"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: **Forest Grove** **Date:** **November 04, 2011**

cost summary

	Conifer	Hardwood	Total
Gross Timber Sale Value	$1,794,563.10	$22,248.60	$1,816,811.70
		Project Work:	$(50,700.00)
		Advertised Value:	$1,766,111.70

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date: November 04, 2011**

timber description

Location: Portions of Sections 2 and 3, T2N, R6W, and Sections 34 and 35, T3N, R6W, W.M., Washington County, Oregon.

Stand Stocking: 20%

SpecieName	AvgDBH	Amortization (%)	Recovery (%)
Douglas - Fir	15	0	98
Alder (Red)	15	0	98

Volume by Grade	2S	3S	4S	Camprur	Total
Douglas - Fir	1,844	3,094	555	0	5,493
Alder (Red)	0	0	0	60	60
Total	1,844	3,094	555	60	5,553

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date: November 04, 2011**

comments:

Pond Values Used: 3rd Quarter Calendar Year 2011.

Western hemlock and Other Conifers Stumpage Price = Pond Value minus Logging Cost:
$276.25/MBF = $455/MBF - $178.75/MBF

Western redcedar and Other Cedars Stumpage Price = Pond Value minus Logging Cost:
$721.25/MBF = $900/MBF - $178.75/MBF

SCALING COST ALLOWANCE = $5.00/MBF

FUEL COST ALLOWANCE = $4.00/Gallon

HAULING COST ALLOWANCE
Hauling costs equivalent to $740 daily truck cost.

Other Costs (with Profit & Risk to be added):
Brand and Paint: 5,553 MBF @$1/MBF = $5,553
Operator's Choice Road: $1,000
Intermediate Supports: 5 supports x $200/support = $1,000
Total Other Costs (with Profit & Risk to be added) = $7,553

Other Costs (No Profit & Risk added):
Blocking/Waterbarring Skid Roads: 10 hrs @ $150/hr = $1,500
Firewood Sorting: 20 hrs @ $150/hr = $3,000
Covering Slash piles: $1,000
Slash Treatment: 40 acres @ $150/acre = $6,000
Tree Topping: 180 trees x $40/tree = $7,200
Equipment Cleaning: 5 machines @ $1,000 per machine = $5,000
TOTAL Other Costs (No Profit & Risk added) = $23,700

ROAD MAINTENANCE
Move-in: $2,000
General Road Maintenance: 8.4 miles x $1,000/mile = $8,400
TOTAL: $10,400 / 5,553 MBF = $1.87/MBF

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date: November 04, 2011**

logging conditions

combination#: 1

	Douglas - Fir	38.70%	
	Alder (Red)	68.00%	
yarding distance:	Medium (800 ft)	**downhill yarding:**	No
logging system:	Shovel	**Process**:	Feller Buncher
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	5.0	**bd. ft / load:**	5,000
cost / mbf:	$57.54		

machines: Feller Buncher w/ Delimber

combination#: 2

	Douglas - Fir	17.72%	
	Alder (Red)	32.00%	
yarding distance:	Medium (800 ft)	**downhill yarding:**	No
logging system:	Cable: Medium Tower >40 - <70	**Process**:	Manual Falling/Delimbing
tree size:	Mature / Regen Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	5.0	**bd. ft / load:**	5,000
cost / mbf:	$138.40		

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

combination#: 3

	Douglas - Fir	17.00%	
yarding distance:	Medium (800 ft)	**downhill yarding:**	No
logging system:	Shovel	**Process**:	Stroke Delimber
tree size:	Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	4.0	**bd. ft / load:**	5,000
cost / mbf:	$71.91		

machines: Stroke Delimber (B)

combination#: 4

	Douglas - Fir	26.59%	
yarding distance:	Medium (800 ft)	**downhill yarding:**	No
logging system:	Cable: Medium Tower >40 - <70	**Process**:	Stroke Delimber
tree size:	Mature / Partial Cut (900 Bft/tree), 3-5 logs/MBF		
loads / day:	4.0	**bd. ft / load:**	5,000
cost / mbf:	$167.21		

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

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date:** November 04, 2011

logging costs

Operating Seasons:	2.00	**Profit Risk:**	10.00%
Project Costs:	$50,700.00	**Other Costs (P/R):**	$7,553.00
Slash Disposal:	$0.00	**Other Costs:**	$23,700.00

Miles of Road

Road Maintenance: $1.87

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	5.0
Alder (Red)	$0.00	2.0	3.5

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date:** November 04, 2011

logging costs breakdown

Logging	Road Maint	Fire Protect	Hauling	Other P/R appl	Profit & Risk	Slash Disposal	Scaling	Other	Total
Douglas - Fir									
$103.47	$1.91	$1.58	$45.75	$1.36	$15.41	$0.00	$5.00	$4.27	$178.75
Alder (Red)									
$83.42	$1.91	$1.58	$98.02	$1.36	$18.63	$0.00	$5.00	$4.27	$214.19

Specie	Amortization	Pond Value	Stumpage	Amortized
Douglas - Fir	$0.00	$505.45	$326.70	$0.00
Alder (Red)	$0.00	$585.00	$370.81	$0.00

"STEWARDSHIP IN FORESTRY"

Timber Sale Appraisal
Big Bell
Sale 341-12-06

District: Forest Grove **Date:** November 04, 2011

summary

Amortized

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

Unamortized

Specie	MBF	Value	Total
Douglas - Fir	5,493	$326.70	$1,794,563.10
Alder (Red)	60	$370.81	$22,248.60

Gross Timber Sale Value

Recovery: $1,816,811.70

Prepared by: Peter Stone **Phone:** 503-359-7477

TIMBER SALE SUMMARY
Big Bell
Contract No. 341-12-06

1. **Type of Sale:** The Timber Sale Area is a combination of Partial Cut-Moderate (PC-M) and Modified Clearcut (MC). The sale is recovery, sealed bid auction.

2. **Revenue Distribution:** 100% BOF; Washington County.

3. **Sale Acreage:** Area 1 is 112 acres of Modified Clearcut, Area 2 is 177 acres of Partial Cut - Moderate, Area 3 is 8 acres of Partial Cut – Moderate, and Area 4 is 2 acres of Right-of-Way. Acres are net of stream buffers and existing road prisms. Area 4 acres were deducted from Area 2. Acreage was determined using ESRI ArcMap GIS software.

4. **Cruise Data**: Volume estimates and plot data statistics were computed using SuperACE timber cruise software. The volume for Area 4 was estimated from Area 2 cruise information.

   For more information see Cruise Report.

5. **Timber Description:** Timber Sale Area is medium to well stocked, 60 year old Douglas-fir stand with minor amounts of western hemlock, western redcedar, and hardwoods. The average Douglas-fir DBH is approximately 15 inches.
   a. PC-M (Areas 2 & 3): Estimated average net volume is 13.2 MBF per acre.
   b. MC (Area 1): Estimated average net volume is 27.7 MBF per acre.

6. **Topography and Logging Method:** Slopes within the sale are predominately North and East facing aspects ranging from 5% to 70%. The sale area has 31% cable-based yarding and 69% ground-based yarding.

7. **Access:** From Timber Road, turn onto Cochran County Road and continue for 3.8 miles, turn left onto Round Top Road and continue for 1.9 miles, stay straight onto Bell Camp Road and continue for 1 mile. You are now at the Northeast corner of the Timber Sale Area.

