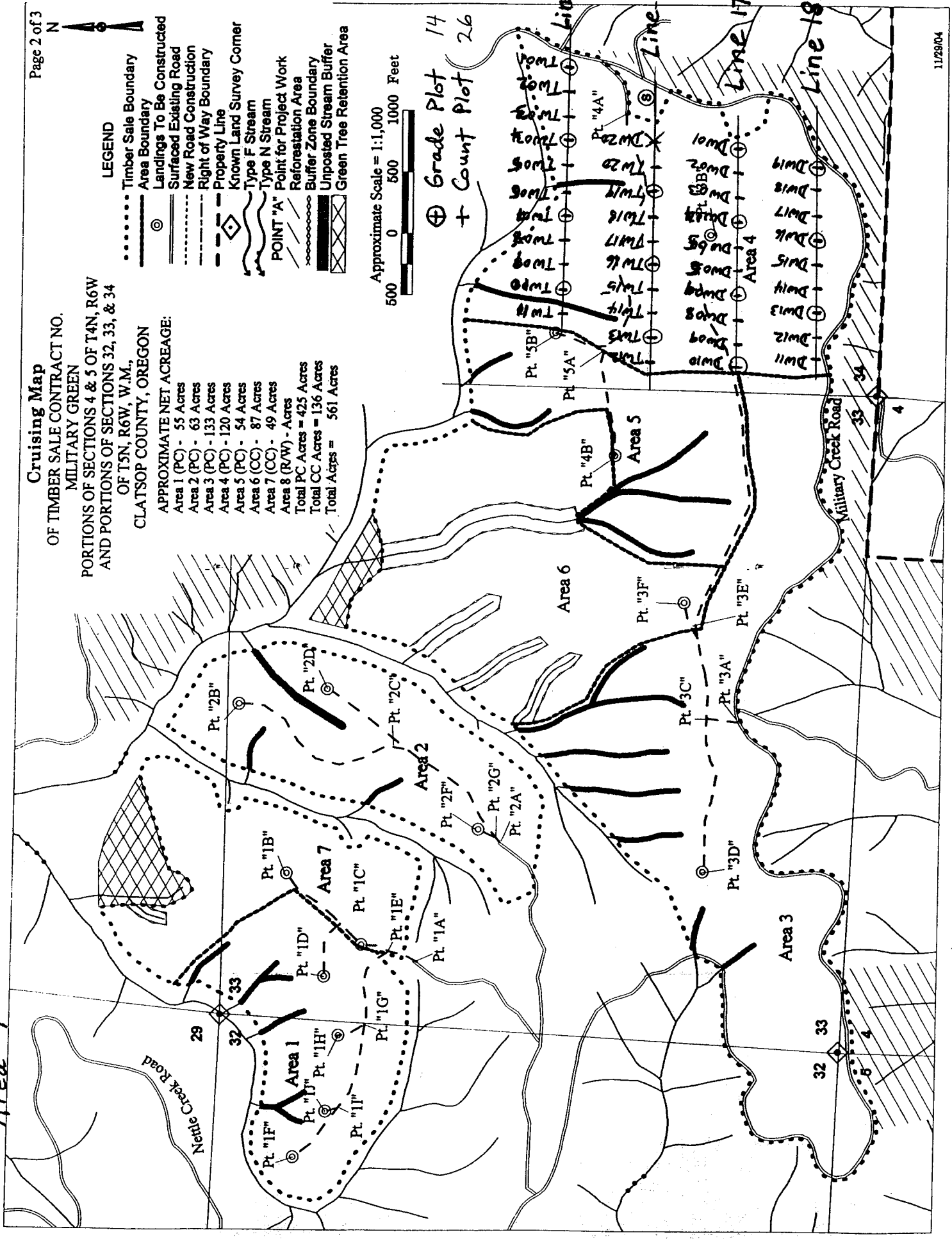
**APPROXIMATE NET ACREAGE:**

- Area 1 (PC) - 55 Acres
- Area 2 (PC) - 63 Acres
- Area 3 (PC) - 133 Acres
- Area 4 (PC) - 120 Acres
- Area 5 (PC) - 54 Acres
- Area 6 (CC) - 87 Acres
- Area 7 (CC) - 49 Acres
- Area 8 (R/W) - Acres
- Total PC Acres = 425 Acres
- Total CC Acres = 136 Acres
- Total Acres = 561 Acres

- LEGEND**
- Timber Sale Boundary
  - Area Boundary
  - Landings To Be Constructed
  - Surfaced Existing Road
  - New Road Construction
  - Right of Way Boundary
  - Property Line
  - Known Land Survey Corner
  - Type F Stream
  - Type N Stream
  - POINT "A" Point for Project Work
  - Reforestation Area
  - Buffer Zone Boundary
  - Unposted Stream Buffer
  - Green Tree Retention Area



⊕ Grade Plot 14  
 + Count Plot 26



Plot Section 2 n. .

**CRUISE DESIGN  
ASTORIA DISTRICT**

**Sale Name:** Military Green **Area(s)** 6 & 7

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

**Approx. Cruise Acres:** 136 **Estimated CV%** 55 Net BF or **SE% Objective** 10 Net BF or  
BA/Acre BA/Acre

**Planned Sale Volume :** 5.4 MMBF **Estimated Sale Area Value/Acre:** \$11,200  
(Areas 6 & 7) (40 MBF/Ac.)

**A. Cruise Goals:** (a) Grade minimum 100 conifer and 20 hardwood trees:  
(b) Sample 44 cruise plots (22 grade/22count); (c) Other goals (     Determine  
"automark" thinning standards; X Determine log grades for sale value; X  
Determine snag and leave tree species and sizes.

**B. Cruise Design:**

1. **Plot Cruises:** BAF 40 (Full point; Half point) (circle one)  
Cruise Line Direction(s) See Map  
Cruise Line Spacing 15 (chains) (feet)  
Cruise Plot Spacing 3 (chains) (feet)  
Grade/Count Ratio 1:1

Do not take plots in stream buffers shown on cruise map. All cedar and marked wildlife trees are leave trees and are recorded as leave trees.

