



"SUSTAINABLE FORESTRY"

Timber Sale Appraisal Cowabunga

Sale AT-341-2015-02-

District: Astoria

Date: January 14, 2015

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$2,409,564.86	\$43,294.51	\$2,452,859.37
		Project Work:	(\$768,717.00)
		Advertised Value:	\$1,684,142.37



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District: Astoria

Date: January 14, 2015

Timber Description

Location: Areas 1, 2, 3, and 4 are located in portions of Section 33, T7N, R6W, and portions of Section 4, T6N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 80%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	21	0	97
Western Hemlock / Fir	22	0	97
Alder (Red)	16	0	95

Volume by Grade	2S	3S	4S	Camprun	Total
Douglas - Fir	4,159	915	114	0	5,188
Western Hemlock / Fir	241	46	7	0	294
Alder (Red)	0	0	0	161	161
Total	4,400	961	121	161	5,643

Comments: Pond Values Used: 4th Quarter Calendar Year 2014.

Expected Log Markets: Mist, OR; Clatskanie, OR; Tillamook, OR; Forest Grove, OR.

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
\$977.43/MBF = \$1,175/MBF - \$197.57/MBF

Pulp (Conifer & Hardwood) Price = \$35/MBF

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$4.00/Gallon

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

Other Costs (with Profit & Risk to be added):
100% Branding and Painting: \$1/MBF x 5,643 MBF = \$5,643
Log Loader Slash & Landing Piling (includes Move-In and Pile Materials) = \$7,155 (see attached appraisal)

Machine Washing for Noxious Weed Compliance = \$2,000
TOTAL Other Costs (with Profit & Risk to be added) = \$14,798

Other Costs (No Profit & Risk added):
None.



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Logging Conditions

Combination#: 1

Douglas - Fir	50.00%
Western Hemlock / Fir	50.00%
Alder (Red)	50.00%

Logging System: Cable: Medium Tower >40 - <70 **Process:** Manual Falling/Delimbing

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

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

loads / day: 11.5 **bd. ft / load:** 4600

cost / mbf: \$94.52

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

Combination#: 2

Douglas - Fir	50.00%
Western Hemlock / Fir	50.00%
Alder (Red)	50.00%

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

yarding distance: Short (400 ft) **downhill yarding:** No

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

loads / day: 18.5 **bd. ft / load:** 4100

cost / mbf: \$26.18

machines: Shovel Logger



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Logging Costs

Operating Seasons: 3.00	Profit Risk: 14%
Project Costs: \$768,717.00	Other Costs (P/R): \$14,798.00
Slash Disposal: \$0.00	Other Costs: \$0.00

Miles of Road

Road Maintenance: \$3.11

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

Hauling Costs

Species	\$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	\$0.00	2.0	4.0
Western Hemlock / Fir	\$0.00	2.0	4.0
Alder (Red)	\$0.00	1.0	3.3

Local Pond Values

Date	Specie	Grade	Value
01/14/2015	Douglas - Fir	2S	\$655.00
01/14/2015	Douglas - Fir	3S	\$595.00
01/14/2015	Douglas - Fir	4S	\$555.00



Timber Sale Appraisal Cowabunga

Sale AT-341-2015-02-

District: Astoria

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Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
\$60.35	\$3.20	\$2.33	\$100.42	\$2.62	\$23.65	\$0.00	\$5.00	\$0.00	\$197.57
Western Hemlock / Fir									
\$60.35	\$3.20	\$2.33	\$100.42	\$2.62	\$23.65	\$0.00	\$5.00	\$0.00	\$197.57
Alder (Red)									
\$60.35	\$3.27	\$2.33	\$248.18	\$2.62	\$44.34	\$0.00	\$5.00	\$0.00	\$366.09

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$642.22	\$444.65	\$0.00
Western Hemlock / Fir	\$0.00	\$546.96	\$349.39	\$0.00
Alder (Red)	\$0.00	\$635.00	\$268.91	\$0.00



Timber Sale Appraisal Cowabunga

Sale AT-341-2015-02-

District: Astoria

Date: January 14, 2015

Summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,188	\$444.65	\$2,306,844.20
Western Hemlock / Fir	294	\$349.39	\$102,720.66
Alder (Red)	161	\$268.91	\$43,294.51

Gross Timber Sale Value

Recovery: \$2,452,859.37

Prepared By: Kevin Berry

Phone: 503-325-5451

Site Prep Appraisal

Sale Number: 341-15-02
Sale Name: Cowabunga
Date: 11/21/2014

Vegetation Type/Zone	Vegetation Type/Zone Code	Production Rate (hr/ac)	Estimated Piles/Acre
Doug-fir	A	0.5	2.0
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	34	17	\$110.00	\$1,870.00
2	MC	B	12	18	\$110.00	\$1,980.00
3	MC	C	7	14	\$110.00	\$1,540.00
Sub Total =						\$5,390.00

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	68	\$5.00	\$340.00
2	4	\$220.00	\$880.00	54	\$5.00	\$270.00
3	6	\$220.00	\$1,320.00	42	\$5.00	\$210.00

*Cost includes separating firewood
 Sub Total = \$820.00

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

Grand Total = \$7,155.00

Projects Road Maintenance Cost Summary

Sale: Cowabunga
Date: 19-Sep-14
By: C.Bangs

Type	Equipment/Rationale		Hours	Rate	Cost
Final Haul Road Maintenance	Grader 14G		48	\$100	\$4,800
	Dump Truck 12CY		24	\$79	\$1,896
	FE Loader C966		24	\$83	\$1,992
	Vibratory Roller		48	\$77	\$3,696
	Water Truck 2,500 gallon		32	\$89	\$2,848
Total					\$15,232

Production Rates	Miles/day	Distance(miles)	Days
Grader	1.5	9.0	6.0
Vibratory Roller	1.5	9.0	6.0

Project No. 1 and 2, Northrup Ridge Quarry to Cow Ridge Road
Project No. 3, Viewpoint Quarry to Cow Ridge Stockpile Site

Road Maintenance Cost Summary

Sale: Cowabunga
 Date: 18-Sep-14
 By: Kevin Berry

MBF: 5,643
 \$\$/MBF: \$3.11

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
Progressive Operations 1st Entry	Grader 14G	\$675	1	16	\$90	\$2,115	Production Rates	Miles/day	Distance(miles)	Days
	Dump Truck 10CY x 2	\$282	2	8	\$73	\$1,450	Grader	2.5	5.0	2.0
	FE Loader C966	\$675	1	8	\$74	\$1,267				
Final Road Maintenance	Grader 14G	\$675	1	32	\$90	\$3,555	Production Rates	Miles/day	Distance(miles)	Days
	Dump Truck 10CY x 3	\$282	2	16	\$73	\$2,618	Grader	1.5	6.3	4.2
	FE Loader C966	\$675	1	16	\$74	\$1,859	Vibratory Roller*	1.5	6.3	4.2
	Vibratory Roller	\$675	1	32	\$72	\$2,979				
	Water Truck 2,500 gallon	\$165	1	20	\$78	\$1,725				
Total										\$17,568

*Final Road Maintenance Only

SUMMARY OF ALL PROJECT COSTS

SALE NAME: Cowabunga

ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	1A to 1B	3.25	
	1C to 1D	2.50	
	2A to 2B	1.00	
	2C to 2D	1.00	
	3A to 3B	1.00	
	3C to 3D	1.75	
	TOTALS	10.50	\$17,541

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	I1 to I2	260.00	
	I3 to I4	55.60	
	I5 to I6	15.50	
	I7 to I8	0.50	
	I9 to I10	1.50	
	I11 to I12	2.00	
	I13 to I14	2.00	
	I15 to I16	1.75	
	TOTALS	338.85	\$44,281

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
Project No. 3	Viewpoint Quarry Development, Rock	\$653,133
	Crushing and Stockpiling	
Project No. 4	Roadside Brushing	\$30,573
	Project Road Maintenance	\$15,232
	TOTAL	\$698,938

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Large Grader (14G)	\$778.00
Vibratory Roller	\$778.00
Excavator (C315)	\$805.00
Excavator (C330)	\$1,406.00
Dozer (D8)	\$1,406.00
Small backhoe (C580)	\$321.00
Water truck (2,500 gallons)	\$190.00
10-12 cy highway dump truck X 8	\$1,304.00
20 cy highway dump truck	\$191.00
Skidder	\$778.00
TOTAL	\$7,957

GRAND TOTAL

Compiled By: Kberry

\$768,717

Date: 09/29/2014

SALE NAME: Cowabunga
ROAD: New Road Construction

NEW CONSTRUCTION: 10.50 STATIONS
IMPROVEMENT: STATIONS

0.20 MILES
MILES

POINTS: 1A to 1B, 1C to 1D, 2A to 2B, 2C to 2D, 3A, to 3B, and 3C to 3D

Method	Acres/amount	x	Rate	=	Cost
Scatter outside of right of wa	1	x	\$ 1,337.00	=	\$1,337.00
		x		=	
		x		=	
		x		=	

\$1,337

[illegible]

\$3,676

[illegible]

Description	Quantity	Rate	Cost
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Culvert Markers			
	1	\$20.00	\$20.00

\$609

Subtotal of Clearing, Exc., Culv.

