



"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal King Louis

Sale AT-341-2016-40-

District: Astoria

Date: February 29, 2016

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	\$3,173,938.32	\$104,371.13	\$3,278,309.45
		Project Work:	(\$465,897.00)
		Advertised Value:	\$2,812,412.45



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District: Astoria

Date: February 29, 2016

Timber Description

Location: Portions of Sections 10, 11, 14, and 15,
T6N, R6W, W.M., Clatsop County, Oregon.

Stand Stocking: 20%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	23	0	97
Western Hemlock / Fir	13	0	97
Alder (Red)	14	0	97
Maple	14	0	97

Volume by Grade	2S	3S	4S	CR 8" - 14"	Total
Douglas - Fir	6,352	1,312	161	0	7,825
Western Hemlock / Fir	0	44	48	0	92
Alder (Red)	0	0	0	232	232
Maple	0	0	0	55	55
Total	6,352	1,356	209	287	8,204

Comments: Pond Values Used: 4th Quarter Calendar Year 2015.

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

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
 $\$946.94/\text{MBF} = \$1,150/\text{MBF} - \$203.06/\text{MBF}$

SCALING COST ALLOWANCE = \$5.00/MBF

FUEL COST ALLOWANCE = \$3.00/Gallon

HAULING COST ALLOWANCE

Hauling costs equivalent to \$780 daily truck cost.

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

100% Brand and Paint: $\$1/\text{MBF} \times 8,204 \text{ MBF} = \$8,204$

Log Loader Slash & Landing Piling Areas 1, 2, 3 and 4 (includes Move-In and Pile Materials): (see attached appraisal) = \$6,071

Machine Washing for Noxious Weed Compliance = $\$2,000.00 \times 2 = \$4,000$

Additional Felling Cost for Area 5 R/W = $\$40/\text{MBF} \times 48 \text{ MBF} = \$1,920$

TOTAL Other Costs (with Profit & Risk to be added) = \$20,195

Other Costs (No Profit & Risk added):

Waterbar and Block Dirt Road Segments after Harvest: $\$15.96/\text{station} \times 2.5 \text{ stations} = \39.90



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Logging Conditions

Combination#: 1	Douglas - Fir	35.00%
	Western Hemlock / Fir	35.00%
	Alder (Red)	35.00%
	Maple	35.00%
Logging System:	Shovel	Process: Stroke Delimber
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	20	bd. ft / load: 4600
cost / mbf:	\$34.48	
machines:	Stroke Delimber (B)	

Combination#: 2	Douglas - Fir	65.00%
	Western Hemlock / Fir	65.00%
	Alder (Red)	65.00%
	Maple	65.00%
Logging System:	Cable: Medium Tower >40 - <70	Process: Stroke Delimber
yarding distance:	Medium (800 ft)	downhill yarding: No
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF	
loads / day:	12	bd. ft / load: 4600
cost / mbf:	\$108.70	
machines:	Log Loader (A) Stroke Delimber (A) Tower Yarder (Medium)	



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Logging Costs

Operating Seasons: 2.00

Profit Risk: 12%

Project Costs: \$465,897.00

Other Costs (P/R): \$20,195.00

Slash Disposal: \$5,583.00

Other Costs: \$39.90

Miles of Road

Road Maintenance: \$3.81

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	4.5
Western Hemlock / Fir	\$0.00	2.0	4.0
Alder (Red)	\$0.00	2.0	3.3
Maple	\$0.00	2.0	3.3



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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									
\$82.72	\$3.92	\$1.07	\$89.27	\$2.46	\$21.53	\$0.68	\$5.00	\$0.00	\$206.65
Western Hemlock / Fir									
\$82.72	\$3.92	\$1.07	\$100.42	\$2.46	\$22.87	\$0.68	\$5.00	\$0.00	\$219.14
Alder (Red)									
\$82.72	\$3.92	\$1.07	\$121.73	\$2.46	\$25.43	\$0.68	\$5.00	\$0.00	\$243.01
Maple									
\$82.72	\$3.92	\$1.07	\$121.73	\$2.46	\$25.43	\$0.68	\$5.00	\$0.00	\$243.01

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	\$0.00	\$609.97	\$403.32	\$0.00
Western Hemlock / Fir	\$0.00	\$414.35	\$195.21	\$0.00
Alder (Red)	\$0.00	\$645.00	\$401.99	\$0.00
Maple	\$0.00	\$445.00	\$201.99	\$0.00



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District: Astoria

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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	7,825	\$403.32	\$3,155,979.00
Western Hemlock / Fir	92	\$195.21	\$17,959.32
Alder (Red)	232	\$401.99	\$93,261.68
Maple	55	\$201.99	\$11,109.45

Gross Timber Sale Value

Recovery: \$3,278,309.45

Prepared By: Dave Rygell

Phone: 503-325-5451

Road Maintenance Cost Summary

Sale: King Louis		MBF: 8,204
Date: 03-Dec-15		\$/MBF: \$3.81
By: D. Rygeil	FL	

Type	Equipment/Rationale	Move In	Times	Hours	Rate	Cost
Progressive Operations 1st Entry	Grader 14G	\$778	1	20	\$100	\$2,778
	Dump Truck 12CY x 2	\$326	2	10	\$79	\$2,232
	FE Loader C966	\$778	1	10	\$83	\$1,608
	Vibratory Roller	\$778	1	20	\$77	\$2,318
Final Haul Maintenance Haul Route	Grader 14G	\$778	1	48	\$100	\$5,578
	Dump Truck 12CY x 2	\$163	2	20	\$79	\$3,486
	Vibratory Roller	\$778	1	48	\$77	\$4,474
	Water Truck 2,500 gallon	\$190	1	48	\$89	\$4,462
	FE Loader C966	\$778	1	16	\$83	\$2,106
	Rubber Tire Backhoe	\$321	1	16	\$77	\$1,553
	Labor		1	16	\$40	\$640
Total						\$31,235

Progressive Ops. 1st Entry	Production Rates	Miles/day	Distance(miles)	Days
	Grader	2.5	5.0	2.0

Final Road Maintenance	Production Rates	Miles/day	Distance(miles)	Days
	Grader	1.5	7.2	4.8
	Vibratory Roller	1.5	7.2	4.8

Site Prep Appraisal

Sale Number: 341-16-40
Sale Name: King Louis
Date: 12/03/2015

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	35	17.5	\$110.00	\$1,925.00
2	MC	A	11	5.5	\$110.00	\$605.00
3	MC	A	10	5	\$110.00	\$550.00
4	MC	A	4	2	\$110.00	\$220.00

Sub Total = \$2,530.00

Sale Area	Number of Landings to be Piled	Cost/Landing Pile*	Total Landing Piling Cost/Area	Number of In-Unit Piles	Material Cost/Pile	Total Materials Cost/Area
1	3	\$220.00	\$660.00	70	\$5.00	\$350.00
2	1	\$221.00	\$221.00	22	\$6.00	\$132.00
3	3	\$220.00	\$660.00	20	\$5.00	\$100.00
4	3	\$220.00	\$660.00	8	\$5.00	\$40.00

