Timber Sale Appraisal
Broken Arrow

Sale TL-341-2019-039-

District: Tillamook

Date: June 22, 2018

Cost Summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$2,515,565.20	$476,332.66	$2,991,897.86
		Project Work:	($367,900.00)
		Advertised Value:	$2,623,997.86

Timber Sale Appraisal
Broken Arrow
Sale TL-341-2019-039-

"STEWARDSHIP IN FORESTRY"

District: Tillamook **Date: June 22, 2018**

Timber Description

Location: Section 20, 21, 29, and 30, T1N, R7W, W. M., Tillamook County, Oregon

Stand Stocking: 60%

Specie Name	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	18	0	99
Alder (Red)	15	0	98
Maple	18	0	98

Volume by Grade	2S	3S & 4S 6"- 11"	8" - 9"	10" - 11"	12"+	6" - 7"	3S	4S	Total
Douglas - Fir	3,111	2,731	0	0	0	0	0	0	5,842
Alder (Red)	0	0	384	182	260	420	0	0	1,246
Maple	0	0	0	0	0	0	18	27	45
Total	3,111	2,731	384	182	260	420	18	27	7,133

Comments: Pond Values Used: April, 2018

Western Red Cedar and Other Cedars Stumpage Price = Pond Value – Logging Cost
$1,400/MBF - $400/MBF = $1,000/MBF

Western Hemlock and Other Conifer Stumpage Price = Pond Value – Logging Cost
$710/MBF - $400/MBF = $310/MBF

Pulp (Conifer and Hardwood) Price = $ 25/ MBF

BRAND AND PAINT ALLOWANCE = $2.00/ MBF
FUEL COST ALLOWANCE = $3.00/ Gallon
HAULING COST ALLOWANCE= Hauling cost equivalent to $780 daily truck cost

Other Costs with Profit and Risk to be added:
Snag creation: (Area 1: 136 snags, Area 2: 230 snags, Area 3: 194 snags) 560 snags x $15/ snag = $8,400
Flagger on Jordan Creek Road: 15 days x 9 hrs/day x $20/hr = $2,700
TOTAL Other Costs with profit and Risk to be added = $11,100

Other Costs with No Profit and Risk Added:
Machine Cleaning: $1000/machine x 2 machines = $2,000
Slash piling and sorting (Cable Ground): $5/ac x 266 ac = $1,330
Heliport Construction: 8 hours machine loader time for slash moving @ $140/ hour = $ 1,120
Non-project Spur 1: $244/station x 18+65 stations = $4,550
Approach Rock (pit run) spurs: 100 cy/spur x $5.50/cy x 1 spurs = $550
Road blocking (Non-project Road 1): $50/ block x 1 road = $50

Ditch Cleaning and Bank Sluff Removal:
Mobilization: Twice – dump truck w/ tilt bed & small excavator: $890 x 2 = $1,780
Excavator (Cat 312 or equivalent): 40 hours @ $135/ hour = $5,400
Dump truck: 40 hours @ $70/ hour = $2,800

TOTAL Other Costs no Profit and Risk added = $19,580

ROAD MAINTENANCE:
Portions of Jordan Creek, Archers, and Axe Ridge Road.
Spot rocking: 20cy/mmbf/mile x 7.1 MMBF x $5.50/cy x 9 miles/ 7,133 MBF = $0.99/ MBF
Interm Grading, 4 times: $400/ mile x 9 miles x 4 times/ 7,133 MBF = $2.02/ MBF
Final Maintenance Grading: $800 x 9 miles/ 7,133 MBF = $1.01/ MBF
Final Maintenance Compaction: $700/mile x 1.5 miles/ 7,133 MBF = $ 0.15/ MBF
Total Road Maintenance: $4.17/ MBF

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"STEWARDSHIP IN FORESTRY"

District: Tillamook **Date: June 22, 2018**

Logging Conditions

Combination#: 1

Douglas - Fir	94.82%
Alder (Red)	94.91%
Maple	93.11%

Logging System: Cable: Large Tower >=70 **Process:** Stroke Delimber

yarding distance: Long (1,500 ft) **downhill yarding:** No

tree size: Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF

loads / day: 5 **bd. ft / load:** 4200

cost / mbf: $295.24

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

Combination#: 2

Douglas - Fir	5.18%
Alder (Red)	5.09%
Maple	6.89%

Logging System: Shovel **Process:** Stroke Delimber

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

tree size: Mature Private Forest / Regen Cut (250 Bft/tree), 6-11 logs/MBF

loads / day: 15 **bd. ft / load:** 3800

cost / mbf: $55.65

machines: Stroke Delimber (B)

Timber Sale Appraisal
Broken Arrow

Sale TL-341-2019-039-

District: Tillamook

Date: June 22, 2018

Logging Costs

Operating Seasons:	2.00	**Profit Risk:**	15%
Project Costs:	$367,900.00	**Other Costs (P/R):**	$11,100.00
Slash Disposal:	$0.00	**Other Costs:**	$19,580.00

Miles of Road

Road Maintenance: $4.17

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

Hauling Costs

Species	$ / MBF	Trips/Day	MBF / Load
Douglas - Fir	$0.00	3.0	4.0
Alder (Red)	$0.00	3.0	4.2
Maple	$0.00	3.0	3.9

Timber Sale Appraisal
Broken Arrow

Sale TL-341-2019-039-

District: Tillamook **Date: June 22, 2018**

Logging Costs Breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling / Brand & Paint	Other	Total
Douglas - Fir									
$282.82	$4.21	$1.23	$65.65	$1.56	$53.32	$0.00	$2.00	$2.74	$413.53
Alder (Red)									
$283.04	$4.25	$1.23	$63.14	$1.56	$52.98	$0.00	$2.00	$2.74	$410.94
Maple									
$278.73	$4.25	$1.23	$68.00	$1.56	$53.07	$0.00	$2.00	$2.74	$411.58

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$844.13	$430.60	$0.00
Alder (Red)	$0.00	$790.00	$379.06	$0.00
Maple	$0.00	$501.00	$89.42	$0.00

Timber Sale Appraisal
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"STEWARDSHIP IN FORESTRY"

District: Tillamook

Date: June 22, 2018

Summary

Amortized

Specie	MBF	Value	Total
Douglas - Fir	0	$0.00	$0.00
Alder (Red)	0	$0.00	$0.00
Maple	0	$0.00	$0.00

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,842	$430.60	$2,515,565.20
Alder (Red)	1,246	$379.06	$472,308.76
Maple	45	$89.42	$4,023.90

Gross Timber Sale Value

Recovery: $2,991,897.86

Prepared By: Bryan Huck **Phone:** 503-815-7025

Move-In Calculations for Project Work not Involving Rocking/Pit Work

Sale: **Broken Arrow**

LOWBOY HAUL (Round Trip)		
DIST. (mi)	ROADWAY	AVE SPEED (mph)
36.0	Pavement	30
3.2	Main Lines	7
6.8	Steep Grades	2

No.	EQUIPMENT DESCRIPTION	Move in Cost	Pilot Cars	Within Area Move ($/mile)	Begin Mileage	End Mileage	Total Miles	Within Area Cost	Total Cost
1	Graders	$691.71		$3.65	0.00	0.00	0	$0.00	$691.71
1	Excavators (Large)	$956.14	1	$44.80	0.00	0.00	0	$0.00	$956.14
1	Tractor (D8)	$890.69	2	$15.10	0.00	0.00	0	$0.00	$890.69
4	Dump Truck (10 cy +)	$841.14		$2.85	0.00	0.00	0	$0.00	$841.14
1	Water Truck (1500 Gal)	$150.02		$2.85	0.00	0.00	0	$0.00	$150.02
					TOTAL MOVE-IN COSTS:				$3,529.70

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Crushed	Location:	Sec. 21 , T01N, R07W, W.M.
Sale:	**Broken Arrow**	Road:	5544 c.y.
Swell:	1.40	Stockpile:	2500 c.y.
Shirinkage	1.16	Total Truck Loads:	8044 c.y.
Drill Pct.:	100%	In Place Total:	5746 c.y.
Reject Pct:	15%		

Pit Development & Cleanup of Rock Source 3 including clearing and grubbing and screening and placing overburden and reject in Waste Area 14. Spread and compact material in Waste Area 14. Stockpile 2,500 cubic yards of Pit-Run Rock in Stockpile Site 3 including stockpile development. $19,950.00

Drill & Shoot:	$2.90	/cu.yd.	x	5746	cu.yds.	=	$16,663.40
Push Rock:	$0.70	/cu.yd.	x	8044	cu.yds.	=	$5,630.80
Load Crusher:	$0.70	/cu.yd.	x	8044	cu.yds.	=	$5,630.80
Crush Rock 2 12/"-0":	$2.80	/cu.yd.	x	8044	cu.yds.	=	$22,523.20
Load Dump Truck:	$0.70	/cu.yd.	x	8044	cu.yds.	=	$5,630.80
Screen Reject:	$1.55	/cu.yd.	x	8044	cu.yds.	=	$12,468.20
Haul Reject Material:	$2.15	/cu.yd.	x	832	cu.yds.	=	$1,788.80
					Subtotal		$90,286.00

Move In/Set-up Crusher	1				$2,520.00
Move In and set up Drill and Compressor	1	@	$463.45	=	$463.45
Move in Roller and Compactor	1	@	$463.45	=	$463.45
Move in Grader	1	@	$198.56	=	$198.56
Move in D-8	0	@	$835.49	=	$0.00
Move in Loader	1	@	$688.72	=	$688.72
Move in Excavator	1	@	$928.54	=	$928.54
Move in Trucks	5	@	$149.83	=	$749.15
Move in Water Truck	1	@	$176.11	=	$176.11
Change Gradation					
				Subtotal	$6,187.98

TOTAL PRODUCTION COSTS $96,473.98

Base Cost= $11.99 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
A to B 0 1625 (Crushed)	0.00	2.45	28.00	30.45	590		$17,965.50
A to B 0 1625 (Crushed)	0.00	2.45	28.00	30.45	200		$6,090.00
A to B 1625 17340 (Crushed)	4.28	2.45	11.99	18.72	3520		$65,894.40
A to B Junction Rock (Crushed)	0.00	2.45	28.00	30.45	20		$609.00
A to B Junction Rock (Crushed)	0.00	2.45	28.00	30.45	70		$2,131.50
A to B Culvert Backfill (Crushed)	4.95	0.60	11.99	17.54	100		$1,754.00
Stockpile	2.24	0.40	11.99	14.63	2500		$36,575.00
M to N 0 1740 (Crushed)	3.11	2.45	11.99	17.55	190		$3,334.50
M to N Junction Rock (Crushed)	2.95	2.45	11.99	17.39	10		$173.90
U to V 0 365 (Crushed)	1.54	2.45	11.99	15.98	100		$1,598.00
U to V Junction Rock (Crushed)	1.50	2.45	11.99	15.94	30		$478.20
U to V Culvert Backfill (Crushed)	2.26	0.60	11.99	14.85	10		$148.50
U to V Culvert Backfill (Crushed)	2.39	0.60	11.99	14.98	10		$149.80
U to V Culvert Backfill (Crushed)	2.49	0.60	11.99	15.08	10		$150.80
U to V Spot Rocking (Crushed)	2.00	2.45	11.99	16.44	400		$6,576.00
				Total C.Y.	7760	Sub Total	$143,629.10

TOTAL ROCKING COSTS $143,629.10

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Pit-Run 1	Location:	Sec. , TN, RW, W.M.	
Sale:	**Broken Arrow**		Road:	5470 c.y.
Swell:	1.40		Stockpile:	c.y.
Shirinkage	1.16		Total Truck Loads:	5470 c.y.
Drill Pct.:	0%		In Place Total:	3907 c.y.