SURFACING				Stations/ amount		x		Rate/ sta/amt		Cost	
Subgrade prep:				Description							
				Grade, Shape and Ditch 16'		10.50		x		\$24.83 \$260.72	
				Subgrade Compaction		10.50		x		\$20.19 \$212.00	
ROAD SEGMENT 1A to 1B				POINT TO POINT		Sta. to Sta.					
				1A to 1B		0+00 to 3+25					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 3.25		163 \$8.71 \$1,415	
Junctions		1 1/2"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$9.05 \$199	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				1A to 1B				240			
ROAD SEGMENT 1C to 1D				POINT TO POINT		Sta. to Sta.					
				1C to 1D		0+00 to 2+50					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 2.50		125 \$8.71 \$1,089	
Junctions		1 1/2"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$9.05 \$199	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				1C to 1D				202			
ROAD SEGMENT 2A to 2B				POINT TO POINT		Sta. to Sta.					
				2A to 2B		0+00 to 1+00					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 1.00		50 \$8.71 \$436	
Bedding and backfill		1/12"-0" Crushed		N/A		culvert 22		culverts 1.00		22 \$9.05 \$199	
Junctions		4"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$8.71 \$192	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				2A to 2B				149			
ROAD SEGMENT 2C to 2D				POINT TO POINT		Sta. to Sta.					
				2C to 2D		0+00 to 1+00					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 1.00		50 \$8.71 \$436	
Junctions		4"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$8.71 \$192	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				2C to 2D				127			
ROAD SEGMENT 3A to 3B				POINT TO POINT		Sta. to Sta.					
				3A to 3B		0+00 to 1+00					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 1.00		50 \$8.71 \$436	
Junctions		4"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$8.71 \$192	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				3A to 3B				127			
ROAD SEGMENT 3C to 3D				POINT TO POINT		Sta. to Sta.					
				3C to 3D		0+00 to 1+75					
Application		Rock Size and Type		Depth of Rock (inches)		Volume (CY) per		Number of		TOTAL VOLUME (CY)	
		Location								Rate/ Sta./ amt.	
										Cost	
Surfacing Rock		4"-0" Crushed		8		station 50		stations 1.75		88 \$8.71 \$762	
Junctions		4"-0" Crushed		N/A		junction 22		junctions 1.00		22 \$8.71 \$192	
Landing		6"-0" pit-run		N/A		landing 55		landings 1.00		55 \$11.21 \$617	
Total Rock for Road Segment:				3C to 3D				165			
Processing:				Description				No.sta		Rate/sta	
				Water, Process & Compact: 4"-0" Crushed				10.50		\$56.48 \$593	
SUB TOTAL FOR SURFACING				6"-0"pr		4"-0"		1 1/2"-0"		Total	
				330		613		66		1,009	
SPECIAL PROJECTS				Description				Cost			
				Develop Pit-Run 330 cy @3.7 0				330		\$ 3.70 \$1,221.00	
SUB TOTAL FOR SPECIAL PROJECTS											
GRAND TOTAL				Subtotal of Surfacing, Special Projects						\$11,923	
				Subtotal of Clearing, Exc., Culv.						\$5,619	
										\$17,541	

Compiled By: K. Berry

Date: 09/10/2014

SUMMARY OF CONSTRUCTION COSTS

SALE NAME:	Cowabunga	NEW CONSTRUCTION:	STATIONS	MILES
ROAD:	11-12, 13-14, 15-16, 17-18, 19-110, 111-112, 113-114, and 115-116	IMPROVEMENT:	338.85 STATIONS	6.42 MILES
POINTS:				

CLEARING & GRUBBING

Method	Acres/amount	x	Rate	=	Cost
		x		=	
		x		=	
		x		=	

SUB TOTAL FOR CLEARING & GRUBBING

EXCAVATION

[illegible]

SUB TOTAL FOR EXCAVATION

CULVERT MATERIALS AND INSTALLATION

[illegible]

	Description	Quantity	Rate	Cost
Other/miscellaneous:				
Culvert stakes & markers:	Culvert Markers	18	\$20.00	\$360.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

	\$1,141
Subtotal of Clearing, Exc., Culv.	\$1,530

CRUSHED ROCK COST

SALE NAME:	Cowabunga
PROJECT:	1 and 2
QUARRY:	Cow Creek Stockpile

MATERIAL: Crushed 4"-0"

DATE: 11/07/2014
BY: Berry/Bangs

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 1
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$6.73	/cy
Load:	\$0.72	/cy
Spread:	\$1.26	/cy

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

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

Production: cy/day = 682

CRUSHED ROCK HAUL COSTS 1,758 cy @ \$8.71 /cy

CRUSHED ROCK COST

SALE NAME:	Cowabunga
PROJECT:	1 and 2
QUARRY:	Cow Creek Stockpile

MATERIAL: Crushed 4"-0"

DATE: 11/07/2014
BY: Berry/Bangs

[illegible]

ROCK HAUL:

Truck type: D20 No. trucks: 1
 Delay min.: 8 Efficiency: 85%

Ave haul:	\$7.07	/cy
Load:	\$0.72	/cy
Spread:	\$1.26	/cy

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

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

Production: cy/day = 649

CRUSHED ROCK HAUL COSTS

484 cy @ \$9.05 /cy

CRUSHED ROCK COST

SALE NAME:	Cowabunga
PROJECT:	1 and 2
QUARRY:	Cow Creek Stockpile

MATERIAL: Crushed 4"-0"

DATE: 11/07/2014
BY: Berry/Bangs

[illegible]

ROCK HAUL:

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

Ave haul:	\$2.90	/cy
Load:	\$0.48	/cy
Spread:	\$0.78	/cy

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

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

Production: cy/day = 1,305

CRUSHED ROCK HAUL COSTS

660 cy @ \$4.17 /cy

PIT RUN ROCK COST

SALE NAME:	Cowabunga
PROJECT:	Projects Nos 1 and 2
QUARRY:	Viewpoint

MATERIAL: Pit Run

DATE: 11/14/2014
BY: Berry/Bangs

[illegible]

ROCK HAUL:

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

Ave haul:	\$8.21	/cy
Load:	\$1.08	/cy
Spread:	\$1.92	/cy

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

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

Production: cy/day = 462

PIT RUN ROCK HAUL COSTS

781 cy @ \$11.21 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. <u>3</u>	Timber Sale Name: <u>Cowabunga</u>
Quarry: <u>Viewpoint</u>	Swell: <u> </u>
Location: <u>SE1/4, SE1/4, Sec 4, T7N, R6W, W.M</u>	Shrink: <u>16%</u>
County: <u>Clatsop</u>	
By: <u>C.Bangs</u>	Loading Hopper: <u>Yes</u>
Date: <u>08/18/2014</u>	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	5%	CR	11,000		12,760
1-1/2"-0"	20%	CR	13,600		15,776
4"-0"	20%	CR	17,000		19,720
6"-0"		CR		100	100
24"-6"		RR			
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			41,600	100	48,356

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Screening Plants	2	\$553	\$1,106	Off Highway Dump Truck	2	\$774	\$1,548
3 Stage Crusher	1	\$2,891	\$2,891	D8 cat	1	\$1,406	\$1,406
Loading Hopper	1	\$553	\$553	Excavator	1	\$1,406	\$1,406
Drill & Compressor	1	\$1,406	\$1,406	Loader	1	\$805	\$805
Powder	3	\$351	\$1,054				
2nd/3rd Drill Move-in	2	\$750	\$1,500				

SUB TOTAL FOR MOBILIZATION

\$13,674

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

SUB TOTAL FOR SET UP COSTS

\$4,862

TOTAL MOBILIZATION & SET UP COSTS**\$18,536****2) CLEARING & GRUBBING**

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clearing, grubbing, pile, burn	40.0	hrs.	\$155	\$6,200

TOTAL CLEARING & GRUBBING COSTS**\$6,200**

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread, waste area)	4,000	bcy	\$4.00	\$16,000

TOTAL EXCAVATION COSTS

\$16,000

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	15%	7,238	\$2.60	\$18,820
crushed	48,256	100%	Drill & shoot	85%	47,594	\$2.70	\$128,504
pit run	0	0	Oversize red	10%	4,826	\$5.80	\$27,988
rip rap	0	0	Other				
Total	48,256						
reject	7,737	16.0%					

TOTAL ROCK DEVELOPMENT COSTS

\$175,313

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	2	\$507.00	\$1,014
Calibrate			
Test	24	\$57.30	\$1,375
Test			

TOTAL CALIBRATION & TESTING COSTS

\$2,389

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	55,993	\$0.87	\$48,620
Shot rock handling (Exc.) hrs.	350	\$155.00	\$54,250
End Haul to crusher (OR) x2 hrs.	350	\$125.00	\$43,750

TOTAL FEEDING & LOADING COSTS

\$146,620

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed	12,760	3 stage w/s	110	\$3.54	\$45,124
1-1/2"-0"	crushed	15,776	3 stage w/s	120	\$3.24	\$51,141
4"-0"	crushed	19,720	2 stage w/s	140	\$2.48	\$48,877
6"-0"						

TOTAL ROCK CRUSHING COSTS

\$145,142

8) STOCKPILING**STOCKPILE SITE PREPARATION**

Equipment	Hours	Rate	Total
Dozer	8	\$120.00	\$960.00
Compactor		\$72.00	
Grader		\$90.00	
Excavator		\$138.00	

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

\$960.00

SUB TOTAL

\$960

HAUL & STOCKPILE		# of	CU. YDS.	RATE	COST
STOCKPILE LOCATION	SIZE				
1. Viewpoint	3/4"-0"	4	6,000	\$1.44	\$8,640
2. Nicolai	3/4"-0"	5	5,000	\$3.87	\$19,350
3. Viewpoint	4"-0"	4	17,000	\$1.44	\$24,480
4. Kerry	1 1/2"-0"	5	8,600	\$3.76	\$32,336
5. Cow Ridge	1 1/2"-0"	5	5,000	\$6.05	\$30,250
6.					