*Cost includes separating firewood and materials

Sub Total = \$2,251.00

Move-In Allowance	Number of Move-In's	Total Move-In Allowance	
\$1,290.00	1	\$1,290.00	

Sub Total = \$1,290.00

Grand Total = \$6,071.00

SUMMARY OF ALL PROJECT COSTS

SALE NAME: King Louis

ROAD CONSTRUCTION:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 1	1B-1C (Dirt)	2.50	\$17,735
	2A-2B, 4C-4D	6.20	
	2B, 4A, 4B	n/a	
	TOTALS	8.70	\$17,735

ROAD IMPROVEMENT:

	<u>Road segment</u>	<u>Length/Sta</u>	<u>Cost</u>
Project No. 2	13-14, 15-16, 17-18	321.00	\$108,005
	TOTALS	321.00	\$108,005

SPECIAL PROJECTS:

	<u>Description</u>	<u>Cost</u>
Project No. 3	Rock Crushing, Northrup Quarry	\$319,941
Project No. 4	Stream Enhancement	\$8,800
	Project Road Maintenance	\$3,757
	TOTAL	\$332,498

MOVE IN:

<u>Equipment</u>	<u>Cost</u>
Dozer (D8)	\$1,406.00
Excavator (C315)	\$805.00
Excavator (C330)	\$1,406.00
Dump Trucks (12cy x 5)	\$815.00
Dump Trucks (20cy x 2)	\$382.00
Front End Loader (C966)	\$778.00
Grader (14G)	\$778.00
Vibratory Roller	\$778.00
Water Truck (2,500 gallon)	\$190.00
Backhoe (C 580)	\$321.00
TOTAL	\$7,659

GRAND TOTAL **\$465,897**

Compiled By: D. Rygell FL Date: 01/05/2016

SUMMARY OF CONSTRUCTION COSTS

SALE NAME: King Louis NEW CONSTRUCTION: 8.70 STATIONS 0.16 MILES
ROAD: 1B-1C (2.50), 2A-2B (4.00), 4C-4D (2.20) STATIONS
POINTS: 1A, 2B, 2C, 4A, 4B, 4D MILES

CLEARING & GRUBBING

Method	Acres/amount	X	Rate	=	Cost
1B to 1C, 2A to 2B, 4C to 4D Scatter Outside R/W	1.00	X	\$ 1,337.00	=	\$1,337.00
1A, 2C Clear Trees on Existing Landing (Hrs. C330)	0.50	X	\$ 155.00	=	\$77.50

SUB TOTAL FOR CLEARING & GRUBBING

\$1,415

EXCAVATION

Material	Cy/amount	X	Rate	=	Cost
1B to 1C Balanced Construction	2.80	X	\$122.00	=	\$341.60
4C to 4D Balanced Construction	1.60	X	\$122.00	=	\$195.20
4C to 4D Common Drift	0.60	X	\$190.00	=	\$114.00
2C, 2B, 4A, 4B, 4D Landing Construction	5	X	\$389.00	=	\$1,945.00
4A Endhaul Landing Waste (12cy Dump)	1.00	X	\$79.00	=	\$79.00
4A C330 Ex. Work Lndg. Waste (Hrs.)	1.00	X	\$155.00	=	\$155.00
		X		=	
		X		=	
		X		=	

SUB TOTAL FOR EXCAVATION

\$2,830

CULVERT MATERIALS AND INSTALLATION

Location	Dia/type	Lineal ft.	Rate	Cost	Lineal ft.	Rate	Cost
1B-1C							
0+90	18" CPP	30	\$19.53	\$585.90	30	\$19.53	\$585.90
1+70	18" CPP	30	\$19.53	\$585.90	30	\$19.53	\$585.90

Other/miscellaneous:

Culvert stakes & markers:

Description	Quantity	Rate	Cost
6' x 2 1/2" Fiberglass markers	2	\$20.00	\$40.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION

\$2,384

\$6,628

Subtotal of Clearing, Exc., Culv.

SURFACING										
Subgrade prep:			Description		Stations/ amount	Rate/ sta./amt	Cost			
			Subgrade Compaction (1B-1C, 2A-2B, 4C-4D)		8.70	\$ 20.19	\$175.65			
			Grade, Shape and Ditch 16' (2A-2B, 4C-4D)		6.20	\$ 24.83	\$153.95			
			Outslope 14' (1B-1C)		2.50	\$ 18.35	\$45.88			
ROAD SEGMENT		1B TO 1C		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1B to 1C	Volume per	Number of				
Junctions	1 1/2"-0" Crushed	0+00	n/a	1B to 1C	junction	22	junctions	1	\$7.11	\$ 156.42
Total Rock for Road Segment: \$156										
ROAD SEGMENT		2A TO 2B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	2A to 2B	Volume per	Number of				
Base Rock	4"-0" crushed	0+00 - 2+20	8	2A to 2B	stations	50	stations	4.0	\$9.75	\$ 1,950.00
Junctions	1 1/2"-0" Crushed	0+00	n/a	junction	22	junctions	1.0		\$7.11	\$ 156.42
Culverts	3/4"-0" Crushed	0+50, 2+60	n/a	culvert	33	culvert	2.0		\$7.53	\$ 496.98
Dissipator	24"-6"	2+60	n/a	culvert	11	culvert	1.0		\$8.38	\$ 92.18
Landings	6"-0" Pit-Run	2B	n/a	landing	77	landing	1.0		\$10.60	\$ 816.20
Total Rock for Road Segment: \$3,512										
ROAD SEGMENT		4C TO 4D		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	4C to 4D	Volume per	Number of				
Base Rock	4"-0" crushed	0+00 - 2+20	8	4C to 4D	stations	50	stations	2.2	\$9.75	\$ 1,072.50
Junctions	1 1/2"-0" Crushed	0+00	n/a	junction	22	junctions	1.0		\$7.11	\$ 156.42
Landings	6"-0" Pit-Run	4D	n/a	landing	77	landing	1.0		\$10.60	\$ 816.20
Total Rock for Road Segment: \$2,045										
ROAD SEGMENT		1A, 2C, 4A, 4B		POINT TO POINT		Sta. to Sta.		TOTAL VOLUME (CY)	Rate/ Sta./ amt.	Cost
Application	Rock Size and Type	Location	Depth of Rock (inches)	1A, 2C, 4A, 4B	Volume per	Number of				
Landings	6"-0" Pit-Run	1A, 2C, 4A, 4B	n/a	1A, 2C, 4A, 4B	landing	77	landing	4	\$10.60	\$ 3,264.80
Total Rock for Road Segment: \$3,265										
Processing:		Description		No. sta	Rate/sta	Cost				
		Water, Process & Compact (2A-2B, 4C-4D)		6.20	\$ 56.48	\$350				
SUB TOTAL FOR SURFACING										
				24"-6"pr	6"-0"pr	4"-0"	1 1/2"-0"	3/4"-0"	Total	
				11	462	310	66	66	915	

SPECIAL PROJECTS		
	Description	Cost
1B-1C	Pit-run development	\$ 1,201.20
	Dissipater development	\$ 47.30
	Remove temporary culverts	\$ 155.00
SUB TOTAL FOR SPECIAL PROJECTS		\$1,404
		Subtotal of Surfacing & Spec. Proj. \$11,107
		Subtotal of Clearing, Exc., Culv. \$6,628
GRAND TOTAL		\$17,735

