

PART IV: OTHER INFORMATION

State Timber Sale Contract
No. 341-10-10
Mombo Combo

NOTICE OF TRANSFER OF STATE TIMBER

Instructions

629:-Form-301-010

Complete Section 1. Mark the box which applies to you/your company in Section 2. Complete Section 3 and obtain signatures.

SECTION 1

On _____, state timber sale purchaser (Transferor)
_____, sold, exchanged or otherwise transferred to
_____, (Transferee) state timber originating from State
Timber Sale Contract No: _____.

Transferee hereby certifies that they:

- (a) Will not export the unprocessed state timber which is the subject of this transaction;
- (b) Will not sell, transfer, exchange or otherwise convey the unprocessed timber which is the subject of this transaction to any other person without first obtaining a like certification from that person.
- (c) Are not prohibited by OAR's 629-31-005 through 045 from purchasing state timber or logs directly from the State Forester, or this is a sale of Western Red Cedar for domestic processing.

SECTION 2

- Have not exported unprocessed timber originating from private lands in Oregon in the last 24 months.
- This is a sale of hardwood logs for domestic processing.
- This is a sale of Western Red Cedar for domestic processing.
- This is a sale of pulp logs or cull logs processed at domestic pulp mills, domestic chip plants or other domestic operations for the purpose of conversion of the logs into chips.

SECTION 3

The parties understand that falsely entering into this certification, or failure to comply with the terms of this certification is a violation of the Forest Conservation and Shortage Relief Act of 1990 and OAR Chapter 629, Division 31, and is subject to any and all penalties contained therein.

Transferor:

Transferee:

Signed _____

Signed _____

Title _____

Title _____

Dated _____

Dated _____

[Note: For the purpose of this form, the definition of unprocessed timber is the same as in OAR 629-31-005]

Mail To: State Forester
2600 State Street
Salem, OR 97310

FPA "Written Plan" for Operating within 100 Feet of Type F Streams Mombo Combo Timber Sale

Portions of Section 1, T6N, R6W and Section 35, T7N, R6W, W.M., Clatsop County, Oregon

Landowner: Oregon Department of Forestry
92219 Highway 202
Astoria, Oregon 97103
Phone: (503) 325-5451

Protected Resources:

1. Warner Creek
2. Unnamed tributary to Warner Creek
3. Unnamed tributary to Fishhawk Lake
4. Unnamed tributary to Fishhawk Lake

Specific Site Characteristics:

1. Warner Creek (Small, Type F) – This stream (approximately 2 to 8 feet wide) runs along the west sale boundaries of Area 2 for approximately 2,500 feet. The stream channel has moderate and steep short slopes with alder, maple, and conifer.
2. Unnamed tributary to Warner Creek (Small, Type F) – This stream (approximately 2 to 4 feet wide) runs approximately 700 feet adjacent to the timber sale boundary along the northwest side of Area 2. The stream channel has moderate and steep short slopes with alder, maple, and conifer.
3. Unnamed tributary to Fishhawk Lake (Medium, Type F) – This stream (approximately 3 to 6 feet wide) runs approximately 400 feet adjacent to the timber sale boundary along the east side of Area 4. The stream channel has moderate short slopes with alder, maple, and conifer.
4. Unnamed tributary to Fishhawk Lake (Small Type F) – This stream (approximately 3 to 6 feet wide) runs approximately 1,600 feet adjacent to the timber sale boundary along the south side of Areas 3 and 4. The stream channel has moderate short slopes with alder, maple, and conifer.

Tree and Vegetation Retention:

Vegetation within the buffers consists of a combination of conifers, hardwoods, and shrubs.

All posted Type F buffers along or within cut units are approximately 100 feet. During cable yarding operations, it is anticipated that cable skylines will cross all of the above listed streams. It is not anticipated that any logs will pass over the Type F streams or buffers.

Resource Protection Practices:

Along all of the above-mentioned streams, as well as any live streams, the following practices are required, under the timber sale contract, to protect the streams and streamside areas:

1. No trees will be felled within posted stream buffers (RMA's) except where needed for corridors.
2. Trees that fall or slide into Type F RMA's shall not be removed without prior approval from STATE.
3. Trees adjacent to the posted stream buffers (RMA's) will be felled away from or parallel to the streams to prevent trees from entering the aquatic areas.
4. When cable logging is conducted nearby the RMA's, logging lines may cross, but will not be lowered into the RMA's during yarding, except during rigging. During rigging, the lines must be pulled out of the RMA's when changing corridors.
5. Logs shall be fully suspended when yarding across all stream buffers (RMA's).
6. Cable corridors must be at least 100 feet apart where they cross the RMA's.

I, the undersigned, submit this written plan in compliance with the requirements in the Forest Practice Act regarding the operations conducted within 100 feet of streams. I agree to the protection measures listed in this plan.

Submitted by: _____ Date: _____
Operator/PURCHASER

Attachments: Logging Plan Map

X:\Sunset Unit\2010 FY Sales\Mombo Combo\Sale Prep\Mombo Combo Harvesting Written Plan.doc



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Mombo Combo
Sale 341-10-10

District: Astoria

Date: May 12, 2010

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$1,679,335.38	\$154,171.44	\$1,833,506.82
		Project Work:	\$(147,457.00)
		Advertised Value:	\$1,686,049.82



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
 Mombo Combo
 Sale 341-10-10

District: Astoria

Date: May 12, 2010

timber description

Location: Portions of Section 1 T6N, R6W, and Sections 25, 35, and 36, T7N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 80%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	20	0	97
Western Hemlock / Fir	14	0	97
Alder (Red)	16	0	95
Maple	14	0	90

Volume by Grade	2S	3S	4S	Camprur	Total
Douglas - Fir	4,205	1,185	186	0	5,576
Western Hemlock / Fir	54	32	11	0	97
Alder (Red)	0	0	0	441	441
Maple	0	0	0	27	27
Total	4,259	1,217	197	468	6,141



Timber Sale Appraisal
Mombo Combo
Sale 341-10-10

"STEWARDSHIP IN FORESTRY"

District: Astoria

Date: May 12, 2010

comments: Pond Values Used: 1st Quarter Calendar Year 2010.

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

Western redcedar Stumpage Price = Pond Value minus Logging Cost
 $\$666.26/\text{MBF} = \$820.00/\text{MBF} - \$153.74/\text{MBF}$

Poles/Piling DF = Douglas-fir Poles/Piling (Long Poles)
Pole stumpage Price:
 $\$456.26 = \$650/\text{MBF} - \$193.74$

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE
Hauling costs equivalent to \$700 daily truck cost.

Other Costs (with Profit & Risk to be added):
Additional Logging Costs:
Branding & Painting: $\$1/\text{MBF} \times 6,141 = \$6,141$
Log Loader Slash & Landing Piling (includes Move-In and Pile
Materials) = \$6,207.50 (see attached appraisal)

Total Slash Hauling Costs for Area 1 = \$1,600
Log Loader & Dump Truck Slash Loading and Hauling for Area 1
10-12 cy. Dump Truck Mobilization = \$141
Dump Truck Time $\$73/\text{hr.} \times 8 \text{ hrs.} = \584
Log Loader Time $\$87.50/\text{hr.} \times 10 \text{ hrs.} = \875

Close Dirt Spur 3hrs @ $\$120/\text{hr} = \360

TOTAL Other Costs (with Profit and Risk to be added) = \$14,308.50

Other Costs (No Profit and Risk to be added):
None.



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal Mombo Combo Sale 341-10-10

District: Astoria

Date: May 12, 2010

logging conditions

combination#: 1

Douglas - Fir	74.00%
Western Hemlock / Fir	74.00%
Alder (Red)	74.00%
Maple	74.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Medium Tower >40 - <70 **Process:** Stroke Delimber
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 9.0 **bd. ft / load:** 4,500
cost / mbf: \$82.57

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

combination#: 2

Douglas - Fir	19.00%
Western Hemlock / Fir	19.00%
Alder (Red)	19.00%
Maple	19.00%

yarding distance: Short (400 ft) **downhill yarding:** No
logging system: Shovel **Process:** Feller Buncher
tree size: Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 8.0 **bd. ft / load:** 4,800
cost / mbf: \$37.46

machines: Feller Buncher w/ Delimber

combination#: 3

Douglas - Fir	7.00%
Western Hemlock / Fir	7.00%
Alder (Red)	7.00%
Maple	7.00%

yarding distance: Medium (800 ft) **downhill yarding:** No
logging system: Cable: Small Tower <=40 **Process:** Manual Delimiting
tree size: Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF
loads / day: 6.0 **bd. ft / load:** 4,500
cost / mbf: \$100.04

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



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
 Mombo Combo
 Sale 341-10-10

District: Astoria

Date: May 12, 2010

logging costs

Operating Seasons:	3.00	Profit Risk:	14.00%
Project Costs:	\$147,457.00	Other Costs (P/R):	\$14,308.50
Slash Disposal:	\$0.00	Other Costs:	\$0.00

Miles of Road

Road Maintenance: \$3.83

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	3.0	4.5
Western Hemlock / Fir	\$0.00	3.0	4.5
Alder (Red)	\$0.00	3.0	3.0
Maple	\$0.00	2.0	3.0



Timber Sale Appraisal
 Mombo Combo
 Sale 341-10-10

"STEWARDSHIP IN FORESTRY"

District: Astoria

Date: May 12, 2010

logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$75.22	\$3.94	\$2.14	\$46.84	\$2.33	\$18.27	\$0.00	\$5.00	\$0.00	\$153.74
Western Hemlock / Fir									
\$75.22	\$3.94	\$2.14	\$46.84	\$2.33	\$18.27	\$0.00	\$5.00	\$0.00	\$153.74
Alder (Red)									
\$75.22	\$4.02	\$2.14	\$71.64	\$2.33	\$21.75	\$0.00	\$5.00	\$0.00	\$182.10
Maple									
\$75.22	\$4.21	\$2.14	\$112.57	\$2.33	\$27.51	\$0.00	\$5.00	\$0.00	\$228.98

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$451.15	\$297.41	\$0.00
Western Hemlock / Fir	\$0.00	\$370.00	\$216.26	\$0.00
Alder (Red)	\$0.00	\$520.00	\$337.90	\$0.00
Maple	\$0.00	\$420.00	\$191.02	\$0.00



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Mombo Combo
Sale 341-10-10

District: Astoria

Date: May 12, 2010

summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,576	\$297.41	\$1,658,358.16
Western Hemlock / Fir	97	\$216.26	\$20,977.22
Alder (Red)	441	\$337.90	\$149,013.90
Maple	27	\$191.02	\$5,157.54