SUB TOTAL

\$115,056

TOTAL STOCKPILING COSTS

\$116,016

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	\$23,212
\$3.00 /CY 7,737 CY	
2nd/3rd Drilling Move-in bench preparation (excavator hrs.)	\$1,550
Final Quarry Dev., Access Road Const., Waterbarring, Drainage, Block Quarry Access	\$1,550
Haul and spread pit-run at Cow Ridge Stockpile Site (\$6.05*100cy)	\$605

TOTAL MISCELLANEOUS COSTS

\$26,917

10) GRAND TOTAL:

\$653,133

\$/Cubic Yard

\$13.53

Footnotes:

HAUL and STOCKPILE COST

SALE NAME: Cowabunga
 QUARRY: Viewpoint ROCK TYPE: Crushed

Location 1. Viewpoint 3/4"-0"	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
							0.10
Truck type: <u>D20</u> No. trucks: <u>1</u> Delay min.: <u>8</u> Efficiency: <u>85%</u> Ave haul: \$0.93 /cy Load: \$0.00 /cy Stockpile: \$0.51 /cy Truck type: <u>D12</u> No. trucks: <u>1</u> Delay min.: <u>6</u> Efficiency: <u>85%</u> Truck type: <u> </u> No. trucks: <u> </u> Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 1,539							
Location 1. Viewpoint		Haul and Stockpile Cost				\$1.44 /cy	

Location 2. Nicolai 3/4"-0"	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
			2.00	0.20	0.50	0.10	0.10
Truck type: <u>D20</u> No. trucks: <u> </u> Delay min.: <u>15</u> Efficiency: <u>75%</u> Ave haul: \$3.03 /cy Load: \$0.00 /cy Stockpile: \$0.83 /cy Truck type: <u>D12</u> No. trucks: <u>5</u> Delay min.: <u>6</u> Efficiency: <u>85%</u> Truck type: <u>D10</u> No. trucks: <u> </u> Delay min.: <u>10</u> Efficiency: <u>75%</u> Production: cy/day = 1,041							
Location 2. Nicolai		Haul and Stockpile Cost				\$3.87 /cy	

Location 3. Viewpoint 4"-0"	ONE WAY HAUL IN MILES						
	50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
							0.10
Truck type: <u>D20</u> No. trucks: <u>1</u> Delay min.: <u>8</u> Efficiency: <u>85%</u> Ave haul: \$0.93 /cy Load: \$0.00 /cy Stockpile: \$0.51 /cy 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>10</u> Efficiency: <u>75%</u> Production: cy/day = 1,539							
Location 3. Viewpoint		Haul and Stockpile Cost				\$1.44 /cy	

HAUL and STOCKPILE COST

Location 4. Kerry 0		ONE WAY HAUL IN MILES						
		50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
								0.10
Truck type: D20	No. trucks: 1					Ave haul: \$0.93	/cy	
Delay min.: 8	Efficiency: 85%					Load: \$0.00	/cy	
Truck type: D12	No. trucks: 1					Stockpile: \$0.51	/cy	
Delay min.: 6	Efficiency: 85%							
Truck type: D10	No. trucks:					Production: cy/day =	1,539	
Delay min.: 10	Efficiency: 75%							
Location 4. Kerry		Haul & Stockpile Cost				\$1.44 /cy		

Location 5. Kerry 1 1/2"-0"		ONE WAY HAUL IN MILES						
		50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				2.00	0.20	0.40	0.10	0.10
Truck type: D20	No. trucks:					Ave haul: \$2.93	/cy	
Delay min.: 15	Efficiency: 75%					Load: \$0.00	/cy	
Truck type: D12	No. trucks: 5					Stockpile: \$0.83	/cy	
Delay min.: 6	Efficiency: 85%							
Truck type: D10	No. trucks:					Production: cy/day =	1,078	
Delay min.: 10	Efficiency: 75%							
Location 5. Block Quarry Access		Haul & Stockpile Cost				\$3.76 /cy		

Location 6. 0		ONE WAY HAUL IN MILES						
		50 MPH	30 MPH	25 MPH	20 MPH	15 MPH	10 MPH	5 MPH
				3.00	1.20	0.90	0.30	0.10
Truck type: D20	No. trucks:					Ave haul: \$5.15	/cy	
Delay min.: 15	Efficiency: 75%					Load: \$0.00	/cy	
Truck type: D12	No. trucks: 8					Stockpile: \$0.90	/cy	
Delay min.: 6	Efficiency: 85%							
Truck type: D10	No. trucks:					Production: cy/day =	981	
Delay min.: 10	Efficiency: 75%							
Location 6. 0		Haul & Stockpile Cost				\$6.05 /cy		

BRUSHING COST ANALYSIS
Cowabunga
FY2015
Kevin Berry
8/26/2014/2013

Brushing Type	\$/mi.
<i>Light (L)</i>	850
<i>Medium (M)</i>	1100
<i>Heavy (H)</i>	1550

Total Cost= \$30,573

Total Miles= 27.21

Avg. \$/mi.= \$1,123.38

Road Segment	Road Name	Measured Feet	Miles	Brushing Type	\$
B1	Northrup Creek	3850	0.73	L	\$619.79
B2	Bridge to Nowhere	5150	0.98	H	\$1,511.84
B3 to B4	Foster Mainline	53550	10.14	L	\$8,620.74
I1 to I2	Cow Ridge	25900	4.91	M	\$5,395.83
B5		1200	0.23	H	\$352.27
B6		3900	0.74	H	\$1,144.89
B7		2800	0.53	H	\$821.97
B8		1500	0.28	H	\$440.34
B9		700	0.13	H	\$205.49
B10		200	0.04	H	\$58.71
B11	Ridge 77	5300	1.00	M	\$1,104.17
B12		1350	0.26	H	\$396.31
B13	Ridgepole	3850	0.73	M	\$802.08
B14		8950	1.70	H	\$2,627.37
B15		200	0.04	H	\$58.71
B16		300	0.06	H	\$88.07
B17		700	0.13	M	\$112.69
B18		350	0.07	M	\$72.92
B19		200	0.04	H	\$58.71
B20		900	0.17	M	\$187.50
B21		1600	0.30	H	\$469.70
B22		6000	1.14	H	\$1,761.36
B23		350	0.07	H	\$102.75
B24		2100	0.40	H	\$616.48
B25		1800	0.34	H	\$528.41
B26		850	0.16	H	\$249.53
B27		195	0.04	H	\$57.24
B28		200	0.04	H	\$58.71
B29		200	0.04	H	\$58.71
I3 to I4	Cow Creek Rd	6650	1.26	M	\$1,385.42
I5 to I6	Area 2	1600	0.30	M	\$333.33
B30		1300	0.25	M	\$270.83

Projects Road Maintenance Cost Summary

Sale: Cowabunga
Date: 19-Sep-14
By: C.Bangs AL

Type	Equipment/Rationale	Hours	Rate	Cost
Final Haul Road Maintenance	Grader 14G	48	\$100	\$4,800
	Dump Truck 12CY	24	\$79	\$1,896
	FE Loader C966	24	\$83	\$1,992
	Vibratory Roller	48	\$77	\$3,696
	Water Truck 2,500 gallon	32	\$89	\$2,848
Total				\$15,232

Production Rates		
Grader	Miles/day	Distance(miles)
	1.5	9.0
Vibratory Roller	1.5	9.0
		Days
		6.0
		6.0

Project No. 1 and 2, Northrup Ridge Quarry to Cow Ridge Road
Project No. 3, Viewpoint Quarry to Cow Ridge Stockpile Site

Road Maintenance Cost Summary

Sale: Cowabunga
Date: 18-Sep-14
By: Kevin Berry FL

MBF: 5,643
\$/MBF: \$3.11

Type	Equipment/Rationale	Move-in Rate	Times	Hours	Rate	Cost	Production Rates			
Progressive Operations 1st Entry	Grader 14G Dump Truck 10CY x 2 FE Loader C966	\$675 \$282 \$675	1	16	\$90	\$2,115	Production Rates	Miles/day	Distance(miles)	Days
			2	8	\$73	\$1,450	Grader	2.5	5.0	2.0
			1	8	\$74	\$1,267				
Final Road Maintenance	Grader 14G Dump Truck 10CY x 3 FE Loader C966 Vibratory Roller Water Truck 2,500 gallon	\$675 \$282 \$675 \$675 \$165	1	32	\$90	\$3,555	Production Rates	Miles/day	Distance(miles)	Days
			2	16	\$73	\$2,618	Grader	1.5	6.3	4.2
			1	16	\$74	\$1,859	Vibratory Roller*	1.5	6.3	4.2
			1	32	\$72	\$2,979				
Total			1	20	\$78	\$1,725				
						\$17,568				

*Final Road Maintenance Only

**Cowabunga
TIMBER CRUISE REPORT
FY 2015**

1. Sale Area Location: Areas 1 through 3 are located in portions of Section 33, T7N, R6W, and portions of Section 4, T6N, R6W, W.M., Clatsop County, OR.

2. Fund Distribution: BOF 100%
Tax Code 8-01 (98%); 8-02 (2%)

3. Sale Acreage by Area:

Area	Treatment	Gross Acres	Existing R/W	New R/W	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	49.5	0.0	0.5	3.0	46	GIS
2	Modified Clearcut	32.5	1.0	0.5	1.0	30	GIS
3	Modified Clearcut	33.0	1.0	0.0	1.0	31	GIS
4	Right-of-Way	1.0	0.0	0.0	0.0	1	Length X Width
TOTALS		117	2	1	5	108	

4. Cruisers and Cruise Dates:

All areas were cruised by Nick Haile, Derek Bangs, and Kevin Berry on 6/04/2014 and 6/19/2014.

5. Cruise Method and Computation:

Area 1 was variable plot cruised using a 54.54 BAF. These plots are located on a 2 chain by 5 chain grid, with every fourth plot measured and graded. A total of 49 plots were sampled, with 13 measured and graded plots, and 36 count plots.

