ODFW AQUATIC INVENTORY PROJECT

OREGON PLAN FOR SALMON & WATERSHEDS

STREAM RESTORATION HABITAT REPORT

STREAM: Bewley Creek (#NC 111)
BASIN: Tillamook River
SURVEY TYPE: Post-Tx
DATE: October 30, 2003
REPORT PREPARED BY: Paul Jacobsen

The Bewley Creek restoration project was treated in 1995, and then monitored in 1996 and again in 2001 for post-treatment conditions. There is also baseline information available from 1995, just prior to treatment. This site has a companion reference reach located just downstream. In comparing the pre-treatment data with both of the post-treatment surveys, it is notable that the reach was pool-rich prior to treatment. Pool frequency has improved slightly and there are more complex pools than before treatment. Riffle gravel has remained stable but riffle fines have decreased. Large wood pieces have decreased through time, while wood volume and key pieces, initially high just after treatment, have decreased below pre-treatment conditions.

	ODFW	Benchmark		AQI Survey	Post Project	Post Project	
Habitat Variable	**Desirable**	**Undesirable**		**5/4/95**	**8/29/96**	**7/24/01**	
Pool Area	>35%	<10%		53.7	39.3	76.8	
Pool Frequency	5-8	>20%		4.0	6.4	3.5	
Residual Pool Depth	.5-1m	.2-.5m		.50	.62	.57	
Complex Pools/km	>2.5	<1		0.0	12.2	6.0	
Width/Depth Ratio	<15	>30		11.3	14.7	12.7	
Riffle Gravel % area	>35%	<15%		48	45	46	
Silt-Sand-Organic %	<8%	>15%		20	14	10	
Shade %	>70%	< 60%		74	87	86	
LWD - pieces/100m	>20	<10		14.5	11.1	9.3	
LWD - Volume/100m	>30	<20		13.7	32.4	7.7	
LWD - Key pieces/ 100m	>3	<1		0.9	1.3	.3	

COMMENTS:

There were no potential barriers to upstream fish migration in the surveyed length.

The 1996 survey crew recorded ten habitat structures while the 2001 crew noted thirteen.

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STREAM RESTORATION HABITAT REPORT

STREAM:	Bewley Creek (NC-111)
BASIN:	Tillamook River
SURVEY TYPE:	Post-Tx
DATE:	July 24, 2001
SURVEY CREW:	Rachel Werner, Sean Allen
REPORT PREPARED BY:	Paul Jacobsen
BASIN AREA:	15.5 km^2
USGS MAPS:	Tillamook
ECOREGION:	Coast Range Sitka Spruce

GENERAL DESCRIPTION:

The Bewley Creek habitat survey extended 786 meters. The channel was unconstrained in a broad valley floor. The average valley width index was 10.8 (range: 7.0 – 20.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 0.5 percent. Scour pools (75%) and riffles (17%) dominated stream habitat. Gravel (36%) and cobble (25%) dominated stream substrate. Wood volume was low at 7.7 m^3/100m.

COMMENTS:

There were no potential barriers to upstream fish migration in the surveyed length.

The crew noted several habitat structures during the survey.

ODFW AQUATIC INVENTORY PROJECT

OREGON PLAN FOR SALMON & WATERSHEDS

STREAM RESTORATION HABITAT REPORT

STREAM:	Bewley Creek (#NC 111)
BASIN:	Tillamook River
SURVEY TYPE:	Post-Tx
DATE:	September 9, 2002
SURVEY CREW:	Sean Allen, Rachel Werner
REPORT PREPARED BY:	Paul Jacobsen
BASIN AREA:	15.5 km^2
USGS MAPS:	Tillamook
ECOREGION:	Coast Range Sitka Spruce