**C. Tree Measurements:**

1. **Diameter:** Minimum DBH to cruise is 8" for conifers and 10" for hardwoods.  
Record dbh to nearest 1/2" for trees < 16", to nearest 1" for trees 16-24", and to nearest 2" for trees > 24". If tree diameters are estimated (only estimate on variable plot cruises), then record to closest estimate.
2. **Bole Length:** Record bole length to nearest foot at TCD. For trees greater than 100 feet in merchantable height, estimating to the nearest 5 feet is acceptable.
3. **Top Cruise Diameter (TCD):** Minimum top outside bark is 7" for conifers and 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.)  
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C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull  
Hardwoods: #2 Sawmill = 12" + scaling diameter; #3 Sawmill = 10 and 11"; #4 Sawmill = 8 and 9"
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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: Jon Long

Approved by: \_\_\_\_\_

Date: 12/1/04

Areas 6 & 7



**LEGEND**

- Timber Sale Boundary
- Area Boundary
- Landings To Be Constructed
- Surfaced Existing Road
- New Road Construction
- Right of Way Boundary
- Property Line
- Known Land Survey Corner
- Type F Stream
- Type N Stream
- Point "A" Point for Project Work
- Reforestation Area
- Buffer Zone Boundary
- Unposted Stream Buffer
- Green Tree Retention Area

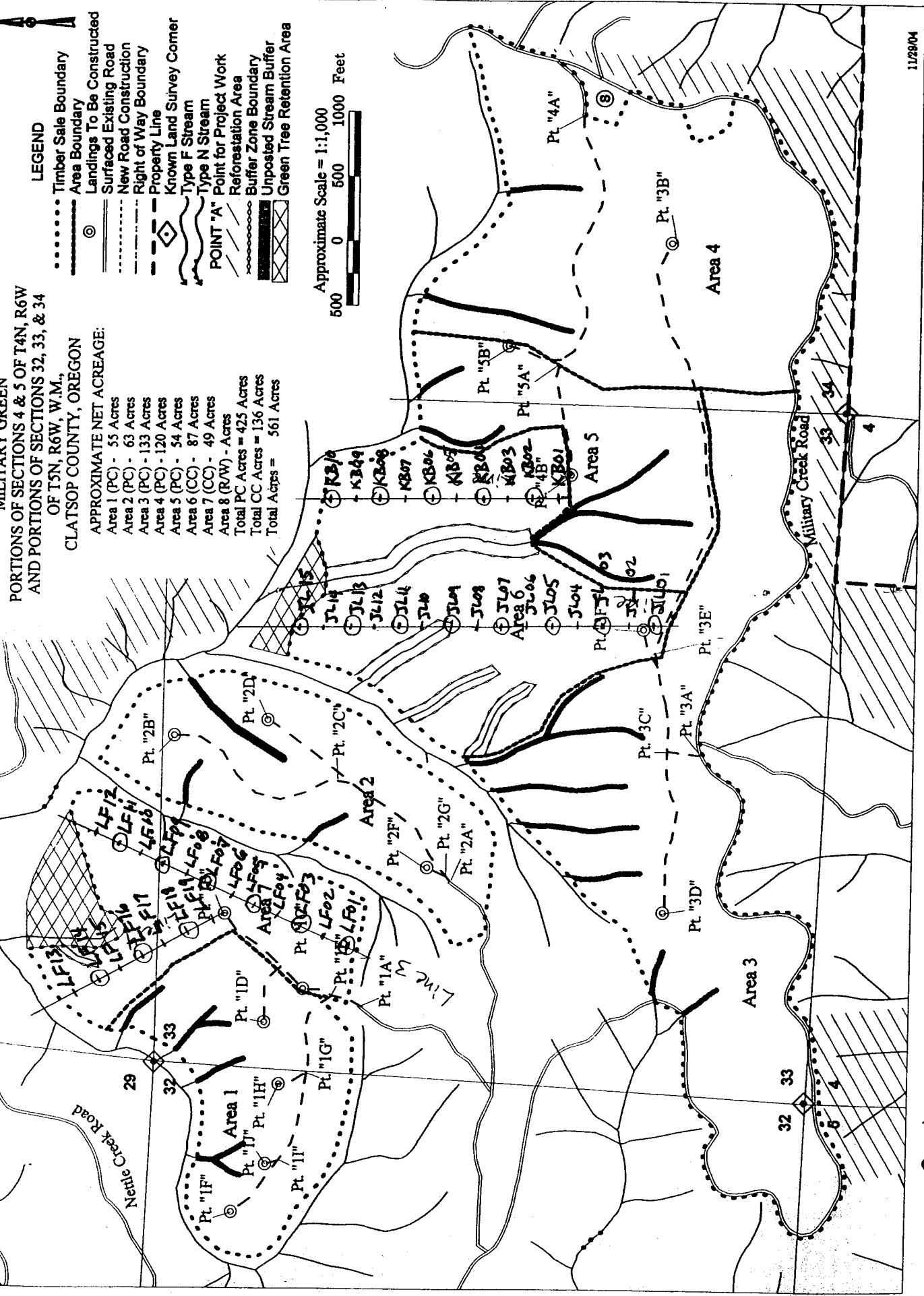
Approximate Scale = 1:1,000



**Cruising Map**  
 OF TIMBER SALE CONTRACT NO.  
 MILITARY GREEN  
 PORTIONS OF SECTIONS 4 & 5 OF T4N, R6W  
 AND PORTIONS OF SECTIONS 32, 33, & 34  
 OF T5N, R6W, W.M.,  
 CLATSOP COUNTY, OREGON

**APPROXIMATE NET ACREAGE:**

- Area 1 (PC) - 55 Acres
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- Area 3 (PC) - 133 Acres
- Area 4 (PC) - 120 Acres
- Area 5 (PC) - 54 Acres
- Area 6 (CC) - 87 Acres
- Area 7 (CC) - 49 Acres
- Area 8 (R/W) - Acres
- Total PC Acres = 425 Acres
- Total CC Acres = 136 Acres
- Total Acres = 561 Acres



Plot Station 201...