Gross Timber Sale Value

Recovery: \$1,833,506.82

Prepared by: Jay Morey

Phone: 503-325-5451

Road Maintenance Cost Summary (Interim and Post Harvest)

Sale: Mombo Combo
Date: March 5, 2010
By: Jay Morey

MBF: 6,141
\$/MBF: \$3.83

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost
Interim Operations Entries - 1	Grader 14G	\$675	1	22	\$93	\$2,721
	Dump Truck 12CY	\$141	1	10	\$73	\$871
	FE Loader C966	\$675	1	10	\$77	\$1,445
Final Road Maintenance	Grader 14G	\$675	1	40	\$93	\$4,395
	Dump Truck 12CY	\$141	2	30	\$73	\$2,472
	FE Loader C966 on Tilt Trailer	\$675	1	20	\$77	\$2,215
	Vibratory Roller	\$675	1	50	\$72	\$4,275
	Water Truck 2,500 gallon	\$165	1	30	\$83	\$2,655
	Backhoe-small Labor	\$279	1	20	\$72	\$1,719
				20	\$38	\$760
Total						\$23,528

Interim Operations Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Grader	2.5	5.4	2.2	21.6

Final Road Maintenance

Production Rates	Miles/day	Distance (miles)	Days	Hours
Process - Grader	1.5	5.4	3.6	36.0
Vibratory Roller	1.5	5.4	3.6	36.0

Process and Compaction of anticipated haul route: Greasy Spoon (0.25 mi), Fishhawk Loop Road (I1-I2), Fishhawk Road (I4-I5), and Fishhawk Tie-thru Road (I2-I3)

Total Miles = 5.4 miles

Road Maintenance after completion of Projects

Sale: Mombo Combo
Date: 26-Feb-10
By: J. Long

Type	Equipment/Rationale	Hours	Rate	Cost
Final Haul	Grader 14G	60	\$93	\$5,580
Road	Dump Truck 12CY x 3	30	\$73	\$2,190
Maintenance	FE Loader C966	10	\$77	\$770
Haul Route	Vibratory Roller	60	\$72	\$4,320
	Water Truck 2,500 gallon	40	\$83	\$3,320
Total				\$16,180

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	8.0	5.3
Vibratory Roller	1.5	8.0	5.3

*Project work road maintenance is to be performed from Viewpoint Quarry to Pt. "12"

Site Prep Appraisal

Sale Number: 341-10-10
Sale Name: Mombo Combo
Date: 02/08/2010

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	1.0	3.0
Hemlock/Fir	B	1.5	4.5
Hemlock/Spruce	C	2.0	6.0
Hemlock	D	2.0	6.0
Conifer/Hardwood	E	1.5	4.5

Sale Area	Harvest Type	Veg Type/Zone	Ground Based Yarding Acres	Estimated Piling Hours/Area	Cost/Hour	Total Cost/Area	
1	MC	A	6.5	6.5	\$110.00	\$715.00	
2	MC	A	6	6	\$110.00	\$660.00	
3	MC	A	12	12	\$110.00	\$1,320.00	
In-unit Piling						Sub Total =	\$2,695.00
Sale Area	Number of Landings to be Piled	Cost/Landing Pile*	Total Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Cost/Area	
1	4	\$220.00	\$880.00	19.5	\$5.00	\$97.50	
2	2	\$220.00	\$440.00	18	\$5.00	\$90.00	
3	4	\$220.00	\$880.00	36	\$5.00	\$180.00	
*Cost includes separating firewood					Materials	Sub Total =	\$367.50
Landing Piling						Sub Total =	\$2,200.00
Move-In Allowance	Number of Move-In's	Total Move-In Allowance					
\$945.00	1	\$945.00	Move-In Sub Total = \$945.00				
Grand Total =						\$6,207.50	

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Mombo Combo

NEW CONSTRUCTION:

Project No.	Road segment	Length/Sta	Cost
1	2A-2B, 3A-3B, and 3C-3D.	Rock 19.00 Dirt 7.10	\$21,900.00
TOTALS	0.5 miles	26.10	\$22,576.00

ROAD IMPROVEMENT:

Project No.	Road segment	Length/Sta	Cost
2	I1-I2, I2-I3, I4-I5, and I6-I7.	244.07	\$96,584
TOTALS	4.6 miles	244.07	\$96,584

SPECIAL PROJECTS:

Project No.	Description	Cost
3	Roadside Brushing 10.4 miles	\$5,194
	Project Work Road Maintenance	\$16,180
TOTAL		\$21,374

MOVE IN:

Equipment	Cost
Excavator (C330)	\$1,220
Dozer (D8)	\$1,220
Rubber Tired Skidder	\$622
Vibratory Roller	\$675
Front End Loader (C966) 1 @ \$675	\$675
10-12 yd dump truck 2 @ \$141	\$282
20 yd dump truck 6 @ \$166	\$996
Large Grader (14G)	\$675
Brush cutter, (15' reach tractor)	\$279
Backhoe (C 580)	\$279
GRAND TOTAL	\$147,457

FL

Compiled By: Long/ Morey

Date: 03/03/2010

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Mombo Combo
 ROADS: 2A-2B (3+60), 3A-3B (15+40), 3C-3D (7+10)

NEW CONSTRUCTION: 26.10 STATIONS 0.49 MILES
 IMPROVEMENT: STATIONS MILES

CLEARING & GRUBBING					
Method	Acres/amount	x	Rate	=	Cost
Scatter outside R/W	3.5	x	\$1,161.00	=	\$4,063.50
		x		=	
		x		=	
SUB TOTAL FOR CLEARING & GRUBBING					\$4,064

EXCAVATION					
Material	Sta/amount	x	Rate	=	Cost
Common (drift earth up to 200') \$\$/sta.	19.00	x	\$165.00	=	\$3,135.00
Landing construction \$\$/landing	5	x	\$338.00	=	\$1,690.00
Field Design spur road const. \$/sta	7.10	x	\$106.00	=	\$752.60
		x		=	
		x		=	
SUB TOTAL FOR EXCAVATION					\$5,578

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
Other/miscellaneous:		Description		Quantity	Rate	Cost			
Culvert stakes & markers:									
SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION					\$9,641				

Subtotal of Clearing, Exc., Culv. **\$9,641**

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: Mombo Combo
 ROAD: Fishhawk Loop, FL60, FL602, Fishhawk Tie
 POINTS: I1 to I2 (124+48 sta.), I2 to I3, (61+75 sta.), I4 to I5 (53+84 sta.)

NEW CONSTRUCTION: _____ STATIONS _____ MILES _____
 IMPROVEMENT: 240.07 STATIONS _____ MILES 4.55 MILES

CLEARING & GRUBBING						
	Method	Quantity	x	Rate	=	Cost
I1 to I2	Sta. 28+47 - 31+09 * see separate cost sheet		x		=	
I1 to I2	Sta. 14+50 - 18+15	0.02	x	\$1,161	=	\$23.22
I1 to I2	Sta. 28+32 - 33+44	0.28	x	\$1,161	=	\$325.08
I1 to I2	Sta. 80+35 - 88+14	1.02	x	\$1,161	=	\$1,184.22
I1 to I2	Sta. 98+00	0.10	x	\$1,161	=	\$116.10
I1 to I2	Sta. 106+60	0.10	x	\$1,161	=	\$116.10
I2 to I3	Remove ditchline woody debris (C315) (Hrs)	1.00	x	\$94	=	\$94.00
I4 to I5	Clearing protruding debris					
	C315 Excavator (hrs)	10	x	\$94	=	\$940.00
	haul to waste area(D.Trk)	10	x	\$73	=	\$730.00
	Laborer	10	x	\$38	=	\$380.00
I4 to I5	Sta. 18+49 - 23+21	0.26	x	\$1,161	=	\$301.86
	Sta.46+70 Eliminate overhead danger tree					
	Cutter hrs	2	x	\$38.00	=	\$76.00
	C315 Excavator (Hrs)	0.50	x	\$94	=	\$47.00
SUB TOTAL FOR CLEARING & GRUBBING						\$4,334

EXCAVATION						
	Material	Cy/amount	x	Rate	=	Cost
I1 to I2	Sta. 6+75 - 7+50 Buttress Construction					
	C330 Excavator (Hrs)	2	x	\$144	=	\$288.00
	Haul material to WA	150	x	\$1.76	=	\$264.00
	Sta 12+42 See culvert cost note.					
I1 to I2	Sta. 14+50 - 16+15 move centerline into hill					
	C330 Excavator (Hrs)	1.50	x	\$144	=	\$216.00
	Haul material to WA	68	x	\$1.76	=	\$119.68
I1 to I2	Sta. 19+40 Culvert maintenance					
	C315 Excavator (Hrs)	0.25	x	\$94	=	\$23.50
	Trim culvert outlet	0.50	x	\$38.00	=	\$19.00
I1 to I2	Sta. 28+32 - 33+44 (Build Design)					
	Exc. Drift to fills	406	x	\$1.60	=	\$649.60
	Haul material to WA	1,070	x	\$1.76	=	\$1,883.20
	Cut slope rounding (28+47 - 30+00)	1.53	x	\$37.00	=	\$56.61
	Embankment Compaction	406	x	\$0.60	=	\$243.60
I1 to I2	Sta 42+45 Develop waste area (C330)	1	x	\$144	=	\$144.00
I1 to I2	Sta. 47+67 - 50+65 "V"ditchline, build up inside shoulder					
	Grader, Cat 14G	1	x	\$93	=	\$93.00
I1 to I2	Sta. 81+54 - 88+14 (Build Design)					
	Exc. Drift to fills	25	x	\$1.60	=	\$40.00
	Haul material to WA	3,047	x	\$1.76	=	\$5,362.72
I1 to I2	Sta. 5+60, 9+25, 19+60, 23+28, 53+36, 92+60, 109+90 improve existing turnouts					
	Cat 14G Grader (Hrs)	2	x	\$93	=	\$186.00
I1 to I2	Cut slope rounding (81+74 - 88+70)	5	x	\$37	=	\$185.00
I1 to I2	Embankment Compaction	25	x	\$0.60	=	\$15.00
I1 to I2	Waste Area compaction	4,372	x	\$0.30	=	\$1,311.60
I1 to I2	Misc. Cutslope Rounding	1.65	x	\$37	=	\$61.05
I1 to I2	Culvert Disposal (4 culverts)					
	C315 Excavator (Hrs)	2	x	\$94	=	\$188.00
	Dump truck	5	x	\$73	=	\$365.00
I2 to I3	Sta. 57+00 Remove ditch line debris					
	C315 Excavator (Hrs)	0.50	x	\$94	=	\$47.00
I4 to I5	Clean catch basins, sta 6+04, 17+72, 26+23, 29+65)					
	C315 Excavator (Hrs)	1	x	\$94	=	\$94.00
	Haul material to WA	20	x	\$1.61	=	\$32.20
	Waste Compaction	20	x	\$0.30	=	\$6.00
I4 to I5	Sta. 14+75 Improve turnout right					
	Grader, Cat 14G	0.25	x	\$93	=	\$23.25
I4 to I5	Sta. 18+49 - 23+21(Build Design)					
	Exc. Drift to fills	366	x	\$1.60	=	\$585.60
	Haul material to WA	326	x	\$1.76	=	\$573.76
	Cut slope rounding (19+85-21+20)	1.35	x	\$37.00	=	\$49.95
SUB TOTAL FOR EXCAVATION						\$13,126