8. **Projects:**
   Project No. 1 - construct 1.37 miles of road - $21,661.92.
   Project No. 2 - surface 0.63 miles of road - $19,668.79.
   Project No. 3 - grass seed, fertilize, and mulch - $402.41.
   Project No. 4 road vacating - $2939.72.
   Equipment Move-in and Cleaning - $6,024.21

   Total credit for project work is $50,700

9. Other Costs:

Other Costs (with Profit and Risk to be added):
Brand and Paint: 5,553 MBF @$1/MBF = $5,553
Operator's Choice Road: $1,000
Intermediate Supports: 5 supports x $200/support = $1,000
Total Other Costs (with Profit & Risk to be added) = $7,553

Other Costs (No Profit & Risk added):
Blocking/Waterbarring Skid Roads: 10 hrs @ $150/hr = $1,500
Firewood Sorting: 20 hrs @ $150/hr = $3,000
Covering Slash piles: $1,000
Slash Treatment: 40 acres @ $150/acre = $6,000
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Equipment Cleaning: 5 machines @ $1,000 per machine = $5,000
TOTAL Other Costs (No Profit & Risk added) = $23,700

ROAD MAINTENANCE
Move-in: $2,000
General Road Maintenance: 8.4 miles x $1,000/mile = $8,400
TOTAL: $10,400 ($1.87/MBF)

Pre-Operations Report

Operation Name: Big Bell
Management Basin: Gales Creek, Wheeler, Upper Salmonberry **Sale Quarter:** 1
County (%): Washington 100% **BOF** 100%
CSL 0%

I. VOLUME AND VALUE SUMMARY

Table 1. Types, Acres, and Value

Area	Harvest Type	Anticipated Product[3]	Gross Acres	Net Acres	MBF/ Acre[1]	MBF/Area[1]	$/MBF[2]	$/Area
1	MC	DF-M	128	105	31.5	3,308	$350	$1,157,800
2	PC-M	DF-M	175	165	11	1,815	$300	$544,500
3	PC-M	DF-M	7	7	11	77	$300	$23,100
4	Snag	Hard snags	48	46	0	0	0	0
Total		Regeneration	128	105		5,200		
		Partial Cut	182	172		Gross Value		$1,725,400
						Project Costs		$74,000
						Net Value		$1,651,400

1. Estimated harvest volume per acre or Area.
2. Estimated 'stumpage value' (excluding Project Costs)
3. Anticipated Product (AA-B-C) – AA) SLI species code of the bid species, B) Size Class (S – small [average DBH < 15], M – medium [average DBH 15 to 23], L – large (average DBH > 23]), C) Special Product (P – Premium, H – Hardwood)

II. PHYSICAL DESCRIPTION OF OPERATION AREA

Table 2. Physical Characteristics of Operation Area

Location: T3N, R6W, Sec 34, 35 & T2N, R6W, Secs 1, 2, 3	
Rainfall:	Elevation: 2,400 – 2,700
Site Index: 132	Aspect: varied
Vegetation Zone:	Other:
Soils: Jewell, Elsie, Osweg	

III. CURRENT STAND CONDITION:

Table 3. Stand Inventory Information

Area	Stand ID	Measured /Imputed[1]	Species	Age	TPA	DBH	BA	% SDI	Net Acres
1	7537	I	DF	61	89	18	150	37	48
	7551	M	DF	55	149	16	214	54	47
	7553	M	DF	59	181	15	212	56	10
2	7537	I	DF	61	89	18	150	37	140
	7494	M	DFCX	60	152	17	225	56	25
3	7551	M	DF	55	149	16	214	54	7
4	7517[2]	M	DFRA	60	43	19	88	21	46

1. Identify the source of stand inventory information. Use the following codes: M = Measure SLI data, I = Imputed SLI data, P = Pre-Cruise Plots, O = other (if other, describe below).
2. This is a shelter wood stand. Inventory information reflects the current overstory.

Table 4. Additional Stand Information

Area	Stand ID	Snags/ Acre[1]	Down Wood / Acre[2]	% Ground Cover	Predominant Understory Vegetation	Forest Health Issues
1	7537	2	478	99	n/a	
	7551	0	67	29	Salal	
	7553	0	25	50	Salal	
2	7537	2	478	99	n/a	
	7494	1	25	59	Salal, Sword Fern	
3	7551	0	67	29	Salal	
4	7517	0	252	100	Sword Fern, Bracken Fern	

1. Identify the number of hard snags per acre (decay classes 1 and 2).
2. Identify the cubic feet per acre of hard down wood (decay classes 1 and 2)

IV. DESIRED FUTURE CONDITION/VISION:

Table 5. Stand Structure Information

Area	Stand ID	Current	Post Harvest[1]	Desired Future	Net Acres
1	7537	UDS	REG	GEN	48
	7551	CSC	REG	GEN	47
	7553	UDS	REG	GEN	10
2	7537	UDS	UDS	GEN	140
	7494	LYR	LYR	OFS	25
3	7551	CSC	UDS	GEN	7
4	7517	UDS	UDS	GEN	46

1. The stand is expected to develop into this condition in the five to ten years after this operation is completed.

According to the Forest Grove District's landscape design (*Forest Grove District Implementation Plan, 2011*), the desired future condition (DFC) for the sale area is 8% older forest structure (OFS), and 92% general (GEN). The vision for the DFC – OFS portion of this stand is to develop a complex forest structure as quickly as possible, creating habitat for older forest dependant wildlife species. The remainder of the sale area may be scheduled for a regeneration harvest in the future.

V. PROPOSED MANAGEMENT PRESCRIPTION:

Table 6. Prescription

Area	Harvest Type	Harvest Species	Residual Species	Residual TPA	Residual BA	Residual SDI
1	MC	DF	DF,RA	5	n/a	n/a
2	PC-M	DF	DF, WH	45	140	35
3	PC-M	DF	DF, WH	45	140	35
4	Snag Creation	n/a		n/a	n/a	n/a

Table 7. Structural Components

Area	Purpose	Species	DBH	TPA	Arrangement					Anticipated Down Wood (ft3/Acre)
					Scattered in Unit	Clumps in Unit	In Unit RMA	Adjacent RMA	Green Tree Area	
1	GTR	DF,RA	18	5			x		x	None
2	none									
3	none									
4	Snags	DF	24	4	x					

This stand will most likely receive an additional silvicultural treatment in approximately 20 years. The older and larger trees at that time will provide a much better opportunity to address snag and DWD creation. Between now and then we will rely on natural recruitment of these structural components.

Table 8. Pathway

Area	Reforestation			Pre-commercial Thinning		Partial Cut A	Partial Cut B	Regeneration Harvest
	Type	Species	TPA	Age	TPA	Age	Age	Age
1	initial	DF,WH,WRC	436	15	200	40		60
2	n/a						80	
3	n/a							80
4	None							

Table 9. Site Preparation

Area	Site Prep				Other issues (Big Game, Mtn. Beavers, SNC, etc)			
	Slash Treatment	Whole Tree Yarding	Chemical	Other	Vegetation	Animal	Insect & Disease	Other
1		X				TBD		
2	n/a							
3	n/a							
4	None							

VI. HARVESTING AND ACCESS CONSIDERATIONS:

Table 10. Harvest System and Access Summary

Area	Harvest System		Slope (%)	Area Access	Seasonal Access
	% Cable	% Ground			
1	40	60	35-65%	Simple	All Weather
2	30	70	20-65%	Simple	All Weather
3	100		55%	Simple	Summer
4	n/a	n/a			

Are Easements required along haul route? ☐ YES ☒ NO
If "yes", describe below easements that need to be obtained.

Are property line surveys required for this operation? ☐ YES ☒ NO
If "yes", describe the lines to be surveyed, type of survey (i.e. section subdivision, refresh previously established line, etc.), and length of survey.

Are Invasive Species present along the haul route? ☒ YES ☐ NO
If "yes", describe below the management actions necessary to meet management goals for these species.

Scotch broom is present along the haul route. The district treats scotch broom independently of timber sales.

Table 11. Transportation Management Summary (Miles or Number of Crossings)

Activity	Mainline	Collector	Rocked Spur	Dirt Spur
Construct			1.2	
Improve				
Maintain	5.0	2.5		
Block (Dormant)				
Vacate				
Stream Crossings				
Type F				
Type N				

VII. AQUATIC RESOURCES AND WATER QUALITY:

Table 12. Stream Classifications Within or Adjacent to the Operation

Area	Fish Bearing (Type F)	Operating in Inner Zone of Type F	Non-Fish Bearing (Type N)				Unknown - Fish Presence Surveys Required
			Large / Medium	Small Perennial	H.E.R. / P.D.F.T	Other	
1				x			none
2	x			x			
3	x			x			
4	x						

Table 13. Additional Stream Considerations

Area	SAH Basin	Potential Stream Habitat Project	Domestic Water Sources Present	Stream Name
1	None	None	None	Gales Creek
2	Lousignont/Upper Nehalem	None	None	South Fork
3	None	None	None	Gales Creek
4	Lousignont/Upper Nehalem	None	None	South Fork

VIII. WILDLIFE AND T&E SPECIES CONSIDERATIONS:

Table 14. Northern Spotted Owls - Surveys and Presence

Area	NSO Surveys Required[1]	Years Surveys Completed	Additional Surveys Planned	NSO Response
1	Yes	2007, 2008, 2009,2010	2011	None
2	Yes	2007, 2008, 2009,2010	2011	None
3	Yes	2007, 2008, 2009,2010	2011	None
4	Yes	2007, 2008, 2009,2010	2011	None

1. Surveys are required if the Area contains NSO habitat, as determined by Area Wildlife Biologist. Enter "Yes" or one of the following codes when surveys are not required: "N.H" – no habitat within the Area; "N.R." – surveys of individual operations are not required (Klamath-Lake District only); "T.B." – surveys are not required because the Area is within the Tillamook Burn (see NSO Policy); "HCP" – covered by a Habitat Conservation Plan; "S.W." – a survey waiver has been issue for another reason (explain below or attach the waiver).