TC PSPCSTGR

**Species, Sort Grade - Board Foot Volumes (Project)**

T05N R06W S33 TyTAKE  
THRU  
T5N R6W S33 TyTAKE

**Project: MILITARY**  
**Acres 579.00**

**Page 1**  
**Date 1/5/2005**  
**Time 3:41:26PM**

Spp	S T	So rt	Gr 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				
D		?																0.00	1.9	
D		?	?															0.00	12.2	
D		?	2S	58	2.3	15,006	14,663	8,490		3	66	31	4	2	29	65	35	282	1.90	52.0
D		?	3S	27	1.2	6,847	6,765	3,917	1	89	8	2	2	7	26	65	36	92	0.76	73.4
D		?	4S	4	3.7	1,081	1,042	603	2	98			45	47	7	1	21	29	0.46	36.3
<b>D Totals</b>				<b>88</b>	<b>2.0</b>	<b>22,935</b>	<b>22,470</b>	<b>13,010</b>	<b>0</b>	<b>33</b>	<b>46</b>	<b>21</b>	<b>5</b>	<b>6</b>	<b>27</b>	<b>62</b>	<b>30</b>	<b>128</b>	<b>1.10</b>	<b>175.8</b>
H		?	?															0.00	1.2	
H		?	2S	4	.6	1,068	1,062	615			91	9	8		50	42	34	203	1.42	5.2
H		?	3S	5	2.5	1,307	1,275	738		92	8	0	3	1	23	73	35	91	0.76	13.9
H		?	4S	1		141	141	82		99	1		60	40			19	23	0.44	6.1
<b>H Totals</b>				<b>10</b>	<b>1.5</b>	<b>2,516</b>	<b>2,478</b>	<b>1,435</b>	<b>53</b>	<b>43</b>	<b>4</b>	<b>8</b>	<b>3</b>	<b>33</b>	<b>56</b>	<b>30</b>	<b>94</b>	<b>0.85</b>	<b>26.5</b>	
A		?	?															0.00	.2	
A		?	2S	1	1.1	234	231	134			34	66			84	16	33	399	2.48	.6
A		?	3S	0		98	98	57		71	29			38	35	27	34	90	0.83	1.1
A		?	4S	0		85	85	49		100				32	29	39	25	39	0.59	2.2
<b>A Totals</b>				<b>2</b>	<b>.6</b>	<b>416</b>	<b>414</b>	<b>239</b>	<b>37</b>	<b>26</b>	<b>37</b>	<b>6</b>	<b>15</b>	<b>55</b>	<b>24</b>	<b>28</b>	<b>101</b>	<b>0.98</b>	<b>4.1</b>	
NF		?	?															0.00	.0	
NF		?	2S	0		24	24	14		5	22	73			100		40	597	2.98	.0
NF		?	3S	0		3	3	1		79	21			21	79		30	136	1.23	.0
NF		?	4S	0		0	0	0		100				100			16	30	0.56	.0
<b>NF Totals</b>				<b>0</b>		<b>27</b>	<b>27</b>	<b>16</b>	<b>13</b>	<b>22</b>	<b>65</b>	<b>4</b>	<b>7</b>	<b>89</b>	<b>30</b>	<b>335</b>	<b>2.30</b>	<b>.1</b>		
S		?	2S	0		2	2	1			100				100		40	460	2.65	.0
S		?	3S	0		1	1	0			100			100			32	160	1.31	.0
S		?	4S	0		0	0	0		100			100				16	30	0.69	.0
<b>S Totals</b>				<b>0</b>		<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>25</b>	<b>71</b>	<b>5</b>	<b>25</b>	<b>71</b>	<b>29</b>	<b>217</b>	<b>1.81</b>	<b>.0</b>		
<b>Totals</b>					<b>2.0</b>	<b>25,897</b>	<b>25,391</b>	<b>14,701</b>	<b>0</b>	<b>35</b>	<b>45</b>	<b>20</b>	<b>6</b>	<b>5</b>	<b>28</b>	<b>61</b>	<b>30</b>	<b>123</b>	<b>1.07</b>	<b>206.4</b>

TC TSPCSTGR										Species, Sort Grade - Board Foot Volumes (Type)										Page 1					
										Project: MILITARY										Date 1/6/2005					
																				Time 3:02:10PM					
T5N R6W S33 TTAKE										T5N R6W S33 TTAKE															
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt							
5N		6W		33		AREA1235		TAKE		299.00		81		115		1		W							
Spp	S	So	Gr	ad	%	Net	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre			
							Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Bd	CF/Lf				
						BdFt				Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf				
D				CU																		0.00	3.5		
D		?		CU																		7	0.00	14.4	
D		?		2S	57	2.2	9,933	9,710		2,903		1	69	30	8	4	24	64	34	264	1.89			36.7	
D		?		3S	37	1.4	6,437	6,347		1,898	1	85	9	5	4	6	30	60	35	93	0.77			68.5	
D		?		4S	6	3.5	1,124	1,084		324	2	98			42	50	9		21	29	0.44			37.7	
<b>D</b>	<b>Totals</b>				89	2.0	17,494	17,141		5,125	1	39	42	18	9	7	25	58	28	107	1.01			160.8	
H		?		2S	31		637	637		191		100						73	27	34	184	1.35			3.5
H		?		3S	60		1,218	1,218		364		100						39	61	37	102	0.79			11.9
H		?		4S	9		186	186		56		100				49	51			19	23	0.43			8.2
<b>H</b>	<b>Totals</b>				11		2,042	2,042		610		69	31		4	5	46	45	30	86	0.80			23.6	
<b>Type Totals</b>						1.8	19,536	19,183		5,736	1	42	41	17	8	7	27	57	29	104	0.98			184.4	

T05N R06W S34 TTAKE										T05N R06W S34 TTAKE			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt				
05N	06W	34	AREA4	TAKE	120.00	40	64	1	W				

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
									Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
D	?	?														4		0.00	12.5	
D	?	2S		56	3.9	10,842	10,417	1,250	1	81	18	3	2	17	77	37	278	1.84	37.4	
D	?	3S		39	.1	7,343	7,333	880	95	5			8	7	84	38	102	0.77	72.0	
D	?	4S		5	9.3	929	843	101	100			28	54	13	5	24	30	0.44	27.7	
<b>D</b>	<b>Totals</b>			84	2.7	19,114	18,592	2,231	43	47	10	3	7	13	77	33	124	1.02	149.6	
H	?	?														9		0.00	3.9	
H	?	2S		45		1,550	1,550	186		75	25	25		34	41	31	206	1.38	7.5	
H	?	3S		55		1,874	1,874	225	88	12		6	5	6	83	33	80	0.69	23.3	
<b>H</b>	<b>Totals</b>			16		3,424	3,424	411	48	40	11	14	3	19	64	30	98	0.82	34.8	
<b>Type Totals</b>					2.3	22,538	22,016	2,642	43	46	10	5	6	14	75	32	119	0.99	184.4	

T05N R06W S33 TTAKE	T05N R06W S33 TTAKE
Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt	BdFt
05N 06W 33 AREA67 TAKE 142.00 44 133 1	W

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre				
									Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf					
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99								
D	?	?																						
D	?	2S		78	1.8	27,868	27,372	3,887		4	60	35		1	1	38	60	36	296	1.90				92.5
D	?	3S		19	1.8	6,812	6,692	950		92	8			2	6	32	60	35	83	0.74				80.2
D	?	4S		3		1,051	1,051	149		2	98			62	38			20	28	0.50				38.1
<b>D</b>	<b>Totals</b>			<b>89</b>	<b>1.7</b>	<b>35,731</b>	<b>35,115</b>	<b>4,986</b>		<b>0</b>	<b>24</b>	<b>49</b>	<b>27</b>	<b>3</b>	<b>3</b>	<b>36</b>	<b>58</b>	<b>32</b>	<b>162</b>	<b>1.26</b>				<b>217.2</b>
H		DO	CU																					
H	?	2S		59	1.7	1,473	1,448	206			100					48	52	36	209	1.47				6.9
H	?	3S		35	13.3	980	849	121		73	27			6		6	89	37	84	0.79				10.1
H	?	4S		6		158	158	22		100				87	13			18	24	0.47				6.5
<b>H</b>	<b>Totals</b>			<b>6</b>	<b>6.0</b>	<b>2,611</b>	<b>2,455</b>	<b>349</b>		<b>32</b>	<b>68</b>			<b>8</b>	<b>1</b>	<b>30</b>	<b>61</b>	<b>30</b>	<b>98</b>	<b>0.96</b>				<b>25.1</b>
A	?	?																						
A	?	2S		56	1.1	953	942	134			34	66				84	16	33	399	2.48				2.4
A	?	3S		24		399	399	57		71	29				38	35	27	34	90	0.83				4.4
A	?	4S		20		345	345	49		100				32	29		39	25	39	0.59				9.0
<b>A</b>	<b>Totals</b>			<b>4</b>	<b>.6</b>	<b>1,697</b>	<b>1,686</b>	<b>239</b>		<b>37</b>	<b>26</b>	<b>37</b>		<b>6</b>	<b>15</b>	<b>55</b>	<b>24</b>	<b>28</b>	<b>101</b>	<b>0.98</b>				<b>16.6</b>
<b>Type Totals</b>					<b>2.0</b>	<b>40,039</b>	<b>39,256</b>	<b>5,574</b>		<b>0</b>	<b>25</b>	<b>49</b>	<b>26</b>	<b>3</b>	<b>3</b>	<b>36</b>	<b>57</b>	<b>31</b>	<b>152</b>	<b>1.22</b>				<b>258.9</b>