SUMMARY OF CONSTRUCTION COSTS	
SALE NAME:	King Louis
ROAD:	13-14(88.2), 15-16 (3.2), 17-18 (6.8), 19-110 (221.8)
NEW CONSTRUCTION:	STATIONS:
IMPROVEMENT:	320.00 STATIONS:
	MILES
	6.06 MILES

SALE NAME:	King Louis	NEW CONSTRUCTION:	STATIONS	MILES
ROAD:	13-14(88.2), 15-16 (3.2), 17-18 (6.8), 19-110 (221.8)	IMPROVEMENT:	320.00 STATIONS	6.06 MILES

CLEARING & GRUBBING				
Method	Acres/amount	x	Rate	Cost
13-14 (47+40) Daylight Turnout (hrs. C330)	0.5	x	\$155.00	\$77.50
13-14 (47+40) Daylight Turnout (hrs. C330)	0.5	x	\$155.00	\$77.50
13-14 (49+60) Remove Sod from Turnout (hrs. 14G)	0.25	x	\$100.00	\$25.00
		x		

SUB TOTAL FOR CLEARING & GRUBBING

Material	Cy/amount	x	Rate	=	Cost
I3-14 (34+10, 42+30, 52+40)					
Install ditch filters w/315 (\$/hr)	3	x	\$101.00	=	\$303.00
I9-110 (30+00, 32+20, 38+10, 40+00, 41+80, 58+20, 59+00, 74+60, 191+60)					
Install ditch filters w/315 (\$/hr)	9	x	\$101.00	=	\$909.00
		x		=	
		x		=	

SUB TOTAL FOR EXCAVATION

[illegible]

Description	Quantity	Rate	Cost
Other/miscellaneous:			
6' x 2 1/2" Fiberglass markers	6	\$20.00	\$120.00

Culvert stakes & markers:			
6' x 2 1/2" Fiberglass markers	6	\$20.00	\$120.00

SUB TOTAL FOR CULVERT MATERIALS & INSTALLATION		\$1,878
*Pipe disconnects ditch from stream		
Subtotal of Clearing, Exc., Culv.		\$3,270

*Pipe disconnects ditch from stream

CRUSHED ROCK COST

SALE NAME:	King Louis
PROJECT:	No. 1 and 2
QUARRY:	Northrup

MATERIAL: 3/4"-0" Crushed

DATE: 01/05/2016
BY: Dave Rygell

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>2</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$6.45	/cy
Load:	Off Belt	/cy
Spread:	\$1.08	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

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

Production: cy/day = 737

CRUSHED ROCK HAUL COSTS 6,205 cy @ \$7.53 /cy

CRUSHED ROCK COST

SALE NAME:	King Louis
PROJECT:	No. 1 and 2
QUARRY:	Northrup

MATERIAL: 1 1/2"-0"

DATE: 01/05/2016
BY: Dave Rygell

[illegible]

ROCK HAUL:

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

Ave haul:	\$6.03	/cy
Load:	Off Belt	/cy
Spread:	\$1.08	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

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

Production: cy/day = 788

CRUSHED ROCK HAUL COSTS 3,482 cy @ \$7.11 /cy

CRUSHED ROCK COST

SALE NAME:	King Louis
PROJECT:	No. 1 and 2
QUARRY:	Northrup

MATERIAL: 4"-0" Crushed

DATE: 01/05/2016
BY: Dave Rygell

[illegible]

ROCK HAUL:

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

Ave haul:	\$8.19	/cy
Load:	Off Belt	/cy
Spread:	\$1.56	/cy

Truck type: D12 No. trucks: 5
 Delay min.: 6 Efficiency: 85%

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

Production: cy/day = 581

CRUSHED ROCK HAUL COSTS

354 cy @ \$9.75 /cy

PIT RUN ROCK COST

SALE NAME:	King Louis
PROJECT:	No. 1 and 2
QUARRY:	Northrup

MATERIAL: Pit Run (6"-4" & 6"-0")

DATE: 12/01/2015
BY: D. Rygell

[illegible]

ROCK HAUL:

Truck type:	<u>D20</u>	No. trucks:	<u>2</u>
Delay min.:	<u>8</u>	Efficiency:	<u>85%</u>

Ave haul:	\$8.17	/cy
Load:	\$0.84	/cy
Spread:	\$1.56	/cy

Truck type:	<u>D12</u>	No. trucks:	<u>5</u>
Delay min.:	<u>6</u>	Efficiency:	<u>85%</u>

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

Production: cy/day = 582

PIT RUN ROCK HAUL COSTS

770 cy @ \$10.57 /cy

RIP RAP ROCK COST

SALE NAME:	King Louis
PROJECT:	No. 1 and 2
QUARRY:	Northrup

MATERIAL: Rip Rap

DATE: 01/05/2016
BY: Dave Rygell

[illegible]

ROCK HAUL:

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>5</u>
Delay min.:	<u>5</u>	Efficiency:	<u>85%</u>

Ave haul: \$7.00 /cy
Load: \$1.38 /cy
Develop: _____ /cy

Production: cy/day = 451

RIP RAP ROCK HAUL COSTS

22 cy @ \$8.38 /cy

SUMMARY OF ROCK DEVELOPMENT AND CRUSHING COSTS

PROJECT NO. 3	Timber Sale Name: King Louis
Quarry: Northrup Ridge	Swell:
Location: SE 1/4, SE 1/4, Sec. 17, T6N, R6W	Shrink: 16%
County: Clatsop	
By: Kraig Kirkpatrick	Loading Hopper: Yes
Date: 01/14/2016	

ROCK SIZE	REJECT	GRADATION	STOCKPILE CU. YDS.	TRUCK MEAS CU. YDS.	TOTAL CU. YDS.
3/4"-0"	5%	CR	5,000	5,464	11,264
1-1/2"-0"	5%	CR	3,000	3,482	6,962
4"-0"	5%	CR	7,400	354	8,938
6"-0"		PR			
24"-6"		RR			
36"		RR			
TOTAL CUBIC YARDS OF ROCK:			15,400	9,300	27,164

1) MOBILIZATION & SET UP:

EQUIPMENT	QUANTITY	RATE	COST	EQUIPMENT	QUANTITY	RATE	COST
Screening Plants	2	\$553	\$1,106	Off Highway Dump Truck	1	\$774	\$774
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	1	\$351	\$351				
2nd Drill Move-in	1	\$750	\$750				

SUB TOTAL FOR MOBILIZATION

\$11,448

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

\$16,309

2) CLEARING & GRUBBING

DESCRIPTION	QUANTITY	UNIT	RATE	COST
Clear, grub, and haul to waste area				
C330	40.0	hr	\$155	\$6,200
Off Highway Dump	20.0	hr	\$127	\$2,540

TOTAL CLEARING & GRUBBING COSTS

\$8,740

3) EXCAVATION

MATERIAL DESCRIPTION	QUANTITY	UNIT	RATE	COST
Overburden Removal (excavate, load haul, spread)				
C330	40	hr	\$155.00	\$6,200
D8 Dozer	40	hr	\$158.00	\$6,320
Off Highway Dump	20	hr	\$127.00	\$2,540