CULVERT MATERIALS AND INSTALLATION									
Location	Dia/type	Lineal ft.	Rate	Cost	Location	Dia/type	Lineal ft.	Rate	Cost
I1- I2 sta. 12+42	18"	52	\$35.02	\$1,821.04					
I1-I2 sta. 77+80	18"	35	\$17.64	\$617.40					
I1-I2 sta. 84+11	18"	40	\$17.64	\$705.60					
I1-I2 sta. 50+65	18"	40	\$17.64	\$705.60					

* Note: Install rate is greater for this culvert because of fill depth. Costed for 1 hour extra of a C315, 2 hours extra for tamper, 2 extra hours of labor, and 37 cy of material hauled to waste area. Extra cost is \$94 for the C315, \$18 for the tamper, \$76 for labor, and \$264 in waste material. Total extra cost is \$452 / 52' = \$8.69/ft.

Description	Quantity	Rate	Cost
Culvert stakes & markers:			
I1 to I2	4	\$18.00	\$72.00
I4 to I5	3	\$18.00	\$54.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION \$3,976

Subtotal of Clearing, Exc., Culv. **\$21,436**

SURFACING

Subgrade prep:	Description	Stations/ amount	x	Rate/ sta/amt	Cost
	Grade, Shape and Ditch 16'	(11 - 12)	124.48	x	\$21.55 \$2,682.54
	Subgrade Compaction	(11 - 12)	124.48	x	\$17.52 \$2,180.89
	Load & haul ditch material	(11 - 12)	17.21	x	\$19.89 \$342.31
	Grade, Shape and Ditch 16'	(12 - 13)	61.75	x	\$21.55 \$1,330.71
	Subgrade Compaction	(12 - 13)	61.75	x	\$17.52 \$1,081.86
	Load & haul ditch material	(12 - 13)	4.06	x	\$19.89 \$80.75
	Grade, Shape and Ditch 16'	(14 - 15)	53.84	x	\$21.55 \$1,160.25
	Subgrade Compaction	(14 - 15)	53.84	x	\$17.52 \$943.28
	Load & haul ditch material	(14 - 15)	11.23	x	\$19.89 \$223.36
	Grade, Shape and Ditch 16'	(16 - 17)	4.00	x	\$21.55 \$86.20
	Subgrade Compaction	(16 - 17)	4.00	x	\$17.52 \$70.08
	Scatter ditch waste materials	(16 - 17)	4.00	x	\$10.78 \$43.12

ROAD SEGMENT 11 to 12				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	11 to 12 Volume (CY) per	0+00 to 124+48 Number of						
Base Rock	4"-0" crushed		n/a	station	n/a	stations	12.35	536	\$6.37	\$3,414	
Turnouts	4"-0" crushed	5+60,9+25,14+50	8"	turnout	22	turnouts	8	176	\$6.37	\$1,121	
19+60,23+28, 53+36											
88+00, 106+80											
Curve Widening	4"-0" crushed		8"	curve	n/a	curves	6	188	\$6.37	\$1,198	
Crowd/narrow ditchline	4"-0" crushed	47+67 - 50+65	6"		n/a		n/a	20	\$6.37	\$127	
Surface Rock	3/4"-0" crushed		3"	station	19	stations	124.48	2,365	\$6.37	\$15,066	
Junctions	3/4"-0" crushed		3"	junction	20	junctions	6	130	\$6.37	\$828	
Turnouts	3/4"-0" crushed		3"	turnout	10	turnouts	20	200	\$6.37	\$1,274	
Curve Widening	3/4"-0" crushed		3"	curve	n/a	curves	36	326	\$6.37	\$2,077	
Culvert Bedding	3/4"-0" crushed		n/a	culvert	n/a	culverts	4	130	\$6.37	\$828	
Leveling Rock	3/4"-0" crushed							100	\$6.37	\$637	
Narrow ditchline	3/4"-0" crushed	47+67 - 50+65	3"		n/a		n/a	10	\$6.37	\$64	
Dissipator Rock	24"-6" riprap		n/a	dissipator	10	dissipators	4	70	\$12.79	\$895	
Buttress Rock	24"-6" riprap		n/a	buttress	300	buttresses	1	300	\$12.79	\$3,837	
Total Rock for Road Segment:				11 to 12				4,551			\$31,366

ROAD SEGMENT 12 to 13				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	12 to 13 Volume (CY) per	0+00 to 61+75 Number of						
Surface Rock	3/4"-0" crushed		2"	station	13	stations	61.75	803	\$6.37	\$5,114	
Curve Widening	3/4"-0" crushed		2"	curve	n/a	curves	14	96	\$6.37	\$612	
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	8	80	\$6.37	\$510	
Junctions	3/4"-0" crushed		2"	junction	n/a	junctions	3	80	\$6.37	\$510	
Subgrade Leveling	3/4"-0" crushed		N/A					335	\$6.37	\$2,134	
Total Rock for Road Segment:				12 to 13				1,394			\$8,878

ROAD SEGMENT 14 to 15				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	14 to 15 Volume (CY) per	0+00 to 53+84 Number of						
Base Rock	4"-0" crushed	19+67 - 22+76	8"	station	50	stations	1.54	77	\$6.37	\$490	
Turnouts	4"-0" crushed	32+84	8"	turnout	22	turnouts	1	22	\$6.37	\$140	
Surface Rock	3/4"-0" crushed		2"	station	13	stations	53.84	700	\$6.37	\$4,458	
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	11	110	\$6.37	\$701	
Curve Widening	3/4"-0" crushed		2"	curve	n/a	curves	19	106	\$6.37	\$675	
Leveling Rock	3/4"-0" crushed							120	\$6.37	\$764	
Junctions	3/4"-0" crushed		2"	junction	10	junctions	2	20	\$6.37	\$127	
Total Rock for Road Segment:				14 to 15				1,155			\$6,726

ROAD SEGMENT 16 to 17				POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt	Cost	
Application	Rock Size and Type	Location	Depth of Rock (inches)	16 to 17 Volume (CY) per	0+00 to 4+00 Number of						
Surface Rock	3/4"-0" crushed	0+00 - 4+00	2"	station	13	stations	4.00	52	\$6.37	\$331	
Turnouts	3/4"-0" crushed		2"	turnout	10	turnouts	1	10	\$6.37	\$64	
Leveling Rock	4"-0" crushed		N/A					60	\$6.37	\$382	
Total Rock for Road Segment:				16 to 17				122			

Processing:	Description	(11 - 12)	3/4"-0"	# lifts	No. sta	Rate/sta	Cost
Note: 37+86 sta.'s will be processed during dust palliative application.	Water, Process & Compact:	(11 - 12)	3/4"-0"	1	86.62	\$49.02	\$4,246
		(11 - 12)	4"-0"	2	8.00	\$49.02	\$784
		(12 - 13)	3/4"-0"	1	61.75	\$49.02	\$3,027
		(14 - 15)	3/4"-0"	1	53.84	\$49.02	\$2,639
		(14 - 15)	4"-0"	2	0.50	\$49.02	\$49
		(16 - 17)	4"-0"	1	4.00	\$21.08	\$84
		(16 - 17)	3/4"-0"	1	4.00	\$49.02	\$196

	24"-6"	4"-0"	3/4"-0"	Total	
SUB TOTAL FOR SURFACING	370	1,079	5,773	7,222	\$68,222

SPECIAL PROJECTS

Description	Cost
Seed & Mulch Waste Area 0.2 ac @ \$1173	\$234.60
Surface preparation: mix and roll (37+86 sta.) (11 - 12)	\$1,856
Product cost and application (37+86 sta.) (11 - 12)	\$4,836

SUB TOTAL FOR SPECIAL PROJECTS	\$6,927
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Subtotal of Surfacing & Spec. Proj. \$75,148
 Subtotal of Clearing, Exc., Culv. \$21,436

GRAND TOTAL	\$96,584
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Compiled By: d.mellison

Date: 01/15/10

PIT RUN ROCK COST

SALE NAME: Mombo Combo
 PROJECT: Project No. 1
 QUARRY: Viewpoint

MATERIAL: Pit Run

DATE: 02/26/2010
 BY: J. Long

Segment	Stations	Cubic Yards						Misc	Total
		Base	Landing	Turnout	Turnaround	Junction			
2A - 2B			130						130
3A - 3B			180						180
3C - 3D									
Grand Total			310						310

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
2A - 2B		130			4.00	3.00	0.80	0.30	0.20	8.30
3A - 3B		180			4.00	3.00	1.00	0.40	0.20	8.60
3C - 3D										
TOTAL		310								
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL					4.00	3.00	0.92	0.36	0.20	AVERAGE HAUL 8.47
Average Round Trip Distance (miles)									16.95	

ROCK HAUL:

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

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

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

Ave haul: \$7.00 /cy
 Load: \$0.78 /cy
 Spread: \$1.46 /cy

Production: cy/day = 500

PIT RUN ROCK HAUL COSTS 310 cy @ \$9.24 /cy

PIT RUN ROCK COST

SALE NAME: Mombo Combo
 PROJECT: Road Improvement
 QUARRY: _____

MATERIAL: Waste

DATE: 01/15/10
 BY: d.mellison

Segment	Stations	Cubic Yards							Total
		Base	Landing	Turnout	Turnaround	Junction	waste	Misc	
I1 - I2	7+00						150		150
I1 - I2	14+50						68		68
I1 - I2	29+78						1,623		1,623
I1 - I2	83+65						2,612		2,612
I4 - I5	19+91						20		20
I4 - I5	20+85						292		292
Grand Total							4,765		4,765