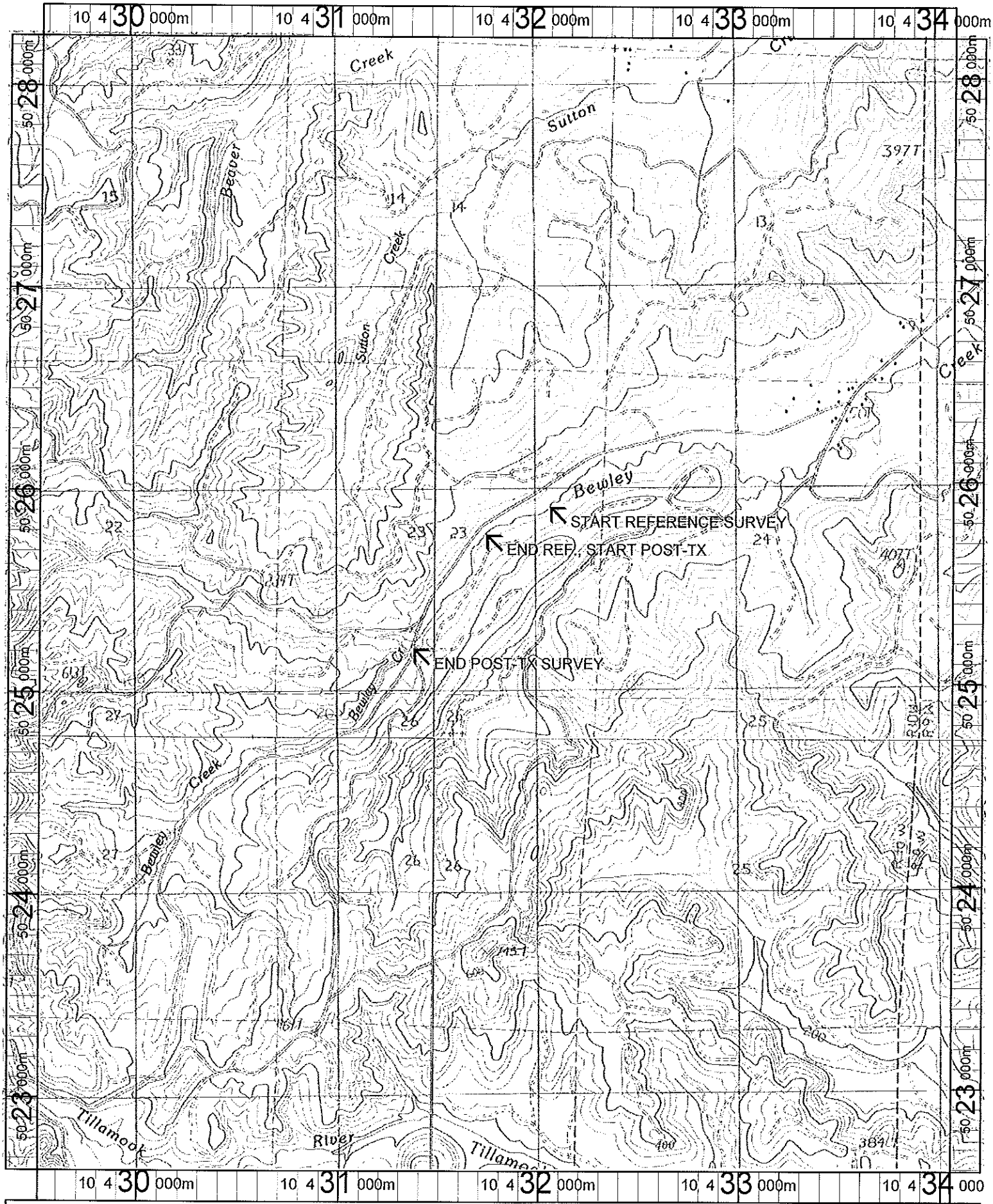
GENERAL DESCRIPTION:

The Bewley Creek habitat survey extended 786 meters. The channel was unconstrained in a broad valley floor. The average valley width index was 10.8 (range: 7.0–20.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 0.5 percent. Scour pools (75%) and riffles (17%) dominated stream habitat.

	ODFW	Benchmark		AQI Survey	Post Project	Post Project	Post Project
Habitat Variable	**Desirable**	**Undesirable**		**5/4/95**	**8/29/96**	**7/24/01**	**2/14/02**
Pool Area	>35%	<10%		53.7	39.3	76.8	78.8
Pool Frequency	5-8	>20%		4.0	6.4	3.5	3.4
Residual Pool Depth	.5-1m	.2-.5m		.50	.62	.57	.57
Complex Pools/km	>2.5	<1		0.0	12.2	6.0	6.6
Width/Depth Ratio	<15	>30		11.3	14.7	12.7	11.7
Riffle Gravel % area	>35%	<15%		48	45	46	41
Silt-Sand-Organic %	<8%	>15%		20	14	10	5
Shade %	>70%	< 60%		74	87	86	
LWD - pieces/100m	>20	<10		14.5	11.1	9.3	8.6
LWD - Volume/100m	>30	<20		13.7	32.4	7.7	8.0
LWD - Key pieces/ 100m	>3	<1		0.9	1.3	.3	0.1

COMMENTS:

There were no potential barriers to upstream fish migration in the surveyed length.