Areas 2 and 3 were variable plot cruised using a 40 BAF. These plots are located on a 3 chain by 4 chain grid, with every third plot measured and graded. A total of 46 plots were sampled, with 17 measured and graded plots, and 29 count plots.

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

Data was collected on Corvallis MicroTechnology (CMT) data collectors, and downloaded to the Atterbury Super A.C.E. program in District for computing. See the attached Cruise Design for more details on the cruise method. The cruise calculations were processed in the Astoria district office.

AREA	CRUISE	TRACT	TYPE	ACRES
Area 1	COWBUNG	AREA1	00MC	45
2 & 3	COWBUNG	2&3	A2&3	63
Area 4	COWBUNG	AREA1	R/W	1

6. Timber Description:

Area 1 is a modified clearcut unit, approximately 65 years-old, consisting of Douglas-fir, with minor amounts of western hemlock, red alder. The average Douglas-fir tree size to be harvested is 21.6 inches DBH, with an average height of 87 feet to a merchantable top (7 inch d.o.b.) The average western hemlock tree size is 20.8 inches DBH and 87 feet to a merchantable top (7 inch d.o.b). The average red alder tree size 15.9 inches DBH and 63 feet to a merchantable top (7 inch d.o.b). The net volume per acre to be harvested is 59.3 MBF.

Areas 2 and 3 are modified clearcut units, approximately 65 years-old, consisting of Douglas-fir, with minor amounts of western hemlock, red alder. The average Douglas-fir tree size to be harvested is 20.6 inches DBH, with an average height of 92 feet to a merchantable top (7 inch d.o.b.) The average western hemlock tree size is 23.1 inches DBH and 86 feet to a merchantable top (7 inch d.o.b). The average red alder tree size 16.6 inches DBH and 47 feet to a merchantable top (7 inch d.o.b). The net volume per acre to be harvested is 46.7 MBF.

Area 4 (Right-of-Way) totals one acre of in-sale right-of-way. The timber type is similar to Area 1, therefore the average cruise volume (net) from this area was applied to this acre. The average volume per acre to be harvested is 59.3 MBF.

7. Statistical Analysis and Stand Summary

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1 (MC)	40%	8%	26.8%	3.8%
2 & 3 (MC)	45%	8%	28.9%	4.3%

8. Volumes by Species and Log Grade: (See "Species, Sort, Grade" - Project Report, attached).

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

Species	DBH	Net Vol.	2 Saw	3 Saw	4 Saw	Camp Run	% D & B	% Sale
Douglas-fir	21.1"	5,188	4,159	915	114	0	2.5	92
Western Hemlock and other conifers	22.1"	294	241	46	7	0	2.6	5
Red Alder/other Hardwoods	16.3"	161	0	0	0	161	9.0	3
TOTALS		5,643						

9. Approvals:

Prepared by: Kevin Berry Date: 6/25/2014

Unit Forester Approval:  Date: 11/17/14

10. Attachments:

Cruise Designs and Maps - 6 pages
Volume Reports - 4 pages
Statistics Reports - 4 pages
Log Stock Tables - 3 pages
Stand Table Summary - 2 pages

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cowabunga

Area(s) 1

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 46 **Estimated CV%** 40 Net BF or BA/Acre **SE% Objective** 8

Planned Sale Volume: 2,300 **Estimated Sale Area Value/Acre:** \$ 20,400

A. Cruise Goals: (a) Grade minimum 72 conifer trees:
Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

1. Plot Cruises: BAF 54.54 (Full point; Half point) (circle one)
Cruise Line Direction(s) 90' Az
Cruise Line Spacing 5 chains
Cruise Plot Spacing 2 chains
Grade/Count Ratio 1:3

Record all hardwood as camp run. Record all cedar as leave. Record all snags as SN and record diameter & total height. If plot lands in buffer then offset at least 1/2 chain outside the buffer.

C. Tree Measurements:

1. Diameter: Minimum DBH to cruise is 8 " for conifers and 10" for hardwoods. Record dbh to nearest 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 " or 40% of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.

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

5. **Tree Segments:** Record log segments in “standard” log lengths in general use, such as 32’ and 40’ lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12’; for hardwoods, it’s 8’. Maximum segment length is 40’. One foot of trim is assumed for each merch. segment. Do not use “double dash” (--) feature on the data recorder except for the top segment of the tree.
6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple); DL (Douglas-fir over 30” dbh); HL (Western hemlock over 30” dbh); SL (Sitka spruce over 30” dbh); CL (Western red cedar over 30” dbh); NFL (Noble fir over 30” dbh); SFL (Silver fir over 30” dbh)
B. Sort: Use code “1” (Domestic).
C. Grade: A = 1 Peeler; B = 2 Peeler; C = 3 Peeler; D = Special Mill; 2 = 2 Sawmill; 3 = 3 Sawmill; 4 = 4 Sawmill; R = Camp Run; 0 = Cull
7. **Deductions:** Estimate visible defect or damage as a “length deduction” (most often), or as a “diameter deduction,” as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a “per tree” basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points, not to exceed 100’ apart. On “measure/grade” plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
ITS and 100% Cruises: Mark cruise “strips” with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
9. **Cruising Equipment:** Relaskop, Rangefinder, Logger’s Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging
10. **Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale).

Cruise Design by: Kevin Berry

Approved by: _____

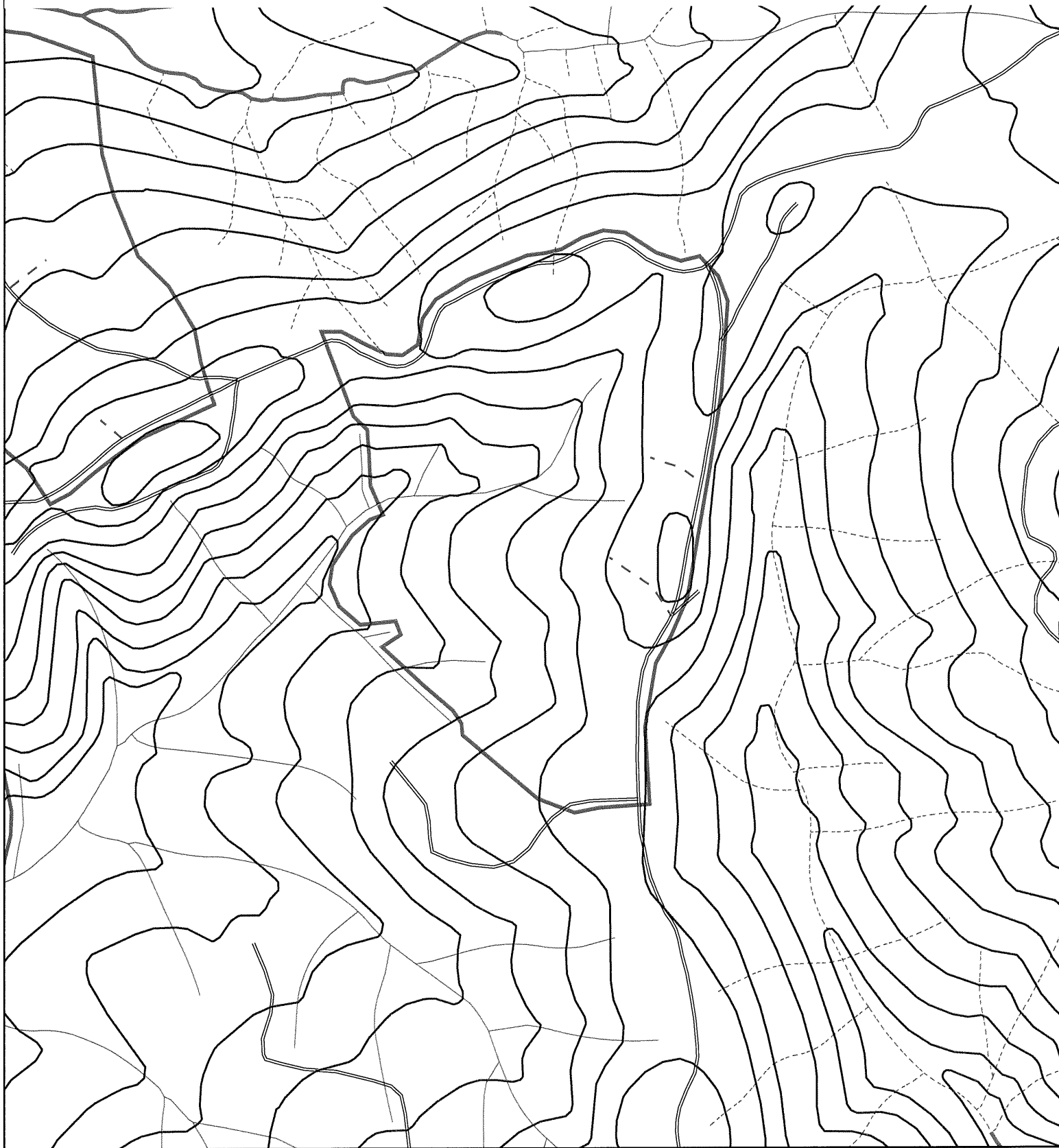
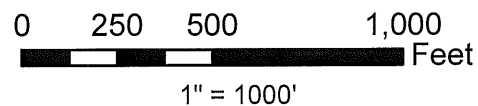
Date: 5-20-2014

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Cowabunga Areas 1 Cruise Map

54.54 BAF

3 x 5 chain spacing



**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: Cowabunga

Area(s) 2 & 3

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 63 **Estimated CV%** 45 Net BF or BA/Acre **SE% Objective** 8

Planned Sale Volume: 1,638 **Estimated Sale Area Value/Acre:** \$ 10,400

A. Cruise Goals: (a) Grade minimum 75 conifer trees:
Determine log grades for sale value; Determine snag and leave tree species and sizes;
Determine "diameter limit" harvest parameters;

B. Cruise Design:

- 1. Plot Cruises:** BAF 40 (Full point; Half point) (circle one)
Cruise Line Direction(s) 90' Az
Cruise Line Spacing 4 chains
Cruise Plot Spacing 3 chains
Grade/Count Ratio 1:2

Record all hardwood as camp run. Record all cedar as leave. Record all snags as SN and record diameter & total height. If plot lands in buffer then offset at least 1/2 chain outside the buffer.