T5N R6W S33 T8RW		T5N R6W S33 T8RW
Twp 5N Rge 6W Sec 33 Tract AREA 8RW Type 8RW Acres 18.00 Plots 81 Sample Trees 221 CuFt 1 BdFt W		

Spp	So T	Gr ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/Lf		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D		CU																0.00	3.9	
D	?	CU																7	0.00	18.6
D	?	2S	67	2.3	25,557	24,980	450		1	60	40	3	3	22	72	36	303	2.03	82.4	
D	?	3S	28	1.2	10,644	10,520	189	1	82	12	5	3	5	32	60	35	95	0.81	110.9	
D	?	4S	4	2.5	1,631	1,590	29	3	97			54	39	8		19	29	0.47	55.6	
<b>D</b>	<b>Totals</b>		89	2.0	37,832	37,090	668	0	28	44	28	5	5	24	65	30	137	1.20	271.4	
H	?	2S	50		1,804	1,804	32		76	24				26	74	36	297	1.92	6.1	
H	?	3S	44		1,579	1,579	28		93	7				32	68	37	107	0.85	14.8	
H	?	4S	6		215	215	4		89	11		55	45			19	25	0.45	8.6	
<b>H</b>	<b>Totals</b>		9		3,597	3,597	65		46	39	15	3	3	27	67	32	122	1.03	29.5	
NF	?	CU																6	0.00	.3
NF	?	2S	89		770	770	14		5	22	73				100	40	597	2.98	1.3	
NF	?	3S	10		82	82	1		79	21		21		79		30	136	1.23	.6	
NF	?	4S	1		13	13	0		100			100				16	30	0.56	.4	
<b>NF</b>	<b>Totals</b>		2		866	866	16		13	22	65	4		7	89	30	335	2.30	2.6	
S	?	2S	71		61	61	1			100				100		40	460	2.65	.1	
S	?	3S	25		21	21	0			100				100		32	160	1.31	.1	
S	?	4S	5		4	4	0		100			100				16	30	0.69	.1	
<b>S</b>	<b>Totals</b>		0		86	86	2		5	25	71	5		25	71	29	217	1.81	.4	
<b>Type Totals</b>				1.7	42,380	41,639	750	0	29	43	28	5	5	24	66	30	137	1.19	303.8	

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT MILITARY		DATE 1/6/2005				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
5N	6W	33	AREA1235	0001	299.00	81	664	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		81	664	8.2						
CRUISE		28	221	7.9	39,827	.6				
DBH COUNT										
REFOREST										
COUNT		53	434	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
DOUG FIR	104	76.2	17.5	63		126.9	17,494	17,141	4,599	4,594
DOUGLEAV	96	41.5	23.0	86		119.9	20,383	19,994	5,085	5,072
WHEMLOCK	11	11.9	15.2	62		14.9	2,042	2,042	572	572
HEMLEAV	6	2.6	24.6	84		8.7	1,572	1,572	391	391
NFIRLEAV	2	.5	32.6	94	1	2.9	655	655	132	132
SFIRLEAV	1	.3	23.0	92	0	.8	150	150	36	36
SPRUCELV	1	.1	24.0	90		.4	86	86	21	21
<b>TOTAL</b>	<b>221</b>	<b>133.2</b>	<b>19.4</b>	<b>71</b>		<b>274.6</b>	<b>42,381</b>	<b>41,639</b>	<b>10,835</b>	<b>10,818</b>
SD: 1		COEFF VAR.%	S.E.%	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DOUG FIR		152.6	10.3	150	167	184				
DOUGLEAV		138.7	9.3	228	252	275				
WHEMLOCK		474.7	31.9	6	10	13				
HEMLEAV		710.8	47.8	10	19	28				
NFIRLEAV		1110.9	74.7	3	13	22				
SFIRLEAV		1486.6	100.0	0	2	5				
SPRUCELV		1486.6	100.0	0	3	6				
<b>TOTAL</b>		<b>69.5</b>	<b>4.7</b>	<b>443</b>	<b>465</b>	<b>487</b>	<b>99</b>	<b>48</b>	<b>34</b>	
SD: 1		COEFF VAR.%	S.E.%	TREES/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DOUG FIR		70.2	7.8	70	76	82				
DOUGLEAV		26.6	3.0	40	42	43				
WHEMLOCK		171.5	19.1	10	12	14				
HEMLEAV		187.8	20.9	2	3	3				
NFIRLEAV		490.8	54.5	0	1	1				
SFIRLEAV		632.4	70.3	0	0	0				
SPRUCELV		900.0	100.0	0	0	0				
<b>TOTAL</b>		<b>42.4</b>	<b>4.7</b>	<b>127</b>	<b>133</b>	<b>139</b>	<b>37</b>	<b>18</b>	<b>12</b>	
SD: 1		COEFF VAR.%	S.E.%	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DOUG FIR		55.4	6.2	119	127	135				
DOUGLEAV		20.3	2.3	117	120	123				
WHEMLOCK		166.9	18.5	12	15	18				
HEMLEAV		190.7	21.2	7	9	11				
NFIRLEAV		490.8	54.5	1	3	4				
SFIRLEAV		632.4	70.3	0	1	1				
SPRUCELV		900.0	100.0	0	0	1				
<b>TOTAL</b>		<b>25.8</b>	<b>2.9</b>	<b>267</b>	<b>275</b>	<b>282</b>	<b>14</b>	<b>7</b>	<b>5</b>	
SD: 1		COEFF VAR.%	S.E.%	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DOUG FIR		56.2	6.2	16,072	17,141	18,211				
DOUGLEAV		22.5	2.5	19,493	19,994	20,495				
WHEMLOCK		165.9	18.4	1,665	2,042	2,418				

TC TSTATS				STATISTICS			PAGE 2		
				PROJECT MILITARY			DATE 1/6/2005		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
5N	6W	33	AREA1235	0001	299.00	81	664	1	W
SD: 1		COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
		VAR.	S.E.%	LOW	AVG	HIGH	7	10	12
HEMLEAV		195.4	21.7	1,231	1,572	1,913			
NFIRLEAV		490.8	54.5	298	655	1,013			
SFIRLEAV		632.4	70.3	44	150	255			
SPRUCELV		900.0	100.0		86	172			
<b>TOTAL</b>		24.6	2.7	40,501	41,639	42,777	12	6	4