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	7+00	150					0.38	0.100	0.100	0.58
I1 - I2	14+50	68					0.25	0.10	0.10	0.45
I1 - I2	29+78	1,623						0.05	0.10	0.15
I1 - I2	83+65	2,612				0.20	0.37	0.10	0.10	0.77
I4 - I5	19+91	20				0.17	0.20	0.10	0.10	0.57
I4 - I5	20+85	292				0.18	0.20	0.10	0.10	0.58
TOTAL		4,765								
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL						0.12	0.23	0.08	0.10	AVERAGE HAUL 0.54
									Average Round Trip Distance (miles)	1.07

ROCK HAUL:

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

Ave haul: 1.321093 /cy
 * Load: \$0.43 /cy
 Compaction _____ /cy

Truck type: D12 No. trucks: 2
 Delay min.: 6 Efficiency: 85%

Production: cy/day = 884

Waste Haul Costs: 4,765 cy @ \$1.76 /cy

* Loading cost = \$144/hr* 8hrs/day / 1326cy/day/2 = \$.4344 (C330)

* Loading cost = \$94/hr* 8hrs/day / 1326cy/day/2 = \$.2836 (C315)

\$1.61/cy

RIP RAP ROCK COST

SALE NAME: Mombo Combo
 PROJECT: Fishhawk Loop Improvement
 QUARRY: Viewpoint

MATERIAL: Rip Rap

DATE: 01/15/10
 BY: d.mellison

Segment	Stations	Cubic Yards						Misc	Total
		Dissapator	Armor	Buttress					
I1 - I2		40		300					340
Grand Total		40		300					340

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		340			3	4.50	2.26	0.60	0.30	10.66
TOTAL		340								
	STA./NO.	CU. YD.								
CUBIC YARD WEIGHTED HAUL					3.00	4.50	2.26	0.60	0.30	AVERAGE HAUL 10.66

Average Round Trip Distance (miles) 21.32

ROCK HAUL:

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

Truck type: D10 No. trucks: 6
 Delay min.: 5 Efficiency: 85%

Ave haul: \$9.42 /cy
 Load: \$1.68 /cy
 * Develop: \$1.69 /cy

Production: cy/day = 371

RIP RAP ROCK HAUL COSTS 340 cy @ **\$12.79 /cy**

* Development = 4 hours @ \$144/hr / 340 = \$1.69

CRUSHED ROCK COST

SALE NAME: MomboCombo
 PROJECT: Project No. 1 New Construction
 QUARRY: Viewpoint SP

MATERIAL: Crushed

DATE: 02/26/2010
 BY: J. Long

Segment	Stations	Cubic Yards							Total
		Base	Running	Turnout	Curves	Junction	Leveling	Bedding	
2A - 2B	124+48	180		22		33			235
3A - 3B	61+75	770		66					836
3C - 3D	50+50								
Grand Total		950		88		33			1,071

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	
2A - 2B	124+48	235			4	3.00	0.80	0.30	0.10	8.20
3A - 3B	61+75	836			4	3.00	1.00	0.30	0.20	8.50
3C - 3D	50+50									
TOTAL		1,071								
CUBIC YARD WEIGHTED HAUL					4.00	3.00	0.96	0.30	0.18	AVERAGE HAUL 8.43

Average Round Trip Distance (miles) 16.87

ROCK HAUL:

Truck type: D20 No. trucks: 6
 Delay min.: 8 Efficiency: 85%

Ave haul: \$5.73 /cy
 Load: \$0.45 /cy
 Spread: \$0.78 /cy

Truck type: D12 No. trucks: 2
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 991

CRUSHED ROCK HAUL COSTS 1,071 cy @ \$6.96 /cy

CRUSHED ROCK COST

SALE NAME: MomboCombo
 PROJECT: Road Improvement
 QUARRY: Kery Stockpiles/Viewpoint SP

MATERIAL: Crushed

DATE: 01/20/2010
 BY: d.mellison

Segment	Stations	Cubic Yards							
		Base	Running	Turnout	Curves	Junction	Leveling	Bedding	Total
I1 - I2	124+48		2,365	200	326	130	109	123	3,253
I2 - I3	61+75		803	80	96	80	335		1,394
I4 - I5	50+50		700	110	106		120		1,036
I1 - I2 (4"-0")	124+48	505		176	188		17		886
I4 - I5 (4"-0")	50+50	77		22		20			119
I6 - I7 (4"-0")	4+00						60		60
I6 - I7 (3/4"-0")	4+00		52	10					62
Grand Total		582	3,920	598	716	230	641	123	6,810

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	124+48	3,253			2	2.67	1.00	0.60	0.30	6.57
I2 - I3	61+75	1,394			2	1.50	0.74	0.60	0.30	5.14
I4 - I5	50+50	1,036			2	1.50	0.70	0.60	0.30	5.10
I1 - I2 (4"-0")	124+48	886			3	4.26	1.50	0.60	0.30	9.66
I4 - I5 (4"-0")	50+50	119			3	3.00	1.29	0.60	0.30	8.19
I6 - I7 (4"-0")	4+00	60			3	3.00	1.00	0.60	0.30	7.90
I6 - I7 (3/4"-0")	4+00	62			2	1.20	0.70	0.60	0.30	4.80
TOTAL		6,810								
CUBIC YARD WEIGHTED HAUL					2.16	2.45	0.97	0.60	0.30	AVERAGE HAUL 6.48

Average Round Trip Distance (miles) 12.96

ROCK HAUL:

Truck type: D20 No. trucks: 6
 Delay min.: 8 Efficiency: 85%

Ave haul: \$5.20 /cy
 Load: \$0.45 /cy
 Spread: \$0.73 /cy

Truck type: D12 No. trucks: 2
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 1,093

CRUSHED ROCK HAUL COSTS 6,810 cy @ \$6.37 /cy

**Mombo Combo Timber Sale
No. 341-10-10**

Mechanical Brushing Costs

Date: 01/08/10

Road Segment	Road Name	Road Number	Miles	Brush Density	Cost / Mile	Segment Cost
I1 - B47	Fish Hawk Loop Road	FL	4.25	Very Light	\$400	\$1,700
B1 - B2		FL10	0.05	Very Light	\$400	\$20
B3 - B4		FL20	0.27	Light	\$600	\$162
B5 - B6		FL30	0.20	Very Light	\$400	\$80
B7 - B8		FL40	0.05	Very Light	\$400	\$20
B9 - B10		FL50	0.06	Very Light	\$400	\$24
B11 - B12		FL5010	0.02	Very Light	\$400	\$8
I4 - I7		FL60	1.10	Light - Medium	\$700	\$770
B13 - B14		FL6010	0.01	Very Light	\$400	\$4
I6 - B15		FL6020	0.37	Very Light	\$400	\$148
I5 - B16		FL602010	0.14	Very Light	\$400	\$56
B17 - B18		FL60201010	0.03	Very Light	\$400	\$12
I2 - I3		Fish Hawk Tie Road	FT	1.46	Very Light	\$400
B19 - B20	FT10		0.23	Light - Medium	\$700	\$161
B21 - B23	FT20		0.12	Medium-Heavy	\$1,100	\$132
B22 - B24	FT2010		0.10	Medium	\$900	\$90
B25 - B28	FL70		0.55	Light	\$600	\$330
B26 - B27	FL7010		0.04	Light	\$600	\$24
B29 - B30	FL80		0.06	Very Light	\$400	\$24
B31 - B32	FL8010		0.02	Very Light	\$400	\$8
B33 - B34	FL90		0.76	Light	\$600	\$456
B35 - B36	FL9010		0.02	Very Light	\$400	\$8
B37 - B38	FL9020		0.24	Light	\$600	\$144
B39 - B40	FL9030		0.03	Light	\$600	\$18
B41 - B42	FL9040		0.15	Light	\$600	\$90
B43 - B44	FL904010	0.01	Very Light	\$400	\$4	
B45 - B46	FL100	0.09	Heavy	\$1,300	\$117	
			10.43		\$498	\$5,194

OREGON DEPARTMENT of FISH and WILDLIFE

FISH SCREENING PROGRAM

SMALL PUMP SCREEN SELF CERTIFICATION

The Oregon Water Resources Department in coordination and cooperation with the Oregon Department of Fish and Wildlife includes screen requirements on pumps to protect fish as a condition of many surface water and/or reservoir water right permits. This is done in accordance with ORS 537.153.

The Oregon Department of Fish and Wildlife does not usually inspect small pump screens at pumped diversions less than 225 GPM (Gallons per Minute), but furnishes the following fish screening criteria information to the water right permit tee:

Screen material open area must be at least 27% of the total wetted screen area.

Perforated plate: Openings shall not exceed 3/32 or 0.0938 inches (2.38 mm).

Mesh/Woven wire screen: Square openings shall not exceed 3/32 or 0.0938 inches (2.38mm) in the narrow direction, e.g., 3/32 inch x 3/32 inch open mesh.

Profile bar screen/Wedge wire: Openings shall not exceed 0.0689 inches (1.75 mm) in the narrow direction.

Screen area must be large enough to cause fish impact. Wetted screen area depends on the water flow rate and the water approach velocity. **Approach velocity** is the water velocity perpendicular to and approximately three inches in front of any part of the screen face.

An Active pump screen is a self cleaning screen that has a proven cleaning system. The **screen approach velocity for active pump screens** shall not exceed 0.4 fps (feet per second) or 0.12 mps (meters per second). The wetted screen area in square feet is calculated by dividing the maximum water flow rate in cubic feet per second (1 cfs = 449 gpm) by 0.4 fps.

A Passive pump screen is a screen that has no cleaning system other than periodic manual cleaning. **Screen approach velocity for passive pump screens** shall not exceed 0.2 fps or 0.06 mps. The wetted screen area in square feet is calculated by dividing the maximum water flow rate by 0.2 fps.

For further information on fish screening please contact:

Bernie Kepshire, Oregon Department of Fish and Wildlife,
7118 NE Vandenberg Avenue, Corvallis, OR 97330-9446 (541) 757-4186 x 255

As evidence of having met fish screen installation requirements, please sign the certification and send to: Oregon Water Resources Department, Water Rights Section, 725 Summer St. NE, Suite A, Salem, OR 97301-1271

Certification: I certify that my small pumped diversion of less than 225 gpm meets fish screening criteria, and that I will maintain it to comply with regulatory criteria. I also understand that should fish screening standards change, I may be required to modify my installation to meet applicable standards.

Applicant Signature: _____

Date: ____ / ____ / ____ WRD File #

Printed Name and Address:

Phone: (_____) _____

Fax: (_____) _____

bmk
3/11/99
PUMPCERT.doc

NB: ODFW logo is 129% of logo on HQ mail label

**MOMBO COMBO
FY 2010
TIMBER CRUISE REPORT**

1. **Sale Area Location:** Areas 1, 2, 3, 4 and 5 R/W are located in portions of Section 1 T6N, R6W, and Sections 25, 35, and 36, T7N, R6W; W.M., Clatsop County, Oregon.