C. Tree Measurements:

- 1. Diameter:** Minimum DBH to cruise is 8 " for conifers and 10" for hardwoods. Record dbh to nearest 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 " or 40% of dob at 16' form point. Generally, use 7" outside bark for trees < 18" dbh and 40% of dob @ FP for trees > 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree measured/graded; OR (2) Measure a minimum of 20 form factors for each major conifer species on the cruise area, and use these to calculate average FF for the species on the cruise. Hardwood form factors are a Standard 87

5. **Tree Segments:** Record log segments in "standard" log lengths in general use, such as 32' and 40' lengths, whenever possible. Do not record odd segments just to maximize grade. Cull segments can be any length. For conifers, minimum merchantable segment length is 12'; for hardwoods, it's 8'. Maximum segment length is 40'. One foot of trim is assumed for each merch. segment. Do not use "double dash" (--) feature on the data recorder except for the top segment of the tree.
6. **Species, Sort, and Grade Codes:** A. Species: Record as D (Douglas-fir); H (Western hemlock); S (Sitka Spruce); C (Western red cedar); NF (Noble fir); SF (Silver fir); A (Red alder); M (Bigleaf maple); DL (Douglas-fir over 30" dbh); HL (Western hemlock over 30" dbh); SL (Sitka spruce over 30" dbh); CL (Western red cedar over 30" dbh); NFL (Noble fir over 30" dbh); SFL (Silver fir over 30" dbh)
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7. **Deductions:** Estimate visible defect or damage as a "length deduction" (most often), or as a "diameter deduction," as applicable. Estimate hidden defect and breakage (usually some breakage is encountered in trees > 100 feet in height) on a "per tree" basis. Steep and broken topography generally results in higher breakage percentages than gentler topography, and hemlock generally breaks more than D-fir and spruce.
8. **Standard Field Procedures:** Plot Type Cruises: Mark cruise line beginning and end points with blue/yellow flagging. Write plot identification numbers and line direction on the ribbon. At each plot, tie yellow flagging above eye level near plot center and another yellow flagging around a sturdy wooden stake marking plot center. On each yellow flagging, write the plot identification number. Between plots, along the cruise line, tie blue flagging at intervisible points, not to exceed 100' apart. On "measure/grade" plots write the tree number and/or tree diameter on at least the first measured tree (clockwise from the line direction) in yellow paint. All trees on the plot may be marked this way, if the cruiser chooses.
ITS and 100% Cruises: Mark cruise "strips" with various colored flagging (not pink). Mark trees measured and graded with yellow paint.
9. **Cruising Equipment:** Relaskop, Rangefinder, Logger's Tape (with dbh on back), Biltmore Stick, Compass, Cruise Cards in Tatum OR Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging
10. **Attachments:** A. Cruise Map (showing cruise unit boundaries, cruise lines and plot locations, legal description and section lines, BAF or plot size, measure/count plot ratio, north arrow, and scale).

Cruise Design by: Kevin Berry

Approved by: _____

Date: 6-18-2014

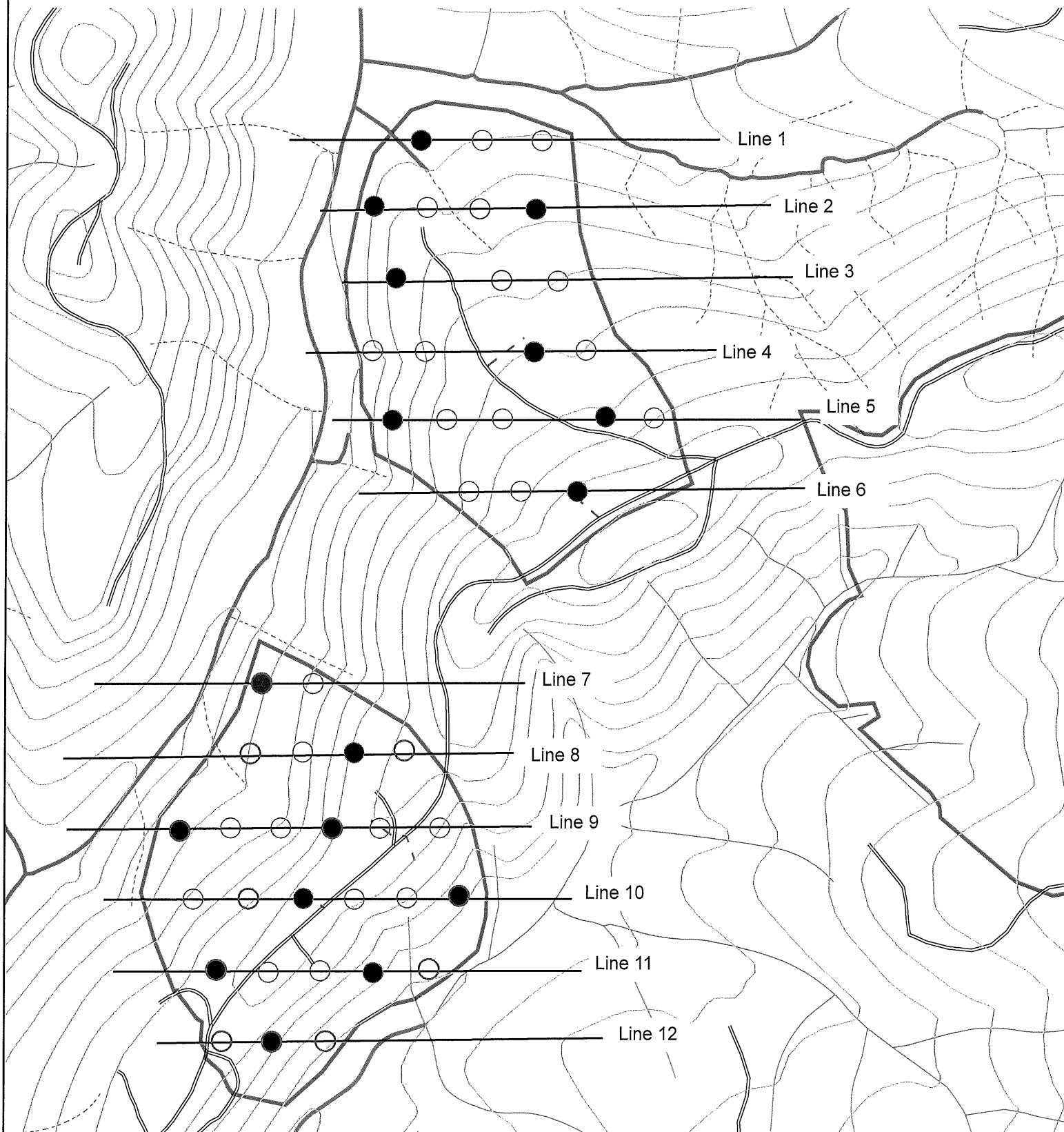
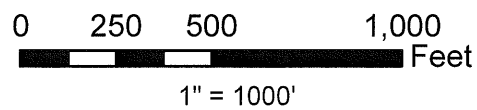
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Cowabunga Areas 2 and 3 Cruise Map

40 BAF

3X4 chain spacing

2 to 1 ratio



TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																
T06N R06W S04 TyA2&361.00 T06N R06W S04 Ty00MC46.00 T06N R06W S04 TyRW1.00		Project: COWBUNGA Acres108.00												Page1 Date10/31/2014 Time1:32:50PM				
S Spp	So Gr T rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log			Logs Per /Acre
		Def%	Gross	Net	Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf			
					4-5		6-11	12-16	17+	12-20	21-30	31-35				36-99		
H	DOCU		100.0	51											9		0.00	.5
H	DO2S	81	.9	2,249	2,228	241			50	50	6		4	90	38	366	2.19	6.1
H	DO3S	16		430	430	46		88	12		3	5	23	69	36	93	0.81	4.7
H	DO4S	3		65	65	7		100			68	32			18	29	0.58	2.2
H Totals		5	2.6	2,796	2,724	294		16	43	41	7	2	7	85	33	203	1.49	13.4
D	DOCU		100.0	524											7		0.00	6.7
D	DO2S	80	1.5	39,098	38,509	4,159	0	4	50	45		1	14	86	38	334	1.96	115.3
D	DO3S	17	1.3	8,582	8,468	915	0	96	4		0	13	26	60	35	86	0.74	98.3
D	DO4S	3		1,064	1,064	115	4	96			24	65		12	24	34	0.49	30.9
D Totals		92	2.5	49,268	48,040	5,188	0	22	41	36	1	4	15	80	34	191	1.34	251.1
A	DOCU		100.0	147											5		0.00	3.6
A	DOCR	100		1,490	1,490	161		58	42		1	47	13	39	29	90	0.89	16.6
A Totals		3	9.0	1,637	1,490	161		58	42		1	47	13	39	25	74	0.86	20.2
Totals			2.7	53,702	52,254	5,643	0	23	41	35	1	5	15	79	33	184	1.32	284.7