TOTAL EXCAVATION COSTS \$15,060

4) DEVELOP ROCK

ROCK SUMMARY			METHOD	%	QUANTITY	RATE	COST
Type	Cu. yd. Vol.	Weight	Ripping	25%	6,791	\$2.60	\$17,657
crushed	27,164	100%	Drill & shoot	75%	21,392	\$2.70	\$57,757
pit run	0	0	Oversize red	3%	815	\$5.80	\$4,727
rip rap	0	0	Other				
Total	27,164						
reject	1,358	5.0%					

TOTAL ROCK DEVELOPMENT COSTS \$80,141

5) CALIBRATION & TESTING

DESCRIPTION	NO.	\$/TEST	COST
Calibrate	2	\$507.00	\$1,014
Calibrate			
Test	10	\$57.30	\$573
Test			

TOTAL CALIBRATION & TESTING COSTS \$1,587

6) FEEDING & LOADING

DESCRIPTION	CU. YD. QUANTITY	COST CU. YD.	TOTAL COST
Dig & Feed Rock	28,522	\$0.89	\$25,393
Shot rock handling (Exc.)	80	\$155.00	\$12,400

TOTAL FEEDING & LOADING COSTS \$37,793

7) ROCK CRUSHING

ROCK SIZE	ROCK TYPE	CU. YD. QUANTITY	CRUSHER TYPE	HOURLY PRODUCTION	RATE CU. YD.	TOTAL COST
3/4"-0"	crushed	11,264	3 stage w/s	110	\$3.54	\$39,834
1-1/2"-0"	crushed	6,962	3 stage w/s	120	\$3.24	\$22,568
4"-0"	crushed	8,938	2 stage w/s	140	\$2.48	\$22,153

TOTAL ROCK CRUSHING COSTS \$84,556

8) STOCKPILING

STOCKPILE SITE PREPARATION

Equipment	Hours	Rate	Total
Dozer	4	\$120.00	\$480.00
Compactor		\$72.00	
Grader		\$90.00	
Excavator		\$138.00	

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

\$480.00

SUB TOTAL

\$480

HAUL & STOCKPILE

HAUL & STOCKPILE		# of			
STOCKPILE LOCATION	SIZE	TRUCKS	CU. YDS.	RATE	COST
1. Cow Crk	3/4"-0"	6	5,800	\$4.15	\$24,087
2. Northrup	1-1/2"-0"	3	3,480	\$3.00	\$10,455
3. Cow Crk	4"-0"	7	8,584	\$3.98	\$34,179
4.					
5.					
6.					

SUB TOTAL

\$68,721

TOTAL STOCKPILING COSTS

\$69,201

9) MISCELLANEOUS COSTS

DESCRIPTION	COST
Load, Haul, and Spread the reject material at the waste area.	\$4,075
\$3.00 /CY 1,358 CY	
2nd Drilling Move-in bench preparation (excavator hrs.)	\$930
Final Quarry Dev., Access Road Const., Waterbarring, Drainage, Block Quarry Access	\$1,550

TOTAL MISCELLANEOUS COSTS

\$6,555

10) GRAND TOTAL:

\$319,941

\$/Cubic Yard

\$11.78

Footnotes:

**King Louis
Stream Enhancement
Project No. 4**

Location	Site	No. Tops	Number of Logs	\$/Tree*	Number of Straw Bales	\$/Bale	Cost per Site
SE1-SE2	1	4	4	\$250.00	2	\$10.73	\$1,021.46
SE1-SE2	2	4	4	\$250.00	2	\$10.73	\$1,021.46
SE1-SE2	3	4	4	\$250.00	2	\$10.73	\$1,021.46
SE3-SE4	4	4	4	\$250.00	2	\$10.73	\$1,021.46
SE3-SE4	5	4	4	\$250.00	2	\$10.73	\$1,021.46
SE3-SE4	6	4	4	\$250.00	2	\$10.73	\$1,021.46
SE3-SE4	7	4	4	\$250.00	2	\$10.73	\$1,021.46

Grass Seed 25lbs. @\$1.60 lb=\$40.00
8 hrs. @\$40.00 hrs.=320.00
 *\$/Tree includes transportation cost of tree up to 1 mile.

Subtotal	\$7,150
Seed	\$40
Labor	\$320
Equipment Move-In	\$1,290
Project Total	\$8,800

Projects Road Maintenance Cost Summary

Sale: King Louis
Date: 03-Dec-15
By: D. Rygell

Type	Equipment/Rationale		Hours	Rate	Cost
Projects Road Maintenance	Grader 14G		12	\$100	\$1,200
	Dump Truck 12CY		4	\$79	\$316
	FE Loader C966		3	\$83	\$249
	Vibratory Roller		12	\$77	\$924
	Water Truck 2,500 gallon		12	\$89	\$1,068
Total					\$3,757

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

Roads to maintain: Northrup Road (0.8 miles), Foster Road (.7 miles), Northrup Pit Road (0.6mi)

Cruise Report King Louis FY 2016

1. Sale Area Location: Areas 1 through 5 are located in portions of Sections 10, 11, 14, and 15, T6N, R6W, W.M., Clatsop County, OR.

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

3. **Sale Acreage by Area:**

Area	Treatment	Gross Acres	Existing ROW	Stream Buffer	Net Acres	Survey Method
1	Modified Clearcut	42	2	5	35	GIS
2	Modified Clearcut	33	1	9	23	GIS
3	Modified Clearcut	47	1	10	36	GIS
4	Modified Clearcut	97	2	18	77	GIS
5 R/W	*Right-of-way	1	n/a	n/a	1	GIS
TOTALS		220	6	42	172	

*Area 5 R/W consist of 1 acre of in-sale right of way

4. **Cruisers and Cruise Dates:**

Area 1 was cruised by Dave Rygell on 12-17-15. Area 3 was cruised by Dave Rygell on 12-18-15. Area 2 was cruised by Nick Haile on 12-18-15. Area 4 was cruised by Dave Rygell, Nick Haile and Kevin Berry on 12-22-15.

5. **Cruise Method and Computation:**

Areas 1, 2, 3, and 4 are modified clearcut units and were variable plot cruised using a 40 BAF. These plots are located on a 4 chain by 9 chain grid, with every third plot measured and graded. A total of 47 plots were sampled, with 17 measured and graded plots, and 30 count plots.

Data was collected on Allegro 2 data collectors, and downloaded to the Atterbury Super A.C.E. program 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
1, 2, 3, and 4	KLOUIS	AREA1234	00MC	172
1, 2, 3, and 4	KLOUIS	AREA1234	TAKE	171
5 R/W	KLOUIS	AREA1234	ROW	1

6. **Timber Description:**

Areas 1, 2, 3, and 4 are modified clearcut units, approximately 70 years-old, consisting of Douglas-fir, with minor amounts of western hemlock, red alder and bigleaf maple. The average Douglas-fir tree size to be harvested is 23 inches DBH, with an average height of 99 feet to a merchantable top (7 inch d.o.b.) The average western hemlock tree size is 13 inches DBH and 47 feet to a merchantable top (7 inch d.o.b). The average red alder tree size 14 inches DBH and 34 feet to a merchantable top (7 inch d.o.b). The average bigleaf maple tree size 14 inches DBH and 34 feet to a merchantable top (7 inch d.o.b). The net volume per acre to be harvested is 47.7 MBF/acre.