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT MILITARY		DATE 1/6/2005				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	34	AREA4	0002	120.00	40	281	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES				
TOTAL		40	281	7.0						
CRUISE		14	110	7.9	16,269		.7			
DBH COUNT										
REFOREST										
COUNT		26	171	6.6						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	55	74.6	17.9	74		131.0	20,111	19,574	5,234	5,232
DOUGLEAV	35	27.6	24.6	90		91.0	16,235	16,000	3,895	3,895
WHEMLOCK	10	19.7	15.6	62		26.0	3,709	3,709	938	927
HEMLEAV	6	11.4	19.3	90		23.0	4,548	4,535	1,085	1,032
SNAG	3	2.0	16.7	82		3.0	339	339	98	98
NFIRLEAV	1	.4	30.0	125	0	2.0	672	672	125	125
<b>TOTAL</b>	<b>110</b>	<b>135.6</b>	<b>19.3</b>	<b>77</b>		<b>276.0</b>	<b>45,613</b>	<b>44,828</b>	<b>11,376</b>	<b>11,311</b>
	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DOUG FIR	130.5	12.4	153	174	196					
DOUGLEAV	161.2	15.4	174	206	237					
WHEMLOCK	339.4	32.4	15	22	29					
HEMLEAV	451.1	43.0	15	26	37					
SNAG	638.2	60.9	2	6	10					
NFIRLEAV	1048.8	100.0		15	30					
<b>TOTAL</b>	<b>62.5</b>	<b>6.0</b>	<b>422</b>	<b>449</b>	<b>475</b>	<b>80</b>	<b>39</b>	<b>27</b>		
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DOUG FIR	58.7	9.3	68	75	82					
DOUGLEAV	39.7	6.3	26	28	29					
WHEMLOCK	153.3	24.2	15	20	24					
HEMLEAV	126.8	20.0	9	11	14					
SNAG	421.0	66.6	1	2	3					
NFIRLEAV	441.4	69.8	0	0	1					
<b>TOTAL</b>	<b>45.6</b>	<b>7.2</b>	<b>126</b>	<b>136</b>	<b>145</b>	<b>43</b>	<b>21</b>	<b>14</b>		
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DOUG FIR	55.7	8.8	119	131	143					
DOUGLEAV	35.9	5.7	86	91	96					
WHEMLOCK	150.1	23.7	20	26	32					
HEMLEAV	123.8	19.6	18	23	28					
SNAG	355.7	56.2	1	3	5					
NFIRLEAV	441.4	69.8	1	2	3					
<b>TOTAL</b>	<b>32.5</b>	<b>5.1</b>	<b>262</b>	<b>276</b>	<b>290</b>	<b>21</b>	<b>11</b>	<b>7</b>		
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DOUG FIR	55.9	8.8	17,845	19,574	21,303					
DOUGLEAV	35.6	5.6	15,099	16,000	16,900					
WHEMLOCK	153.9	24.3	2,806	3,709	4,612					
HEMLEAV	124.3	19.7	3,643	4,535	5,426					
SNAG	406.0	64.2	121	339	556					
NFIRLEAV	441.4	69.8	203	672	1,142					
<b>TOTAL</b>	<b>34.2</b>	<b>5.4</b>	<b>42,406</b>	<b>44,828</b>	<b>47,250</b>	<b>24</b>	<b>12</b>	<b>8</b>		



TC TSTATS				STATISTICS				PAGE 1		
				PROJECT MILITARY		DATE 12/23/2004				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
5N	6W	33	AREA1235	TAKE	299.00	81	342	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
		PLOTS	TREES		TREES	TREES				
TOTAL		81	342	4.2						
CRUISE		26	115	4.4	26,356	.4				
DBH COUNT										
REFOREST										
COUNT		52	227	4.4						
BLANKS		3								
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
D	104	76.2	17.5	63		126.9	18,463	18,097	4,434	4,430
H	11	11.9	15.2	62		14.9	1,994	1,994	500	500
<b>TOTAL</b>	<b>115</b>	<b>88.1</b>	<b>17.2</b>	<b>62</b>		<b>141.9</b>	<b>20,457</b>	<b>20,091</b>	<b>4,934</b>	<b>4,930</b>
	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
D	86.3	8.0	313	341	368					
H	338.1	31.5	12	18	24					
<b>TOTAL</b>	<b>77.8</b>	<b>7.3</b>	<b>333</b>	<b>359</b>	<b>385</b>	<b>124</b>	<b>61</b>	<b>42</b>		
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
D	70.2	7.8	70	76	82					
H	171.5	19.1	10	12	14					
<b>TOTAL</b>	<b>62.5</b>	<b>6.9</b>	<b>82</b>	<b>88</b>	<b>94</b>	<b>80</b>	<b>39</b>	<b>27</b>		
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
D	55.4	6.2	119	127	135					
H	166.9	18.5	12	15	18					
<b>TOTAL</b>	<b>50.2</b>	<b>5.6</b>	<b>134</b>	<b>142</b>	<b>150</b>	<b>52</b>	<b>25</b>	<b>18</b>		
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
D	55.9	6.2	16,973	18,097	19,222					
H	166.1	18.5	1,626	1,994	2,362					
<b>TOTAL</b>	<b>51.5</b>	<b>5.7</b>	<b>18,942</b>	<b>20,091</b>	<b>21,240</b>	<b>54</b>	<b>26</b>	<b>18</b>		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT MILITARY				DATE 12/23/2004		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	34	AREA4	TAKE	120.00	40	149	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	40	149	3.7							
CRUISE	14	64	4.6		10,677		.6			
DBH COUNT										
REFOREST										
COUNT	22	85	3.9							
BLANKS	4									
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
D	54	70.8	18.0	74		125.0	20,120	19,577	4,812	4,810
H	10	18.1	15.6	62		24.0	3,226	3,226	741	733
<b>TOTAL</b>	<b>64</b>	<b>89.0</b>	<b>17.5</b>	<b>71</b>		<b>149.0</b>	<b>23,345</b>	<b>22,803</b>	<b>5,553</b>	<b>5,543</b>
	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	76.4	9.6	281	310	340					
H	251.3	31.4	25	36	47					
<b>TOTAL</b>	<b>59.1</b>	<b>7.4</b>	<b>321</b>	<b>346</b>	<b>372</b>		<b>71</b>	<b>35</b>	<b>24</b>	
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	64.4	10.2	64	71	78					
H	162.8	25.7	13	18	23					
<b>TOTAL</b>	<b>62.4</b>	<b>9.9</b>	<b>80</b>	<b>89</b>	<b>98</b>		<b>79</b>	<b>39</b>	<b>27</b>	
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	61.6	9.7	113	125	137					
H	159.2	25.2	18	24	30					
<b>TOTAL</b>	<b>55.4</b>	<b>8.8</b>	<b>136</b>	<b>149</b>	<b>162</b>		<b>63</b>	<b>31</b>	<b>21</b>	
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	62.0	9.8	17,659	19,577	21,496					
H	163.4	25.8	2,393	3,226	4,059					
<b>TOTAL</b>	<b>56.8</b>	<b>9.0</b>	<b>20,756</b>	<b>22,803</b>	<b>24,851</b>		<b>66</b>	<b>32</b>	<b>22</b>	