Is the Operation within an NSO Provincial Circle or Home Range? ☐ **YES** ☒ **NO**
If "yes", attached the preliminary Biological Assessment.

Table 15. Marbled Murrelets - Surveys and Presence

Area	MM Surveys Are Required[1]	Years Surveys Completed	Additional Surveys Planned	MM Observations
1	SS			
2	SS			
3	SS			
4	SS			

1. Survey are required if the Area contains or is adjacent (within 330 feet) of potential marbled murrelet habitat, as determined by Area Wildlife Biologist. Enter "Yes", or one of the following codes when surveys are not required: "N.H." – no potential habitat within or adjacent to the Area; "O.Z." – outside the Marbled Murrelet Survey Zone; "S.S". – in Systematic Survey Zone; "T.C." – tree climbing was used (or planned) instead of the normal survey protocol; "HCP" – covered by a Habitat Conservation Plan; "S.W." – a survey waiver has been issue for another reason (explain below or attach the waiver).

Is the Operation within a Marble Murrelet Management Area? ☐ **YES** ☒ **NO**
If "yes", attached the preliminary Biological Assessment.

Other Wildlife Considerations: None.

T&E Fish:

Streams in this sale are in the headwaters of the Salmonberry, Nehalem River and Gales Creek basins. As of January 2011, Coho salmon in the Salmonberry and Nehalem River basins for the Oregon Coast and winter steelhead in the Gales Creek basin are listed as threatened for the Upper Willamette. However, the sale is located well upstream of actual distribution of listed fish.

T&E Plants:

Does the Oregon Biodiversity Information Center database or field reconnaissance indicate the presence of known threatened or endangered plants near the operation? ☐ **YES** ☒ **NO**

IX. SLOPE STABILITY AND GEOTECHNICAL ISSUES:

Table 16. Summary of Slope Stability Assessment[1]

Area	Potential Hazards[2]					Geotech Review to Date	Additional Geotech Review
	Deep Seated Landslide	HLHL – Risk to Stream	HLHL – Risk to Public	Debris Flow Stream (FPA/FMP)	Inner Gorge		
1	L	L	N	NL	L	Office	None
2	L	L	N	NL	L	Office	None
3	L	L	N	NL	L	Office	None
4	n/a						

[1] All assessments are based on the review conducted to date; additional field work by the Geotechnical Specialist (Geotech), foresters, or others may identify additional sites or risks that could lead to further evaluation or modification of the operation.
[2] The potential hazards are rated as: Not Likely – additional action is not required, Likely – additional field review by forester or Geotech required, Present – specific hazards have been identified.

X. RECREATION RESOURCES:

Table 17. Recreation Sites In the Vicinity of the Operation[1]

Type of Recreation Site or Facility	In or Immediately Adjacent to the Operation	In the Vicinity of the Operation (1/4 mile)	On the Anticipated Haul Route
Motorized Trails			
Non-Motorized Trails	X		
Campgrounds			Reehers Camp
Other Recreation Sites or Facilities			

Raven Ridge Mountain Bike Trail and trailhead drop-off/turnaround is located immediately adjacent to the sale area boundary. Sale activity is not likely to impact the trail, trailhead, or trail use activity. Approximately 1,000 feet of the Gales Creek Trail runs through Area 3. Logging will be planned for outside of the high use summer months.

XI. CULTURAL RESOURCES:

Does the ODF Cultural Resources Inventory or field reconnaissance indicate the presence of cultural resources in and adjacent to this operation? ☐ **YES** ☒ **NO**

XII. SCENIC RESOURCES:

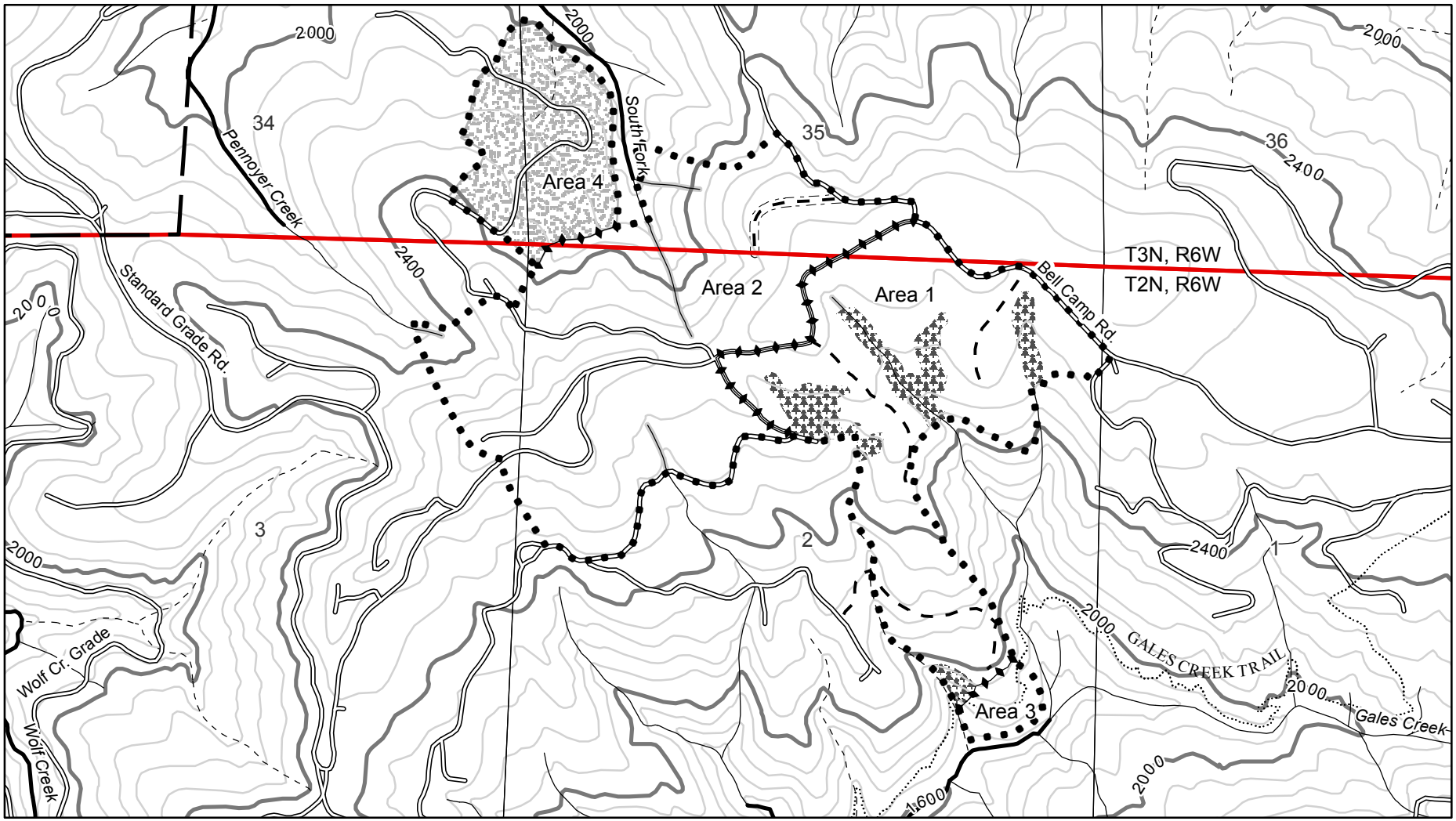
The district has reviewed the scenic potential of vantage points in and around this operation. This review shows that this operation contain Areas with an ODF Visual Classification of __2__.