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page 1					
Project: COWBUNGA														Date	10/31/2014				
														Time	1:27:14PM				
T06N R06W S04 T00MC										T06N R06W S04 T00MC									
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
06N	06W	04	AREA1	00MC	46.00	49	67	1	W										
S So Gr T rt ad Spp			% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre
			Def%	Gross	Net	Log Scale Dia.				Log Length				Ln Ft	Bd Ft	CF/ Lf			
D	DO	CU		00.0	958									7		0.00	11.2		
D	DO	2S	81	1.6	45,721	44,990	2,070	0	3	42	55		1	16	83	37	367	2.13	122.7
D	DO	3S	18	2.5	9,928	9,683	445	0	93	7		0	16	30	54	34	84	0.75	115.8
D	DO	4S	1		489	489	22		100			39	61			21	26	0.43	18.9
D Totals			93	3.4	57,096	55,162	2,537	0	19	36	45	0	4	18	77	33	205	1.44	268.6
A	DO	CU		00.0	306											5		0.00	7.5
A	DO	CR	100		1,885	1,885	87		76	24			55		45	29	84	0.79	22.5
A Totals			3	14.0	2,191	1,885	87		76	24			55		45	23	63	0.75	30.0
H	DO	2S	85	.9	2,006	1,989	91			67	33				100	40	328	1.92	6.1
H	DO	3S	15		328	328	15		100				16		84	38	63	0.66	5.2
H Totals			4	.8	2,334	2,316	107		14	57	28		2		98	39	206	1.35	11.2
Type Totals				3.7	61,620	59,363	2,731	0	21	36	43	0	6	17	77	33	192	1.38	309.9

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1							
Project: COWBUNGA										Date 10/31/2014									
										Time 1:27:14PM									
T06N R06W S04 TA2&3										T06N R06W S04 TA2&3									
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt										
06N	06W	04	2&3	A2&3	61.00	46	113	1	W										
S So Gr T rt ad Spp		%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
		Net BdFt	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	191									7		0.00	3.2		
D	DO	2S	78	1.4	33,996	33,515	2,044		6	59	35			11	89	38	306	1.82	109.6
D	DO	3S	18	.2	7,544	7,532	459		99	1		0	11	22	67	36	89	0.72	84.8
D	DO	4S	4		1,507	1,507	92	5	95			20	65		14	25	38	0.50	40.1
D Totals		91		1.6	43,237	42,553	2,596	0	25	47	28	1	4	13	82	35	179	1.25	237.6
H	DO	CU		00.0	91											9		0.00	.8
H	DO	2S	79	1.0	2,436	2,413	147			39	61	9		7	84	36	396	2.43	6.1
H	DO	3S	17		509	509	31	83	17			4		35	61	35	120	0.96	4.2
H	DO	4S	4		115	115	7	100				68	32			18	29	0.58	3.9
H Totals		6		3.6	3,152	3,038	185	18	34	48		11	1	11	77	30	201	1.60	15.1
A	DO	CU		00.0	25											6		0.00	.6
A	DO	CR	100		1,185	1,185	72		37	63		2	37	28	32	30	99	1.04	12.0
A Totals		3		2.1	1,211	1,185	72	37	63			2	37	28	32	28	94	1.03	12.6
Type Totals				1.7	47,600	46,776	2,853	0	25	46	28	1	5	13	80	34	176	1.26	265.3

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1		
				Project: COWBUNGA												Date		10/31/2014		
																Time		1:27:14PM		
T06N R06W S04 TRW										T06N R06W S04 TRW										
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
06N		06W		04		AREA1		RW		1.00		49		67		1		W		
S So Gr Spp T rt 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	Bd	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	Ft		
D DO CU					00.0	958											7		0.00	11.2
D DO 2S			81		1.6	45,721	44,990	45	0	3	42	55		1	16	83	37	367	2.13	122.7
D DO 3S			18		2.5	9,928	9,683	10	0	93	7		0	16	30	54	34	84	0.75	115.8
D DO 4S			1			489	489	0		100			39	61			21	26	0.43	18.9
D Totals			93		3.4	57,096	55,162	55	0	19	36	45	0	4	18	77	33	205	1.44	268.6
A DO CU					00.0	306											5		0.00	7.5
A DO CR			100			1,885	1,885	2		76	24			55		45	29	84	0.79	22.5
A Totals			3		14.0	2,191	1,885	2		76	24			55		45	23	63	0.75	30.0
H DO 2S			85		.9	2,006	1,989	2			67	33			100		40	328	1.92	6.1
H DO 3S			15			328	328	0		100				16		84	38	63	0.66	5.2
H Totals			4		.8	2,334	2,316	2		14	57	28		2		98	39	206	1.35	11.2
Type Totals					3.7	61,620	59,363	59	0	21	36	43	0	6	17	77	33	192	1.38	309.9

TC		PSTATS		PROJECT STATISTICS						PAGE	1	
				PROJECT		COWBUNG				DATE	10/31/2014	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt		
06N	06	04	2&3	A2&3		108.00	144	869	1	W		
06N	06W	04	AREA1	00MC								
06N	06W	04	AREA1	RW								
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL			144	869	6.0							
CRUISE			43	246	5.7	13,244	1.9					
DBH COUNT												
REFOREST												
COUNT			101	615	6.1							
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			204	99.1	21.1	90		240.0	49,268	48,040	11,521	11,422
SNAG			13	8.7	18.4	48		16.1				
R ALDER			14	9.5	16.3	55		13.7	1,637	1,490	464	436
WHEMLOCK			15	5.3	22.1	87		14.2	2,796	2,724	669	661
TOTAL			246	122.6	20.6	84		283.9	53,702	52,254	12,654	12,519
CONFIDENCE LIMITS OF THE SAMPLE												
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR												
CL	68.1	COEFF		SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH			5	10	15	
DOUG FIR			62.7	4.4	643	673	702					
SNAG												
R ALDER			43.0	11.9	154	174	195					
WHEMLOCK			57.6	15.4	565	667	770					
TOTAL			71.7	4.6	581	609	636	205		51	23	
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			84.6	7.0	92	99	106					
SNAG			234.9	19.6	7	9	10					
R ALDER			351.6	29.3	7	9	12					
WHEMLOCK			393.7	32.8	4	5	7					
TOTAL			79.9	6.7	114	123	131	255		64	28	
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			81.9	6.8	224	240	256					
SNAG			214.2	17.8	13	16	19					
R ALDER			351.2	29.2	10	14	18					
WHEMLOCK			404.6	33.7	9	14	19					
TOTAL			76.7	6.4	266	284	302	235		59	26	
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			82.3	6.9	44,748	48,040	51,332					
SNAG												
R ALDER			360.7	30.0	1,042	1,490	1,937					
WHEMLOCK			408.3	34.0	1,798	2,724	3,650					
TOTAL			77.9	6.5	48,864	52,254	55,643	242		61	27	

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT COWBUNG				DATE	10/31/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	06W	04	2&3	A2&3	61.00	46	297	1	W		
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		46	297	6.5							
CRUISE		17	112	6.6	6,869		1.6				
DBH COUNT											
REFOREST											
COUNT		29	177	6.1							
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		88	93.3	20.6	92		215.7	43,237	42,553	10,368	10,333
WHEMLOCK		9	5.4	23.1	86		15.7	3,152	3,038	729	714
SNAG		7	5.8	20.9	41		13.9				
R ALDER		8	8.1	16.6	47		12.2	1,211	1,185	373	368
TOTAL		112	112.6	20.5	86		257.4	47,600	46,776	11,470	11,415
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		59.0	6.3	539	576	612					
WHEMLOCK		50.4	17.8	589	717	844					
SNAG											
R ALDER		55.6	21.0	140	178	215					
TOTAL		69.4	6.6	488	523	557	192	48	21		
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		37.7	5.6	88	93	98					
WHEMLOCK		334.8	49.3	3	5	8					
SNAG		194.3	28.6	4	6	7					
R ALDER		255.1	37.6	5	8	11					
TOTAL		23.6	3.5	109	113	117	22	6	2		
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		37.2	5.5	204	216	227					
WHEMLOCK		329.8	48.6	8	16	23					
SNAG		162.8	24.0	11	14	17					
R ALDER		258.0	38.0	8	12	17					
TOTAL		23.1	3.4	249	257	266	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		
DOUG FIR		39.0	5.7	40,109	42,553	44,998					
WHEMLOCK		331.1	48.8	1,556	3,038	4,519					
SNAG											
R ALDER		262.8	38.7	726	1,185	1,644					
TOTAL		28.9	4.3	44,783	46,776	48,769	33	8	4		