Pit Development & Cleanup of Rock Source 2 including clearing and grubbing and placing overburden in Waste Area 4, spread and compact overburden in Waste Area 4. $4,837.00

Drill & Shoot:	$2.50	/cu.yd.	x	0	cu.yds.	=	$0.00
Rip Rock:	$1.90	/cu.yd.	x	3907	cu.yds.	=	$7,423.30
Push Rock:	$0.00	/cu.yd.	x	5470	cu.yds.	=	$0.00
Load Crusher:	$0.00	/cu.yd.	x	5470	cu.yds.	=	$0.00
Crush Rock:	$0.00	/cu.yd.	x	5470	cu.yds.	=	$0.00
Load Dump Truck:	$0.70	/cu.yd.	x	5470	cu.yds.	=	$3,829.00
Oversize Reduction:	$4.50	/cu.yd.	x	0	cu.yds.	=	$0.00
					Subtotal		$16,089.30

Move In/Set-up Crusher					$0.00
Move In and set up Drill and Compressor	0	@	$463.45	=	$0.00
Move in Roller and Compactor	1	@	$463.45	=	$463.45
Move in Grader	1	@	$198.56	=	$198.56
Move in D-8	1	@	$835.49	=	$835.49
Move in Loader	1	@	$688.72	=	$688.72
Move in Excavator	1	@	$928.54	=	$928.54
Move in Trucks	4	@	$149.83	=	$599.32
Move in Water Truck	1	@	$176.11	=	$176.11
Change Gradation					
				Subtotal	$3,890.19
				TOTAL PRODUCTION COSTS	$19,979.49

Base Cost= $3.65 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
A to B Energy Dissipator (Riprap)	3.78	1.40	3.65	8.83	20		$176.60
A to B Landing Rock (Pit-Run)	1.59	1.40	3.65	6.64	600		$3,984.00
A to B Ld. Trk. Turnaround (Pit-Run)	1.50	1.40	3.65	6.55	50		$327.50
A to B Junction Rock (Pit-Run)	1.49	1.40	3.65	6.54	30		$196.20
C to D 0 325 (Pit-Run)	1.89	1.40	3.65	6.94	170		$1,179.80
C to D Landing Rock (Pit-Run)	1.93	1.40	3.65	6.98	150		$1,047.00
C to D Junction Rock (Pit-Run)	1.86	1.40	3.65	6.91	30		$207.30
E to F 0 360 (Pit-Run)	1.84	1.40	3.65	6.89	220		$1,515.80
E to F Landing Rock (Pit-Run)	1.86	1.40	3.65	6.91	150		$1,036.50
E to F Junction Rock (Pit-Run)	1.81	1.40	3.65	6.86	30		$205.80
G to H 0 210 (Pit-Run)	1.80	1.40	3.65	6.85	140		$959.00
G to H Landing Rock (Pit-Run)	1.82	1.40	3.65	6.87	150		$1,030.50
G to H Junction Rock (Pit-Run)	1.78	1.40	3.65	6.83	30		$204.90
I to J 0 635 (Pit-Run)	1.63	1.40	3.65	6.68	440		$2,939.20
I to J 635 1440 (Pit-Run)	1.64	1.10	3.65	6.39	480		$3,067.20
I to J Landing Rock (Pit-Run)	1.75	1.40	3.65	6.80	150		$1,020.00
I to J Junction Rock (Pit-Run)	1.50	1.40	3.65	6.55	30		$196.50
K to L 0 335 (Pit-Run)	1.16	1.40	3.65	6.21	170		$1,055.70
K to L Landing Rock (Pit-Run)	1.19	1.40	3.65	6.24	150		$936.00
K to L Junction Rock (Pit-Run)	1.13	1.40	3.65	6.18	60		$370.80
M to N 0 1740 (Pit-Run)	1.42	1.40	3.65	6.47	960		$6,211.20
M to N Landing Rock (Pit-Run)	1.53	1.40	3.65	6.58	150		$987.00
M to N Landing Rock (Pit-Run)	1.56	1.40	3.65	6.61	150		$991.50
M to N Junction Rock (Pit-Run)	1.25	1.40	3.65	6.30	50		$315.00
O to P 0 175 (Pit-Run)	1.32	1.40	3.65	6.37	100		$637.00
O to P Landing Rock (Pit-Run)	1.35	1.40	3.65	6.40	150		$960.00
O to P Junction Rock (Pit-Run)	1.32	1.40	3.65	6.37	60		$382.20
Y to Z 0 170 (Pit-Run)	1.65	1.40	3.65	6.70	100		$670.00
Y to Z Landing Rock (Pit-Run)	1.67	1.40	3.65	6.72	150		$1,008.00
Y to Z Junction Rock (Pit-Run)	1.64	1.40	3.65	6.69	30		$200.70
AA to BB 0 165 (Pit-Run)	1.40	1.40	3.65	6.45	140		$903.00
AA to BB Landing Rock (Pit-Run)	1.41	1.40	3.65	6.46	150		$969.00
AA to BB Junction Rock (Pit-Run)	1.38	1.40	3.65	6.43	30		$192.90
				Total C.Y.	5470	Sub Total	$36,083.80

TOTAL ROCKING COSTS	$36,083.80

ROCK PIT DEVELOPMENT AND CRUSHING COST SUMMARY

Pit:	Pit-Run 2	Location:	Sec. , TN, RW, W.M.
Sale:	**Broken Arrow**	Road:	3330 c.y.
Swell:	1.40	Stockpile:	c.y.
Shirinkage	1.16	Total Truck Loads:	3330 c.y.
Drill Pct.:	0%	In Place Total:	2379 c.y.

Pit Development & Cleanup of Rock Source 4 including clearing and grubbing and placing overburden in Waste Area 9, spread and compact overburden in Waste Area 9.							$4,539.00
Rip Rock:	$1.90	/cu.yd.	x	2379	cu.yds.	=	$4,520.10
Load Dump Truck:	$0.70	/cu.yd.	x	3330	cu.yds.	=	$2,331.00
						Subtotal	$11,390.10

Move in Roller and Compactor	1	@	$463.45	=	$463.45
Move in Grader	1	@	$198.56	=	$198.56
Move in D-8	1	@	$835.49	=	$835.49
Move in Loader	1	@	$688.72	=	$688.72
Move in Excavator	1	@	$928.54	=	$928.54
Move in Trucks	4	@	$149.83	=	$599.32
Move in Water Truck	1	@	$176.11	=	$176.11
Change Gradation					
				Subtotal	$3,890.19

TOTAL PRODUCTION COSTS $15,280.29

Base Cost= $4.59 Per Cu.Yd.

Road Segment	Haul Cost $/cu.yd.	Proc Cost $/cu.yd.	Base Cost. $/cu.yd.	Cost $/cu.yd.	Number Cu. Yds		ROCK COST
Q to R 2780 3150 (Pit-Run)	1.16	1.40	4.59	7.15	190		$1,358.50
Q to R 4370 6695 (Pit-Run)	1.72	1.40	4.59	7.71	1300		$10,023.00
Q to R Landing Rock (Pit-Run)	1.69	1.40	4.59	7.68	300		$2,304.00
Q to R Spot Rocking (Pit-Run)	1.31	1.40	4.59	7.30	200		$1,460.00
Q to R Spot Rocking (Pit-Run)	1.35	1.40	4.59	7.34	100		$734.00
S to T 0 185 (Pit-Run)	1.68	1.40	4.59	7.67	130		$997.10
S to T Landing Rock (Pit-Run)	1.69	1.40	4.59	7.68	150		$1,152.00
S to T Junction Rock (Pit-Run)	1.66	1.40	4.59	7.65	30		$229.50
U to V 5515 5790 (Pit-Run)	3.42	1.40	4.59	9.41	200		$1,882.00
U to V Landing Rock (Pit-Run)	3.37	1.40	4.59	9.36	150		$1,404.00
U to V Junction Rock (Pit-Run)	3.42	1.40	4.59	9.41	10		$94.10
U to V Landing Rock (Pit-Run)	3.48	1.40	4.59	9.47	150		$1,420.50
W to X 0 370 (Pit-Run)	3.18	1.40	4.59	9.17	240		$2,200.80
W to X Landing Rock (Pit-Run)	3.21	1.40	4.59	9.20	150		$1,380.00
W to X Junction Rock (Pit-Run)	3.14	1.40	4.59	9.13	30		$273.90
				Total C.Y.	3330	Sub Total	$26,913.40

TOTAL ROCKING COSTS $26,913.40

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **A to B**

Construction -	0+00	stations	Improvement -	173+40	stations	Reconstruction -	0+00	stations
	0.00	miles		3.28	miles		0.00	miles

CULVERTS - MATERIALS & INSTALLATION

Culverts			
370	LF of 18"	$6,475.00	
		$6,475.00	
Culvert Stakes & Markers			
10	markers	$80.00	
		$80.00	**TOTAL CULVERTS** **$6,555.00**

ROCK

0+00	to	16+25	590	cy. of	Crushed	@	$30.45	per c.y.=	$17,965.50
0+00	to	16+25	200	cy. of	Crushed	@	$30.45	per c.y.=	$6,090.00
16+25	to	173+40	3,520	cy. of	Crushed	@	$18.72	per c.y.=	$65,894.40
Junction Rock		0+00	20	cy. of	Crushed	@	$30.45	per c.y.=	$609.00
Junction Rock		0+00	70	cy. of	Crushed	@	$30.45	per c.y.=	$2,131.50
Culvert Backfill		As Marked	100	cy. of	Crushed	@	$17.54	per c.y.=	$1,754.00
Energy Dissipator		0+00	20	cy. of	Riprap	@	$8.83	per c.y.=	$176.60
Landing Rock		+60/131+75/165	600	cy. of	Pit-Run	@	$6.64	per c.y.=	$3,984.00
Ld. Trk. Turnaround		135+75	50	cy. of	Pit-Run	@	$6.55	per c.y.=	$327.50
Junction Rock		135+75	30.0	cy. of	Pit-Run	@	$135.00	per c.y.=	$4,050.00
								TOTAL ROCK	**$102,982.50**