The harvest prescriptions should have very little impact on scenic resources.

XIII. OTHER RESOURCE CONSIDERATIONS:

Are there other resources present in or around this operation that need special consideration?

☐ **YES** ☒ **NO**



FY 2012
Big Bell
PORTIONS OF SECTIONS 34, 35, T3N, R6W,
& PORTIONS OF SECTIONS 1, 2, 3, T2N, R6W, W.M.
WASHINGTON COUNTY

Forest Grove District GIS
June 2011
This product is for informational use and may not be suitable for legal, engineering, or surveying purposes.

1:15,840

1,300 650 0 1,300 Feet

N

APPROXIMATE NET ACRES

AREA 1	105	ACRES (MC)
AREA 2	165	ACRES (PC-M)
AREA 3	7	ACRES (PC-M)
AREA 4	46	ACRES (Snag Creation Only)
TOTAL	323	ACRES

Legend

- Timber Sale Boundary
- Area Boundary
- Fish, Perennial
- Nonfish, Perennial
- Unknown fish, Perennial
- index (400ft)
- intermediate (80ft)
- Motorized Trails
- Non-motorized Trails
- Surfaced Roads
- Unsurfaced Roads
- Road Construction
- Right-of-Way
- Stream Buffer
- Snag Creation Area
- Ownership

PROJECT COST SUMMARY SHEET

Timber Sale: Big Bell

Sale Number: 341-12-16

PROJECT NO. 1: ROAD CONSTRUCTION

Road Segment	Length	Cost
A to B	11+85	$2,909.79
C to D	19+00	$5,416.03
E to F	16+75	$5,321.90
G to H	2+20	$720.13
I to J	22+75	$7,294.07
	72+55	stations
	1.37	miles

TOTAL PROJECT NO. 1 COST = $21,661.92

PROJECT NO. 2: SURFACING

Road Segment	Amount	Type	Cost
A to B	832 cy	6" - 0	$6,223.36
C to D	45 cy	1 1/2" - 0	$457.20
C to D	1,523 cy	6" - 0	$10,614.26
E to F	50 cy	6" - 0	$407.50
G to H	303 cy	6" - 0	$1,966.47
Total	45 cy	1 1/2" - 0	
	2,708 cy	6" - 0	

TOTAL PROJECT NO. 2 COST = $19,668.79

PROJECT NO. 3: GRASS SEED, FERTILIZE, & MULCH

Grass seed and fertilize	$366.41
Mulch.	$36.00

TOTAL PROJECT NO. 3 COST = $402.41

PROJECT NO. 4: VACATING

Road vacating E to F and I to J	$2,939.72

TOTAL PROJECT NO. 4 COST = $2,939.72

MOVE IN & EQUIPMENT CLEANING $6,024.21

TOTAL ALL PROJECTS $50,697.05

TOTAL CREDITS $50,700.00

SUMMARY OF CONSTRUCTION COST

Timber Sale: **Big Bell** Timber Sale No. : 341-12-16

Road Segment: **A to B** Construction: 11+85 stations

0.22 miles

PROJECT NO. 1

EXCAVATION

Clearing and Grubbing (Scatter)	0.54	acres @	$980.00	per acre =	$533.20	
Balanced Road Construction	11.85	sta @	$90.00	per sta =	$1,066.50	
Construct Turnouts (1)	1	ea @	$60.00	per ea =	$60.00	
Construct Turnaround (1)	1	ea @	$75.00	per ea =	$75.00	
Landing	1	ea @	$285.00	per ea =	$285.00	
Grade, Ditch, and Roll	11.85	sta @	$28.70	per sta =	$340.10	
				TOTAL EXCAVATION COSTS=		**$2,359.79**

CULVERTS - MATERIALS & INSTALLATION

Culverts

30 LF of 18" $540.00

Culvert Markers

1 markers $10.00

TOTAL CULVERT COSTS = **$550.00**

PROJECT NO. 1 TOTAL COST = $2,909.79

PROJECT NO. 2:

SURFACING 10 " deep = 53 cy/sta

A to B	628	cy of	6" - 0	@	$7.48	per cy =	$4,697.44
Turnouts (1)	18	cy of	6" - 0	@	$7.48	per cy =	$134.64
Turnaround (1)	16	cy of	6" - 0	@	$7.48	per cy =	$119.68
Junction	20	cy of	6" - 0	@	$7.48	per cy =	$149.60
Landing (1)	150	cy of	6" - 0	@	$7.48	per cy =	$1,122.00
Total =	832	cy of	6" - 0				

PROJECT NO. 2 TOTAL COST = $6,223.36

PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil.	0.27	acres @	$220.00	per acre =	$59.85	

PROJECT NO. 3 TOTAL COST = $59.85

TOTAL COST = $9,193.00

SUMMARY OF CONSTRUCTION COST

Timber Sale: Big Bell Timber Sale No. : 341-12-16

Road Segment: C to D Construction: 19+00 stations

0.36 miles

PROJECT NO. 1

EXCAVATION

Clearing and Grubbing (Scatter)	0.87	acres @	$980.00	per acre =	$854.91	
Balanced Road Construction	19.00	sta @	$90.00	per sta =	$1,710.00	
Construct Turnouts (2)	2	ea @	$60.00	per ea =	$120.00	
Construct Turnaround (1)	1	ea @	$75.00	per ea =	$75.00	
Landing with 245' Approach	1	ea @	$575.82	per sta =	$575.82	
Landing (Roadside)	1	ea @	$150.00	per ea =	$150.00	
Landing	1	ea @	$285.00	per ea =	$285.00	
Grade, Ditch, and Roll	19.00	sta @	$28.70	per sta =	$545.30	
				TOTAL EXCAVATION COSTS=		$4,316.03

CULVERTS - MATERIALS & INSTALLATION

Culverts

60 LF of 18" $1,080.00

Culvert Markers

2 markers $20.00

TOTAL CULVERT COSTS = $1,100.00

PROJECT NO. 1 TOTAL COST = $5,416.03

PROJECT NO. 2:

SURFACING

	10	" deep =	53 cy/sta				
C to D Base Rock	941	cy of	6" - 0	@	$6.97	per cy =	$6,558.77
C to D Surfacing Lift 1½" - 0	45	cy of	1½" - 0	@	$10.16	per cy =	$457.20
Turnouts (2)	36	cy of	6" - 0	@	$6.97	per cy =	$250.92
Turnaround (1)	16	cy of	6" - 0	@	$6.97	per cy =	$111.52
Junction	20	cy of	6" - 0	@	$6.97	per cy =	$139.40
Landing (1)	150	cy of	6" - 0	@	$6.97	per cy =	$1,045.50
Landing with 245' Approac	280	cy of	6" - 0	@	$6.97	per cy =	$1,950.55
Landing (Roadside)	80	cy of	6" - 0	@	$6.97	per cy =	$557.60
Total =							
	45	cy of	1½" - 0				
	1523	cy of	6" - 0				

PROJECT NO. 2 TOTAL COST = $11,071.46

PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil.	0.44	acres @	$220.00	per acre =	$95.96

PROJECT NO. 3 TOTAL COST = $95.96

TOTAL COST = $16,583.45

SUMMARY OF CONSTRUCTION COST

Timber Sale: Big Bell Timber Sale No. : 341-12-16

Road Segment: E to F Construction: 16+75 stations

0.32 miles

PROJECT NO. 1

EXCAVATION

Clearing and Grubbing (Scatter)	0.77	acres @	$980.00	per acre =	$753.67	
Balanced Road Construction	14.75	sta @	$90.00	per sta =	$1,327.50	
Drift	2.00	sta @	$150.00	per sta =	$300.00	
Construct Turnaround (1)	1	ea @	$75.00	per ea =	$75.00	
Landing	2	ea @	$150.00	per ea =	$300.00	
Landing	1	ea @	$285.00	per ea =	$285.00	
Grade, Ditch, and Roll	16.75	sta @	$28.70	per sta =	$480.73	
				TOTAL EXCAVATION COSTS=		$3,521.90

CULVERTS - MATERIALS & INSTALLATION

Culverts

100 LF of 18" $1,800.00

TOTAL CULVERT COSTS = $1,800.00

PROJECT NO. 1 TOTAL COST = $5,321.90

PROJECT NO. 2:

SURFACING

Subgrade Reiforcemer	50	cy of	6" - 0	@ $8.15	per cy =	$407.50
Total =						
	50	cy of	6" - 0			

PROJECT NO. 2 TOTAL COST = $407.50

PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil.	0.38 acres @	$220.00	per acre =	$84.60	

PROJECT NO. 3 TOTAL COST = $84.60

PROJECT NO. 4:

Grass seed and fertilize areas of disturbed soil.	0.62 acres @	$220.00	per acre =	$135.35	
Mulch	0.62 acres @	$600.00	per acre =	$369.15	
Construct waterbars	6.00 each @	$25.00	per each =	$150.00	
Construct tank trap	1.00 each @	$50.00	per each =	$50.00	
Remove culverts	3.00 each @	$150.00	per each =	$450.00	

PROJECT NO. 4 TOTAL COST = $1,454.50

TOTAL COST = $7,268.49

SUMMARY OF CONSTRUCTION COST

Timber Sale: **Big Bell** Timber Sale No. : 341-12-16

Road Segment: **G to H** Construction: 2+20 stations

0.04 miles

PROJECT NO. 1

EXCAVATION

Clearing and Grubbing (Scatter)	0.10	acres @	$980.00	per acre =	$98.99	
Balanced Road Construction	2.20	sta @	$90.00	per sta =	$198.00	
Construct Turnaround (1)	1	ea @	$75.00	per ea =	$75.00	
Landing	1	ea @	$285.00	per ea =	$285.00	
Grade, Ditch, and Roll	2.20	sta @	$28.70	per sta =	$63.14	
				PROJECT NO. 1 TOTAL COST =		**$720.13**

PROJECT NO. 2:

SURFACING	10	" deep =	53 cy/sta				
G to H	117	cy of	6" - 0	@	$6.49	per cy =	$759.33
Turnaround (1)	16	cy of	6" - 0	@	$6.49	per cy =	$103.84
Junction	20	cy of	6" - 0	@	$6.49	per cy =	$129.80
Landing (1)	150	cy of	6" - 0	@	$6.49	per cy =	$973.50
Total =	303	cy of	6" - 0				
						PROJECT NO. 2 TOTAL COST =	**$1,966.47**

PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil.	0.05	acres @	$220.00	per acre =	$11.11	
				PROJECT NO. 3 TOTAL COST =		**$11.11**

TOTAL COST = $2,697.71

SUMMARY OF CONSTRUCTION COST

Timber Sale: **Big Bell** Timber Sale No. : 341-12-16

Road Segment: **I to J** Construction: 22+75 stations

0.43 miles

PROJECT NO. 1

EXCAVATION

Clearing and Grubbing (Scatter)	1.04	acres @	$980.00	per acre =	$1,023.65	
Balanced Road Construction	14.75	sta @	$90.00	per sta =	$1,327.50	
Drift	8.00	sta @	$150.00	per sta =	$1,200.00	
Construct Turnouts (2)	2	ea @	$60.00	per ea =	$120.00	
Construct Turnaround (1)	1	ea @	$75.00	per ea =	$75.00	
Landing	1	ea @	$150.00	per ea =	$150.00	
Landing	1	ea @	$285.00	per ea =	$285.00	
Grade, Ditch, and Roll	22.75	sta @	$28.70	per sta =	$652.93	
				TOTAL EXCAVATION COSTS=		**$4,834.07**

CULVERTS - MATERIALS & INSTALLATION

Culverts

70 LF of 18" $1,260.00 50 LF of 24" $1,200.00

TOTAL CULVERT COSTS = **$2,460.00**

PROJECT NO. 1 TOTAL COST = $7,294.07

PROJECT NO. 3:

Grass seed and fertilize areas of disturbed soil.	0.52	acres @	$220.00	per acre =	$114.90	
Mulch	0.06	acres @	$600.00	per acre =	$36.00	

PROJECT NO. 3 TOTAL COST = $150.90

PROJECT NO. 4:

Grass seed and fertilize areas of disturbed soil.	0.84	acres @	$220.00	per acre =	$183.84	
Mulch	0.84	acres @	$600.00	per acre =	$501.38	
Construct waterbars	12.00	each @	$25.00	per each =	$300.00	
Construct tank trap	1.00	each @	$50.00	per each =	$50.00	
Remove culverts	3.00	each @	$150.00	per each =	$450.00	

PROJECT NO. 4 TOTAL COST = $1,485.22

TOTAL COST = $8,930.19

Move-In & Equipment Cleaning

Timber Sale: Big Bell
Sale Number: 341-12-06

LOWBOY HAUL (Round Trip)		
DIST. (mi)	ROAD	AVE SPEED (mph)
5.3	Main Lines	**7**
2.0	Steep Grades	**2**

No.	EQUIPMENT DESCRIPTION	Equipment Cleaning	Base Cost	Woods Cost	Pilot Cars	Within Area Move ($/mile)	Begin Mileage	End Mileage	Total Miles	Within Area Cost	Total Cost
0	Drill & Compressor		$0.00	$0.00		$46.00	$0.00	$0.00	$0.00	$0.00	$0.00
0	Brush Cutter		$0.00	$0.00		$4.00	$0.00	$0.00	$0.00	$0.00	$0.00
1	Graders		$300.00	$250.72		$3.65	$0.00	$0.00	$0.00	$0.00	$550.72
0	Loader (Small)		$0.00	$0.00	1	$3.55	$0.00	$0.00	$0.00	$0.00	$0.00
1	Loader (Med. & Large)		$414.39	$331.57	1	$9.00	$0.00	$0.00	$0.00	$0.00	$745.96
1	Rollers (smooth/grid) & Compactors		$308.59	$207.00		$5.00	$0.00	$0.00	$0.00	$0.00	$515.59
0	Excavators (Small)		$0.00	$0.00		$22.00	$0.00	$0.00	$0.00	$0.00	$0.00
0	Excavators (Med.)		$0.00	$0.00		$35.50	$0.00	$0.00	$0.00	$0.00	$0.00
1	Excavators (Large)	$1,000	$466.14	$385.91	1	$44.80	$0.00	$0.00	$0.00	$0.00	$1,852.05
0	Tired Backhoes/Skidders		$0.00	$0.00		$3.00	$0.00	$0.00	$0.00	$0.00	$0.00
0	Tractors (D6)		$0.00	$0.00	2	$7.10	$0.00	$0.00	$0.00	$0.00	$0.00
0	Tractors (D7)		$0.00	$0.00	2	$11.30	$0.00	$0.00	$0.00	$0.00	$0.00
1	Tractor (D8)	$1,000	$473.80	$353.71	2	$15.10	$0.00	$0.00	$0.00	$0.00	$1,827.51
2	Dump Truck (10 cy +)		$233.34	$145.00		$2.85	$0.00	$0.00	$0.00	$0.00	$378.34
0	Dump Truck (Off Hiway)		$0.00	$0.00	1	$4.75	$0.00	$0.00	$0.00	$0.00	$0.00
1	Water Truck (1500 Gal)		$95.00	$59.04		$2.85	$0.00	$0.00	$0.00	$0.00	$154.04
0	Water Truck (2500 Gal)		$0.00	$0.00		$2.85	$0.00	$0.00	$0.00	$0.00	$0.00
									TOTAL MOVE-IN COSTS:		$6,024.21

ROCK DEVELOPMENT COST SUMMARY

Timber Sale: Big Bell

Sale Number: 341-12-06

Pit Name: Bellgrade Pit

Swell:	1.30		Pit Run (trk measure)		2,708 cy
Shrinkage:	1.16		Total Truck Yardage:		2,708 cy
Drill Pct.:	100%		Total In Place Yardage:		2,083 cy
Scalp & Clear Overburden:					$1,500.00
Rip Rock:	$1.90 /cy x	2,083 cy	=		$3,957.63
Load Dump Truck:	$0.70 /cy x	2,708 cy	=		$1,895.50
			Subtotal		$7,353.12
Equipment Cleaning					$1,000.00
Move in Excavator					$853.53
Clean Up Pit					$300.00
			Subtotal		$2,153.53

PIT DEVELOPMENT COST $3.51/cy

TOTAL PRODUCTION COST $9,506.65

CRUISE REPORT
Big Bell
341-12-06

1. ACREAGE CALCULATION: Area 1is 112 acres, Area 2 is 177 acres, and Area 3 is 8 acres. Acres were determined with ESRI ArcMap GIS Software**.** Acres are net of stream buffers, leave areas, and existing roads.