Area 5 R/W is similar to the timber description mentioned above in Areas 1, 2, 3, and 4. The average volume per acre to be harvested 48.0 MBF/acre.

7. **Statistical Analysis and Stand Summary**

Statistics for Stand B.F. volumes

Area	Estimated CV	Target SE%	Actual CV	Actual SE%
1, 2, 3, and 4	45%	8%	40%	6%

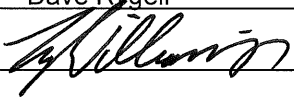
8. **Volumes by Species and Log Grade:**

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	CR	% D & B	% Sale
Douglas-fir	23"	7,825	6,352	1,312	161	0	1.6	95
Western hemlock	13"	92	0	44	48	0	0	1
Red alder	14"	232	0	0	0	232	0	3
Big leaf maple	14"	55	0	0	0	55	0	<1
TOTALS		8,204	6,352	1,356	209	287	1.8	100

9. **Approvals:**

Prepared by: Dave Rygell Date: 12/23/2015

Unit Forester Approval:  Date: 1/13/16

10. **Attachments:**
- Cruise Designs and Maps - 3 pages
 - Volume Reports - 3 pages
 - Statistics Reports - 4 pages
 - Stand Table Summary – 1 page
 - Log Stock Tables - 2 pages

X:\STATE_FORESTS\UNIT_JEWELL\Timber Sales\2016\King_Louis\C_KingLouis_CruiseReport.docx

**CRUISE DESIGN
ASTORIA DISTRICT**

Sale Name: King Louis **Area(s)** 1, 2, 3, and 4

Harvest Type: Modified Clearcut

Approx. Cruise Acres: 172 **Estimated CV%** 45 Net BF or
BA/Acre **SE% Objective** 8

Planned Sale Volume: 8.2 MMBF **Estimated Sale Area Value/Acre:** \$ 14,541.00

A. Cruise Goals: (a) Grade minimum 90 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
Cruise Line Direction(s) 310 degrees
Cruise Line Spacing 9 chains
Cruise Plot Spacing 4 chains
Grade/Count Ratio 1:2

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

C. Tree Measurements:

- 1. 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 less than 18" dbh and 40% of dob
@ FP for trees greater than 18" dbh.
- 4. Form Factors:** (1) Measure or estimate a 16' form factor for every conifer tree
measured/graded; Hardwood form factors are a Standard 87.
- 5. Tree Segments:** Record log segments in "standard" 32" and 40' log lengths
whenever possible. Do not record odd segments just to maximize grade. The
maximum segment length is 40'. The minimum segment length is 12' for conifer and 8'
for hardwoods. Minimum merchantable diameter for conifer is 8" dbh and 10" dbh for
hardwoods. One foot of trim is assumed for each merchantable segment.

- 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. On "measure/grade" plots paint the tree diameter on each tree starting with the first tree right of the cruise line direction and continuing clockwise.

9. Cruising Equipment: Relaskop, Rangefinder, Biltmore Stick, Compass, Data Recorder, Cruise Design, Cruise Map, Yellow Flagging, Blue Flagging.

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

Cruise Design by: Dave Rygell

Approved by: [Signature]

Date: 12/17/15

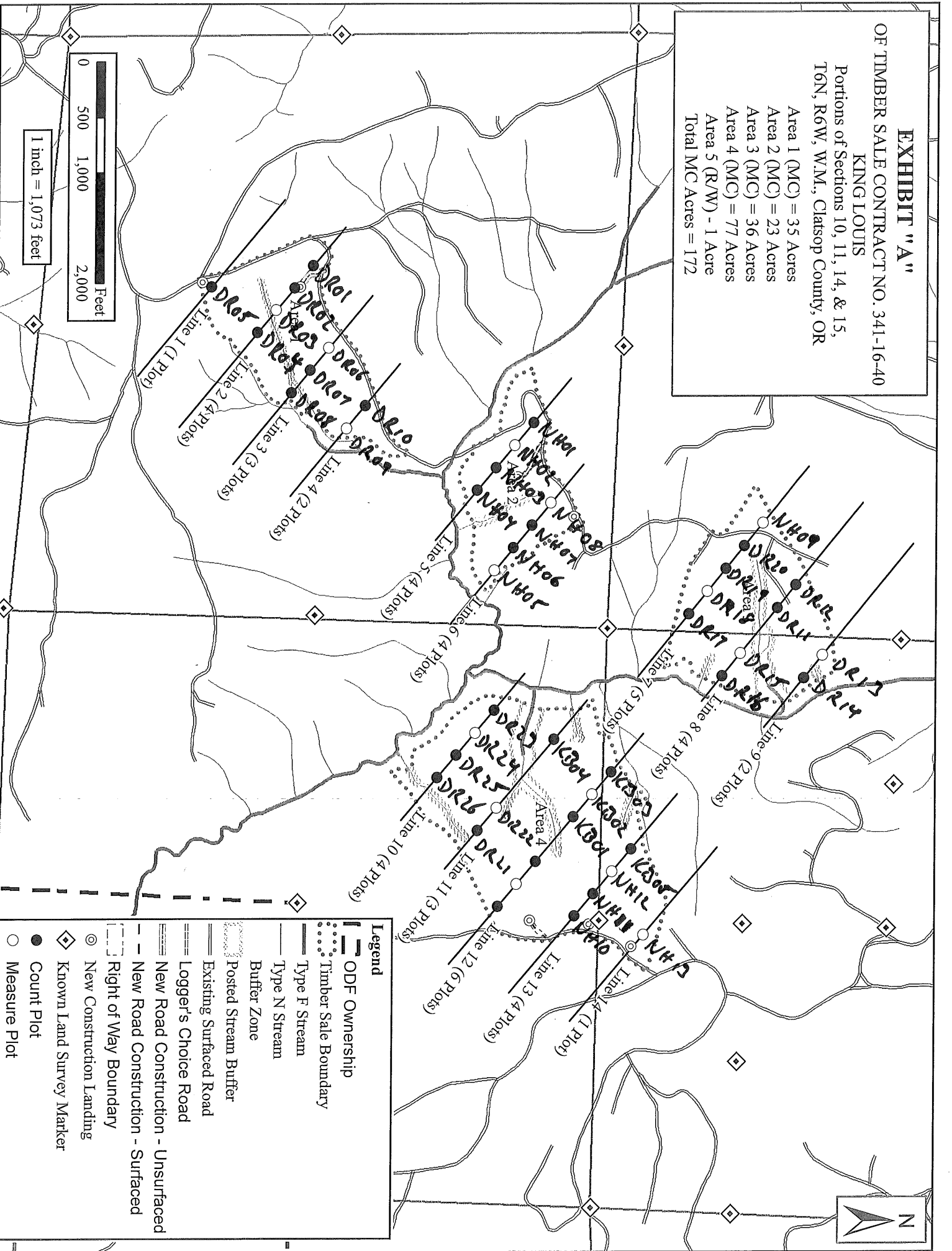
EXHIBIT "A"