SPECIAL PROJECTS

Construct landings @ 105+60, 131+75, and 165+55 -	3.00	landing @	$285.00	per landing	$855.00	
Construct waste areas @ 131+75, 135+75, 150+55, 169+50 & 172+10 -	2.50	acres @	$980.00	per acre	$2,450.00	
Pull ditch from 2+20 to 12+10 and place material as directed -	10.00	stations @	$100.00	per station	$1,000.00	
Construct ditchouts @ 3+90, lt., 151+95, rt., 164+65, rt. & 169+60, rt. -	4.00	ditchouts @	$60.00	per ditchout	$240.00	
Construct Loaded Log Truck Turnaround @ 135+75 -	1.00	turnaround @	$165.00	per turnaround	$165.00	
Place boulders from 2+20 to 3+40 -	1.00	hours @	$135.00	per hour	$135.00	
Grade and shape road -	173.40	stations @	$15.50	per station	$2,687.70	
Woven Geotextile including installation from 2+20 to 12+10 -	1728.00	square yards @	1.10	per sq. yd.	$1,900.80	
Roll subgrade w/ vibratory roller prior to rocking -	173.40	stations @	$13.20	per station	$2,288.88	
Construct ditch from 2+20 to 3+40 -	1.20	stations @	$100.00	per station	$120.00	
Remove culverts from state lands	5.00	@	$457.90	total	$457.90	
Mulching from 2+20 to 12+10 -	0.06	acres @	$600.00	per acre	$36.00	
				TOTAL SPECIAL PROJECTS		**$12,336.28**

GRAND TOTAL **$121,873.78**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **C to D**

Construction -	3+25	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.06	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		3+25	10%			$90	=	$292.50	
								TOTAL	**$292.50**

ROCK

0+00	to	3+25	170	cy. of	Pit-Run	@	$6.94	per c.y.=	$1,179.80	
Landing Rock		2+70	150	cy. of	Pit-Run	@	$6.98	per c.y.=	$1,047.00	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$6.91	per c.y.=	$207.30	
									TOTAL ROCK	**$2,434.10**

SPECIAL PROJECTS

Construct landing -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	3.25	stations @	$15.50	per station	$50.38	
Roll subgrade w/ vibratory roller prior to rocking -	3.25	stations @	$13.20	per station	$42.90	
Grass seed and fertilize -	0.22	acres @	$220.00	per acre	$48.40	
					TOTAL SPECIAL PROJECTS	**$426.68**

GRAND TOTAL **$3,153.28**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **E to F**

Construction -	3+60	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.07	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		0+55	20%			$409	=	$224.95	
0+55		1+35	70%			$3,664	=	$2,931.20	
1+35		1+65	40%			$690	=	$207.00	
1+65		2+60	70%			$2,466	=	$2,342.70	
2+50		3+60	35%			$229	=	$251.90	
								TOTAL	**$5,957.75**

ROCK

0+00 to	3+60	220	cy. of	Pit-Run	@	$6.89	per c.y.=	$1,515.80	
Landing Rock	3+60	150	cy. of	Pit-Run	@	$6.91	per c.y.=	$1,036.50	
Junction Rock	0+00	30	cy. of	Pit-Run	@	$6.86	per c.y.=	$205.80	
								TOTAL ROCK	**$2,758.10**

SPECIAL PROJECTS

Construct landing @ 3+70 -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	3.60	stations @	$15.50	per station	$55.80	
Roll subgrade w/ vibratory roller -	3.60	stations @	$13.20	per station	$47.52	
Grass seed and fertilize -	0.33	acres @	$220.00	per acre	$72.60	
					TOTAL SPECIAL PROJECTS	**$460.92**

GRAND TOTAL **$9,176.77**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **G to H**

Construction -	2+10	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.04	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		2+10	30%			$191	=	$401.10	
								TOTAL	**$401.10**

ROCK

0+00	to	2+10	140	cy. of	Pit-Run	@	$6.85	per c.y.=	$959.00	
Landing Rock		2+10	150	cy. of	Pit-Run	@	$6.87	per c.y.=	$1,030.50	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$6.83	per c.y.=	$204.90	
								TOTAL ROCK		**$2,194.40**

SPECIAL PROJECTS

Consruct landing @ 2+10 -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	2.10	stations @	$15.50	per station	$32.55	
Roll subgrade w/ vibratory roller prior to rocking -	2.10	stations @	$13.20	per station	$27.72	
Grass seed and fertilize -	0.14	acres @	$220.00	per acre	$30.80	
				TOTAL SPECIAL PROJECTS		**$376.07**

GRAND TOTAL **$2,971.57**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **I to J**

Construction -	12+10	stations	Improvement -	0+00	stations	Reconstruction -	2+30	stations
	0.23	miles		0.00	miles		0.04	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		0+65	20%			$139	=	$90.35	
0+65		6+35				$8,289	=	$47,247.30	
8+65		10+20				$2,357	=	$3,653.35	
10+20		11+15				$693	=	$658.35	
11+15		13+65	20%			$139	=	$347.50	
13+65		14+40				$20,623	=	$15,467.25	
								TOTAL	**$67,464.10**

RECONSTRUCTION: CLEARING AND GRUBBING -

Side cast	0.174	acres @	$660.00	per acre =	$114.84	
Scattering	0.270	acres @	$980.00	per acre =	$264.60	
				TOTAL CLEARING AND GRUBBING		**$379.44**

RECONSTRUCTION: EXCAVATION -

Road Earthwork	2.30	sta. @	$75.00	per sta. =	$172.50	
Pullback	1824	cy. @	$1.40	per c.y.=	$2,553.60	
				TOTAL EXCAVATION		**$2,726.10**

RECONSTRUCTION: ENDHAUL -

Pullback	0+85	to	5+90	1824	cy. @	$1.38	per c.y.=	$2,517.12	
Spread & compact				1824	cy. @	$0.25	per c.y.=	$456.00	
							TOTAL ENDHAUL		**$2,973.12**

CULVERTS - MATERIALS & INSTALLATION

Culverts

50	LF of 18"	$875.00
		$875.00

Culvert Stakes & Markers

1	markers	$8.00
		$8.00

TOTAL CULVERTS **$883.00**

ROCK

0+00	to	6+35	440	cy. of	Pit-Run	@	$6.68	per c.y.=	$2,939.20	
6+35	to	14+40	480	cy. of	Pit-Run	@	$6.39	per c.y.=	$3,067.20	
Landing Rock		14+40	150	cy. of	Pit-Run	@	$6.80	per c.y.=	$1,020.00	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$6.55	per c.y.=	$196.50	
								TOTAL ROCK		**$7,222.90**

SPECIAL PROJECTS

Grade and shape road -	14.40	stations @	$15.50	per station	$223.20	
Roll subgrade w/ vibratory roller prior to rocking -	14.40	stations @	$13.20	per station	$190.08	
Grass seed and fertilize -	3.27	acres @	$220.00	per acre	$719.40	
				TOTAL SPECIAL PROJECTS		**$1,132.68**

GRAND TOTAL **$82,781.34**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **K to L**

Construction -	3+35	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.06	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		3+25	10%			$90	=	$292.50	
								TOTAL	**$292.50**

ROCK

0+00	to	3+35	170	cy. of	Pit-Run	@	$6.21 per c.y.=	$1,055.70	
Landing Rock		3+35	150	cy. of	Pit-Run	@	$6.24 per c.y.=	$936.00	
Junction Rock		0+00	60	cy. of	Pit-Run	@	$6.18 per c.y.=	$370.80	
								TOTAL ROCK	**$2,362.50**

SPECIAL PROJECTS

Construct landing -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	3.35	stations @	$15.50	per station	$51.93	
Roll subgrade w/ vibratory roller prior to rocking -	3.35	stations @	$13.20	per station	$44.22	
Grass seed and fertilize -	0.23	acres @	$220.00	per acre	$50.60	
				TOTAL SPECIAL PROJECTS		**$431.75**

GRAND TOTAL **$3,086.75**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **M to N**

Construction -	17+40	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.33	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		0+85	35%			$475	=	$403.75	
0+85		1+80	55%			$2,460	=	$2,337.00	
1+80		4+35	45%			$928	=	$2,366.40	
4+35		10+35	70%			$3,378	=	$20,268.00	
10+35		12+45	50%			$529	=	$1,110.90	
12+45		13+70	35%			$293	=	$366.25	
13+70		15+10	65%			$1,618	=	$2,265.20	
15+10		15+60	40%			$1,496	=	$748.00	
15+60		17+40	20%			$139	=	$250.20	
								TOTAL	**$30,115.70**

CULVERTS - MATERIALS & INSTALLATION

Culverts				
50	LF of 18"	$875.00		
		$875.00		
Culvert Stakes & Markers				
1	markers	$8.00		
		$8.00	**TOTAL CULVERTS**	**$883.00**

ROCK

0+00	to	17+40	960	cy. of	Pit-Run	@	$6.47	per c.y.=	$6,211.20	
0+00	to	17+40	190	cy. of	Crushed	@	$17.55	per c.y.=	$3,334.50	
Landing Rock		15+90	150	cy. of	Pit-Run	@	$6.58	per c.y.=	$987.00	
Landing Rock		17+40	150	cy. of	Pit-Run	@	$6.61	per c.y.=	$991.50	
Junction Rock		0+00	50	cy. of	Pit-Run	@	$6.30	per c.y.=	$315.00	
Junction Rock		0+00	10	cy. of	Crushed	@	$17.39	per c.y.=	$173.90	
									TOTAL ROCK	**$12,013.10**

SPECIAL PROJECTS

Construct landings @ 15+60 & 17+40 -	2.00	landing @	$285.00	per landing	$570.00	
Construct waste areas -	0.50	acres @	$980.00	per acre	$490.00	
Grade and shape road prior to rocking -	17.40	stations @	$15.50	per station	$269.70	
Roll subgrade w/ vibratory roller prior to rocking -	17.40	stations @	$13.20	per station	$229.68	
Grass seed and fertilize -	2.80	acres @	$220.00	per acre	$616.00	
					TOTAL SPECIAL PROJECTS	**$2,175.38**

GRAND TOTAL **$45,187.18**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **O to P**

Construction -	1+75	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.03	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		1+75	10%			$90	=	$157.50	
								TOTAL	**$157.50**

0+00	to	1+75	100	cy. of	Pit-Run	@	$6.37 per c.y.=	$637.00	
Landing Rock		1+75	150	cy. of	Pit-Run	@	$6.40 per c.y.=	$960.00	
Junction Rock		0+00	60	cy. of	Pit-Run	@	$6.37 per c.y.=	$382.20	
								TOTAL ROCK	**$1,979.20**

SPECIAL PROJECTS

Construct landing -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	1.75	stations @	$15.50	per station	$27.13	
Roll subgrade w/ vibratory roller prior to rocking -	1.75	stations @	$13.20	per station	$23.10	
Grass seed and fertilize -	0.12	acres @	$220.00	per acre	$26.40	
					TOTAL SPECIAL PROJECTS	**$361.63**

GRAND TOTAL **$2,498.33**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **Q to R**

Construction -	4+80	stations	Improvement -	62+15	stations	Reconstruction -	0+00	stations
	0.09	miles		1.18	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
27+80		31+50	40%			$243	=	$899.10	
43+70		44+80	10%			$90	=	$99.00	
								TOTAL	$998.10

CULVERTS - MATERIALS & INSTALLATION

Culverts				
50	LF of 18"	$875.00		
		$875.00		
Culvert Stakes & Markers				
1	markers	$8.00		
		$8.00	TOTAL CULVERTS	$883.00