All timber sale areas are posted with ODF "Timber Sale Boundary", "Area Boundary" signs and pink ribbon. Area 5 R/W is posted with ODF "Right-of-Way Boundary" signs.

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

3. **Sale Acreage by Area:**

Area	Harvest Type	Gross Acres	GTRA Acres	New R/W Acres	Stream Buffer Acres	Existing R/W Acres	Net Acreage
1	MC	32.8	0	0	-0.3	0	32.5
2	MC	47.1	0	0	-1.8	0	45.3
3	MC	49.0	0	0	-3.7	0	45.3
4	PC	21.3	n/a	0	0	0	21.3
5	R/W	0	n/a	0	n/a	n/a	0
TOTALS		150.2	0	*0	-5.8	0	144.4

* Approximately 3.5 acres of in-sale R/W is in Areas 1, 2, and 3.

4. **Cruisers and Cruise Dates:** Area 1 was cruised by Jay Morey, Bryce Rodgers, and Ed Holloran. Area 2 was cruised by Jay Morey and Kraig Kirkpatrick. Area 3 was cruised by Jay Morey, Bryce Rodgers, and Jon Long. Area 4 was cruised by Jay Morey, Bryce Rodgers, Jon Long, and Kraig Kirkpatrick. All areas were cruised in January 2010.
5. **Cruise Method and Computation:** Cruises used Corvallis MicroTechnology (CMT) and Juniper Allegro data collectors, and were downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria District office.

Areas 1, 2 and 3 (Modified Clear Cuts), were variable plot cruised with a 54.44 BAF for conifers and a 20 BAF for hardwoods. 64 plots were sampled on a cruise grid of 3 chains by 6 chains, with a count/cruise ratio of 1:1.

Area 4 (Partial Cut), were variable plot cruised with a 40 BAF for conifers and a 20 BAF for hardwoods. 23 plots were sampled on a cruise grid of 2 chains by 4 chains, with all plots cruised.

Area 5 R/W, was calculated applying road R/W acreage using cruise per acre volumes for clear cut harvest in Areas 1, 2, and 3. Area 4 contains no R/W.

<u>AREAS</u>	<u>PROJECT</u>	<u>TRACT</u>	<u>CRUISE TYPE</u>
1, 2, 3	MOMBO	A123, A123TAKE, A123LEAVE	00MC
4	MOMBO	A4, A4TAKE, A4LEAVE	00PC
5 R/W	MOMBO	A5RW	00MC

6. **Timber Description:**

Areas 1, 2 and 3 (Modified Clearcut) – These stands are approximately 68 to 78 years old, consisting of Douglas-fir dominant mixed conifer stands with patches and stringers of hardwoods along the draws and

streams. The average "take" volume per acre is 46 MBF, tree size is 19" DBH and 76 feet to a merchantable top (6" D.I.B. or 40% of the diameter at 16 feet).

Area 4 (Partial Cut) – This stand is approximately 76 years old, consisting of Douglas-fir dominant conifer stands with traces of hardwoods. This stand averages 22.0 inches in DBH, with an average merchantable height of 86 feet to a merchantable top (6" D.I.B. or 40% of the diameter at 16 feet). The take volume averages 19.0 inches in DBH with an average merchantable height of 79 feet. This stand will be harvested to an SDI of approximately 35-40, with a basal area target of 170 ft², while retaining approximately 46 trees per acre. The average (net) volume to be harvested is 20.0 MBF/acre.

Area 5 R/W – The R/W is the same type timber as Areas 1, 2, and 3. The average volume to remove from Area 5 is 49 MBF per acre. There is 3.5 acres of R/W.

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

Area	Target CV	Target SE%	Actual CV	Actual SE%
1, 2, 3	45	10	49.3	6.2
4	45	11	38.1	8.1

The statistics for all areas are "Take" and "Leave" stands combined.

8. Take Volumes by Species and Log Grades for All Sale Areas by MBF: (See "Species, Sort Grade-Board Feet Volumes (Project)" and the "Stand Table Summary" attached, of the thinning and regeneration harvest areas combined.) Volumes do not include "ingrowth." The majority of defect and breakage was culled out during the cruise.

Species	DBH	Net Vol.	2 Saw	3Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	20.1	5,576	4,205	1,185	186	-	4.1	91
Hemlock	14.4	97	54	32	11	-	4.1	2
Alder	15.0	441	-	-	-	441	1.4	6.5
Maple	14.0	27				27	37.4	0.5
TOTAL		6,141				468	4.2	100

9. Prepared by: Jay Morey

Date: February 18, 2010

10. Approved by: _____

Date: MARCH 26, 2010

11. Attachments: Cruise Plans & Maps (7 pages)
Species, Sort, Grade Reports (4 pages)
Statistics Reports (6 pages)
Stand Table Summary Reports (3 pages)
Take - Log Stock Table Reports (2 pages)

Species, Sort Grade - Board Foot Volumes (Project)

T06N R06W S01 Ty00PC 21.30 T07N R06W S25 Ty00MC 123.10	Project: MOMBO Acres 144.40	Page 1 Date 2/17/2010 Time 8:05:12AM
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S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre		
								Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf			
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
D	DOCU			100.0	925											9		0.00	9.5		
D	DO2S	75		1.9	29,678	29,124	4,205 4,206			1	52	47		1	1	21	77	37	335	2.03	87.0
D	DO3S	21		2.0	8,379	8,210	1,185 1,186			99	1			3	5	43	50	35	93	0.76	88.0
D	DO4S	4		.9	1,299	1,287	186			5	94	1		40	55	5		21	28	0.44	46.7
D	Totals		91	4.1	40,281	38,621	5,576 5,577			0	25	39	35	3	4	25	69	32	167	1.27	231.2
H	DOCU			100.0	29													6		0.00	.7
H	DO2S	55		.0	374	374	54				55	45				19	81	38	412	2.34	.9
H	DO3S	33			222	222	32			100						9	91	39	104	0.74	2.1
H	DO4S	12			77	77	11			100				40	60			24	25	0.50	3.1
H	Totals		2	4.1	702	673	97			44	31	25		5	7	13	75	29	98	0.91	6.9
M	DOCU			100.0	99													12		0.00	2.5
M	DOCR	100		7.1	205	190	27			87	13			29	10	31	31	27	55	0.75	3.5
M	Totals		0	37.4	304	190	27			87	13			29	10	31	31	21	32	0.56	5.9
A	DOCU			100.0	32													6		0.00	1.1
A	DOCR	100		.4	3,068	3,056	441			57	41	2		8	7	30	55	31	99	0.92	30.8
A	Totals		7	1.4	3,100	3,056	441			57	41	2		8	7	30	55	30	96	0.91	31.9
Totals				4.2	44,388	42,540	6,141 6,142			0	28	39	33	3	4	25	68	31	154	1.21	275.9

Species, Sort Grade - Board Foot Volumes (Type)										Page	1										
T TSPCSTGR										Date	2/17/2010										
Project: MOMBO										Time	8:03:36AM										
T07N R06W S25 T00MC										T07N R06W S25 T00MC											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt	W											
07N	06W	25	A123TAKE	00MC	123.10	64	221	1													
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs	
					Net	Def%	Gross		Net	Net MBF	Log Scale Dia.				Log Length				Ln		Bd
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft	Lf	/Acre	
D	DO	CU		00.0		1,025											9		0.00	10.2	
D	DO	2S	76	1.9	32,465	31,846	3,920			1	50	48	1	1	21	77	37	336	2.04	94.7	
D	DO	3S	20	2.0	8,796	8,622	1,061			99	1		3	6	44	47	34	93	0.77	92.6	
D	DO	4S	4	.9	1,391	1,379	170		6	93	1		40	55	5		21	28	0.44	50.0	
D	Totals		90	4.2	43,677	41,847	5,151		0	24	39	37	3	4	25	69	32	169	1.28	247.4	
A	DO	CU		00.0		38											6		0.00	1.3	
A	DO	CR	100	.4	3,599	3,584	441			57	41	2	8	7	30	55	31	99	0.92	36.1	
A	Totals		8	1.4	3,637	3,584	441		57	41	2		8	7	30	55	30	96	0.91	37.5	
H	DO	CU		00.0		34											6		0.00	.9	
H	DO	2S	55	.0	439	439	54				55	45			19	81	38	412	2.34	1.1	
H	DO	3S	33		261	261	32		100						9	91	39	104	0.74	2.5	
H	DO	4S	12		90	90	11		100				40	60			24	25	0.50	3.6	
H	Totals		2	4.1	824	790	97		44	31	25		5	7	13	75	29	98	0.91	8.0	
M	DO	CU		00.0		116											12		0.00	2.9	
M	DO	CR	100	7.1	240	223	27			87	13		29	10	31	31	27	55	0.75	4.1	
M	Totals		0	37.4	356	223	27		87	13			29	10	31	31	21	32	0.56	7.0	
Type Totals					4.2	48,494	46,444	5,716	5,717	0	28	39	34	3	4	25	67	31	155	1.22	299.9

T06N R06W S01 T00PC		T06N R06W S01 T00PC
Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt		W
06N 06W 01 A4TAKE 00PC 21.30 23 64 1		

Spp	Sp	So	Gr	ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
						Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/Lf	
										4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99				
D		DO	CU			00.0	344											10		0.00	5.5
D		DO	2S		67	1.3	13,575	13,394	285	2	67	31			22	78		38	312	1.90	42.9
D		DO	3S		29	2.4	5,971	5,826	124	100				1	28	71		37	95	0.74	61.4
D		DO	4S		4	1.4	767	756	16	100			44	50	6			20	28	0.44	27.4
D	Totals				100	3.3	20,657	19,976	425	34	45	21	2	2	23	73		33	146	1.11	137.1
Type Totals						3.3	20,657	19,976	425	34	45	21	2	2	23	73		33	146	1.11	137.1

Species, Sort Grade - Board Foot Volumes (Project)