OF TIMBER SALE CONTRACT NO. 341-16-40

KING LOUIS

Portions of Sections 10, 11, 14, & 15,
T6N, R6W, W.M., Clatsop County, OR

Area 1 (MC) = 35 Acres
Area 2 (MC) = 23 Acres
Area 3 (MC) = 36 Acres
Area 4 (MC) = 77 Acres
Area 5 (R/W) - 1 Acre
Total MC Acres = 172



Legend

- ODF Ownership
- Timber Sale Boundary
- Type F Stream
- Type N Stream
- Buffer Zone
- Posted Stream Buffer
- Existing Surfaced Road
- Logger's Choice Road
- New Road Construction - Unsurfaced
- New Road Construction - Surfaced
- Right of Way Boundary
- New Construction Landing
- Known Land Survey Marker
- Count Plot
- Measure Plot

TC		PSPCSTGR Species, Sort Grade - Board Foot Volumes (Project)																	
T06N R06W S15 TyROW1.00 T06N R06W S15 TyTAKE171.00						Project: KLOUIS						Page 1 Date 12/23/2015 Time 1:39:08PM							
						Acres172.00													
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
							Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
			Def%	Gross	Net		4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
D	DOCU		100.0	188											20	15		0.00	1.0
D	DO2S	81	1.3	37,432	36,931	6,352		4	40	56		0	12	88	38	16	391	2.24	94.4
D	DO3S	16	.9	7,698	7,629	1,312	0	91	9		2	9	38	52	33	9	97	0.84	78.6
D	DO4S	3		933	933	161	14	86			16	42	10	33	25	6	34	0.47	27.2
D Totals		95	1.6	46,251	45,493	7,825	0	20	34	46	1	2	16	81	34	12	226	1.54	201.3
H	DO3S	47		256	256	44		100						100	40	11	180	1.15	1.4
H	DO4S	53		279	279	48	20	80				15		85	37	5	44	0.49	6.3
H Totals		1		535	535	92	10	90				8		92	37	6	69	0.62	7.7
M	DOCU		100.0	95											29	8		0.00	1.3
M	DOCR	100	5.9	343	322	55	10	90			3	12	47	38	32	5	37	0.58	8.6
M Totals		1	26.4	438	322	55	10	90			3	12	47	38	32	6	33	0.51	9.9
A	DOCR	100		1,346	1,346	232		44	56		19	3	78		21	8	63	0.89	21.3
A Totals		3		1,346	1,346	232		44	56		19	3	78		21	8	63	0.89	21.3
C	DOCU		100.0	0											6	41		0.00	.0
C	DO2S	90		2	2	0			52	48		11	48	42	37	17	442	3.17	.0
C	DO3S	10		0	0	0		100					100		32	8	70	0.78	.0
C Totals		0	15.2	2	2	0		9	48	43		10	52	38	32	16	268	2.27	.0
Totals			1.8	48,573	47,698	8,204	1	22	34	44	1	3	18	78	33	11	199	1.43	240.3

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page		1				
				Project: KLOUIS										Date		12/23/2015				
														Time		1:39:08PM				
T06N R06W S15 TTAKE										T06N R06W S15 TTAKE										
Twp		Rge		Sec		Tract		Type		Acres		Plots		Sample Trees		CuFt		BdFt		
06N		06W		15		AREA1234		TAKE		171.00		47		111		1		W		
S So Gr T rt ad Spp			%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
								Log Scale Dia.				Log Length				Ln Dia Bd CF/				
			Net	Def%	Gross	Net	Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
D DO CU				100.0	188											20	15		0.00	
D DO 2S			81	1.3	37,432	36,931	6,315		4	40	56		0	12	88	38	16	391	2.24	
D DO 3S			16	.9	7,698	7,629	1,305	0	91	9		2	9	38	52	33	9	97	0.84	
D DO 4S			3		933	933	160	14	86			16	42	10	33	25	6	34	0.47	
D Totals			95	1.6	46,251	45,493	7,779	0	20	34	46	1	2	16	81	34	12	226	1.54	
A DO CR			100		1,346	1,346	230		44	56		19	3	78		21	8	63	0.89	
A Totals			3		1,346	1,346	230		44	56		19	3	78		21	8	63	0.89	
M DO CU				100.0	95											29	8		0.00	
M DO CR			100	5.9	343	322	55	10	90			3	12	47	38	32	5	37	0.58	
M Totals			1	26.4	438	322	55	10	90			3	12	47	38	32	6	33	0.51	
H DO 3S			47		256	256	44		100					100		40	11	180	1.15	
H DO 4S			53		279	279	48	20	80				15	85		37	5	44	0.49	
H Totals			1		535	535	91	10	90				8	92		37	6	69	0.62	
Type Totals					1.8	48,570	47,696	8,156	1	22	34	44	1	3	18	78	33	11	198	1.43

T		TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)												Page		1			
				Project: KLOUIS												Date		12/23/2015			
																Time		1:39:08PM			
T06N R06W S15 TROW										T06N R06W S15 TROW											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
06N	06W	15	AREA1234	ROW	1.00	47	113	1	W												
S Spp	So T	Gr rt	ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/	
					Def	%	Gross		Net	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	
D	DO	CU		100.0	188										20	15		0.00	1.0		
D	DO	2S	81	1.3	37,432	36,931	37		4	40	56		0	12	88	38	16	391	2.24	94.4	
D	DO	3S	16	.9	7,698	7,629	8	0	91	9		2	9	38	52	33	9	97	0.84	78.6	
D	DO	4S	3		933	933	1	14	86			16	42	10	33	25	6	34	0.47	27.2	
D Totals				95	1.6	46,251	45,493	45	0	20	34	46	1	2	16	81	34	12	226	1.54	201.3
A DO CR				100	1,346	1,346	1	44	56			19	3	78		21	8	63	0.89	21.3	
A Totals				3	1,346	1,346	1	44	56			19	3	78		21	8	63	0.89	21.3	
M	DO	CU		100.0	95											29	8		0.00	1.3	
M	DO	CR	100	5.9	343	322	0	10	90			3	12	47	38	32	5	37	0.58	8.6	
M Totals				1	26.4	438	322	0	10	90			3	12	47	38	32	6	33	0.51	9.9
H	DO	3S	47		256	256	0	100						100		40	11	180	1.15	1.4	
H	DO	4S	53		279	279	0	20	80				15	85		37	5	44	0.49	6.3	
H Totals				1	535	535	1	10	90				8	92		37	6	69	0.62	7.7	
C	DO	CU		100.0	55											6	41		0.00	.1	
C	DO	2S	90		282	282	0		52	48			11	48	42	37	17	442	3.17	.6	
C	DO	3S	10		28	28	0	100						100		32	8	70	0.78	.4	
C Totals				1	15.2	366	310	0	9	48	43		10	52	38	32	16	268	2.27	1.2	
Type Totals					1.9	48,936	48,007	48	1	22	34	44	1	3	18	78	33	11	199	1.43	241.4