ROCK

27+80	to	31+50	190	cy. of	Pit-Run	@	$7.15	per c.y.=	$1,358.50	
43+70	to	66+95	1,300	cy. of	Pit-Run	@	$7.71	per c.y.=	$10,023.00	
Landing Rock		58+00/66+90	300	cy. of	Pit-Run	@	$7.68	per c.y.=	$2,304.00	
Spot Rocking		0+00-27+80	200	cy. of	Pit-Run	@	$7.30	per c.y.=	$1,460.00	
Spot Rocking		31+50-43+70	100	cy. of	Pit-Run	@	$7.34	per c.y.=	$734.00	
									TOTAL ROCK	$15,879.50

SPECIAL PROJECTS

Construct landing @ 58+10 -	10.00	hours @	$145.00	per hour	$1,450.00	
Construct landing @ 66+95 -	1.00	landing @	$285.00	per landing	$285.00	
Construct waste areas -	0.15	acres @	$980.00	per acre	$147.00	
Grade and shape road prior to rocking -	4.80	stations @	$15.50	per station	$74.40	
Roll subgrade w/ vibratory roller prior to rocking -	4.80	stations @	$13.20	per station	$63.36	
Grass seed and fertilize -	0.25	acres @	$220.00	per acre	$55.00	
					TOTAL SPECIAL PROJECTS	$2,074.76

GRAND TOTAL **$19,835.36**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **S to T**

Construction -	1+85	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.04	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		1+85	20%			$139	=	$257.15	
								TOTAL	$257.15

ROCK

0+00 to	1+85	130	cy. of	Pit-Run	@	$7.67	per c.y.=	$997.10	
Landing Rock	1+85	150	cy. of	Pit-Run	@	$7.68	per c.y.=	$1,152.00	
Junction Rock	0+00	30	cy. of	Pit-Run	@	$7.65	per c.y.=	$229.50	
								TOTAL ROCK	$2,378.60

SPECIAL PROJECTS

Construct landing @ 1+85 -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road prior to rocking -	1.85	stations @	$15.50	per station	$28.68	
Roll subgrade w/ vibratory roller prior to rocking -	1.85	stations @	$13.20	per station	$24.42	
Grass seed and fertilize -	0.17	acres @	$220.00	per acre	$37.40	
				TOTAL SPECIAL PROJECTS		$375.50

GRAND TOTAL **$3,011.25**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **U to V**

Construction -	2+75	stations	Improvement -	55+15	stations	Reconstruction -	0+00	stations
	0.05	miles		1.04	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
55+15		56+15				$212	=	$212.00	
56+15		57+90				$744	=	$1,302.00	
								TOTAL	**$1,514.00**

IMPROVEMENT: EXCAVATION -

Road Earthwork	55.15	sta. @	$10.00	per sta. =	$551.50	
					TOTAL EXCAVATION	**$551.50**

CULVERTS - MATERIALS & INSTALLATION

Culverts				
120	LF of 18"	$2,100.00		
		$2,100.00		
Culvert Stakes & Markers				
3	markers	$24.00		
		$24.00	**TOTAL CULVERTS**	**$2,124.00**

ROCK

0+00	to	3+65	100	cy. of	Crushed	@	$15.98	per c.y.=	$1,598.00	
55+15	to	57+90	200	cy. of	Pit-Run	@	$9.41	per c.y.=	$1,882.00	
Junction Rock		0+00	30	cy. of	Crushed	@	$15.94	per c.y.=	$478.20	
Culvert Backfill		42+45	10	cy. of	Crushed	@	$14.85	per c.y.=	$148.50	
Culvert Backfill		49+70	10	cy. of	Crushed	@	$14.98	per c.y.=	$149.80	
Culvert Backfill		55+15	10	cy. of	Crushed	@	$15.08	per c.y.=	$150.80	
Landing Rock		49+70	150	cy. of	Pit-Run	@	$9.36	per c.y.=	$1,404.00	
Junction Rock		55+15	10	cy. of	Pit-Run	@	$9.41	per c.y.=	$94.10	
Landing Rock		57+90	150	cy. of	Pit-Run	@	$9.47	per c.y.=	$1,420.50	
Spot Rocking		3+65-55+15	400	cy. of	Crushed	@	$16.44	per c.y.=	$6,576.00	
									TOTAL ROCK	**$13,901.90**

SPECIAL PROJECTS

Construct waste area @ 15+35 -	0.50	acres @	$980.00	per acre	$490.00	
Grade and shape road prior to rocking -	5.85	stations @	$13.20	per station	$77.22	
Roll subgrade w/ vibratory roller prior to rocking -	5.85	stations @	$15.50	per acre	$90.68	
Grass seed and fertilize -	0.25	acres @	$220.00	per acre	$55.00	
					TOTAL SPECIAL PROJECTS	**$712.90**

GRAND TOTAL **$18,804.30**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **W to X**

Construction -	3+70	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.07	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		3+70	40%			$243	=	$899.10	
								TOTAL	**$899.10**

ROCK

0+00	to	3+70	240	cy. of	Pit-Run	@	$9.17 per c.y.=	$2,200.80	
Landing Rock		3+70	150	cy. of	Pit-Run	@	$9.20 per c.y.=	$1,380.00	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$9.13 per c.y.=	$273.90	
								TOTAL ROCK	**$3,854.70**

SPECIAL PROJECTS

Construct landing @ 3+70 -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	3.70	stations @	$15.50	per station	$57.35	
Roll subgrade w/ vibratory roller prior to rocking -	3.70	stations @	$13.20	per station	$48.84	
Grass seed and fertilize -	0.34	acres @	$220.00	per acre	$74.80	
				TOTAL SPECIAL PROJECTS		**$465.99**

GRAND TOTAL **$5,219.79**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **Y to Z**

Construction -	0+00	stations	Improvement -	0+00	stations	Reconstruction -	1+70	stations
	0.00	miles		0.00	miles		0.03	miles

RECONSTRUCTION: CLEARING AND GRUBBING -

Scattering	0.200	acres @	$980.00	per acre =	$196.00	
				TOTAL CLEARING AND GRUBBING		**$196.00**

RECONSTRUCTION: EXCAVATION -

Road Earthwork	1.70	sta. @	$75.00	per sta. =	$127.50	
				TOTAL EXCAVATION		**$127.50**

ROCK

0+00	to	1+70	100	cy. of	Pit-Run	@	$6.70	per c.y.=	$670.00	
Landing Rock		0+00	150	cy. of	Pit-Run	@	$6.72	per c.y.=	$1,008.00	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$6.69	per c.y.=	$200.70	
								TOTAL ROCK		**$1,878.70**

SPECIAL PROJECTS

Construct landing -	1.00	landing @	$285.00	per landing	$285.00	
Grade and shape road -	1.70	stations @	$15.50	per station	$26.35	
Roll subgrade w/ vibratory roller prior to rocking -	1.70	stations @	$13.20	per station	$22.44	
				TOTAL SPECIAL PROJECTS		**$333.79**

GRAND TOTAL **$2,535.99**

SUMMARY OF CONSTRUCTION COST

Sale: **Broken Arrow** Road: **AA to BB**

Construction -	1+65	stations	Improvement -	0+00	stations	Reconstruction -	0+00	stations
	0.03	miles		0.00	miles		0.00	miles

CONSTRUCTION: CLEARING, GRUBBING, SCATTERING, EXCAVATION, COMPACTION, LOADING, END-HAULING AND SPREADING/COMPACTING AT WASTE AREA -

Station	to	Station	Avg. Sideslope	Avg. Dist. To W.A. (mi.)	Outslope/Ditch	Cost per Station			
0+00		1+00	70%	0.1		$4,649	=	$4,649.00	
1+00		1+65	20%			$139	=	$90.35	
								TOTAL	**$4,739.35**

ROCK

0+00	to	1+65	140	cy. of	Pit-Run	@	$6.45	per c.y.=	$903.00	
Landing Rock		1+65	150	cy. of	Pit-Run	@	$6.46	per c.y.=	$969.00	
Junction Rock		0+00	30	cy. of	Pit-Run	@	$6.43	per c.y.=	$192.90	
									TOTAL ROCK	**$2,064.90**

SPECIAL PROJECTS

Construct landing -	1.00	landing @	$285.00	per landing	$285.00	
Construct waste areas -	0.50	acres @	$980.00	per acre	$490.00	
Grade and shape road -	1.65	stations @	$15.50	per station	$25.58	
Roll subgrade w/ vibratory roller prior to rocking -	1.65	stations @	$13.20	per station	$21.78	
Grass seed and fertilize -	0.15	acres @	$220.00	per acre	$33.00	
				TOTAL SPECIAL PROJECTS		**$855.36**

GRAND TOTAL **$7,659.61**

PROJECT SUMMARY SHEET

Sale: Broken Arrow

CONSTRUCTION

Point	C to D	3+25	stations =	$3,153.28
Point	E to F	3+60	stations =	$9,176.77
Point	G to H	2+10	stations =	$2,971.57
Point	I to J	12+10	stations =	$75,227.07
Point	K to L	3+35	stations =	$3,086.75
Point	M to N	17+40	stations =	$45,187.18
Point	O to P	1+75	stations =	$2,498.33
Point	Q to R	4+80	stations =	$2,348.64
Point	S to T	1+85	stations =	$3,011.25
Point	U to V	2+75	stations =	$2,309.02
Point	W to X	3+70	stations =	$5,219.79
Point	AA to BB	1+65	stations =	$7,659.61
			SUBTOTAL CONSTRUCTION	**$161,849.26**

IMPROVEMENT

Point	A to B	173+40	stations =	$121,873.78
Point	Q to R	62+15	stations =	$17,486.72
Point	U to V	55+15	stations =	$16,495.28
			SUBTOTAL IMPROVEMENT	**$155,855.78**

RECONSTRUCTION

Point	I to J	2+30	stations =	$7,554.27
Point	Y to Z	1+70	stations =	$2,535.99
			SUBTOTAL RECONSTRUCTION	**$10,090.26**

SPECIAL PROJECTS

Construct Stockpile - 2500 CY 2 1/2" Crushed	36,575.00
SUBTOTAL SPECIAL PROJECTS	**$36,575.00**

MOVE IN **$3,529.70**

GRAND TOTAL **$367,900.00**

OREGON DEPARTMENT OF FORESTRY
CRUISE REPORT
Broken Arrow

1. Type of Sale
Regeneration harvest, Recovery

2. Legal Description
Sections 20, 21, 29, 30, T1N, R7W, W.M. Tillamook County, Oregon

3. Sale Acreage
Sale acreage was determined by GPS and orthophotographs along with GIS.

ACRES

	Gross	Net
Area 1 (Modified Clearcut)	78	68
Area 2 (Modified Clearcut)	145	115
Area 3 (Modified Clearcut)	115	97

Gross Acres
Area within the Timber Sale Boundary signs

Net acres
Used for calculating the advertised volume.
Gross acres, less roads and riparian areas inside the sale boundary.