T07N R06W S25 Ty00MC 3.50
 AREA 5 R/W

Project: MOMBO
 Acres 3.50

Page 1
 Date 4/13/2010
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S Spp	So T	Gr rt	ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre	
									Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf		
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D	DOCU															10		0.00	10.8		
D	DO2S	76			1.9	34,717	34,062	119		1	50	48		1	1	20	78	37	336	2.04	101.2
D	DO3S	20			1.9	9,093	8,917	31		99	1			3	6	45	46	34	93	0.77	95.7
D	DO4S	4			.8	1,486	1,473	5		6	94	1		41	55	4		21	28	0.45	53.1
D Totals				90	1.9	45,296	44,452	156	0	24	39	37	3	4	25	69	32	170	1.29	260.8	
H	DOCU																	6		0.00	.9
H	DO2S	55				439	439	2			55	45				19	81	38	412	2.34	1.1
H	DO3S	33				261	261	1		100						9	91	39	104	0.74	2.5
H	DO4S	12				90	90	0		100			40	60				24	25	0.50	3.6
H Totals				2		790	790	3	44	31	25	5	7	13	75	29	98	0.91	8.0		
M	DOCU																	12		0.00	2.9
M	DOCR	100			7.1	240	223	1		87	13			29	10	31	31	27	55	0.75	4.1
M Totals				0	7.1	240	223	1	87	13			29	10	31	31	21	32	0.56	7.0	
A	DOCU																	6		0.00	1.3
A	DOCR	100			.4	3,641	3,626	13		57	41	2		8	7	30	55	31	99	0.92	36.6
A Totals				7	.4	3,641	3,626	13	57	41	2	8	7	30	55	30	96	0.91	37.9		
C	DO3S	61				173	173	1		100						68	32	35	78	0.79	2.2
C	DO4S	39				110	110	0		100			100					16	24	0.46	4.5
C Totals				1		283	283	1	100			39		41	20	22	42	0.63	6.7		
Totals					1.7	50,249	49,373	173	0	28	39	34	3	4	25	68	31	154	1.22	320.5	

TC TSTATS				STATISTICS				PAGE 1		
PROJECT MOMBO				DATE 2/16/2010						
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	25	A123TAKE	00MC	123.10	64	366	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		64	366	5.7						
CRUISE		39	221	5.7	15,677	1.4				
DBH COUNT										
REFOREST										
COUNT		25	134	5.4						
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	144	97.6	20.2	83		216.9	42,652	41,847	10,036	10,036
R ALDER	59	19.2	16.1	60		27.2	3,599	3,584	1,013	1,013
WHEMLOCK	5	5.3	14.4	45		6.0	790	790	211	211
BL MAPLE	13	5.2	13.7	28		5.3	240	223	80	80
TOTAL	221	127.4	19.2	76		255.4	47,281	46,444	11,341	11,341
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	63.4	5.3	610	644	678					
R ALDER	47.8	6.2	212	226	240					
WHEMLOCK	130.7	64.9	127	362	597					
BL MAPLE	90.8	26.2	39	53	67					
TOTAL	81.8	5.5	464	491	518	267	67	30		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	82.8	10.3	88	98	108					
R ALDER	189.3	23.6	15	19	24					
WHEMLOCK	327.6	40.9	3	5	7					
BL MAPLE	274.9	34.3	3	5	7					
TOTAL	56.4	7.0	118	127	136	127	32	14		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	64.4	8.0	199	217	234					
R ALDER	175.5	21.9	21	27	33					
WHEMLOCK	287.6	35.9	4	6	8					
BL MAPLE	278.5	34.8	3	5	7					
TOTAL	46.3	5.8	241	255	270	86	21	10		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	65.3	8.1	38,436	41,847	45,257					
R ALDER	181.4	22.7	2,772	3,584	4,397					
WHEMLOCK	330.8	41.3	463	790	1,116					
BL MAPLE	305.7	38.2	138	223	308					
TOTAL	52.9	6.6	43,373	46,444	49,515	112	28	12		

TC TSTATS				STATISTICS				PAGE 1		
				PROJECT MOMBO				DATE 2/16/2010		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
07N	06W	25	A123	00MC	123.10	64	398	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	64	398	6.2							
CRUISE	40	239	6.0	17,314	1.4					
DBH COUNT										
REFOREST										
COUNT	24	141	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
DOUG FIR	144	97.6	20.2	83		216.9	42,652	41,847	10,036	10,036
R ALDER	59	19.2	16.1	60		27.2	3,599	3,584	1,013	1,013
DOUGLEAV	7	4.1	24.8	103		13.6	2,635	2,600	625	625
SNAG	6	3.8	20.3	69		8.5				
WHEMLOCK	5	5.3	14.4	45		6.0	790	790	211	211
BL MAPLE	13	5.2	13.7	28		5.3	240	223	80	80
CEDLEAV	5	5.4	12.0	30		4.3	283	283	95	95
TOTAL	239	140.6	19.2	75		281.7	50,198	49,326	12,061	12,061
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.	INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	63.4	5.3	610	644	678					
R ALDER	47.8	6.2	212	226	240					
DOUGLEAV	37.1	15.1	574	676	778					
SNAG										
WHEMLOCK	130.7	64.9	127	362	597					
BL MAPLE	90.8	26.2	39	53	67					
CEDLEAV	66.9	33.2	45	68	91					
TOTAL	84.5	5.5	450	476	502	285	71	32		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.	INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	82.8	10.3	88	98	108					
R ALDER	189.3	23.6	15	19	24					
DOUGLEAV	249.3	31.1	3	4	5					
SNAG	303.1	37.9	2	4	5					
WHEMLOCK	327.6	40.9	3	5	7					
BL MAPLE	274.9	34.3	3	5	7					
CEDLEAV	613.9	76.7	1	5	10					
TOTAL	54.9	6.9	131	141	150	120	30	13		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.	INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	64.4	8.0	199	217	234					
R ALDER	175.5	21.9	21	27	33					
DOUGLEAV	246.9	30.8	9	14	18					
SNAG	326.9	40.8	5	9	12					
WHEMLOCK	287.6	35.9	4	6	8					
BL MAPLE	278.5	34.8	3	5	7					
CEDLEAV	572.6	71.5	1	4	7					
TOTAL	42.6	5.3	267	282	297	72	18	8		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.	INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		

STATISTICS
PROJECT MOMBO

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
07N	06W	25	A123	00MC	123.10	64	398	1	W
CL:	68.1%	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR	65.3	8.1		38,436	41,847	45,257			
R ALDER	181.4	22.7		2,772	3,584	4,397			
DOUGLEAV	248.6	31.1		1,792	2,600	3,407			
SNAG									
WHEMLOCK	330.8	41.3		463	790	1,116			
BL MAPLE	305.7	38.2		138	223	308			
CEDLEAV	566.4	70.7		83	283	483			
TOTAL	49.3	6.2		46,287	49,326	52,366	97	24	11

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT MOMBO				DATE	2/16/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	01	A4TAKE	00PC	21.30	23	64	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		23	64	2.8						
CRUISE		19	64	3.4	1,246	5.1				
DBH COUNT										
REFOREST										
COUNT										
BLANKS		4								
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	64	58.5	18.7	79		111.3	20,313	19,976	4,992	4,992
TOTAL	64	58.5	18.7	79		111.3	20,313	19,976	4,992	4,992
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	63.7	8.0	452	491	530					
TOTAL	63.7	8.0	452	491	530	162	41	18		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	81.5	17.4	48	58	69					
TOTAL	81.5	17.4	48	58	69	277	69	31		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	66.8	14.2	95	111	127					
TOTAL	66.8	14.2	95	111	127	186	47	21		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR	67.7	14.4	17,096	19,976	22,856					
TOTAL	67.7	14.4	17,096	19,976	22,856	191	48	21		

TC TSTATS		STATISTICS					PAGE 1			
		PROJECT MOMBO			DATE 2/16/2010					
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	01	A4LEAVE	00PC	21.30	23	100	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		23	100	4.3						
CRUISE		23	100	4.3	1,006	9.9				
DBH COUNT										
REFOREST										
COUNT										
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
					50I					
DOUGLEAV	93	40.8	26.9	105	199.8	161.7	37,129	36,445	8,190	8,190
ML	5	5.1	12.5	30	7.3	4.3	217	206	66	66
SNAG	1	.6	24.0	70		1.7				
ALDRLEAV	1	.7	15.0	25	1.3	.9	21	21	11	11
TOTAL	100	47.2	25.6	95		168.7	37,367	36,672	8,267	8,267
CONFIDENCE LIMITS OF THE SAMPLE					35.0%					
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUGLEAV	43.0	4.5	1,033	1,082	1,130					
ML	72.4	36.0	23	36	49					
SNAG										
ALDRLEAV										
TOTAL	51.9	5.2	956	1,008	1,060	108	27	12		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUGLEAV	33.0	7.0	38	41	44					
ML	278.1	59.2	2	5	8					
SNAG	479.6	102.2		1	1					
ALDRLEAV	479.6	102.2		1	1					
TOTAL	37.4	8.0	43	47	51	59	15	7		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUGLEAV	24.1	5.1	153	162	170					
ML	238.5	50.8	2	4	7					
SNAG	479.6	102.2		2	4					
ALDRLEAV	479.6	102.2		1	2					
TOTAL	22.6	4.8	161	169	177	21	5	2		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5 10		15		
DOUGLEAV	32.2	6.9	33,943	36,445	38,947					
ML	312.6	66.6	69	206	343					
SNAG										
ALDRLEAV	479.6	102.2		21	43					
TOTAL	31.8	6.8	34,191	36,672	39,153	42	11	5		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT MOMBO				DATE	2/16/2010	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	01	A4	00PC	21.30	23	164	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		23	164	7.1						
CRUISE		23	164	7.1	2,251	7.3				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUGLEAV	93	40.8	26.9	105		161.7	37,109	36,425	8,189	8,189
DOUG FIR	64	58.5	18.7	79		111.3	20,313	19,976	4,992	4,992
BL MAPLE	5	5.1	12.5	30		4.3	217	206	66	66
SNAG	1	.6	24.0	70		1.7				
ALDRLEAV	1	.7	15.0	25		.9	21	21	11	11
TOTAL	<i>164</i>	<i>105.7</i>	<i>22.0</i>	<i>86</i>		<i>280.0</i>	<i>57,660</i>	<i>56,627</i>	<i>13,258</i>	<i>13,258</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	43.1	4.5	1,033	1,081	1,129					
DOUG FIR	63.7	8.0	452	491	530					
BL MAPLE	72.4	36.0	23	36	49					
SNAG										
ALDRLEAV										
TOTAL	<i>64.3</i>	<i>5.0</i>	<i>766</i>	<i>806</i>	<i>846</i>	<i>165</i>	<i>41</i>	<i>18</i>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	33.0	7.0	38	41	44					
DOUG FIR	81.5	17.4	48	58	69					
BL MAPLE	278.1	59.2	2	5	8					
SNAG	479.6	102.2		1	1					
ALDRLEAV	479.6	102.2		1	1					
TOTAL	<i>46.1</i>	<i>9.8</i>	<i>95</i>	<i>106</i>	<i>116</i>	<i>89</i>	<i>22</i>	<i>10</i>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	24.1	5.1	153	162	170					
DOUG FIR	66.8	14.2	95	111	127					
BL MAPLE	238.5	50.8	2	4	7					
SNAG	479.6	102.2		2	4					
ALDRLEAV	479.6	102.2		1	2					
TOTAL	<i>34.1</i>	<i>7.3</i>	<i>260</i>	<i>280</i>	<i>300</i>	<i>48</i>	<i>12</i>	<i>5</i>		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUGLEAV	32.2	6.8	33,930	36,425	38,919					
DOUG FIR	67.7	14.4	17,096	19,976	22,856					
BL MAPLE	312.6	66.6	69	206	343					
SNAG										
ALDRLEAV	479.6	102.2		21	43					
TOTAL	<i>38.1</i>	<i>8.1</i>	<i>52,027</i>	<i>56,627</i>	<i>61,228</i>	<i>61</i>	<i>15</i>	<i>7</i>		