TC TSTATS		STATISTICS						PAGE 1		
		PROJECT MILITARY						DATE 12/23/2004		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	33	AREA67	TAKE	142.00	44	263	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		44	263	6.0						
CRUISE		22	133	6.0	16,395		.8			
DBH COUNT										
REFOREST										
COUNT		22	130	5.9						
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
D	109	90.2	20.4	80		204.5	37,783	37,112	8,477	8,477
H	12	13.7	16.4	58		20.0	2,565	2,409	641	641
A	12	11.6	15.1	41		14.5	1,611	1,601	395	395
<b>TOTAL</b>	<b>133</b>	<b>115.5</b>	<b>19.5</b>	<b>74</b>		<b>239.1</b>	<b>41,960</b>	<b>41,122</b>	<b>9,513</b>	<b>9,513</b>
	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	76.5	6.6	417	446	476					
H	341.5	29.6	14	20	26					
A	514.3	44.6	15	27	39					
<b>TOTAL</b>	<b>63.2</b>	<b>5.5</b>	<b>466</b>	<b>493</b>	<b>520</b>		<b>81</b>	<b>40</b>	<b>28</b>	
	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	55.9	8.4	83	90	98					
H	146.0	22.0	11	14	17					
A	230.9	34.8	8	12	16					
<b>TOTAL</b>	<b>46.8</b>	<b>7.1</b>	<b>107</b>	<b>115</b>	<b>124</b>		<b>45</b>	<b>22</b>	<b>15</b>	
	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	40.1	6.0	192	205	217					
H	132.9	20.0	16	20	24					
A	259.1	39.1	9	15	20					
<b>TOTAL</b>	<b>31.6</b>	<b>4.8</b>	<b>228</b>	<b>239</b>	<b>250</b>		<b>20</b>	<b>10</b>	<b>7</b>	
	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH		7	10	12	
D	40.6	6.1	34,838	37,112	39,386					
H	137.7	20.8	1,909	2,409	2,909					
A	352.6	53.2	750	1,601	2,452					
<b>TOTAL</b>	<b>34.3</b>	<b>5.2</b>	<b>38,996</b>	<b>41,122</b>	<b>43,247</b>		<b>24</b>	<b>12</b>	<b>8</b>	

TC TSTATS		STATISTICS PROJECT MILITARY					PAGE 1		DATE 12/23/2004	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
5N	6W	33	AREA1235	LEAV	299.00	81	324	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		81	324	4.0						
CRUISE		28	106	3.8	13,471	.8				
DBH COUNT										
REFOREST										
COUNT		53	215	4.1						
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DL	96	41.5	23.0	86		119.9	21,807	21,397	4,983	4,970
HL	6	2.6	24.6	84		8.7	1,496	1,496	358	358
NOB FIR	2	.5	32.6	94	1	2.9	699	699	128	128
PS FIR	1	.3	23.0	92	0	.8	161	161	36	36
SL	1	.1	24.0	90		.4	75	75	17	17
<b>TOTAL</b>	<b>106</b>	<b>45.1</b>	<b>23.2</b>	<b>86</b>		<b>132.7</b>	<b>24,239</b>	<b>23,829</b>	<b>5,522</b>	<b>5,509</b>
	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DL	63.1	6.1	527	562	596					
HL	487.5	47.4	20	37	55					
NOB FIR	764.5	74.3	7	28	49					
PS FIR	1029.6	100.0		5	11					
SL	1029.6	100.0		5	11					
<b>TOTAL</b>	<b>54.5</b>	<b>5.3</b>	<b>604</b>	<b>637</b>	<b>671</b>	<b>61</b>	<b>30</b>	<b>21</b>		
	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DL	26.6	3.0	40	42	43					
HL	187.8	20.9	2	3	3					
NOB FIR	490.8	54.5	0	1	1					
PS FIR	632.4	70.3	0	0	0					
SL	900.0	100.0	0	0	0					
<b>TOTAL</b>	<b>16.8</b>	<b>1.9</b>	<b>44</b>	<b>45</b>	<b>46</b>	<b>6</b>	<b>3</b>	<b>2</b>		
	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DL	20.3	2.3	117	120	123					
HL	190.7	21.2	7	9	11					
NOB FIR	490.8	54.5	1	3	4					
PS FIR	632.4	70.3	0	1	1					
SL	900.0	100.0	0	0	1					
<b>TOTAL</b>			<b>133</b>	<b>133</b>	<b>133</b>					
	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD: 1	VAR.%	S.E.%	LOW	AVG	HIGH	7	10	12		
DL	22.7	2.5	20,856	21,397	21,937					
HL	195.0	21.7	1,172	1,496	1,821					
NOB FIR	490.8	54.5	318	699	1,081					
PS FIR	632.4	70.3	48	161	274					
SL	900.0	100.0	0	75	151					
<b>TOTAL</b>	<b>8.3</b>	<b>.9</b>	<b>23,609</b>	<b>23,829</b>	<b>24,050</b>	<b>1</b>	<b>1</b>	<b>0</b>		

$$SDI = \frac{(45)(2.3)^{1/6}}{600} = 28.4$$

TC TSTATS		STATISTICS PROJECT MILITARY						PAGE 1 DATE 12/23/2004		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
05N	06W	34	AREA4	LEAV	120.00	40	124	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		40	124	3.1						
CRUISE		14	45	3.2	4,960	.9				
DBH COUNT REFOREST COUNT		26	79	3.0						
BLANKS 100 %										
<b>STAND SUMMARY</b>										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DL	35	27.6	24.6	90		91.0	17,101	16,841	3,816	3,815
HL	6	11.4	19.3	90		23.0	4,406	4,393	966	916
SNL	3	2.0	16.7	82		3.0	354	354	90	90
NOB FIR	1	.4	30.0	125	0	2.0	660	660	115	115
<b>TOTAL</b>	<b>45</b>	<b>41.3</b>	<b>23.0</b>	<b>90</b>		<b>119.0</b>	<b>22,521</b>	<b>22,248</b>	<b>4,987</b>	<b>4,937</b>
SD: 1		COEFF VAR.%	S.E.%	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DL		69.7	10.4	476	531	586				
HL		281.9	42.0	36	61	87				
SNL		391.3	58.3	6	14	23				
NOB FIR		670.8	100.0		36	72				
<b>TOTAL</b>		<b>49.2</b>	<b>7.3</b>	<b>596</b>	<b>643</b>	<b>690</b>	<b>49</b>	<b>24</b>	<b>17</b>	
SD: 1		COEFF VAR.%	S.E.%	TREES/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DL		39.7	6.3	26	28	29				
HL		126.8	20.0	9	11	14				
SNL		421.0	66.6	1	2	3				
NOB FIR		441.4	69.8	0	0	1				
<b>TOTAL</b>		<b>36.9</b>	<b>5.8</b>	<b>39</b>	<b>41</b>	<b>44</b>	<b>28</b>	<b>14</b>	<b>9</b>	
SD: 1		COEFF VAR.%	S.E.%	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DL		35.9	5.7	86	91	96				
HL		123.8	19.6	18	23	28				
SNL		355.7	56.2	1	3	5				
NOB FIR		441.4	69.8	1	2	3				
<b>TOTAL</b>		<b>19.4</b>	<b>3.1</b>	<b>115</b>	<b>119</b>	<b>123</b>	<b>8</b>	<b>4</b>	<b>3</b>	
SD: 1		COEFF VAR.%	S.E.%	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
				LOW	AVG	HIGH	7	10	12	
DL		35.4	5.6	15,899	16,841	17,783				
HL		124.5	19.7	3,528	4,393	5,258				
SNL		409.8	64.8	124	354	583				
NOB FIR		441.4	69.8	199	660	1,121				
<b>TOTAL</b>		<b>22.0</b>	<b>3.5</b>	<b>21,473</b>	<b>22,248</b>	<b>23,023</b>	<b>10</b>	<b>5</b>	<b>3</b>	