4. Cruising Procedures

A. Cruise Method
All areas were cruised with a grid of 175’ between plots and 700’ between lines. Odd number plots are measure plots, while even numbered plots were count plots. Area 3 was contract cruised in 2016 and has been grown forward to 2018. Cruising on Area 2 was completed by ODF personnel in 2017. Volume for Area 1 was derived from plots in Area 2 in similar timber. These stands were not grown forward due to the short time frame between cruising and contract completion.

The timber sale was cruised using variable plot sampling. On all plots, tree species and diameter were recorded for all conifers 8” DBH and greater containing 20 board feet and all hardwoods 10” DBH and greater containing 30 board feet. On measure plots; form factor and merchantable heights to 6” (for conifer) and 7” (for hardwoods) outside bark were also recorded.

B. Plot size
BAF for A2 was 40, while A3 was cruised with a 33.61. Point of tree observation was 4.5 feet.

C. Grading System

All species were graded using the Columbia River Log Scaling and Grading Bureau rules, favoring a 40’ log.

5. Computation Procedure

Plot data was entered into SuperAce for computation of basal areas, ingrowth, advertised volumes, volume summaries, log stock tables and stand tables for each species and type. The net sale acreage was used for volume calculation.

Statistics – Net Board Feet/ Acre			
	# Plots measure	SE %	CV %
Area 1*	32	8.5	48.0
Area 2	54	6.5	47.6
Area 3	28	8.3	42.9
Total	114	4.4	47.5

*representative plots from Area 2 cruise

6. Hidden Defect and Breakage

A 1% reduction was applied to conifers and a 2% reduction to hardwood volumes for hidden defect and breakage.

7. Timber Description

All areas were burned in the 1933 Tillamook and 1939 Saddle Mountain Fires, and most of Area 2 and all of Area 3 were burned again in the 1945 Wilson River/Salmonberry Fire. Sale areas were planted between 1961 and 1964. Areas 1 and 3 have had no previous management. A small portion (approximately 13 acres) of Area 2 was commercially thinned in 1996 and 1999. The stands are composed of Douglas-fir and red alder with minor components of bigleaf maple.

Sale Area - Species	DBH	Merchantable Bole Height	Merchantable Top
Area 1: Douglas-fir	17	69	5”
Area 1: Alder	14	42	6”
Area 1: Bigleaf maple	17	27	6”
Area 2: Douglas-fir	18	76	5”
Area 2: Alder	16	46	6”
Area 2: Bigleaf maple	19	39	6”
Area 3: Douglas-fir	19	68	5”
Area 3: Alder	14	50	6”

Above data derived from Statistics (type) report using SuperAce 2008, developed by Atterbury consultants, Inc.

8. Cruiser/Dates

Area 2, ODF 2017; Area 3 Contract 2016

9. Revenue Distribution

FDF: 100%

Tax Code: 902 (100%)

Deed Number: 142 (3%); 157 (13%); 159 (84%)

10. Attachments

Stand Tables

Log Stock Tables

Volume Summary

Logging Plan Map

11. Stand and Log Stock Tables Species Key

DF: Douglas-fir - take
RA: Red alder - take
BM: Bigleaf maple – take
BL: Bigleaf maple – Leave

TC TSTNDSUM

Stand Table Summary

Project **BROKENAR**

T01N R07W S29 TSALE | **T01N R07W S29 TSALE**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	
01N	**07W**	**29**	**30_AREA1**	**SALE**	68.00	32	107	**Page:** 1 **Date:** 03/23/2018 **Time:** 9:19:03AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DF		9	1	89	35	4.877	2.15	4.88	5.6	20.0	.78	27	98	53	19	7
DF		10	1	84	78	3.950	2.15	11.85	4.0	16.7	1.34	47	198	91	32	13
DF		11	2	84	83	6.530	4.31	13.06	8.7	37.5	3.25	114	490	221	77	33
DF		12	4	83	82	10.973	8.62	21.95	10.6	42.5	6.61	232	933	449	158	63
DF		13	7	84	79	16.363	15.08	32.73	12.8	47.1	11.93	419	1,543	811	285	105
DF		14	4	85	86	8.062	8.62	14.11	17.7	62.9	7.11	249	887	483	170	60
DF		15	4	84	102	7.023	8.62	15.80	19.3	72.2	8.69	305	1,141	591	207	78
DF		16	3	83	107	4.629	6.46	9.26	25.6	98.3	6.74	237	910	458	161	62
DF		17	2	83	94	2.734	4.31	5.47	25.5	92.5	3.98	140	506	271	95	34
DF		18	4	83	99	4.877	8.62	10.97	26.9	97.8	8.42	296	1,073	573	201	73
DF		19	4	84	101	4.377	8.62	9.85	31.4	110.0	8.83	310	1,083	600	211	74
DF		20	6	84	110	5.926	12.93	15.80	31.8	116.2	14.32	502	1,837	974	341	125
DF		21	6	83	101	5.375	12.93	14.33	32.3	116.9	13.21	464	1,675	898	315	114
DF		22	3	85	108	2.449	6.46	5.71	44.3	171.4	7.22	253	979	491	172	67
DF		23	5	85	109	3.734	10.77	9.71	44.1	173.1	12.23	428	1,680	831	291	114
DF		24	4	83	105	2.743	8.62	6.17	52.1	195.6	9.17	322	1,207	623	219	82
DF		25	3	85	115	1.896	6.46	5.69	47.3	195.6	7.68	269	1,112	522	183	76
DF		26	3	86	102	1.753	6.46	4.09	57.8	252.9	6.73	237	1,034	458	161	70
DF		28	2	84	99	1.008	4.31	2.52	63.1	228.0	4.53	159	574	308	108	39
DF		30	6	84	110	2.634	12.93	6.58	75.5	306.0	14.17	497	2,015	964	338	137
DF		32	1	85	131	.386	2.15	1.16	87.6	416.7	2.89	101	482	196	69	33
DF		33	1	83	100	.363	2.15	1.09	71.4	326.7	2.21	78	355	151	53	24
DF		Totals	76	84	91	102.661	163.75	222.77	25.5	97.9	162.02	5,684	21,813	11,018	3,865	1,483
RA		10	2	82	95	12.304	6.71	18.46	10.8	40.0	5.45	199	738	371	136	50
RA		12	1	82	41	4.272	3.36	4.27	13.3	30.0	1.56	57	128	106	39	9
RA		13	3	80	59	10.920	10.07	14.56	14.7	45.0	5.88	214	655	400	145	45
RA		14	2	77	68	6.277	6.71	9.42	17.5	53.3	4.54	165	502	309	112	34
RA		15	2	70	58	5.468	6.71	8.20	19.0	46.7	4.33	156	383	295	106	26
RA		16	2	83	56	4.806	6.71	4.81	33.3	70.0	4.40	160	336	299	109	23
RA		18	4	75	58	7.595	13.42	11.39	19.3	65.0	6.04	220	740	410	149	50
RA		20	2	77	58	3.076	6.71	6.15	25.5	77.5	4.33	157	477	294	107	32
RA		22	1	77	64	1.271	3.36	2.54	28.2	100.0	1.97	72	254	134	49	17
RA		Totals	19	79	66	55.989	63.75	79.80	17.5	52.8	38.49	1,399	4,214	2,618	951	287
BM		14	1	73	26	1.169	1.25	1.17	12.7	30.0	.39	15	35	27	10	2
BM		16	1	79	40	.895	1.25	.90	24.0	30.0	.57	21	27	39	15	2
BM		25	1	78	52	.367	1.25	.73	36.5	125.0	.71	27	92	48	18	6
BM		Totals	3	76	35	2.431	3.75	2.80	22.6	54.9	1.67	63	154	114	43	10
BL		18	1	76	43	.707	1.25	.71	15.0	30.0	.28	11	21	19	7	1
BL		23	1	78	52	.433	1.25	.43	70.0	80.0	.80	30	35	55	21	2
BL		Totals	2	77	46	1.141	2.50	1.14	35.9	49.0	1.09	41	56	74	28	4
OC		9	1	66	30	5.659	2.50									
OC		13	1	72	35	5.424	5.00									
OC		Totals	2	69	32	11.083	7.50									
Totals			102	81	78	173.305	241.25	306.51	23.4	85.6	203.28	7186	26,237	13,823	4,887	1,784

TC TLOGSTVB

Log Stock Table - MBF

Project: BROKENAR

T01N R07W S29 TSALE **T01N R07W S29 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	
01N	07W	29	30_AREA1	SALE	68.00	32	107	Page 1 Date 3/23/2018 Time 9:19:02AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
DF		CO	2	32	57		57	3.8						13	14	13	17			
DF		CO	2	40	579	2.8	562	37.9						145	189	152	76			
DF		CO	3	16	2		2	.1					2							
DF		CO	3	28	1		1	.1			1									
DF		CO	3	31	16	9.8	15	1.0								15				
DF		CO	3	32	175	.7	174	11.7			43	69	54		7					
DF		CO	3	35	2		2	.1			2									
DF		CO	3	40	448	.9	444	29.9			45	146	145	58	50					
DF		CO	4	11	5		5	.4		5										
DF		CO	4	12	1		1	.0		1										
DF		CO	4	13	2		2	.1		2										
DF		CO	4	14	5		5	.4		5										
DF		CO	4	15	4		4	.2		4										
DF		CO	4	16	9		9	.6		8		1								
DF		CO	4	17	3		3	.2		2		1								
DF		CO	4	18	4		4	.3		4										
DF		CO	4	19	6		6	.4		6										
DF		CO	4	20	18		18	1.2		9	1	8								
DF		CO	4	21	16		16	1.1		8	8									
DF		CO	4	22	2		2	.2			2									
DF		CO	4	23	16		16	1.1		10	1	5								
DF		CO	4	24	5		5	.3		5										
DF		CO	4	25	4		4	.2		4										
DF		CO	4	26	8		8	.5		8										
DF		CO	4	28	12		12	.8		11	1									
DF		CO	4	29	7		7	.4		7										
DF		CO	4	30	4		4	.2		4										
DF		CO	4	32	27		27	1.8			27									
DF		CO	4	33	5		5	.3		5										
DF		CO	4	34	8		8	.5		8										
DF		CO	4	35	5		5	.3		5										
DF		CO	4	37	8		8	.5		8										
DF		CO	4	39	8		8	.6		6		3								
DF		CO	4	40	38		38	2.6		16	6		16							
DF		Totals			1,507	1.6	1,483	83.1		147	138	233	217	216	259	180	93			
RA		H	2	16	13		13	4.5						13						
RA		H	3	16	24		24	8.4						10		14				
RA		H	3	20	13	8.3	12	4.0						12						
RA		H	3	24	15		15	5.4						15						
RA		H	3	32	17		17	5.8						17						
RA		H	4	14	2		2	.7			2									
RA		H	4	15	7		7	2.6				7								
RA		H	4	17	4		4	1.5			4									
RA		H	4	19	17		17	5.8			17									
RA		H	4	23	7		7	2.6			7									
RA		H	4	25	6		6	1.9			6									
RA		H	4	26	27		27	9.4			4	23								
RA		H	4	27	9		9	3.0			9									
RA		H	4	30	5		5	1.8			5									
RA		H	4	31	3		3	1.2			3									