2. SAMPLING INTENSITY:
Area 1: (Cruise Type 0001) In 2005, was cruised with 20 Stand Level Inventory variable radius plots with a total of 115 measured trees. The Super Ace-generated cruise statistics report indicates that the Coefficient of Variation is 38.5% and the cumulative sampling error is an acceptable 8.8%. This cruise appears to have adequately sampled the stand so no additional plots were necessary.

Areas 2 and 3: (Cruise Type 0002) The cruise design assumed a Coefficient of Variation (CV%) of 48%, an average stand diameter of 15 inches, a desired sampling error (SE%) of 9%. The Sale Areas were cruised in September 2011 with 18 variable radius (grade) plots and 18 variable radius count plots. 74 trees were measured and graded. This produced an acceptable cumulative sampling error of 10.4%.

Area 5: Right-of-Way volume was derived from the total stand volume of Area 2 Cruise.

3. TREE MEASUREMENT AND GRADING:
All grade plot "Take" trees were measured and graded following Columbia River Log Scale grade rules and favoring 40 foot segments.

a) **Height Standards:**
Total tree heights were measured to the nearest foot. Bole heights were calculated to a six inch top.
b) **Diameter Standards:** Diameters were measured outside bark at breast height to the nearest inch.
c) **Form Factors** were measured for each grade tree using a form point of 16 feet.

4. DATA PROCESSING

a) **Volumes and Statistics**: Cruised and grown forward volume estimates, and sampling statistics, were derived from Super Ace 2008 cruise software. (Plot data was grown forward to September 2011).

b) **Deductions:** Area 1 - Two percent of the volume was subtracted from the computed volumes to account for hidden defect and breakage.

5. Cruisers: The sale was cruised by SLI contract and ODF cruisers.

Prepared by: _____
Peter Stone Date

Reviewed by: _____
Eric Foucht Date

TC TSTATS

STATISTICS

PAGE 1

PROJECT BIGBELL2

DATE 9/26/2011

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
03N	06W	02	1	0001	112.00	19	112	S	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	19	112	5.9		
CRUISE	19	112	5.9	18,922	.6
DBH COUNT					
REFOREST COUNT					
BLANKS					
100 %					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR-T	109	164.5	14.7	91	50.4	192.8	27,712	27,712	6,509	6,509
R ALDER-T	3	4.5	14.7	71	1.4	5.3	546	546	143	143
TOTAL	*112*	*168.9*	*14.7*	*91*	*51.7*	*198.1*	*28,258*	*28,258*	*6,652*	*6,652*

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-T	80.2	7.7	263	285	306			
R ALDER-T	48.8	33.8	88	133	178			
TOTAL	*80.7*	*7.6*	*259*	*281*	*302*	*260*	*65*	*29*

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-T	68.9	16.2	138	164	191			
R ALDER-T	303.0	71.4	1	4	8			
TOTAL	*64.7*	*15.2*	*143*	*169*	*195*	*177*	*44*	*20*

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-T	35.7	8.4	177	193	209			
R ALDER-T	317.6	74.8	1	5	9			
TOTAL	*31.4*	*7.4*	*183*	*198*	*213*	*42*	*10*	*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-T	38.3	9.0	25,211	27,712	30,213			
R ALDER-T	340.0	80.1	109	546	984			
TOTAL	*35.6*	*8.4*	*25,887*	*28,258*	*30,630*	*54*	*13*	*6*

TC TSTATS

STATISTICS

PAGE 1

PROJECT BIGBELL2

DATE 9/26/2011

TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
03N	06W	02	0001	0002	185.00	36	349	S	W

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	36	349	9.7		
CRUISE	17	73	4.3	15,763	.5
DBH COUNT					
REFOREST					
COUNT	19	184	9.7		
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-T	70	82.7	15.0	92	26.3	101.9	13,322	13,208	3,328	3,328
SNAG-L	1	1.5	16.0	85	0.5	2.0				
WHEMLOCK-L	1	.8	18.0	110	0.4	1.5	169	169	43	43
NOB FIR-L	1	.2	30.0	130	0.2	.9	223	211	45	45
TOTAL	*73*	*85.2*	*15.1*	*92*	*27.3*	*106.3*	*13,714*	*13,588*	*3,415*	*3,415*

CONFIDENCE LIMITS OF THE SAMPLE

68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR

CL: 68.1 %	COEFF		**SAMPLE TREES - BF**			# OF TREES REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR-T	51.0	6.1	185	197	209			
SNAG-L								
WHEMLOCK-L								
NOB FIR-L								
TOTAL	*71.1*	*8.3*	*190*	*207*	*225*	*202*	*51*	*22*

CL: 68.1 %	COEFF		**TREES/ACRE**			# OF PLOTS REQ.		INF. POP.
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR-T	67.7	11.3	73	83	92			
SNAG-L	419.8	69.9	0	1	2			
WHEMLOCK-L	432.2	72.0	0	1	1			
NOB FIR-L	600.0	99.9	0	0	0			
TOTAL	*61.8*	*10.3*	*76*	*85*	*94*	*153*	*38*	*17*

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-T	60.8	10.1	92	102	112			
SNAG-L	419.8	69.9	1	2	3			
WHEMLOCK-L	432.2	72.0	0	1	3			
NOB FIR-L	600.0	99.9	0	1	2			
TOTAL	*52.4*	*8.7*	*97*	*106*	*116*	*110*	*27*	*12*

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-T	62.5	10.4	11,833	13,208	14,583			
SNAG-L								
WHEMLOCK-L	432.2	72.0	47	169	290			
NOB FIR-L	600.0	99.9	0	211	422			
TOTAL	*57.4*	*9.6*	*12,289*	*13,588*	*14,886*	*132*	*33*	*15*

TC TLOGSTVB

Log Stock Table - MBF

Project: BIGBELL2

T03N R06W S02 T0001

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
03N	06W	02	1	0001	112.00	19	112

T03N R06W S02 T0001

Page 1
Date 9/26/2011
Time 1:37:29PM

Spp	S T	So Grade	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+
DF		2M	40	1,255		1,255	40.4						412		380	372	91		
DF		3M	24	6		6	.2				6								
DF		3M	30	6		6	.2				6								
DF		3M	32	206		206	6.6			125	17	19	46						
DF		3M	40	1,349		1,349	43.5			482	274	570	22						
DF		4M	16	54		54	1.7			54									
DF		4M	20	61		61	2.0			61									
DF		4M	24	45		45	1.5			45									
DF		4M	30	41		41	1.3			34	7								
DF		4M	32	79		79	2.5			79									
DF		Totals		3,104		3,104	98.1			881	310	589	480	380	372	91			
RA		R	20	5		5	7.9			5									
RA		R	24	16		16	26.4					16							
RA		R	30	40		40	65.7			6	15		19						
RA		Totals		61		61	1.9			11	15	16	19						
Total All Species				3,165		3,165	100.0			892	325	605	499	380	372	91			

TC TLOGSTVB

Log Stock Table - MBF

Project: BIGBELL2

T03N R06W S02 T0002

T03N R06W S02 T0002

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
03N	06W	02	0001	0002	185.00	36	169

Date 9/26/2011

Time 1:39:14PM

Spp	S T	So Grade	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+
DF	T	CU	6										
DF	T	2M	24	22		22	.9				22		
DF	T	2M	32	23		23	.9			23			
DF	T	2M	40	570	.5	567	23.2			429	105 33		
DF	T	3M	32	281		281	11.5		128 153				
DF	T	3M	40	1,287	1.3	1,270	52.0		183 500	564 24			
DF	T	4M	16	48		48	2.0		48				
DF	T	4M	20	65		65	2.7		65				
DF	T	4M	24	113	1.1	112	4.6		112				
DF	T	4M	30	35		35	1.4		35				
DF	T	4M	40	20		20	.8		20				
DF		Totals		2,465		2,443	97.2		591 652	564 476	127 33		
WH	L	CU	12										
WH	L	CU	24										
WH	L	2M	40	31		31	100.0			31			
WH		Totals		31		31	1.2			31			
NF	L	2M	40	39	5.4	37	95.5				11	27	
NF	L	3M	32	2		2	4.5		2				
NF		Totals		41	5.1	39	1.6		2		11	27	
Total All Species				2,537		2,514	100.0		593 652	564 508	137 33	27	