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT KLOUIS				DATE	12/23/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
06N	06W	15	AREA1234	00MC	172.00	47	296	1	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
PLOTS		TREES		TREES		TREES					
TOTAL		47	296	6.3							
CRUISE		18	116	6.4		17,744		.7			
DBH COUNT											
REFOREST											
COUNT		29	163	5.6							
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE		TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
TREES		/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR		94	72.3	23.3	99	44.4	214.5	46,251	45,493	10,698	10,659
R ALDER		4	13.6	14.4	34	4.0	15.3	1,346	1,346	396	396
BL MAPLE		10	9.4	14.1	34	2.7	10.2	438	322	200	161
WHEMLOCK		3	6.3	13.2	47	1.6	6.0	535	535	180	180
SNAG		3	1.0	24.9	41	0.7	3.4				
CEDLEAV		2	.5	29.9	74	0.5	2.6	366	310	92	84
TOTAL		116	103.2	21.2	81	54.8	251.9	48,936	48,007	11,566	11,479
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		60.7	6.3	796	849	902					
R ALDER		82.4	47.1	79	150	221					
BL MAPLE		67.0	22.3	28	36	44					
WHEMLOCK		96.4	66.7	33	100	167					
SNAG											
CEDLEAV		84.2	78.9	188	890	1,592					
TOTAL		77.9	7.2	663	714	766	242	61	27		
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		49.9	7.3	67	72	78					
R ALDER		242.5	35.3	9	14	18					
BL MAPLE		375.0	54.7	4	9	15					
WHEMLOCK		284.6	41.5	4	6	9					
SNAG		386.4	56.3	0	1	2					
CEDLEAV		427.8	62.3	0	1	1					
TOTAL		43.2	6.3	97	103	110	74	19	8		
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		44.9	6.5	200	214	229					
R ALDER		240.8	35.1	10	15	21					
BL MAPLE		369.5	53.8	5	10	16					
WHEMLOCK		279.3	40.7	4	6	8					
SNAG		331.4	48.3	2	3	5					
CEDLEAV		387.1	56.4	1	3	4					
TOTAL		33.4	4.9	240	252	264	45	11	5		
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		45.7	6.7	42,465	45,493	48,521					
R ALDER		242.8	35.4	870	1,346	1,823					
BL MAPLE		501.3	73.1	87	322	558					
WHEMLOCK		295.1	43.0	305	535	765					

TC TSTATS				STATISTICS				PAGE	2
				PROJECT KLOUIS				DATE	12/23/2015
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
06N	06W	15	AREA1234	00MC	172.00	47	296	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
SNAG									
CEDLEAV		387.6	56.5	135	310	486			
TOTAL		40.0	5.8	45,210	48,007	50,803	64	16	7

TC TSTATS				STATISTICS PROJECT KLOUIS				PAGE 1 DATE 12/23/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	15	AREA1234	TAKE	171.00	47	289	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		47	289	6.1						
CRUISE		17	111	6.5	17,380	.6				
DBH COUNT										
REFOREST										
COUNT		30	173	5.8						
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	94	72.3	23.3	99	44.4	214.5	46,251	45,493	10,698	10,659
R ALDER	4	13.6	14.4	34	4.0	15.3	1,346	1,346	396	396
BL MAPLE	10	9.4	14.1	34	2.7	10.2	438	322	200	161
WHEMLOCK	3	6.3	13.2	47	1.6	6.0	535	535	180	180
TOTAL	111	101.6	21.1	81	53.6	246.0	48,570	47,696	11,473	11,395
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	60.7	6.3	796	849	902					
R ALDER	82.4	47.1	79	150	221					
BL MAPLE	67.0	22.3	28	36	44					
WHEMLOCK	96.4	66.7	33	100	167					
TOTAL	75.5	7.2	678	730	783		228	57	25	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR	49.9	7.3	67	72	78					
R ALDER	242.5	35.3	9	14	18					
BL MAPLE	375.0	54.7	4	9	15					
WHEMLOCK	284.6	41.5	4	6	9					
TOTAL	44.2	6.4	95	102	108		78	19	9	
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	44.9	6.5	200	214	229					
R ALDER	240.8	35.1	10	15	21					
BL MAPLE	369.5	53.8	5	10	16					
WHEMLOCK	279.3	40.7	4	6	8					
TOTAL	33.4	4.9	234	246	258		45	11	5	
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	45.7	6.7	42,465	45,493	48,521					
R ALDER	242.8	35.4	870	1,346	1,823					
BL MAPLE	501.3	73.1	87	322	558					
WHEMLOCK	295.1	43.0	305	535	765					
TOTAL	40.2	5.9	44,901	47,696	50,491		65	16	7	

TC TSTATS				STATISTICS PROJECT KLOUIS				PAGE 1 DATE 12/23/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
06N	06W	15	AREA1234	ROW	1.00	47	292	1	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		47	292	6.2						
CRUISE		18	113	6.3	102	110.6				
DBH COUNT										
REFOREST										
COUNT		29	162	5.6						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	94	72.3	23.3	99	44.4	214.5	46,251	45,493	10,698	10,659
R ALDER	4	13.6	14.4	34	4.0	15.3	1,346	1,346	396	396
BL MAPLE	10	9.4	14.1	34	2.7	10.2	438	322	200	161
WHEMLOCK	3	6.3	13.2	47	1.6	6.0	535	535	180	180
WR CEDAR	2	.5	29.9	74	0.5	2.6	366	310	92	84
TOTAL	113	102.2	21.1	81	54.1	248.5	48,936	48,007	11,566	11,479
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	60.7	6.3	796	849	902					
R ALDER	82.4	47.1	79	150	221					
BL MAPLE	67.0	22.3	28	36	44					
WHEMLOCK	96.4	66.7	33	100	167					
WR CEDAR	84.2	78.9	188	890	1,592					
TOTAL	75.2	7.1	681	733	785		226	56	25	
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH		5	10	15	
DOUG FIR	49.9	7.3	67	72	78					
R ALDER	242.5	35.3	9	14	18					
BL MAPLE	375.0	54.7	4	9	15					
WHEMLOCK	284.6	41.5	4	6	9					
WR CEDAR	427.8	62.3	0	1	1					
TOTAL	43.5	6.3	96	102	109		75	19	8	
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	44.9	6.5	200	214	229					
R ALDER	240.8	35.1	10	15	21					
BL MAPLE	369.5	53.8	5	10	16					
WHEMLOCK	279.3	40.7	4	6	8					
WR CEDAR	387.1	56.4	1	3	4					
TOTAL	32.9	4.8	237	249	260		43	11	5	
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	45.7	6.7	42,465	45,493	48,521					
R ALDER	242.8	35.4	870	1,346	1,823					
BL MAPLE	501.3	73.1	87	322	558					
WHEMLOCK	295.1	43.0	305	535	765					
WR CEDAR	387.6	56.5	135	310	486					
TOTAL	40.0	5.8	45,210	48,007	50,803		64	16	7	