$$SDI = \frac{(39)(2.3)^{1.6}}{600} = 24.6$$

TC TSTNDSUM	Stand Table Summary													
Project MILITARY														
T5N R6W S33 TLEAV											T5N R6W S33 TLEAV			
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:						
5N	6W	33	AREA1235	LEAV	299.00	81	106	1	Date:	1/6/2005				
								Time:	2:48:39PM					
S Spc	T	Sample		Av	Trees/ BA/		Average Log		Net		Totals			
		DBH	Trees	FF 16'	Ht Tot	Acres	Acres	Logs Acres	Net Cu.Ft.	Net Bd.Ft.	Tons/ Acres	Cu.Ft. Acres	Bd.Ft. Acres	Tons
DL		16	2	87	102	1.789	2.50	3.58	27.7	105.0	99	376	297	112
DL		17	2	89	85	1.584	2.50	3.17	28.0	100.0	89	317	265	95
DL		18	6	87	102	4.281	7.49	9.98	30.4	108.7	303	1,085	907	324
DL		19	2	90	100	1.268	2.50	3.17	31.0	118.0	98	374	294	112
DL		20	12	86	109	6.869	14.99	17.17	36.8	131.0	632	2,250	1,889	673
DL		21	9	87	106	4.673	11.24	11.94	38.4	135.7	459	1,620	1,372	484
DL		22	9	85	113	4.280	11.24	10.92	43.4	166.0	475	1,814	1,419	542
DL		23	2	86	115	.866	2.50	2.16	43.8	164.0	95	355	283	106
DL		24	10	86	109	3.975	12.49	10.33	50.5	193.1	522	1,995	1,561	597
DL		25	5	87	118	1.832	6.24	5.13	54.9	225.0	281	1,154	841	345
DL		26	6	85	116	2.032	7.49	5.76	56.6	224.1	326	1,290	975	386
DL		27	2	86	118	.628	2.50	1.88	58.0	243.3	109	459	327	137
DL		28	9	86	116	2.628	11.24	7.01	70.5	300.0	494	2,103	1,477	629
DL		29	4	87	118	1.089	5.00	3.27	69.2	308.3	226	1,007	676	301
DL		30	8	86	112	2.035	9.99	5.34	78.2	341.4	418	1,824	1,250	545
DL		32	3	85	121	.671	3.75	1.79	90.9	397.5	163	711	486	213
DL		33	2	87	125	.420	2.50	1.26	95.3	433.3	120	547	360	163
DL		34	2	82	117	.396	2.50	1.19	91.3	400.0	109	475	325	142
DL		35	1	85	113	.187	1.25	.56	95.3	426.7	53	239	160	72
DL	Totals	96	86	109		41.503	119.88	105.62	48.0	189.3	5,072	19,994	15,165	5,978
HL		22	1	88	107	.550	1.45	1.10	63.5	260.0	70	286	209	86
HL		24	4	86	97	1.849	5.81	3.70	65.8	245.0	243	906	727	271
HL		34	1	85	132	.230	1.45	.69	112.3	550.0	78	380	232	114
HL	Totals	6	86	102		2.629	8.71	5.49	71.2	286.4	391	1,572	1,168	470
NFL		30	1	91	107	.296	1.45	.59	100.0	455.0	59	269	177	80
NFL		36	1	91	125	.205	1.45	.62	119.0	626.7	73	386	219	115
NFL	Totals	2	91	114		.501	2.90	1.21	109.7	542.6	132	655	396	196
SFL		23	1	86	112	.288	.83	.86	41.7	173.3	36	150	107	45
SFL	Totals	1	86	112		.288	.83	.86	41.7	173.3	36	150	107	45
SL		24	1	85	110	.132	.41	.40	53.0	216.7	21	86	63	26
SL	Totals	1	85	110		.132	.41	.40	53.0	216.7	21	86	63	26
Totals		106	86	109		45.052	132.74	113.57	49.8	197.7	5652	22,456	16,899	6,714

TC TSTNDSUM														Stand Table Summary			
Project MILITARY																	
T05N R06W S34 TLEAV										T05N R06W S34							
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:									
05N	06W	34	AREA4	LEAV	120.00	40	45	1	Date:	1/6/2005							
									Time:	2:46:18PM							
S Spc	T	Av			Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals				
		Sample DBH	FF Trees	Ht 16'				Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF	
DL		18	2	85	96	2.943	5.20	5.89	32.0	112.5	188	662		226	79		
DL		20	1	92	87	1.192	2.60	2.38	39.0	145.0	93	346		112	41		
DL		22	6	88	117	5.910	15.60	15.76	45.3	182.5	713	2,876		856	345		
DL		23	2	86	121	1.802	5.20	5.41	43.8	175.0	237	946		284	114		
DL		24	7	86	111	5.793	18.20	14.90	51.2	212.2	763	3,161		916	379		
DL		25	1	89	124	.763	2.60	2.29	53.0	220.0	121	503		146	60		
DL		26	3	83	123	2.116	7.80	5.64	62.3	246.3	351	1,389		421	167		
DL		27	2	85	134	1.308	5.20	3.92	64.5	275.0	253	1,079		304	129		
DL		28	4	86	113	2.432	10.40	6.08	70.5	279.0	429	1,696		514	204		
DL		29	1	85	126	.567	2.60	1.70	69.0	316.7	117	538		141	65		
DL		30	2	86	129	1.059	5.20	3.18	79.5	361.7	253	1,149		303	138		
DL		32	2	84	108	.931	5.20	2.33	84.4	356.0	196	829		236	99		
DL		34	1	82	116	.412	2.60	.82	109.0	455.0	90	375		108	45		
DL		36	1	85	108	.368	2.60	.74	122.5	610.0	90	449		108	54		
DL	Totals	35	86	114		27.595	91.00	71.03	54.8	225.3	3,895	16,000		4,674	1,920		
HL		15	1	91	113	3.124	3.83	6.25	22.5	90.0	141	562		169	67		
HL		16	1	89	119	2.745	3.83	8.24	23.3	90.0	192	741		231	89		
HL		21	1	91	124	1.594	3.83	4.78	44.7	203.3	214	972		256	117		
HL		22	1	86	110	1.452	3.83	2.90	60.0	240.0	174	697		209	84		
HL		23	1	92	110	1.329	3.83	2.66	49.0	300.0	130	797		156	96		
HL		25	1	89	110	1.125	3.83	2.25	80.5	340.0	181	765		217	92		
HL	Totals	6	90	115		11.368	23.00	27.08	38.1	167.5	1,032	4,535		1,238	544		
NFL		30	1	94	154	.407	2.00	1.22	102.7	550.0	125	672		151	81		
NFL	Totals	1	94	154		.407	2.00	1.22	102.7	550.0	125	672		151	81		
SNL		14	2	87	106	1.871	2.00	4.68	18.0	66.0	84	309		101	37		
SNL		45	1	88	35	.091	1.00	.09	158.0	330.0	14	30		17	4		
SNL	Totals	3	87	103		1.961	3.00	4.77	20.7	71.0	98	339		118	41		
Totals		45	87	114		41.332	119.00	104.10	49.5	207.0	5151	21,545		6,181	2,585		