TC TLOGSTVB

Log Stock Table - MBF

Project: BROKENAR

T01N R07W S29 TSALE **T01N R07W S29 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page 2
01N	07W	29	30_AREA1	SALE	68.00	32	107	Date 3/23/2018
								Time 9:19:02AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
RA		H	4	32	61	6.9	57	19.8			21	36								
RA		H	4	40	65	6.4	61	21.3			61									
RA				Totals	296	3.2	287	16.1			139	66		67		14				
BM		H	3	20	6	8.7	5	50.1								5				
BM		H	3	22	1		1	9.5			1									
BM		H	4	19	2		2	22.8			2									
BM		H	4	29	3	40.0	2	17.5			2									
BM				Totals	12	14.1	10	.6			5					5				
BL		H	4	24	1		1	38.0			1									
BL		H	4	40	3	11.1	2	62.0				2								
BL				Totals	4	7.2	4	.2			1	2								
Total All Species					1,819	1.9	1,784	100.0		147	284	302	217	283	259	199	93			

TC TSTNDSUM

Stand Table Summary

Project **BROKENAR**

T01N R07W S29 TSALE **T01N R07W S29 TSALE**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01N	07W	29	29_AREA2	SALE	115.00	54	175

Page: 1
Date: 03/23/2018
Time: 9:17:09AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DF		9	1	90	35	2.966	1.31	2.97	5.6	20.0	.47	17	59	54	19	7
DF		10	1	85	78	2.403	1.31	7.21	4.0	16.7	.81	29	120	94	33	14
DF		11	4	85	103	7.943	5.24	15.89	10.4	46.2	4.70	165	735	540	190	84
DF		12	4	83	82	6.675	5.24	13.35	10.6	42.5	4.02	141	567	462	162	65
DF		13	7	84	79	9.953	9.17	19.91	12.8	47.1	7.26	255	938	834	293	108
DF		14	6	85	83	7.356	7.86	13.49	16.2	58.2	6.24	219	785	718	252	90
DF		15	5	84	107	5.340	6.55	12.82	18.8	72.5	6.87	241	929	791	277	107
DF		16	5	83	112	4.693	6.55	10.32	24.4	95.5	7.17	252	986	824	289	113
DF		17	4	84	111	3.326	5.24	8.31	23.9	94.0	5.66	198	782	650	228	90
DF		18	7	85	110	5.191	9.17	12.61	27.8	108.2	10.00	351	1,365	1,150	403	157
DF		19	7	85	109	4.659	9.17	11.32	31.3	116.5	10.11	355	1,318	1,163	408	152
DF		20	7	84	111	4.205	9.17	11.41	31.5	116.3	10.24	359	1,328	1,178	413	153
DF		21	10	84	112	5.449	13.11	15.26	34.2	135.0	14.86	521	2,060	1,709	600	237
DF		22	7	82	113	3.475	9.17	8.94	40.7	152.2	10.37	364	1,360	1,193	418	156
DF		23	5	85	109	2.271	6.55	5.90	44.1	173.1	7.44	260	1,022	855	299	118
DF		24	8	84	115	3.337	10.48	8.76	49.0	197.6	12.24	430	1,731	1,408	494	199
DF		25	5	80	119	1.922	6.55	5.77	46.7	181.3	7.69	270	1,046	884	310	120
DF		26	5	85	114	1.777	6.55	4.62	56.6	248.5	7.45	262	1,148	857	301	132
DF		27	1	82	130	.330	1.31	.99	59.9	253.3	1.69	59	251	194	68	29
DF		28	2	84	99	.613	2.62	1.53	63.1	228.0	2.76	97	349	317	111	40
DF		29	1	74	129	.286	1.31	.86	63.2	223.3	1.54	54	191	178	62	22
DF		30	8	83	118	2.136	10.48	5.87	72.7	307.3	12.17	427	1,805	1,400	491	208
DF		31	2	79	141	.500	2.62	1.75	72.1	322.9	3.60	126	565	414	145	65
DF		32	3	86	130	.704	3.93	2.11	86.8	415.6	5.23	183	878	601	211	101
DF		33	1	83	100	.221	1.31	.66	71.4	326.7	1.35	47	216	155	54	25
DF		40	1	82	136	.150	1.31	.45	140.5	690.0	1.80	63	311	207	73	36
DF		Totals	117	84	99	87.880	153.33	203.06	28.3	112.5	163.73	5,744	22,844	18,829	6,606	2,627
RA		10	2	82	95	6.029	3.29	9.04	10.8	40.0	2.67	98	362	307	112	42
RA		11	1	82	46	2.491	1.64	2.49	12.0	30.0	.82	30	75	94	34	9
RA		12	1	82	41	2.093	1.64	2.09	13.3	30.0	.76	28	63	88	32	7
RA		13	4	79	61	7.135	6.58	8.92	16.9	56.0	4.15	151	499	478	174	57
RA		14	3	80	67	4.614	4.93	6.15	20.2	62.5	3.42	125	384	394	143	44
RA		15	4	76	70	5.359	6.58	8.04	21.5	60.0	4.76	172	482	548	198	55
RA		16	7	82	68	8.242	11.51	12.95	24.8	72.7	8.83	321	942	1,016	369	108
RA		17	4	81	75	4.172	6.58	8.34	23.4	72.5	5.37	195	605	617	224	70
RA		18	6	79	60	5.582	9.86	8.37	22.8	83.3	5.25	191	698	604	220	80
RA		19	1	87	50	.835	1.64	.84	40.7	70.0	.93	34	58	107	39	7
RA		20	3	78	57	2.261	4.93	3.77	31.4	80.0	3.26	118	301	375	136	35
RA		22	3	71	79	1.868	4.93	3.74	26.6	88.3	2.74	99	330	315	114	38
RA		23	1	88	94	.570	1.64	1.71	35.4	156.7	1.66	60	268	191	70	31
RA		28	1	87	70	.384	1.64	.77	64.7	210.0	1.37	50	161	157	57	19
RA		Totals	41	80	68	51.636	67.41	77.22	21.7	67.7	46.01	1,672	5,229	5,291	1,923	601
BM		15	1	60	64	1.107	1.36	1.11	33.0	60.0	.95	37	66	110	42	8
BM		16	2	69	66	1.945	2.72	1.95	34.5	45.0	1.77	67	88	204	77	10
BM		23	1	79	52	.471	1.36	.47	70.0	80.0	.87	33	38	100	38	4
BM		25	1	79	52	.398	1.36	.80	36.5	125.0	.77	29	100	89	33	11
BM		30	1	40	63	.277	1.36	.28	58.6	60.0	.43	16	17	49	19	2
BM		Totals	6	67	62	4.198	8.15	4.60	39.6	67.0	4.80	182	308	552	209	35
BL		14	1	73	26	.693	.74	.69	12.7	30.0	.23	9	21	27	10	2
BL		18	1	76	43	.419	.74	.42	15.0	30.0	.17	6	13	19	7	1

TC TSTNDSUM

Stand Table Summary

Project **BROKENAR**

T01N R07W S29 TSALE

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01N	07W	29	29_AREA2	SALE	115.00	54	175

T01N R07W S29 TSALE
Page: 2
Date: 03/23/2018
Time: 9:17:09AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
BL		Totals	2	74	32	1.112	1.48	1.11	13.6	30.0	0.40	15	33	46	17	4
OC		9	1	66	30	6.707	2.96									
OC		13	1	73	35	3.214	2.96									
OC		Totals	2	68	32	9.921	5.93									
Totals			168	81	83	154.747	236.30	286.00	26.6	99.4	214.94	7613	28,414	24,719	8,755	3,268

TC TLOGSTVB

Log Stock Table - MBF

Project: BROKENAR

T01N R07W S29 TSALE | **T01N R07W S29 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	
01N	07W	29	29_AREA2	SALE	115.00	54	175	Page 1 Date 3/23/2018 Time 9:17:08AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
DF		CO	2	32	143		143	5.4						63	14	26	40			
DF		CO	2	34	13		13	.5						13						
DF		CO	2	36	9		9	.3						9						
DF		CO	2	40	1,229	1.4	1,212	46.2						309	396	334	151	24		
DF		CO	3	16	2		2	.1					2							
DF		CO	3	28	1		1	.1			1									
DF		CO	3	31	17	9.8	15	.6								15				
DF		CO	3	32	196	.6	195	7.4			44	87	56		7					
DF		CO	3	33	2		2	.1				2								
DF		CO	3	35	2		2	.1			2									
DF		CO	3	40	702	.6	697	26.5			99	236	239	71	51					
DF		CO	4	11	6		6	.2		6										
DF		CO	4	12	3		3	.1		2	1									
DF		CO	4	13	4		4	.2		4	1									
DF		CO	4	14	7		7	.3		7										
DF		CO	4	15	7		7	.3		5	2									
DF		CO	4	16	9		9	.3		8		1								
DF		CO	4	17	6		6	.2		3	1	2								
DF		CO	4	18	10		10	.4		9		1								
DF		CO	4	19	10		10	.4		10										
DF		CO	4	20	22		22	.8		12	2	8								
DF		CO	4	21	17		17	.6		9	8									
DF		CO	4	22	4		4	.1			2	1								
DF		CO	4	23	17		17	.6		11	1	5								
DF		CO	4	24	5		5	.2		5										
DF		CO	4	25	4		4	.1		4										
DF		CO	4	26	8		8	.3		8										
DF		CO	4	27	3		3	.1		2	1									
DF		CO	4	28	18		18	.7		16	1									
DF		CO	4	29	8		8	.3		7	1									
DF		CO	4	30	5		5	.2		5										
DF		CO	4	31	1		1	.1		1										
DF		CO	4	32	29		29	1.1		1	27									
DF		CO	4	33	23		23	.9		23										
DF		CO	4	34	8		8	.3		8										
DF		CO	4	35	5		5	.2		5										
DF		CO	4	36	2		2	.1		2										
DF		CO	4	37	14		14	.5		14										
DF		CO	4	39	9		9	.3		6		3								
DF		CO	4	40	65		65	2.5		16	21	11	16							
DF		CO	4	41	9		9	.3		9										
DF			Totals		2,651		2,627	80.4		217	217	358	313	465	468	374	191	24		
RA		H	1	40	18		18	2.9								18				
RA		H	2	16	11		11	1.8						11						
RA		H	2	32	14		14	2.3						14						
RA		H	2	36	47		47	7.8						24		24				
RA		H	3	16	20		20	3.3						9		11				
RA		H	3	20	10	8.3	10	1.6						10						
RA		H	3	22	6		6	1.0					6							
RA		H	3	24	22		22	3.7					10	13						