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT COWBUNG				DATE	10/31/2014		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	06W	04	AREA1	00MC	46.00	49	286	1	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		49	286	5.8							
CRUISE		13	67	5.2	6,239	1.1					
DBH COUNT											
REFOREST											
COUNT		36	219	6.1							
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		58	106.8	21.6	87		271.6	57,096	55,162	13,016	12,836
SNAG		3	12.4	16.7	53		18.9				
R ALDER		3	11.2	15.9	63		15.6	2,191	1,885	581	523
WHEMLOCK		3	5.2	20.8	87		12.2	2,334	2,316	592	592
TOTAL		67	135.6	20.7	81		318.3	61,620	59,363	14,190	13,952
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		62.2	8.2	686	747	808					
SNAG											
R ALDER		20.4	14.1	146	170	194					
WHEMLOCK		83.1	57.5	252	593	935					
TOTAL		70.6	8.6	622	680	739	199	50	22		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		37.6	5.4	101	107	113					
SNAG		175.6	25.1	9	12	16					
R ALDER		311.5	44.5	6	11	16					
WHEMLOCK		265.2	37.9	3	5	7					
TOTAL		38.2	5.5	128	136	143	58	15	6		
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		31.9	4.6	259	272	284					
SNAG		172.0	24.6	14	19	24					
R ALDER		311.4	44.4	9	16	23					
WHEMLOCK		261.4	37.3	8	12	17					
TOTAL		27.6	3.9	306	318	331	30	8	3		
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		31.7	4.5	52,665	55,162	57,658					
SNAG											
R ALDER		312.4	44.6	1,044	1,885	2,726					
WHEMLOCK		262.8	37.5	1,447	2,316	3,185					
TOTAL		26.8	3.8	57,089	59,363	61,636	29	7	3		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	COWBUNG			DATE	10/31/2014	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	04	AREA1	RW	1.00	49	286	1	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL				49	286	5.8				
CRUISE				13	67	5.2		136		49.4
DBH COUNT										
REFOREST										
COUNT				36	219	6.1				
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		58	106.8	21.6	87	271.6	57,096	55,162	13,016	12,836
SNAG		3	12.4	16.7	53	18.9				
R ALDER		3	11.2	15.9	63	15.6	2,191	1,885	581	523
WHEMLOCK		3	5.2	20.8	87	12.2	2,334	2,316	592	592
TOTAL		67	135.6	20.7	81	318.3	61,620	59,363	14,190	13,952
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		62.2	8.2	686	747	808				
SNAG										
R ALDER		20.4	14.1	146	170	194				
WHEMLOCK		83.1	57.5	252	593	935				
TOTAL		70.6	8.6	622	680	739	199	50	22	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		37.6	5.4	101	107	113				
SNAG		175.6	25.1	9	12	16				
R ALDER		311.5	44.5	6	11	16				
WHEMLOCK		265.2	37.9	3	5	7				
TOTAL		38.2	5.5	128	136	143	58	15	6	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		31.9	4.6	259	272	284				
SNAG		172.0	24.6	14	19	24				
R ALDER		311.4	44.4	9	16	23				
WHEMLOCK		261.4	37.3	8	12	17				
TOTAL		27.6	3.9	306	318	331	30	8	3	
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		31.7	4.5	52,665	55,162	57,658				
SNAG										
R ALDER		312.4	44.6	1,044	1,885	2,726				
WHEMLOCK		262.8	37.5	1,447	2,316	3,185				
TOTAL		26.8	3.8	57,089	59,363	61,636	29	7	3	

TC PLOGSTVB				Log Stock Table - MBF																
T06N R06W S04 TyA2&3 61.00 T06N R06W S04 Ty00MC 46.00 T06N R06W S04 TyRW 1.00					Project: COWBUNGA Acres 108.00										Page 1 Date 10/31/2014 Time 1:27:54PM					
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+	
H	DO	CU	8	4	100.0															
H	DO	CU	10	2	100.0															
H	DO	2S	14	4		4	1.3							4						
H	DO	2S	18	10		10	3.3									10				
H	DO	2S	32	10		10	3.5						5	6						
H	DO	2S	40	219	1.0	217	73.7						39	64	51	63				
H	DO	3S	16	1		1	.4					1								
H	DO	3S	26	3		3	.9				3									
H	DO	3S	32	11		11	3.7				5		5							
H	DO	3S	40	32		32	10.8			13	8	11								
H	DO	4S	13	1		1	.3					1								
H	DO	4S	15	1		1	.3				1									
H	DO	4S	17	2		2	.8			1	1									
H	DO	4S	18	1		1	.3				1									
H	DO	4S	22	2		2	.8			2										
H	Totals			302	2.6	294	5.2			16	18	13	49	70	55	72				
D	DO	CU	6	29	100.0															
D	DO	CU	8	9	100.0															
D	DO	CU	10	4	100.0															
D	DO	CU	14	15	100.0															
D	DO	2S	24	27		27	.5									27				
D	DO	2S	32	565	2.6	550	10.6		5			96	171	217	61					
D	DO	2S	33	15	4.2	14	.3							14						
D	DO	2S	36	113	1.8	111	2.1							45		65				
D	DO	2S	40	3,503	1.3	3,457	66.6			17	63	609	663	1418	518	169				
D	DO	3S	15	2		2	.0					2								
D	DO	3S	16	2		2	.0			2										
D	DO	3S	21	3		3	.0			3										
D	DO	3S	22	5		5	.1				5									
D	DO	3S	24	9		9	.2				2	8								
D	DO	3S	25	20		20	.4			3	18									
D	DO	3S	26	2		2	.0				2									
D	DO	3S	27	44		44	.8				31	12								
D	DO	3S	28	8		8	.1			6	2									
D	DO	3S	29	7		7	.1					7								

Log Stock Table - MBF

T06N R06W S04 TyA2&3	61.00
T06N R06W S04 Ty00MC	46.00
T06N R06W S04 TyRW	1.00

Project: COWBUNGA
Acres 108.00

Page 2
Date 10/31/2014
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S T Spp	So 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	DO	3S	30	24		24	.5			24								
D	DO	3S	31	10		10	.2			7		3						
D	DO	3S	32	187	3.4	181	3.5			3	66	99	5	8				
D	DO	3S	33	15		15	.3			9		6						
D	DO	3S	34	27	13.2	24	.5			4		20						
D	DO	3S	35	9		9	.2			5	4							
D	DO	3S	36	6		6	.1			6								
D	DO	3S	37	51		51	1.0			20	9	22						
D	DO	3S	38	24	3.1	24	.5			24								
D	DO	3S	39	5		5	.1			5								
D	DO	3S	40	450		449	8.7		2	108	113	207		19				
D	DO	3S	41	17		17	.3			17								
D	DO	4S	12	1		1	.0					1						
D	DO	4S	13	1		1	.0				1							
D	DO	4S	14	1		1	.0			1								
D	DO	4S	15	2		2	.0			2								
D	DO	4S	17	3		3	.1			3								
D	DO	4S	18	7		7	.1			7								
D	DO	4S	19	9		9	.2			7		2						
D	DO	4S	20	3		3	.1			3								
D	DO	4S	21	2		2	.0				2							
D	DO	4S	22	6		6	.1			2	4							
D	DO	4S	23	8		8	.2			6	3							
D	DO	4S	24	17		17	.3			7	10							
D	DO	4S	25	4		4	.1			4								
D	DO	4S	26	16		16	.3			8		8						
D	DO	4S	27	16		16	.3			14	2							
D	DO	4S	28	3		3	.1			3								
D	DO	4S	30	3		3	.1			3								
D	DO	4S	40	5		5	.1	0	4									
D	DO	4S	41	9		9	.2			9								
D	Totals			5,321	2.5	5,188	91.9	0	11	323	288	553	789	967	1479	610	169	
A	DO	CU	2	2	100.0													
A	DO	CU	6	2	100.0													
A	DO	CU	9	12	100.0													
A	DO	CR	18	2		2	1.1			2								
A	DO	CR	21	1		1	.8			1								

TC PLOGSTVB		Log Stock Table - MBF																		
T06N R06W S04 TyA2&361.00 T06N R06W S04 Ty00MC46.00 T06N R06W S04 TyRW1.00		Project: COWBUNGA										Page3								
		Acres108.00										Date10/31/2014								
												Time1:27:54PM								
Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches											
									2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
A		DO	CR	22	18		18	11.1					18							
A		DO	CR	24	40		40	24.7				7	5		28					
A		DO	CR	26	6		6	3.8				6								
A		DO	CR	30	10		10	6.5							10					
A		DO	CR	32	20		20	12.7				3			8	10				
A		DO	CR	40	63		63	39.2				12	13		28	11				
A		Totals			177	9.0	161	2.9				29	19		46	47	20			
Total		All Species			5,800	2.7	5,643	100.0		0	11	368	326		612	884	1056	1534	683	169