Name: TILLAMOOK
Date: 1/10/2002
Scale: 1 inch equals 2000 feet

Location: 10 431805 E 5025422 N
Caption: 4-6 YEAR POST-TX AND REFERENCE SURVEY - BEWLEY CREEK - TILLAMOOK BASIN

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

Narrow Valley Floor		Broad Valley Floor	
Steep V-shape	0	Constraining Terraces	0
Moderate V-shape	0	Multiple Terraces	100
Open V-shape	0	Wide Floodplain	0

Valley Width Index avg: 10.8 range: 7.0-20.0

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	0	Single Channel	100
Bedrock	0	Multiple Channel	0
Terrace	0	Braided Channel	0
Alt. Terrace/Hill	0		
Landuse	0		

Channel Characteristics

Type	Length(m)	Area (m2)	Dry Units
Primary	786	3,703	0
Secondary	53	143	1

Channel Dimensions(m)

Wetted		Active		Floodprone	First Terrace
Width	4.5	Width	8.8	22.8	20.1
Depth	0.46	Height	0.7	1.4	1.9
		W:D ratio	12.7	Entrenchment 2.6	

Stream Flow Type: LF Water Temp: 14.0-14.0^{O}C
Avg. Unit Gradient: 0.5% Habitat Units/100m: 5.0

Riparian, Bank, and Wood Summary

	Primary	Secondary
Land Use:	ST	
Riparian Vegetation:	D15	C50

Bank Condition and Shade

Bank Status	Percent Reach Length	Shade (% of 180)
Actively Eroding	5%	Reach avg: 86%
Undercut Banks	14%	Range: 56-100

Large Woody Debris

	Total	Total/100m
All pieces (≥3m x 0.15m)	73	9.3
Volume (m^3)	60	7.7
Key pieces (≥10m x 0.6m)	2	0.3

OREGON DEPT. FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 10/10/01

BEWLEY CREEK POST-TX (#111)
Survey Date: 07/24/01

REACH 1 T2S-R10W-S23SE REACH 1

HABITAT DETAIL

Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m^2)	Large Boulders (#>0.5m)	Substrate Percent Wetted Area S/O	Snd	Grvl	Cbbl	Bldr	Bdrk
GLIDE	1	43	3.6	0.20	155	0	0	25	35	35	5	0
POOL-BACKWATER	1	5	5.4	0.80	26	0	20	30	30	20	0	0
POOL-ISOLATED	1	6	6.0	0.07	38	0	30	70	0	0	0	0
POOL-LATERAL SCOUR	19	476	5.0	0.67	2,472	35	4	21	37	24	6	8
POOL-PLUNGE	1	11	4.3	0.90	46	0	10	35	50	5	0	0
POOL-STRAIGHT SCOUR	5	75	4.9	0.58	370	8	1	20	25	11	6	38
PUDDLED CHANNEL	1	30	2.1	0.20	63	0	25	25	50	0	0	0
RIFFLE	10	154	3.6	0.12	541	0	0	10	46	37	5	2
RIFFLE W/ POCKETS	2	39	3.0	0.15	132	1	1	12	35	43	5	5
STEP/BOULDERS	1	1	3.3	0.10	3	15	0	5	5	5	80	5
Total:	42	839	4.5	0.46	3,845	59	**Avg:** 4	19	36	25	7	9

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m^2)	Wetted Area Percent	Large Boulders Number	Large Boulders #/100m^2
Dammed & BW Pools	2	11	5.7	0.44	64	1.67	0	0.0
Scour Pools	25	561	5.0	0.66	2,888	75.10	43	1.5
Glides	1	43	3.6	0.20	155	4.03	0	0.0
Riffles	12	193	3.5	0.13	673	17.49	1	0.1
Rapids	0	0	-	-	0	0.00	0	0.0
Cascades	0	0	-	-	0	0.00	0	0.0
Step/Falls	1	1	3.3	0.10	3	0.09	15	454.5
Dry	1	30	2.1	0.20	63	1.63	0	0.0

POOL SUMMARY

	Total	#/Km
All Pools	27	32.2
Pools ≥1m deep:	0	0.0
Complex pools (LWD pieces≥3):	5	6.0
Pool Frequency (channel widths/pool):	3.5	
Residual pool depth (avg)	0.57m	

STREAM SUMMARY **BEWLEY CREEK POST-TX (#111)**

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m^2)	Substrate Percent Wetted Area S/O	Sand	Grvl	Cbbl	Bldr	Bdrk	Total Large Boulder
42	839	4.5	0.46	3,845	4	19	36	25	7	9	59

Habitat Group	Wetted Area (m^2)	Percent
Scour Pool	2,888	75.1
Backwater Pools	64	1.7
Glide	155	4.0
Riffle	673	17.5
Rapid	0	0.0
Cascade	0	0.0
Step	3	0.1
Dry	63	1.6

REACH 1 RIPARIAN ZONE VEGETATION SUMMARY REACH 1

Summary of Riparian Zone (0-30m) (4 transects)

Total hardwoods/1000 ft	716
Total conifers/1000 ft	457
Total conifers >20" dbh/1000 ft	30
Total conifers >35" dbh/1000 ft	15