TC TSTNDSUM		Stand Table Summary													
Project MOMBO											T06N R06W S01 T00PC				
T06N R06W S01 T00PC											T06N R06W S01 T00PC				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	Date:		Time:				
06N	06W	01	A4LEAVE	00PC	21.30	23	100	1	02/16/20		1:30:44PM				
S Spec	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits
DL		11	1	89	53	2.635	1.74	2.64	14.0	50.0	37	132		8	3
DL		16	1	88	131	1.246	1.74	2.49	29.0	120.0	72	299		15	6
DL		17	1	88	99	1.103	1.74	2.21	30.5	95.0	67	210		14	4
DL		18	1	88	124	.984	1.74	2.95	27.7	103.3	82	305		17	6
DL		19	1	85	120	.883	1.74	2.65	29.0	110.0	77	291		16	6
DL		22	1	88	114	.659	1.74	1.98	39.7	166.7	78	329		17	7
DL		23	1	88	146	.603	1.74	1.81	51.7	220.0	93	398		20	8
DL		24	7	86	120	3.875	12.17	9.96	54.6	231.7	544	2,308		116	49
DL		25	6	86	142	3.061	10.43	9.18	59.9	254.4	550	2,337		117	50
DL		26	9	87	144	4.245	15.65	12.74	65.6	281.5	836	3,585		178	76
DL		27	2	87	148	.875	3.48	2.62	73.8	336.7	194	884		41	19
DL		28	14	85	144	5.694	24.35	17.49	72.0	315.8	1,258	5,523		268	118
DL		29	10	85	147	3.791	17.39	11.75	77.9	352.3	916	4,140		195	88
DL		30	9	84	148	3.189	15.65	9.92	79.1	360.0	785	3,571		167	76
DL		31	3	84	140	.995	5.22	2.99	88.9	374.4	265	1,118		57	24
DL		32	6	85	146	1.868	10.43	5.92	92.6	441.1	548	2,609		117	56
DL		33	6	84	145	1.757	10.43	4.98	104.5	470.6	520	2,342		111	50
DL		34	3	81	157	.828	5.22	2.48	104.7	482.2	260	1,197		55	25
DL		35	1	82	157	.260	1.74	.78	120.7	563.3	94	440		20	9
DL		36	5	84	158	1.230	8.70	4.43	108.4	539.4	480	2,389		102	51
DL		37	2	77	135	.466	3.48	1.40	115.3	466.7	161	652		34	14
DL		39	2	81	161	.419	3.48	1.47	132.1	627.1	194	920		41	20
DL		43	1	81	179	.172	1.74	.69	113.0	672.5	78	464		17	10
DL	Totals	93	86	134		40.840	161.74	115.52	70.9	315.5	8,190	36,445		1,745	776
ML		10	1	86	21	1.594	.87	1.59	7.0	30.0	11	48		2	1
ML		12	2	87	55	2.214	1.74	3.32	11.7	33.3	39	111		8	2
ML		13	1	87	44	.943	.87	.94	17.0	50.0	16	47		3	1
ML		21	1	87	56	.362	.87								
ML	Totals	5	87	42		5.114	4.35	5.86	11.3	35.1	66	206		14	4
AL		15	1	87	27	.709	.87	.71	15.0	30.0	11	21		2	0
AL	Totals	1	87	27		.709	.87	.71	15.0	30.0	11	21		2	0
SNL		24	1	89	87	.554	1.74								
SNL	Totals	1	89	87		.554	1.74								
Totals		100	86	122		47.215	168.70	122.09	67.7	300.4	8267	36,672		1,761	781

Log Stock Table - MBF

T06N R06W S01 Ty00PC 21.30
 T07N R06W S25 Ty00MC 123.10

Project: **MOMBO**
 Acres **144.40**

Page **1**
 Date **2/16/2010**
 Time **1:32:04PM**

S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
								2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
D	DO	2S	16	30	7.0	28	.5						9	19					
D	DO	2S	20	11	8.3	10	.2						10						
D	DO	2S	24	31		31	.6				2		11	19					
D	DO	2S	30	5		5	.1						5						
D	DO	2S	32	851	1.8	835	15.0					15	296	118	266	119	22		
D	DO	2S	34	41	2.5	40	.7							15	25				
D	DO	2S	40	3,317	1.8	3,256	58.4					41	553	673	1419	484	86		
D	DO	3S	16	18	16.4	15	.3					15							
D	DO	3S	20	15		15	.3				4	11							
D	DO	3S	24	10		10	.2				3	7							
D	DO	3S	25	3		3	.0				3								
D	DO	3S	26	20		20	.4			3	1	3	14						
D	DO	3S	27	3		3	.0				3								
D	DO	3S	28	1		1	.0			1									
D	DO	3S	29	3		3	.0				3								
D	DO	3S	30	23		23	.4			7		15							
D	DO	3S	32	482	2.4	470	8.4			83	136	252							
D	DO	3S	34	36		36	.6			16	16	4							
D	DO	3S	36	36		36	.6			8	19	9							
D	DO	3S	37	6		6	.1			2	4								
D	DO	3S	38	1		1	.0				1								
D	DO	3S	40	555	1.7	546	9.8			102	178	266							
D	DO	4S	12	9		9	.2			2	6	1							
D	DO	4S	14	7		7	.1			1	4	2							
D	DO	4S	15	2		2	.0			2									
D	DO	4S	16	27		27	.5		3	18	6								
D	DO	4S	17	0		0	.0			0									
D	DO	4S	18	18		18	.3			15	3								
D	DO	4S	20	11		11	.2			6	4								
D	DO	4S	22	4		4	.1		2	1	0								
D	DO	4S	24	75		75	1.3			69	6								
D	DO	4S	26	7		7	.1			7									
D	DO	4S	27	9		9	.2		3	6									
D	DO	4S	28	7		7	.1			7									
D	DO	4S	32	11	16.6	9	.2		2	7									
D		Totals		5,683	1.9	5,577	90.8		10	363	402	639	880	825	1748	602	108		
H	DO	2S	32	10		10	10.5							10					

Log Stock Table - MBF

T06N R06W S01 Ty00PC 21.30
 T07N R06W S25 Ty00MC 123.10

Project: **MOMBO**
 Acres **144.40**

Page **2**
 Date **2/16/2010**
 Time **1:32:04PM**

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spe	Net Volume by Scaling Diameter in Inches									
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29
H		DO	2S	40	44		44	45.0					19		24			
H		DO	3S	32	3		3	3.0			3							
H		DO	3S	40	29		29	30.1		10		19						
H		DO	4S	20	4		4	4.6		4								
H		DO	4S	28	7		7	6.9		7								
H		Totals			97		97	1.6		21	3	19	19	10	24			
M		DO	CR	16	5	14.1	5	16.9		2	2							
M		DO	CR	20	3		3	12.0				3						
M		DO	CR	30	3		3	9.9		3								
M		DO	CR	32	9	2.7	8	30.5				5	3					
M		DO	CR	40	10	11.6	8	30.7		6	3							
M		Totals			30	7.1	27	.4		11	5	8	3					
A		DO	CR	16	8		8	1.9		8								
A		DO	CR	20	28		28	6.3		10	5	4	4	4				
A		DO	CR	23	2		2	.5		2								
A		DO	CR	24	2		2	.4		2								
A		DO	CR	26	6		6	1.3		6								
A		DO	CR	30	21		21	4.8		4	4	13						
A		DO	CR	32	134		133	30.2		45	15	44	17	5	7			
A		DO	CR	40	242		241	54.6		4	34	53	100	22	28			
A		Totals			443		441	7.2		80	59	114	121	32	34			
Total		All Species			6,253	1.8	6,143	100.0		10	475	469	780	1004	877	1792	627	108

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Mombo Combo **Areas** 1-3

Harvest Type: (CC) Clearcut

Approx. Cruise Acres: 130 **Estimated CV%** 45 Net BF/Acre **SE% Objective** 10

Planned Sale Volume : 6,000 MBF **Estimated Sale Area Value/Acre:** \$8,400/Ac
(47 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 100 conifer and 20 hardwood trees:
(b) Sample 76 cruise plots (1 grade/ 1 count); (c) Other goals (X Determine volume and quality; X Determine pole density for sale value

B. Cruise Design:

1. Plot Cruises: BAF 20.0 – Alder 54.4 – Conifer (Full point) Half point) (circle one)
Cruise Line Direction(s) Areas 1&3 (North/South) Area 2 (East/West)
Cruise Line Spacing 6 (chains)
Cruise Plot Spacing 3 (chains)
Grade/Count Ratio 1/1

If a cruise line ends up paralleling in a buffer offset by 1 or 2 chains and continue. Take plots as marked on map. All cedar are leave trees. Tally pole grade Douglas-fir trees on each plot. Minimum DBH for poles is 18" with a minimum height of 60' with no defect. Maximum DBH for poles is 30". Record all snags as SNL. Grade all alder as CampRun.

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".
- 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 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.
6. **Species, Sort, and Grade Codes:**
- A. **Species:** Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. **Sort:** Use code "1" (Domestic).
- C. **Grade:** A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
Hardwoods: R = CampRun
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. Be sure to look at **both sides of the tree**, especially if a pole/piling quality tree. Only one set of limb whorls per foot allowed for poles and piling.
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 inter-visible 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.
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: Jay Morey Approved by:  Date: 1/12/10
 X:\Sunset Unit\2010 FY Sales\Mombo Combo\Sale Prep\Cruise\Cruise Design Mombo Combo Areas 1-3.doc

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Mombo Combo **Area(s)** 4

Harvest Type: (PC) "Automark Thinning"

Approx. Cruise Acres: 22 **Estimated CV%** 45 BA/Acre **SE% Objective** 11 BA/Acre

Planned Sale Volume : 374 MBF **Estimated Sale Area Value/Acre:** \$3,400/Ac
(Area 4) (17 MBF/Ac.)