TC TLOGSTVB

Log Stock Table - MBF

Project: **BROKENAR**

T01N R07W S29 TSALE **T01N R07W S29 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page	2
01N	07W	29	29_AREA2	SALE	115.00	54	175	Date	3/23/2018
								Time	9:17:08AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
RA		H	3	32	80	4.9	76	12.6					62	14						
RA		H	3	40	59		59	9.7					59							
RA		H	4	12	3		3	.4			3									
RA		H	4	14	2		2	.3			2									
RA		H	4	15	9		9	1.5			3	6								
RA		H	4	16	5		5	.8			5									
RA		H	4	17	4		4	.6			4									
RA		H	4	19	16		16	2.7			16									
RA		H	4	20	4		4	.6			4									
RA		H	4	21	4		4	.6			4									
RA		H	4	22	2		2	.4			2									
RA		H	4	23	6		6	1.0			6									
RA		H	4	25	9		9	1.4			9									
RA		H	4	26	22		22	3.7			3	19								
RA		H	4	27	7		7	1.2			7									
RA		H	4	28	9		9	1.4			9									
RA		H	4	30	4		4	.7			4									
RA		H	4	31	3		3	.5			3									
RA		H	4	32	56	6.2	52	8.7			23	30								
RA		H	4	33	8	40.0	5	.8			5									
RA		H	4	35	7		7	1.1			7									
RA		H	4	36	12		12	2.0				12								
RA		H	4	40	122	4.9	116	19.2			57	58								
RA		H	4	41	21		21	3.4			21									
RA		Totals			619	2.8	601	18.4			194	126	136	93		53				
BM		H	3	20	11	8.7	10	27.2								10				
BM		H	3	22	2		2	5.2			2									
BM		H	4	29	6	40.0	3	9.5			3									
BM		H	4	32	8		8	21.6			8									
BM		H	4	38	2		2	5.4			2									
BM		H	4	40	13	13.1	11	31.2			7	4								
BM		Totals			40	12.0	35	1.1			21	4				10				
BL		H	4	19	2		2	62.3			2									
BL		H	4	24	1		1	37.7			1									
BL		Totals			4		4	.1			4									
Total All Species					3,314	1.4	3,268	100.0		217	437	488	449	557	468	437	191	24		

FI TSTNDSUM

Stand Table Summary

Project **BROKENAR**

T01N R07W S21 TSALE **T01N R07W S21 TSALE**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page: 1
01N	07W	21	612_AREA3	SALE	97.00	28	92	Date: 04/02/2018
								Time: 7:01:36AM

Spc	S T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log Net Cu.Ft.	Average Log Net Bd.Ft.	Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals Tons	Totals Cunits	Totals MBF
DF		8		87	111	6.832	2.42	13.84	5.5	36.2	2.18	77	501	212	74	49
DF		10		84	54	4.373	2.42	4.43	9.4	31.0	1.19	42	138	115	40	13
DF		11		70	79	3.614	2.42	3.66	17.8	41.4	1.85	65	152	180	63	15
DF		12		82	80	9.109	7.27	15.38	12.5	43.5	5.49	193	669	533	187	65
DF		13		82	77	2.587	2.42	5.24	12.7	46.6	1.89	66	244	183	64	24
DF		15		84	77	1.943	2.42	3.94	18.0	56.9	2.02	71	224	196	69	22
DF		16		85	73	1.708	2.42	3.46	18.4	72.4	1.81	64	251	176	62	24
DF		17		85	100	4.539	7.27	9.20	26.0	103.5	6.80	239	952	660	232	92
DF		18		84	95	5.398	9.69	12.31	26.0	95.4	9.12	320	1,174	884	310	114
DF		19		82	90	4.845	9.69	9.82	33.0	109.9	9.24	324	1,079	897	315	105
DF		20		83	100	2.186	4.84	4.43	39.3	129.3	4.96	174	573	481	169	56
DF		21		85	92	2.975	7.27	6.03	39.9	139.7	6.85	240	842	665	233	82
DF		22		85	109	4.517	12.11	10.98	42.1	165.6	13.17	462	1,818	1,278	448	176
DF		23		85	108	1.653	4.84	4.19	45.5	192.5	5.43	190	806	526	185	78
DF		24		87	133	.759	2.42	2.31	46.7	210.4	3.07	108	485	298	104	47
DF		25		84	108	3.498	12.11	8.51	53.4	219.0	12.96	455	1,863	1,257	441	181
DF		26		81	107	3.234	12.11	7.86	58.7	220.7	13.15	462	1,736	1,276	448	168
DF		28		80	102	1.673	7.27	3.96	68.9	245.4	7.76	272	971	753	264	94
DF		29		83	111	.520	2.42	1.05	88.0	351.8	2.64	93	371	256	90	36
DF		30		85	100	.486	2.42	.98	93.3	357.0	2.62	92	351	254	89	34
DF		31		85	128	.455	2.42	1.38	80.3	375.9	3.16	111	520	307	108	50
DF		32		85	134	.427	2.42	1.30	88.6	434.6	3.28	115	564	318	112	55
DF		33		83	118	.803	4.84	2.03	98.2	430.4	5.69	200	876	552	194	85
DF		34		83	116	.756	4.84	2.30	81.9	389.7	5.37	188	896	521	183	87
DF		37		80	114	.319	2.42	.97	100.2	441.5	2.77	97	429	269	94	42
DF		40		78	93	.273	2.42	.55	156.6	563.9	2.47	87	312	240	84	30
DF		Totals		83	94	69.484	135.61	140.12	34.3	134.1	136.97	4,806	18,797	13,286	4,662	1,823
RA		11		86	103	2.928	1.97	5.89	11.0	41.7	1.78	65	246	173	63	24
RA		12		82	71	9.843	7.89	14.86	13.1	45.2	5.36	195	672	520	189	65
RA		13		84	87	4.193	3.95	8.44	12.2	47.0	2.83	103	396	275	100	38
RA		14		84	65	7.231	7.89	9.10	22.2	68.9	5.55	202	626	538	196	61
RA		15		83	72	7.874	9.87	12.68	21.5	71.7	7.50	273	910	727	264	88
RA		16		80	74	6.921	9.87	11.14	25.2	79.6	7.72	281	887	749	272	86
RA		17		83	67	2.452	3.95	3.70	26.3	69.6	2.68	97	258	260	94	25
RA		19		83	67	.982	1.97	1.98	27.5	88.7	1.49	54	175	145	53	17
RA		22		83	69	.732	1.97	1.47	36.4	135.6	1.48	54	200	143	52	19
RA		Totals		83	74	43.156	49.34	69.27	19.1	63.1	36.39	1,323	4,370	3,530	1,284	424
OC		8		75	81	3.378	1.21	3.38	10.9	31.4	.92	37	106	89	36	10
OC		10		65	29	2.162	1.21	2.19	6.7	21.2	.33	15	46	32	14	5
OC		22		50	16	1.141	3.10	1.14	82.3	237.3	2.35	94	271	228	91	26
OC		30		50	16	.614	3.10	.61	153.0	441.2	2.35	94	271	228	91	26
OC		37		50	21	.426	3.10	.43	220.3	635.3	2.35	94	271	228	91	26
OC		41		49	17	.345	3.10	.35	272.0	784.4	2.35	94	271	228	91	26
OC		44		55	18	.598	6.20	.60	314.3	906.4	4.70	188	542	456	182	53
OC		45		50	16	.285	3.10	.29	329.1	949.1	2.35	94	271	228	91	26
OC		55		50	17	.189	3.10	.19	495.7	1429.5	2.35	94	271	228	91	26
OC		59		50	17	.164	3.10	.16	571.8	1649.1	2.35	94	271	228	91	26
OC		Totals		63	43	9.303	30.34	9.33	96.1	277.5	22.41	897	2,590	2,174	870	251
Totals				81	83	121.943	215.29	218.72	32.1	117.8	195.77	7026	25,756	18,990	6,815	2,498

FI TLOGSTVB

Log Stock Table - MBF

Project: **BROKENAR**

T01N R07W S21 TSALE **T01N R07W S21 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	
01N	07W	21	612_AREA3	SALE	97.00	28	92	Page 1 Date 4/2/2018 Time 7:01:35AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
DF		CO	2	32	20		20	1.1						11	9					
DF		CO	2	40	1,121	.1	1,120	61.4						261	296	336	227			
DF		CO	3	17	2		2	.1					2							
DF		CO	3	24	5		5	.3				5								
DF		CO	3	28	3		3	.1				3								
DF		CO	3	31	6		6	.3			6									
DF		CO	3	32	165	.7	164	9.0			53	28	83							
DF		CO	3	33	4		4	.2					4							
DF		CO	3	36	8		8	.5			8									
DF		CO	3	40	298		298	16.3			57	79	161							
DF		CO	4	16	5		5	.3		4		2								
DF		CO	4	18	10		10	.5		8	2									
DF		CO	4	19	14		14	.8		10	4									
DF		CO	4	20	3		3	.2		3										
DF		CO	4	21	24		24	1.3		23		2								
DF		CO	4	22	3		3	.2		3										
DF		CO	4	23	6		6	.3		6										
DF		CO	4	24	3		3	.2			3									
DF		CO	4	26	7		7	.4		3	5									
DF		CO	4	27	5		5	.3		3	2									
DF		CO	4	29	4		4	.2		4										
DF		CO	4	32	13		13	.7		13										
DF		CO	4	33	4		4	.2		4										
DF		CO	4	34	4		4	.2		4										
DF		CO	4	36	11		11	.6		11										
DF		CO	4	38	15		15	.8		15										
DF		CO	4	40	30		30	1.7		30										
DF		CO	UT	16	15		15	.8								15				
DF		CO	UT	18	17		17	.9										17		
DF		Totals			1,825		1,823	73.0		142	140	119	250	271	305	351	227	17		
RA		H	UT	12	4		4	.9			4									
RA		H	UT	15	3		3	.8			3									
RA		H	UT	16	3		3	.8			3									
RA		H	UT	18	4		4	1.0			4									
RA		H	UT	29	7		7	1.7			7									
RA		H	UT	34	4		4	.9			4									
RA		H	UT	35	7		7	1.7			7									
RA		H	UT	36	8		8	2.0			8									
RA		H	2	16	11		11	2.7						11						
RA		H	2	22	16	4.5	16	3.7								16				
RA		H	2	32	16	6.3	15	3.5						15						
RA		H	3	24	14		14	3.4					14							
RA		H	3	30	18		18	4.3					18							
RA		H	3	32	17		17	4.0					17							
RA		H	4	16	4		4	.9			4									
RA		H	4	18	3		3	.7			3									
RA		H	4	19	5		5	1.2			5									
RA		H	4	20	29	7.4	27	6.3			8	19								
RA		H	4	21	6		6	1.5			6									

FI TLOGSTVB

Log Stock Table - MBF

Project: BROKENAR

T01N R07W S21 TSALE **T01N R07W S21 TSAL**

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
01N	07W	21	612_AREA3	SALE	97.00	28	92

Date 4/2/2018
Time 7:01:35AM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	% Def	Net MBF	% Spc	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
RA		H	4	22	5		5	1.1			5									
RA		H	4	32	38	7.8	35	8.4				35								
RA		H	4	37	15	16.7	13	3.0			13									
RA		H	4	40	202	4.0	194	45.8			49	145								
RA		Totals			441	4.0	424	17.0			133	199	50	26		16				
OC		*	*	32	247		247	98.2			247									
OC		D	UT	19	5		5	1.8		5										
OC		Totals			251		251	10.1		5	247									
Total All Species					2,518		2,498	100.0		147	520	318	300	298	305	367	227	17		