TC		PSTNDSUM		Stand Table Summary										Page		1	
														Date:		12/23/2015	
T06N R06W S15 TyROW1.00 T06N R06W S15 TyTAKE171.00				ProjectKLOUIS										Time:		1:43:05PM	
				Acres172.00										Grown Year:			
S SpC	T	Sample		Tot		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Trees	FF 16'	Av Ht				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
D		13	2	82	61	2.475	2.28	2.48	22.0	60.0		54	149		94	26	
D		14	2	83	74	2.134	2.28	4.27	16.5	40.0		70	171		121	29	
D		15	2	86	121	1.859	2.28	3.72	26.5	105.0		99	390		169	67	
D		16	4	84	89	3.268	4.56	8.17	20.4	74.0		167	605		287	104	
D		17	6	85	120	4.342	6.84	10.13	30.3	112.9		307	1,144		528	197	
D		18	8	85	111	5.164	9.13	12.91	29.6	102.0		382	1,317		657	227	
D		19	4	88	97	2.318	4.56	4.64	37.7	122.5		175	568		301	98	
D		20	12	87	126	6.275	13.69	16.73	36.7	141.2		614	2,364		1,056	407	
D		21	6	85	125	2.846	6.84	8.54	39.0	152.2		333	1,300		573	224	
D		22	28	84	141	12.100	31.94	37.16	44.9	184.0		1,669	6,837		2,871	1,176	
D		23	6	85	142	2.372	6.84	7.91	45.3	185.0		358	1,463		616	252	
D		24	8	86	147	2.905	9.13	8.71	57.3	240.8		500	2,099		859	361	
D		25	8	85	142	2.677	9.13	8.03	59.4	244.2		477	1,961		821	337	
D		26	16	86	139	4.951	18.25	14.85	63.7	275.8		946	4,097		1,627	705	
D		27	6	86	143	1.721	6.84	5.16	67.7	294.4		349	1,521		601	262	
D		28	14	85	134	3.735	15.97	10.67	74.0	323.0		790	3,447		1,359	593	
D		29	8	88	133	1.990	9.13	5.97	77.1	369.2		460	2,204		791	379	
D		30	8	85	152	1.859	9.13	6.51	76.5	345.7		498	2,250		856	387	
D		31	8	87	140	1.741	9.13	5.22	91.1	427.5		476	2,233		818	384	
D		32	6	85	141	1.226	6.84	4.09	87.0	403.0		355	1,646		611	283	
D		33	10	85	154	1.921	11.41	6.53	96.9	471.8		633	3,081		1,089	530	
D		34	6	84	156	1.086	6.84	3.98	94.6	451.8		377	1,798		648	309	
D		35	2	86	142	.341	2.28	1.02	118.0	600.0		121	615		208	106	
D		38	2	86	133	.290	2.28	.87	129.3	653.3		112	568		193	98	
D		40	2	87	140	.261	2.28	.78	149.3	766.7		117	601		201	103	
D		41	2	86	150	.249	2.28	.75	166.3	843.3		124	630		214	108	
D		42	2	86	112	.237	2.28	.47	199.0	925.0		94	439		162	75	
D		Totals	188	85	127	72.344	214.47	200.28	53.2	227.1		10,659	45,493		18,333	7,825	
A		11	2	87	18	5.803	3.83	5.80	8.0	30.0		46	174		80	30	
A		13	2	86	59	4.155	3.83	8.31	13.0	40.0		108	332		186	57	
A		18	2	87	61	2.167	3.83	4.33	27.5	90.0		119	390		205	67	
A		22	2	87	65	1.451	3.83	2.90	42.0	155.0		122	450		210	77	
A		Totals	8	87	42	13.576	15.32	21.35	18.5	63.1		396	1,346		680	232	
H		11	2	85	67	3.009	1.99	3.01	19.0	60.0		57	181		98	31	
H		14	2	88	46	1.858	1.99	1.86	20.0	30.0		37	56		64	10	
H		16	2	89	91	1.422	1.99	2.84	30.0	105.0		85	299		147	51	
H		Totals	6	87	66	6.289	5.96	7.71	23.3	69.4		180	535		309	92	
M		11	2	81	33	1.548	1.02	1.55	10.0			15			27		
M		12	4	87	50	2.601	2.04	2.60	17.5	45.0		46	117		78	20	
M		14	2	87	40	.955	1.02	.96	19.0	40.0		18	38		31	7	
M		15	4	87	37	1.664	2.04	.83	21.0	40.0		17	33		30	6	
M		16	6	87	45	2.194	3.06	2.19	27.0	56.7		59	124		102	21	
M		20	2	79	59	.468	1.02	.47	11.0	20.0		5	9		9	2	
M		Totals	20	86	43	9.430	10.21	8.60	18.7	37.5		161	322		277	55	
C		24	1	82	101	.002	.01	.00	59.5	180.0		0	1		0	0	
C		45	1	86	92	.001	.01	.00	154.5	710.0		0	1		0	0	
C		Totals	2	83	99	.003	.01	.01	80.5	297.4		0	2		1	0	
Totals			224	86	104	101.642	245.97	237.95	47.9	200.5		11,395	47,698		19,600	8,204	

Log Stock Table - MBF

T06N R06W S15 TyROW 1.00
T06N R06W S15 TyTAKE 171.00

Project: KLOUIS
Acres 172.00

Page 2
Date 12/23/2015
Time 1:44:27PM

S T Spp	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	4S	40	53		53	.7	8	45										
D	Totals			7,955	1.6	7,825	95.4	29	383	245	962	697	1503	2081	1412	513			
H	DO	3S	40	44		44	47.9				44								
H	DO	4S	28	7		7	8.0		7										
H	DO	4S	39	31		31	33.7		31										
H	DO	4S	40	10		10	10.4	10											
H	Totals			92		92	1.1	10	38		44								
M	DO	CU	29	4	100.0														
M	DO	CU	30	12	100.0														
M	DO	CR	19	2		2	2.9		2										
M	DO	CR	29	9	25.0	7	12.1		7										
M	DO	CR	31	15		15	27.7		7	9									
M	DO	CR	33	6	20.0	5	9.1		5										
M	DO	CR	34	6		6	10.3	6											
M	DO	CR	37	8		8	13.6		8										
M	DO	CR	39	13		13	24.2		13										
M	Totals			75	26.4	55	.7	6	41	9									
A	DO	CR	8	7		7	3.1		7										
A	DO	CR	16	30		30	12.9		30										
A	DO	CR	18	7		7	3.2		7										
A	DO	CR	21	7		7	3.2		7										
A	DO	CR	32	180		180	77.5			50		60	70						
A	Totals			232		232	2.8		52	50		60	70						
C	DO	CU	6	0	100.0														
C	DO	2S	29	0		0	9.7						0						
C	DO	2S	32	0		0	43.2										0		
C	DO	2S	40	0		0	38.0						0						
C	DO	3S	32	0		0	9.2			0									
C	Totals			0	15.2	0	.0			0			0				0		
Total	All Species			8,354	1.8	8,204	100.0	44	514	304	1006	757	1573	2081	1412	513			

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-16-40
KING LOUIS

Portions of Sections 10, 11, 14, & 15,
T6N, R6W, W.M., Clatsop County, Oregon.

Area 1 (MC) = 35 Acres

Area 2 (MC) = 23 Acres

Area 3 (MC) = 36 Acres

Area 4 (MC) = 77 Acres

Area 5(R/W) = 1 Acre

Total MC Acres = 172