A. Cruise Goals: (a) Grade minimum 75 conifer and 10 hardwood trees
(b) Sample 24 cruise plots (1 grade/0 count); (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 20.0 – Alder 40.0 – Conifer (Full point) Half point) (circle one)
Cruise Line Direction(s) (East/West)
Cruise Line Spacing 4 (chains)
Cruise Plot Spacing 2 (chains)
Grade/Count Ratio 1/0

Basal Area leave target is 160 sq. ft. Cruiser needs to select 4 leave trees per plot.
Cruise all take and leave trees. All merchantable Alder will be reserved. All cedar greater
than 8" are leave trees and count towards the leave tree basal area. Record all snags as
SNL. Grade all alder as CampRun.

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 7" for hardwoods or 40 % of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87.

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

6. **Species, Sort, and Grade Codes:**

- A. **Species:** Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple). For "leave trees" in partial cuts, or for marked "wildlife trees," add an "L" to the species code (such as DL, HL, CL, etc.)
- B. **Sort:** Use code "1" (Domestic).
- C. **Grade:** A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
Hardwoods: R = CampRun

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.

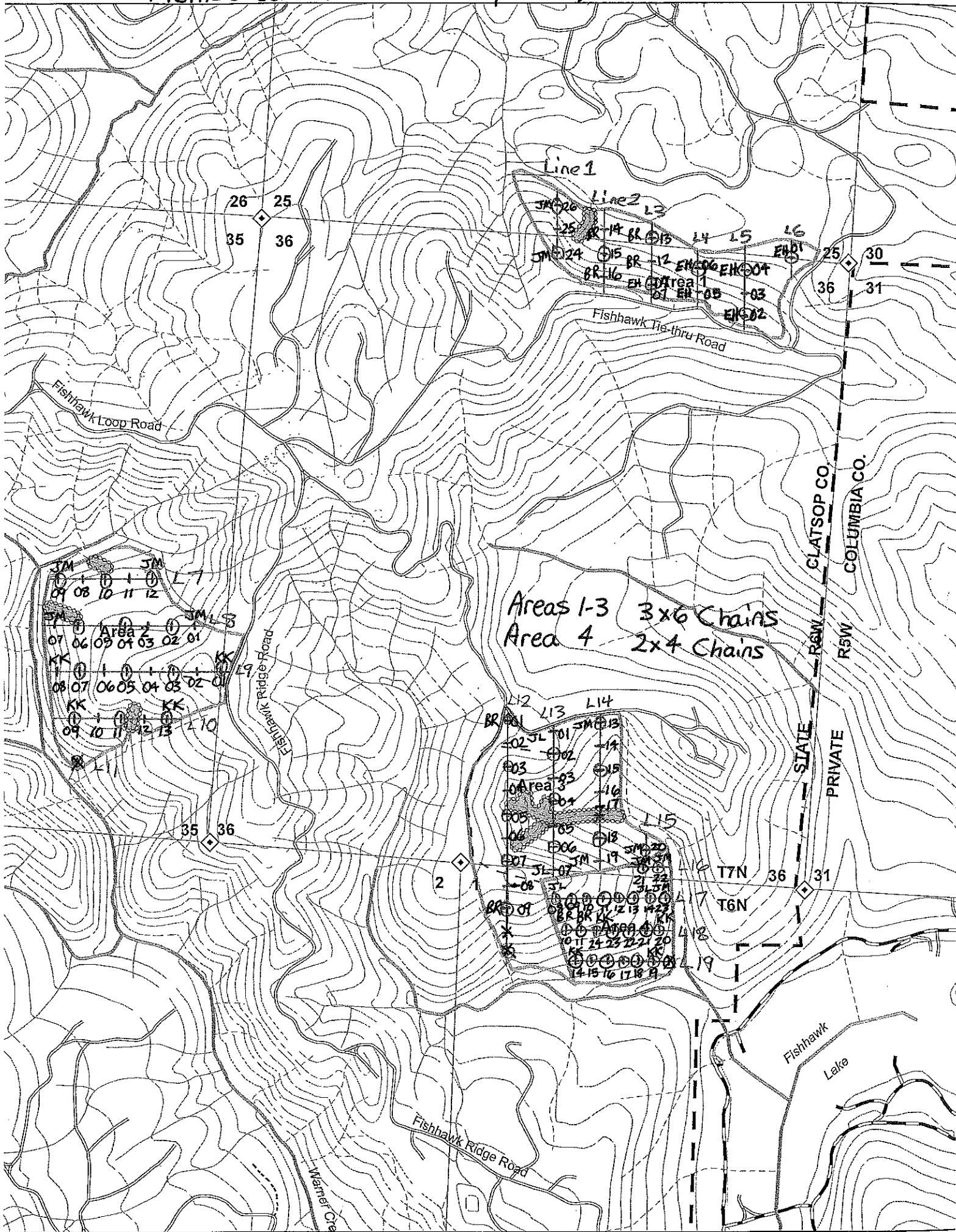
8. **Standard Field Procedures: Plot Type Cruises:** Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at inter-visible 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.

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: Jay Morey
Approved by: [Signature] 1/12/10
Date: 1/12/2010

Mombo Combo Cruise Map 1:12,000

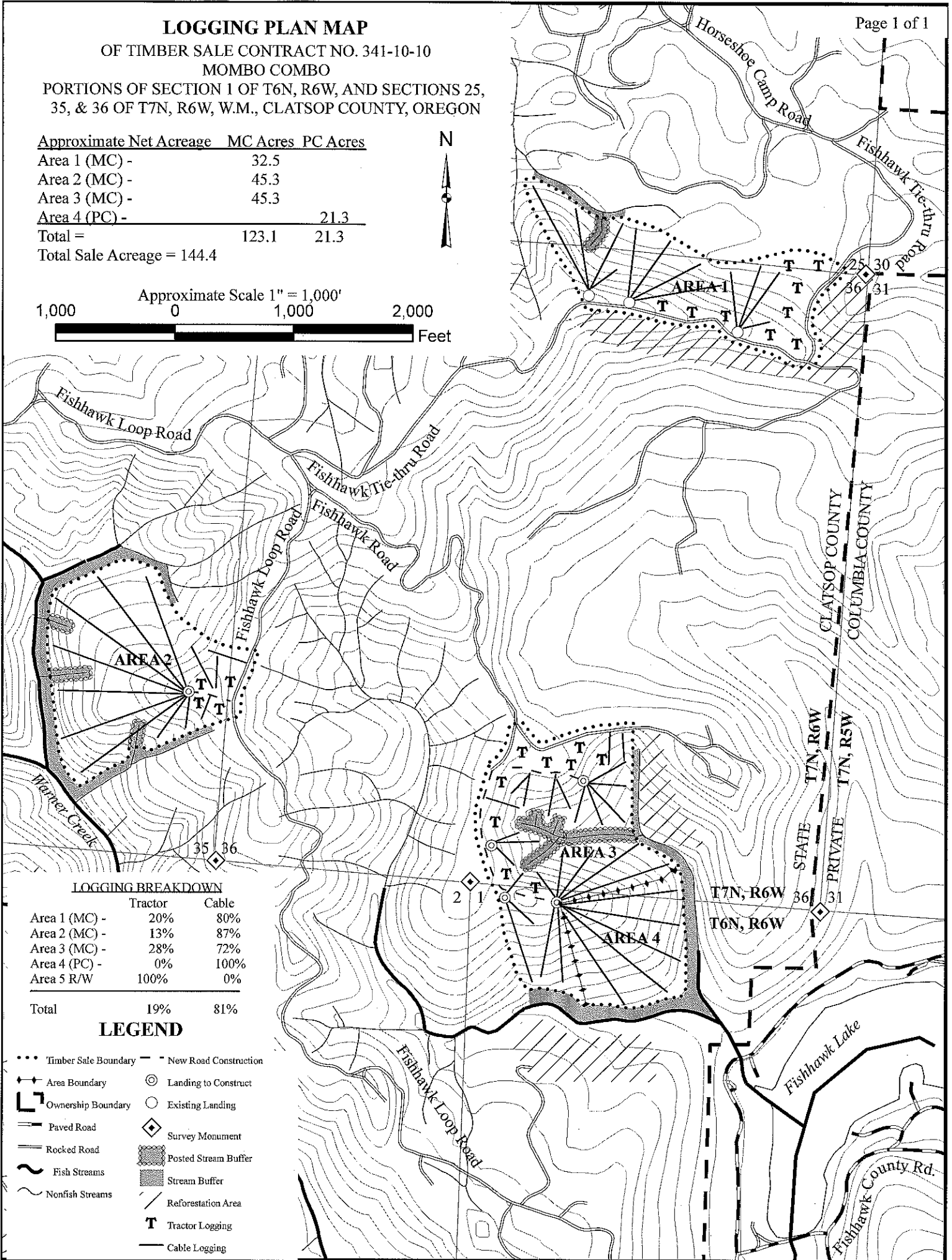
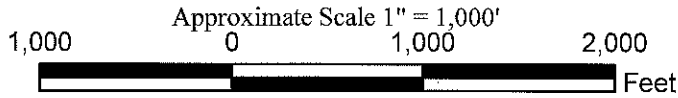


LOGGING PLAN MAP

OF TIMBER SALE CONTRACT NO. 341-10-10
MOMBO COMBO

PORTIONS OF SECTION 1 OF T6N, R6W, AND SECTIONS 25,
35, & 36 OF T7N, R6W, W.M., CLATSOP COUNTY, OREGON

Approximate Net Acreage	MC Acres	PC Acres
Area 1 (MC) -	32.5	
Area 2 (MC) -	45.3	
Area 3 (MC) -	45.3	
Area 4 (PC) -		21.3
Total =	123.1	21.3
Total Sale Acreage = 144.4		



LOGGING BREAKDOWN

	Tractor	Cable
Area 1 (MC) -	20%	80%
Area 2 (MC) -	13%	87%
Area 3 (MC) -	28%	72%
Area 4 (PC) -	0%	100%
Area 5 R/W	100%	0%
Total	19%	81%

LEGEND

- Timber Sale Boundary
- - - New Road Construction
- Area Boundary
- ⊙ Landing to Construct
- Ownership Boundary
- Existing Landing
- == Paved Road
- ◇ Survey Monument
- == Rocked Road
- ▨ Posted Stream Buffer
- ~ Fish Streams
- ▨ Stream Buffer
- ~ Nonfish Streams
- ▨ Reforestation Area
- T Tractor Logging
- Cable Logging