TC TLOGSTVB

**Log Stock Table - MBF**  
**Project: MILITARY**

T5N R6W S33 TTAKE

T5N R6W S33 TTAKE

**Twp Rge Sec Tract**  
**5N 6W 33 AREA1235**

**Type Acres Plots Sample Trees**  
**TAKE 299.00 81 115**

**Page 2**  
**Date 1/6/2005**  
**Time 10:37:59AM**

S Spp	So T	Gr rt	Log de 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	?	4S	34	12		12	.2			12												
D			Totals	5,231	2.0	5,125	89.4		31	774	459	746	1132	645	1080	175	84					
H	?	2S	32	139		139	22.8					139										
H	?	2S	40	52		52	8.4					52										
H	?	3S	32	141		141	23.0			31	23	86										
H	?	3S	40	201		201	32.9			15	136	50										
H	?	3S	41	23		23	3.8			23												
H	?	4S	10	3		3	.5			3												
H	?	4S	14	6		6	1.0			6												
H	?	4S	16	8		8	1.2			8												
H	?	4S	18	11		11	1.8			11												
H	?	4S	23	10		10	1.6			10												
H	?	4S	28	18		18	3.0			18												
H			Totals	610		610	10.6			125	159	136	191									
Total All Species				5,841	1.8	5,736	100.0		31	899	618	882	1323	645	1080	175	84					

TC TLOGSTVB		Log Stock Table - MBF										T05N R06W S34								
										Project: MILITARY				T05N R06W S34						
T05N R06W S34 TAKE										T05N R06W S34										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page	1											
05N	06W	34	AREA4	TAKE	120.00	40	64	Date	1/6/2005											
									Time	10:39:53AM										
Spp	S	So	Gr	Log	Gross	%	Net	%	Net Volume by Scaling Diameter in Inches											
									MBF	Def	MBF	SpC	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19
D	?	?																		
D	?	?		2																
D	?	?		4																
D	?	?		6																
D	DO	CU		8																
D	DO	2S		16	18			18	.8					18						
D	DO	2S		20	25			25	1.1									25		
D	DO	2S		30	29			29	1.3									29		
D	?	2S		32	216			216	9.7			13	99	32	72					
D	?	2S		40	1,013	5.0		962	43.1				246	508	174		34			
D	DO	3S		24	11			11	.5					11						
D	?	3S		27	4			4	.2											
D	?	3S		30	58			58	2.6											
D	?	3S		32	63			63	2.8			25		38						
D	DO	3S		36	8			8	.4					8						
D	?	3S		38	14			14	.6			14								
D	?	3S		40	723	.2		722	32.3			140	287	249	46					
D	?	4S		10	1			1	.0			1								
D	?	4S		11	1			1	.1			1								
D	?	4S		12	4			4	.2			4								
D	?	4S		13	2			2	.1			2								
D	?	4S		15	7			7	.3			7								
D	?	4S		16	3			3	.1			3								
D	?	4S		19	4			4	.2											
D	?	4S		20	7			7	.3			7								
D	?	4S		21	3			3	.1			3								
D	DO	4S		26	4			4	.2			4								
D	DO	4S		28	6			6	.3			6								
D	DO	4S		30	48	11.8		42	1.9			42								
D	?	4S		32	13			13	.6			13								
D	DO	4S		38	9	50.0		5	.2			5								
D	Totals				2,294	2.7		2,231	84.4			276	295	377	391	558	246	63	25	
H	DO	CU		6																
H	?	?		10																
H	?	?		16																
H	DO	2S		12	16			16	3.9											
H	DO	2S		20	30			30	7.4						16					
H	?	2S		32	63			63	15.4					38	26					
H	?	2S		40	76			76	18.6					76						
H	DO	3S		18	13			13	3.2			13								
H	DO	3S		30	10			10	2.5			10								
H	DO	3S		32	14			14	3.4			14								
H	?	3S		36	9			9	2.1			9								
H	?	3S		37	26			26	6.4					26						
H	?	3S		40	152			152	37.1			25	49	78						
H	Totals				411			411	15.6			72	49	78	140	26	46			
Total All Species					2,705	2.3		2,642	100.0			348	344	455	531	584	292	63	25	



TC TLOGSTVB

**Log Stock Table - MBF**  
**Project: MILITARY**

T05N R06W S33 TTAKE

T05N R06W S33

Twp Rge Sec Tract  
 05N 06W 33 AREA67

Type Acres Plots Sample Trees  
 TAKE 142.00 44 133

Page 2  
 Date 1/6/2005  
 Time 10:41:52AM

S Spp	So T	Gr rt	Log de	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	?	3S	40		113	11.6	100	28.6			23	15	29	33							
H	?	4S	16		11		11	3.1			11										
H	?	4S	18		9		9	2.5			6	3									
H	?	4S	28		3		3	.8			3										
H	Totals				371	6.0	349	6.3			57	25	29	188	50						
A	?	?	7																		
A	?	2S	32		113	1.3	112	46.7						24	61	26					
A	?	2S	40		22		22	9.2							22						
A	?	3S	28		3		3	1.1				3									
A	?	3S	30		19		19	8.0			3			16							
A	?	3S	32		20		20	8.3				3	17								
A	?	3S	40		15		15	6.3			15										
A	?	4S	16		16		16	6.5			12	3									
A	?	4S	24		10		10	4.4			10										
A	?	4S	28		4		4	1.5			4										
A	?	4S	40		19		19	8.1			19										
A	Totals				241		239	4.3			64	9	17	16	24	83	26				
Total All Species					5,686	2.0	5,574	100.0		3	578	349	464	1076	861	1799	444				