TC TSTNDSUM

Stand Table Summary

Project BIGBELL2

T03N R06W S02 T0001

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
03N	06W	02	1	0001	112.00	19	112

T03N R06W S02 T0001

Date: 09/26/20

Time: 1:37:31PM

Spc	S T	Sample DBH	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	2	88	55	10.135	3.54	10.14	4.6	20.0	1.34	47	203	150	53	23
DF		9	4	87	71	16.016	7.08	16.02	7.6	40.0	3.49	122	641	390	137	72
DF		10	8	88	89	25.946	14.15	25.95	12.8	60.0	9.44	331	1,557	1,057	371	174
DF		11	3	88	76	8.041	5.31	10.72	11.6	50.0	3.54	124	536	397	139	60
DF		12	8	88	75	18.018	14.15	24.78	13.9	51.8	9.78	343	1,284	1,096	384	144
DF		13	7	87	98	13.434	12.38	26.87	14.1	56.4	10.81	379	1,516	1,210	425	170
DF		14	7	87	98	11.583	12.38	21.51	18.2	78.5	11.15	391	1,688	1,249	438	189
DF		15	8	88	100	11.532	14.15	23.06	21.6	96.2	14.20	498	2,220	1,591	558	249
DF		16	6	88	97	7.601	10.61	15.20	23.3	95.0	10.09	354	1,444	1,130	397	162
DF		17	7	88	103	7.856	12.38	15.71	27.7	117.1	12.38	435	1,840	1,387	487	206
DF		18	5	87	110	5.005	8.84	11.01	30.6	120.0	9.59	336	1,321	1,074	377	148
DF		19	5	87	107	4.492	8.84	9.88	34.5	138.2	9.72	341	1,366	1,089	382	153
DF		20	7	88	106	5.676	12.38	12.16	37.6	142.0	13.04	458	1,727	1,461	513	193
DF		21	8	87	107	5.884	14.15	11.77	45.9	180.0	15.38	540	2,118	1,723	605	237
DF		22	7	87	122	4.691	12.38	14.07	37.7	175.2	15.14	531	2,466	1,695	595	276
DF		23	2	87	118	1.226	3.54	3.68	40.9	185.0	4.29	151	681	480	169	76
DF		24	5	88	121	2.815	8.84	8.45	43.5	190.0	10.46	367	1,605	1,172	411	180
DF		25	4	87	115	2.076	7.08	6.23	47.6	216.7	8.44	296	1,349	945	332	151
DF		26	1	87	114	.480	1.77	1.44	51.6	240.0	2.12	74	345	237	83	39
DF		28	2	87	121	.827	3.54	2.48	61.3	273.3	4.33	152	678	485	170	76
DF		29	2	88	126	.771	3.54	2.31	68.5	326.7	4.52	158	756	506	178	85
DF		30	1	88	122	.360	1.77	1.08	73.3	343.3	2.26	79	371	253	89	42
DF		Totals	109	88	91	164.467	192.82	274.52	23.7	100.9	185.51	6,509	27,712	20,778	7,290	3,104
RA		13	1	87	69	1.919	1.77	1.92	20.5	70.0	1.08	39	134	121	44	15
RA		15	1	88	64	1.441	1.77	2.88	16.0	65.0	1.27	46	187	142	52	21
RA		17	1	87	84	1.122	1.77	2.24	25.6	100.0	1.58	57	224	177	64	25
RA		Totals	3	87	71	4.483	5.31	7.05	20.3	77.5	3.93	143	546	440	160	61
Totals			112	88	90	168.950	198.12	281.56	23.6	100.4	189.44	6652	28,258	21,217	7,450	3,165

TC TSTNDSUM

Stand Table Summary

Project BIGBELL2

T03N R06W S02 T0002

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees
03N	06W	02	0001	0002	185.00	36	169

Date: 09/26/20
Time: 1:39:13PM

Spc	S T	Sample DBH	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	T	10	2	82	57	5.987	3.27	5.99	8.4	31.2	1.44	50	187	266	93	35
DF	T	11	2	85	85	4.948	3.27	4.95	16.3	60.0	2.29	81	297	425	149	55
DF	T	12	4	85	85	8.316	6.53	16.63	10.5	44.1	4.99	175	733	923	324	136
DF	T	13	4	87	85	7.085	6.53	11.53	15.8	58.4	5.18	182	674	959	336	125
DF	T	14	14	87	93	19.056	20.37	38.11	16.9	66.7	18.36	644	2,543	3,397	1,192	470
DF	T	15	4	88	100	4.646	5.70	9.29	20.5	82.9	5.42	190	770	1,003	352	143
DF	T	16	9	86	97	9.634	13.45	19.27	24.0	94.1	13.16	462	1,813	2,434	854	335
DF	T	17	5	89	111	5.442	8.58	11.66	27.8	114.0	9.25	325	1,329	1,712	601	246
DF	T	18	16	88	98	11.969	21.15	25.32	29.1	115.7	20.99	737	2,928	3,883	1,363	542
DF	T	19	3	88	109	2.277	4.48	5.17	33.4	133.3	4.93	173	689	911	320	128
DF	T	20	3	93	96	1.675	3.65	3.35	38.8	166.7	3.71	130	558	686	241	103
DF	T	21	1	83	98	.506	1.22	1.01	42.8	150.0	1.24	43	152	228	80	28
DF	T	24	3	86	100	1.163	3.65	2.71	50.1	197.1	3.88	136	535	717	252	99
DF		Totals	70	87	92	82.706	101.86	154.99	21.5	85.2	94.84	3,328	13,208	17,545	6,156	2,443
NF	L	30	1	89	130	.190	.93	.57	78.4	370.0	1.07	45	211	199	83	39
NF		Totals	1	89	130	.190	.93	.57	78.4	370.0	1.07	45	211	199	83	39
WH	L	18	1	88	110	.843	1.49	.84	51.1	200.0	1.38	43	169	255	80	31
WH		Totals	1	88	110	.843	1.49	.84	51.1	200.0	1.38	43	169	255	80	31
SN	L	16	1		17	1.464	2.04									
SN		Totals	1		17	1.464	2.04									
Totals			73	87	91	85.203	106.33	156.41	21.8	86.9	97.29	3415	13,588	17,998	6,319	2,514

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: BIGBELL2

Page 1
Date 9/26/2011
Time 1:37:28PM

T03N R06W S02 T0001

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
03N	06W	02	1	0001	112.00	19	112	S	W

T03N R06W S02 T0001

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
DF			2M	40		11,209	11,209	1,255			78	22				100	40	14	318	1.73	35.3
DF			3M	50		13,997	13,997	1,568		96	4			1	13	86	38	8	90	0.58	155.0
DF			4M	10		2,506	2,506	281		100			41	31	28		23	6	30	0.32	84.2
DF	**Totals**			98		27,712	27,712	3,104		57	34	9	4	3	9	84	34	8	101	0.70	274.5
RA			R	100		546	546	61		69	31		8	92			27	9	78	0.76	7.0
RA	**Totals**			2		546	546	61		69	31		8	92			27	9	78	0.76	7.0
Type Totals						28,258	28,258	3,165		58	34	9	4	5	9	82	34	8	100	0.70	281.6

T TSPCSTGR

Species, Sort Grade - Board Foot Volumes (Type)

Project: BIGBELL2

Date 9/26/2011

Time 1:39:12PM

T03N R06W S02 T0002

Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt
03N	06W	02	0001	0002	185.00	36	169	S	W