Broken Arrow

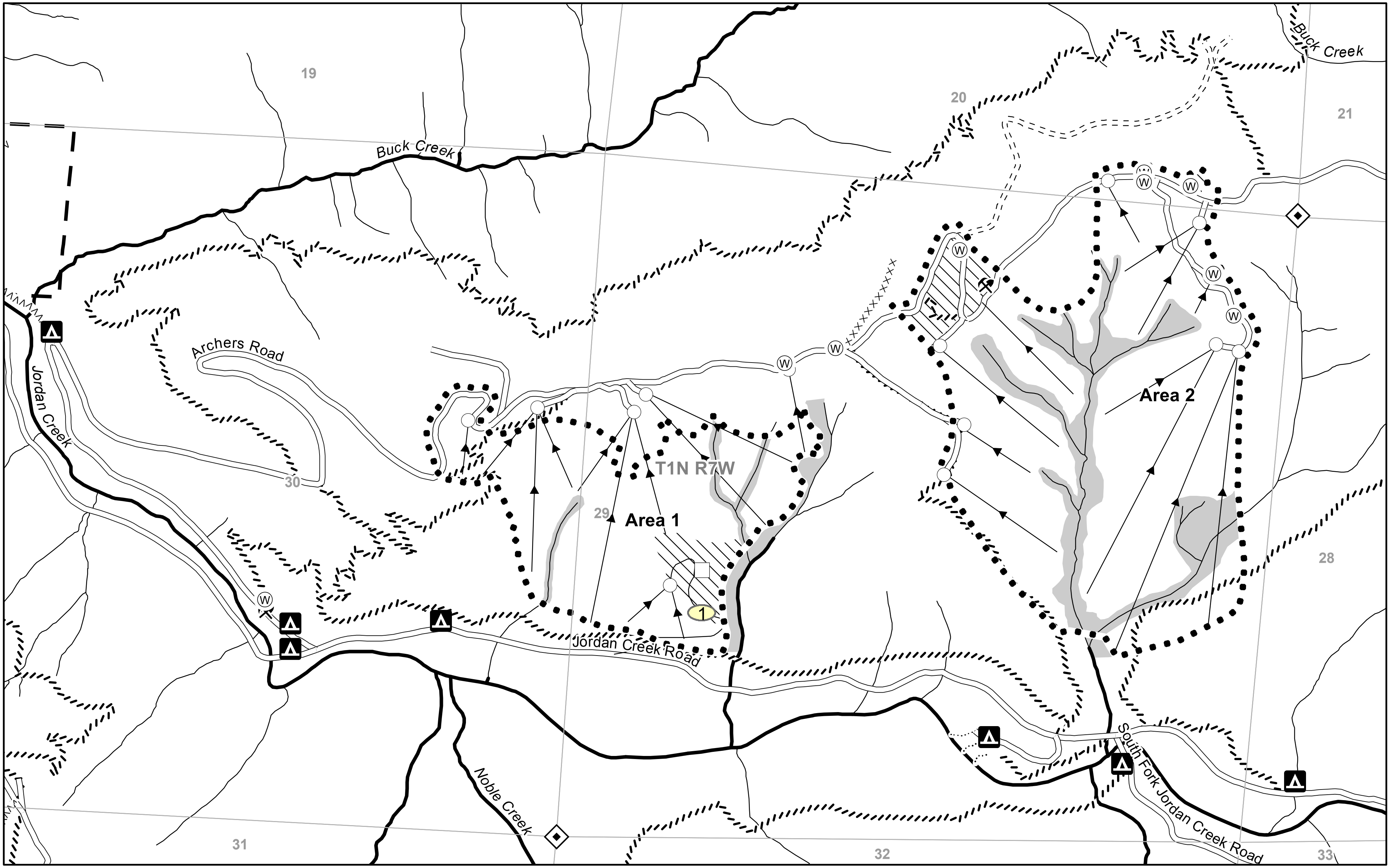
Volume Summary

Area 1-Modifed Clearcut				
	68 acres			
	Cruised Net	Cruised Net	Hidden	Net Sale
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	21.8	1483	1%	1468
Bigleaf Maple	0.2	10	2%	10
Sitka Spruce	0.0	0	1%	0
Alder	4.2	287	2%	281
TOTAL	26.2	1780		1759

Area 2-Modifed Clearcut				
	115 acres			
	Cruised Net	Cruised Net	Hidden	Net Sale
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	22.8	2627	1%	2601
Bigleaf Maple	0.3	35	2%	35
Sitka Spruce	0.0	0	1%	0
Red Alder	5.2	601	2%	589
TOTAL	28.4	3264		3225

Area 3-Modifed Clearcut				
	97 acres			
	Cruised Net	Cruised Net	Hidden	Net Sale
SPECIES	MBF/ Acre	MBF	D&B	MBF
Douglas-fir	18.5	1791	1%	1773
Bigleaf Maple	0.0	0	2%	0
Sitka Spruce	0.0	0	1%	0
Red Alder	4.0	384	2%	376
TOTAL	22.4	2175		2149

TOTAL SALE VOLUME	280	acres
SPECIES	Cruised Net (MBF)	Net Sale (MBF)
Douglas-fir	5901	5842
Bigleaf Maple	45	45
Sitka Spruce	0	0
Red Alder	1272	1246
TOTAL	7218	7133



LOGGING PLAN

Timber Sale Contract No. 341-19-39
BROKEN ARROW
Portions of Sections 20, 21, 29, and 30,
T1N, R7W, W.M.,
Tillamook County, Oregon

Area	Type of Operation	Acres Gross	Acres Net
1	Modified Clearcut	78	68
2	Modified Clearcut	145	115
3	Modified Clearcut	115	97
Total		338	280

Tillamook District GIS
3/26/2018

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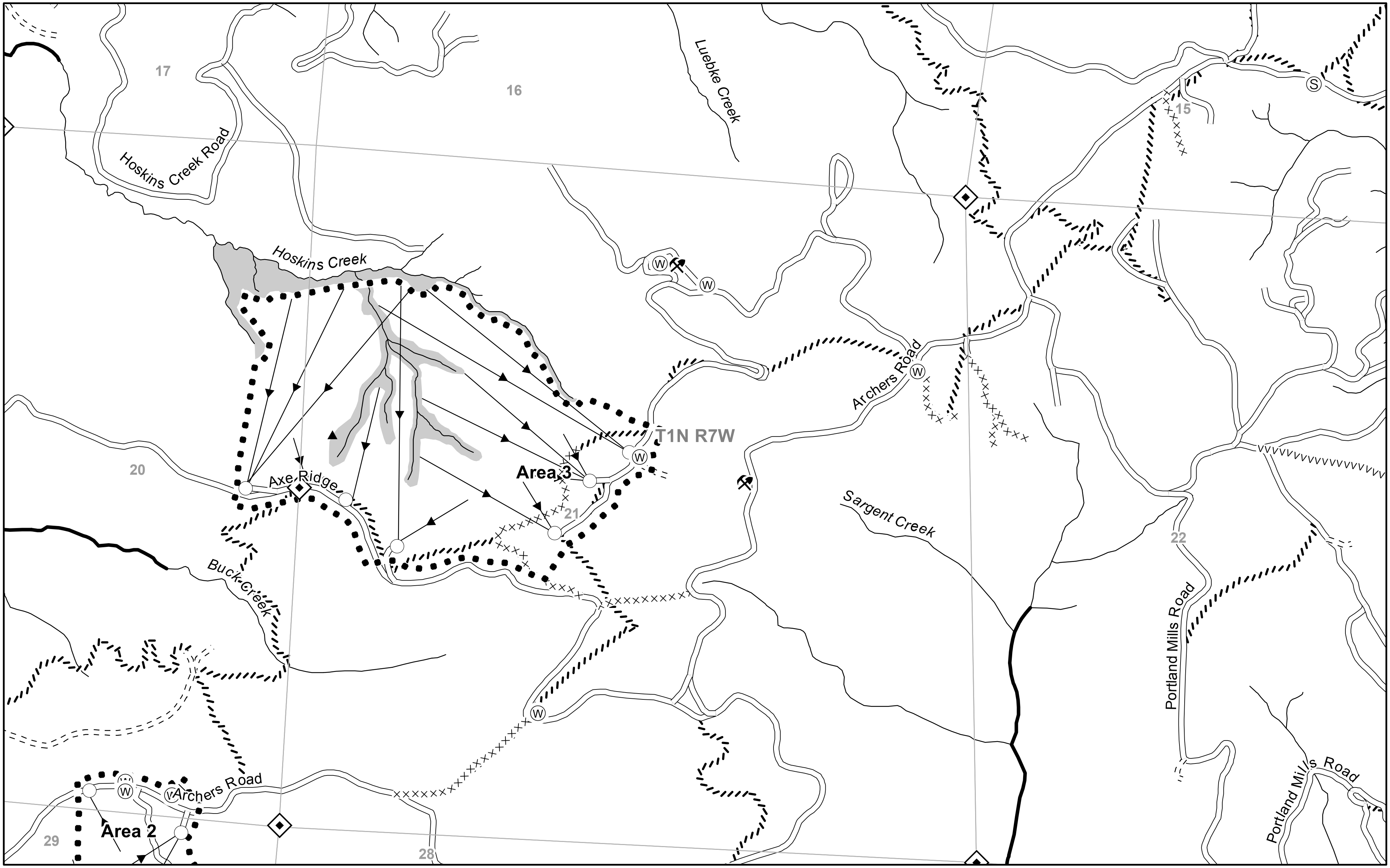

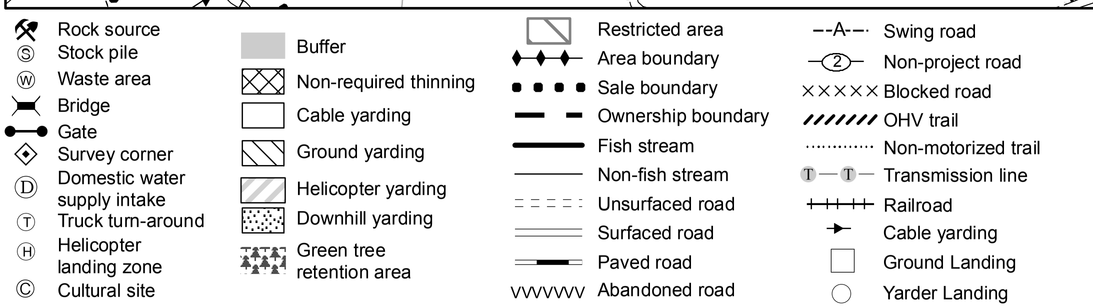

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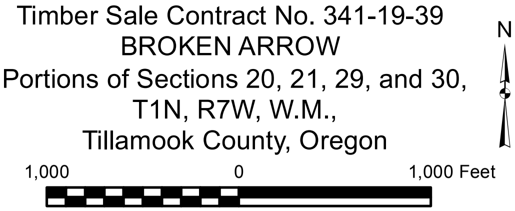

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