Average number of trees in a 5-meter wide band

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters		Zones 1-3 0-30 meters	
Diameter class (cm)	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	1.3	2.3	3.3	1.3	3.5	3.5	8.0
15-30cm	0.0	0.5	1.0	0.5	1.5	0.8	2.5	1.8
30-50cm	0.8	1.3	0.3	0.0	0.0	0.3	1.0	1.5
50-90cm	0.0	0.5	0.0	0.0	0.3	0.0	0.3	0.5
>90cm	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0
Total/100m^2	0.8	3.5	3.8	3.8	3.0	4.5	2.5	3.9

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10-20 meters (%)	Zone 3 20-30 meters (%)
Canopy closure	60	69	58
Shrub cover	19	24	19
Grass/forb cover	81	64	59

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10-20 meters	Zone 3 20-30 meters
Hillslope	13	13	25
High terrace	38	75	38
Low terrace	50	13	13
Floodplain	0	0	0
Wetland/meadow	0	0	0
Stream channel	0	0	0
Roadbed/Railroad	0	0	25
Riprap	0	0	0
Surface slope (%)	17	10	11

Summary of Riparian Zone (0-30m) for all reaches (4 transects)

Summary of riparian zone (0-100ft) extrapolated to 1,000 feet along stream

Total hardwoods/1000 ft	716
Total conifers/1000 ft	457
Total conifers >20" dbh/1000 ft	30

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zones 1-3 Conifer	Hardwood
3-15cm	3.5	8.0
15-30cm	2.5	1.8
30-50cm	1.0	1.5
50-90cm	0.3	0.5
>90cm	0.3	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 10/10/01

BEWLEY CREEK POST-TX (#111)
Survey Date: 07/24/01

RIPARIAN ZONE VEGETATION

Reach 1

Reach 1

VEGETATION DETAIL

Unit	Side	Zone	Surface	Slope	Cover (percent)				Diameter class (cm)					Notes
					Canopy	Shrub	Grass		3-15	15-30	30-50	50-90	>90	
4	LF	1	LT	2.0	60	30	70	Conifer	0	0	0	0	0	
								Hardwood	3	0	0	0	0	
4	LF	2	HT	4.0	70	80	20	Conifer	0	0	0	0	0	
								Hardwood	2	0	0	0	0	
4	LF	3	HT	6.0	70	50	50	Conifer	0	0	0	0	0	
								Hardwood	3	0	1	0	0	
4	RT	1	LT	16.0	65	20	80	Conifer	0	0	0	0	0	
								Hardwood	1	0	2	0	0	
4	RT	2	HT	2.0	65	10	90	Conifer	0	0	0	0	0	
								Hardwood	4	0	0	0	0	
4	RT	3	RB	1.0	10	0	15	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
8	LF	1	HT	0.0	75	0	100	Conifer	0	0	1	0	0	
								Hardwood	0	1	1	1	0	
8	LF	2	HT	0.0	85	20	80	Conifer	0	0	0	0	0	
								Hardwood	2	0	0	0	0	
8	LF	3	HS	23.0	90	30	60	Conifer	0	0	0	0	0	
								Hardwood	5	0	0	0	0	
8	RT	1	LT	4.0	5	50	50	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
8	RT	2	HT	0.0	85	15	85	Conifer	0	0	0	0	1	
								Hardwood	1	2	0	0	0	SPRUCE
8	RT	3	HT	4.0	90	20	80	Conifer	0	1	0	0	0	
								Hardwood	4	0	0	0	0	
13	LF	1	HS	85.0	70	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	2	0	0	
13	LF	2	HS	60.0	85	0	0	Conifer	7	2	1	0	0	
								Hardwood	1	0	0	0	0	
13	LF	3	HS	50.0	70	25	75	Conifer	5	0	0	0	0	
								Hardwood	2	0	0	0	0	
13	RT	1	HT	15.0	70	40	60	Conifer	0	0	0	0	0	
								Hardwood	1	0	0	1	0	
13	RT	2	HT	2.0	55	35	65	Conifer	1	1	0	0	0	
								Hardwood	1	0	0	0	0	
13	RT	3	HT	0.0	65	10	90	Conifer	0	4	0	0	0	
								Hardwood	0	0	0	0	0	
25	LF	1	LT	1.0	55	10	90	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
25	LF	2	LT	1.0	50	30	70	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
25	LF	3	LT	1.0	60	15	85	Conifer	0	1	0	1	0	
								Hardwood	0	3	0	0	0	
25	RT	1	HT	10.0	80	5	95	Conifer	0	0	2	0	0	
								Hardwood	0	1	0	0	0	
25	RT	2	HT	12.0	60	0	100	Conifer	1	1	0	0	0	
								Hardwood	2	0	0	0	0	
25	RT	3	RB	3.0	5	0	15	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	