T03N R06W S02 T0002

Spp	ST	Sort	Grad	% Net BdFt	Bd. Ft. per Acre Def%	Gross	Net	Total Net MBF	Percent Net Board Foot Volume: Log Scale Dia. 4-5	6-11	12-16	17+	Log Length 12-20	21-30	31-35	36-99	Average Log: Ln Ft	Dia In	Bd Ft	CF/ Lf	Logs Per /Acre
DF	T		CU														6	13		0.00	.7
DF	T		2M	25	.4	3,323	3,308	612			95	5		4	4	93	39	13	223	1.32	14.8
DF	T		3M	63	1.1	8,478	8,384	1,551		98	2				18	82	38	8	100	0.68	84.2
DF	T		4M	12	.5	1,522	1,515	280		100			40	52		7	22	6	27	0.33	56.0
DF	**T**	**Totals**		97	.9	13,322	13,208	2,443		74	25	1	5	7	12	76	32	8	85	0.67	155.7
WH	L		CU														16	7		0.00	2.5
WH	L		2M	100		169	169	31			100					100	40	12	200	1.28	.8
WH	**L**	**Totals**		1		169	169	31			100					100	22	8	50	0.58	3.4
NF	L		2M	95	5.4	213	202	37			28	72				100	40	18	530	2.66	.4
NF	L		3M	5		10	10	2		100					100		32	6	50	0.71	.2
NF	**L**	**Totals**		2	5.1	223	211	39		5	27	68			5	95	37	14	370	2.10	.6
Type Totals					.9	13,714	13,588	2,514		72	26	2	4	7	12	77	32	8	85	0.67	159.6

Big Bell
341-12-06
Volume Summary (Shown in MBF)
September 2011

Area 1: Modified Clearcut (112 Acres)

SPECIES		2 SAW	3 SAW	4 SAW	CAMPRUN	TOTAL
Douglas-fir	Cruise Volume	1,255	1568	281	0	3,104
	In-Growth					
-2%	Hidden D&B	(25)	(31)	(6)	(0)	(62)
	Total	**1,230**	**1,537**	**275**	**0**	**3,042**
	% Total	*40*	*51*	*9*	***0***	

SPECIES		2 SAW	3 SAW	4 SAW	CAMPRUN	STOTAL
Red alder	Cruise Volume				61	61
	In-Growth					
-2%	Hidden D&B				(1)	(1)
	Total				**60**	**60**
	% Total				*100*	

Areas 2 & 3: Partial Cut - Moderate (185 Acres)

SPECIES		2 SAW	3 SAW	4 SAW	CAMPRUN	TOTAL
Douglas-fir	Cruise Volume	612	1,551	280	0	2,443
	In-Growth					
-2%	Hidden D&B	(12)	(31)	(6)	(0)	(49)
	Total	**600**	**1,520**	**274**	**0**	**2,394**
	% Total	*25*	*63*	*10*	*0*	

Area 4: Right-of-Way (2 Acres)

SPECIES		2 SAW	3 SAW	4 SAW	CAMPRUN	TOTAL
Douglas-fir	Cruise Volume	15	38	7	0	60
	In-Growth					
	Hidden D&B	(1)	(1)	(1)	(0)	(3)
	Total	**14**	**37**	**6**	**0**	**57**
	% Total	*25*	*65*	*10*	*0*	

There may be negligible volumes of western hemlock and red alder within the R/W

Residual Stand Specifications

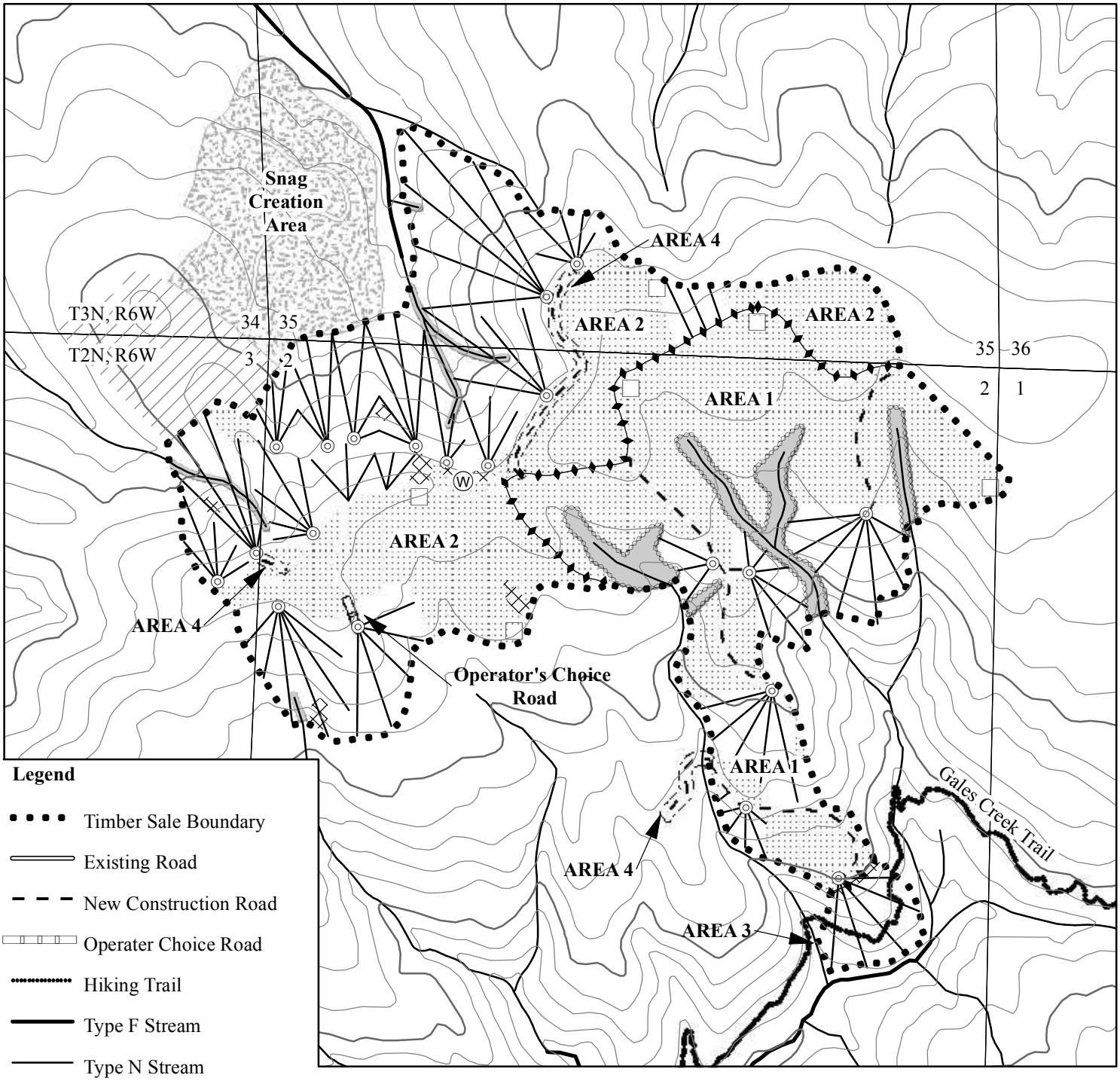
Big Bell
341-12-06

AREA 2

Residual QMD assumption (from cruise leave tree information) - 18.
Target Relative Density - 31

	Minimum	Target	Maximum
Relative Density	28	31	33
Basal Area	120	130	140
Trees per Acre	68	74	79

$RD = BA/\sqrt{DBH}$
$BA = \sqrt{DBH}(RD)$
$BA/tree = (\pi r^2)/(144)$
$TPA = (BA/acre)/(BA/tree)$



Legend

- Timber Sale Boundary
- Existing Road
- New Construction Road
- Operater Choice Road
- Hiking Trail
- Type F Stream
- Type N Stream
- Posted Stream Buffer
- Unposted Stream Buffer
- Cable Landing
- Tractor Landing
- Cable Logging Area
- Tractor Logging Area
- Non Thinnable Area
- Snag Creation Area
- Reforestation Area
- Right-of-Way Boundary
- 80 foot contour

LOGGING PLAN

OF TIMBER SALE CONTRACT NO. 341-12-06
BIG BELL
PORTIONS OF SECTIONS 1, 2, 3, T02N, R06W,
SECTIONS 34, 35, T03N, R06W, W.M
WASHINGTON COUNTY, OREGON

Forest Grove District GIS
October 2011
This product is for informational use and may not be suitable for legal, engineering, or surveying purposes.

1:12,000
1 inch = 1,000 feet

0 500 1,000
Feet

N

APPROXIMATE NET ACRES

	TRACTOR	CABLE
AREA 1	77	35
AREA 2	70	107
AREA 3	0	8
AREA 4	2	0
TOTAL	149	150