TC	PSTNDSUM											Stand Table Summary			Page	1
Date:															10/31/2014	
T06N R06W S04 TyA2&361.00 T06N R06W S04 Ty00MC46.00 T06N R06W S04 TyRW1.00					Project					COWBUNGA			Time:		1:28:31PM	
					Acres					108.00			Grown Year:			
S Spec T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	T o t a l s			
	DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
D	11	4	87	71	6.176	4.08	6.18	16.5	60.0		102	371	110	40		
D	12	3	90	67	4.357	3.42	6.95	13.1	40.0		91	278	99	30		
D	13	1	88	74	1.502	1.38	3.00	13.0	45.0		39	135	42	15		
D	14	2	87	102	2.590	2.77	5.18	21.0	82.5		109	427	117	46		
D	15	7	87	108	6.109	7.50	12.22	24.1	87.3		294	1,067	317	115		
D	16	6	87	106	5.425	7.57	12.31	24.3	89.4		299	1,101	323	119		
D	17	4	86	120	3.049	4.81	6.98	31.2	115.6		217	806	235	87		
D	18	8	87	125	6.266	11.07	15.67	33.1	121.5		519	1,903	560	206		
D	19	12	87	112	7.323	14.42	16.72	37.1	134.3		620	2,245	669	243		
D	20	15	88	128	8.847	19.30	25.27	37.7	155.3		953	3,924	1,030	424		
D	21	13	87	123	6.874	16.53	16.90	44.6	184.9		754	3,124	814	337		
D	22	14	87	120	6.234	16.46	15.86	47.6	192.6		755	3,055	816	330		
D	23	15	87	128	5.930	17.11	17.08	49.1	198.6		839	3,392	906	366		
D	24	15	88	135	5.911	18.57	17.08	56.0	235.8		957	4,028	1,033	435		
D	25	10	88	138	3.418	11.65	10.25	58.5	251.0		600	2,574	648	278		
D	26	21	87	138	6.497	23.95	20.04	62.6	268.4		1,255	5,379	1,355	581		
D	27	10	86	133	2.746	10.92	7.21	71.6	307.2		517	2,216	558	239		
D	28	15	86	132	4.001	17.11	12.00	69.3	319.6		832	3,837	899	414		
D	29	6	87	126	1.333	6.11	3.55	83.1	375.0		295	1,333	319	144		
D	30	10	89	143	2.224	10.92	6.67	89.3	438.5		596	2,927	644	316		
D	31	1	85	120	.264	1.38	.79	78.7	346.7		62	275	67	30		
D	32	4	86	149	.730	4.08	2.19	98.7	473.3		216	1,036	233	112		
D	33	1	88	153	.233	1.38	.70	113.3	566.7		79	396	86	43		
D	34	2	89	146	.323	2.04	.97	117.0	606.7		113	588	123	64		
D	35	2	87	166	.305	2.04	1.22	99.5	535.0		121	653	131	70		
D	36	3	88	146	.484	3.42	1.45	129.2	668.7		188	971	203	105		
D	Totals	204	87	118	99.149	239.99	244.45	46.7	196.5		11,422	48,040	12,336	5,188		
H	16	1	88	82	.704	.98	1.41	24.5	90.0		34	127	37	14		
H	17	2	89	105	1.127	1.78	2.25	37.0	130.0		83	293	90	32		
H	18	1	88	116	.556	.98	1.67	30.3	116.7		51	195	55	21		
H	21	2	86	99	.738	1.78	1.48	52.0	180.0		77	266	83	29		
H	22	1	86	108	.372	.98	.74	60.0	240.0		45	179	48	19		
H	24	1	85	112	.313	.98	.94	51.3	213.3		48	200	52	22		
H	25	1	86	135	.288	.98	.86	53.3	253.3		46	219	50	24		
H	28	2	85	112	.459	1.96	1.38	66.2	276.7		91	381	98	41		
H	29	2	85	134	.387	1.78	1.16	84.0	386.7		98	449	105	49		
H	31	1	86	97	.187	.98	.56	69.0	330.0		39	186	42	20		
H	33	1	85	121	.165	.98	.50	99.0	463.3		49	230	53	25		
H	Totals	15	87	107	5.297	14.17	12.95	51.0	210.3		661	2,724	714	294		
A	12	1	86	54	1.094	.86	1.09	16.0	40.0		18	44	19	5		
A	15	3	87	78	2.542	3.12	4.38	23.5	77.4		103	339	111	37		
A	16	3	86	61	2.235	3.12	3.85	24.0	77.4		92	298	100	32		
A	17	3	86	89	1.979	3.12	3.96	26.1	96.7		103	383	112	41		
A	18	1	86	89	.486	.86	.97	36.5	125.0		36	122	38	13		
A	20	2	87	68	.788	1.72	1.58	35.3	122.5		56	193	60	21		
A	21	1	86	79	.357	.86	.71	39.5	155.0		28	111	30	12		
A	Totals	14	86	73	9.482	13.66	16.55	26.3	90.0		436	1,490	470	161		
SN	12	1	89	38	1.429	1.12										
SN	13	2	88	46	2.978	2.74										
SN	17	1	89	80	.712	1.12										
SN	18	2	88	70	1.553	2.74										

TC PSTNDSUM		Stand Table Summary										Page 2				
												Date: 10/31/2014				
T06N R06W S04 TyA2&3 61.00 T06N R06W S04 Ty00MC 46.00 T06N R06W S04 TyRW 1.00						Project COWBUNGA						Time: 1:28:31PM				
						Acres 108.00						Grown Year:				
S Spec	T			Tot					Average Log		Net Net		T o t a l s			
		DBH	Sample Trees	FF 16'	Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Net Cu.Ft.	Net Bd.Ft.	Tons/ Acre	Cu.Ft. Acre				Bd.Ft. Acre
SN		22	1	88	17	.425	1.12									
SN		24	3	88	38	1.231	3.87									
SN		38	1	88	18	.143	1.12									
SN		40	1	85	50	.129	1.12									
SN		46	1	84	17	.097	1.12									
SN		Totals	13	88	48	8.697	16.09									
Totals			246	87	109	122.626	283.91	273.96	45.7	190.7		12,519	52,254		13,520	5,643

Logging Plan

OF TIMBER SALE CONTRACT NO. 341-15-02
COWABUNGA
PORTIONS OF SECTION 33 T7N,R6W, AND
PORTIONS OF SECTION 4 T6N, R6W,
W.M., CLATSOP COUNTY, OREGON



Logging Breakdown		
	Tractor	Cable
Area 1	74%	26%
Area 2	40%	60%
Area 3	23%	77%

Legend

- | | |
|--------------------------------|--------------------------|
| Timber Sale Boundary | Type F Stream |
| Existing Surfaced Road | Posted Stream Buffer |
| Logger Choice Road | New Construction Landing |
| New Road Construction - Rocked | Known Land Survey Corner |
| Type N Stream | |

Approximate Net Acreage:

Area 1 (MC) - 46

Area 2 (MC) - 30

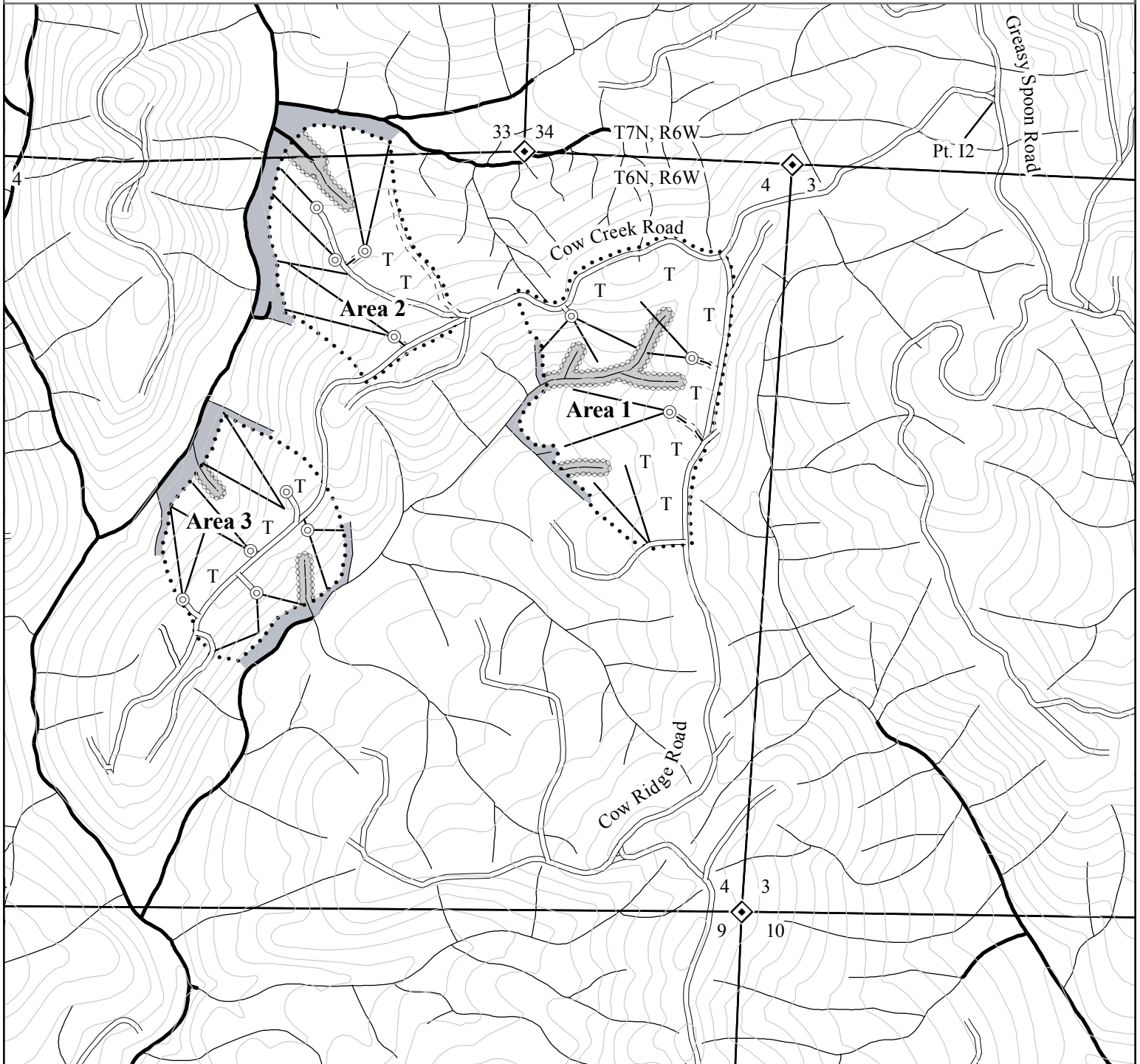
Area 3 (MC) - 31

Area 4 (R/W) - 1

Total Sale Acreage - 108

Approximate Scale = 1":1,000'

0 250 500 1,000 1,500 Feet



Logging Plan

OF TIMBER SALE CONTRACT NO. 341-15-02
COWABUNGA
PORTIONS OF SECTION 33 T7N,R6W, AND
PORTIONS OF SECTION 4 T6N, R6W,
W.M., CLATSOP COUNTY, OREGON



Looging Breakdown		
	Tractor	Cable
Area 1	74%	26%
Area 2	40%	60%
Area 3	23%	77%

Legend

- Timber Sale Boundary
- Existing Surfaced Road
- Logger Choice Road
- New Road Construction - Rocked
- Type N Stream
- Type F Stream
- Posted Stream Buffer
- New Construction Landing
- Known Land Survey Corner

Approximate Net Acreage:

Area 1 (MC) - 46

Area 2 (MC) - 30

Area 3 (MC) - 31

Area 4 (R/W) - 1

Total Sale Acreage - 108

Approximate Scale = 1":1,000'

