

ODFW AQUATIC INVENTORY PROJECT
OREGON PLAN FOR SALMON & WATERSHEDS
STREAM RESTORATION HABITAT REPORT

STREAM: Bewley Creek (#NC 110)
 BASIN: Tillamook River
 SURVEY TYPE: Reference
 DATE: October 30, 2003
 REPORT PREPARED BY: Paul Jacobsen

The Bewley Creek reference site is located just downstream of the companion Bewley Creek treatment site. This site was surveyed for reference conditions in 1995, 1996 and 2001. It is notable that this reach is pool-rich, and has been increasing in pool area through time. Additionally, complex pools are more common now than in 1995. Pool frequency has decreased somewhat, while riffle gravel has increased dramatically. Riffle fines increased immediately after upstream treatment, but have returned to pre-treatment levels. Large wood pieces, volume, and key pieces have all decreased through time. Since the same trend with large wood has occurred in the treated section, this may indicate that the large wood was blown out of these reaches, while the gravel, which has decreased in the treated section, may have settled into this reach.

	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	73.2	93.9	
Pool Frequency	5-8	>20%		4.0	4.2	5.0	
Residual Pool Depth	.5-1m	.2-.5m		.50	.44	.74	
Complex Pools/km	>2.5	<1		0.0	12.5	12.1	
Width/Depth Ratio	<15	>30		11.3	13.4	10.9	
Riffle Gravel % area	>35%	<15%		48	40	78	
Silt-Sand-Organic %	<8%	>15%		20	30	19	
Shade %	>70%	< 60%		74	87	68	
LWD - pieces/100m	>20	<10		14.5	10.2	7.2	
LWD - Volume/100m	>30	<20		13.7	8	3.7	
LWD - Key pieces/ 100m	>3	<1		.9	.4	0.0	

COMMENTS:

There were no potential barriers to upstream fish migration in the surveyed length.
 The crew noted evidence of beaver activity during the survey.

**ODFW AQUATIC INVENTORY PROJECT
OREGON PLAN FOR SALMON & WATERSHEDS
STREAM RESTORATION HABITAT REPORT**

STREAM: Bewley Creek (NC-110)
BASIN: Tillamook River
SURVEY TYPE: Reference
DATE: July 24, 2001
SURVEY CREW: Rachel Werner, Sean Allen
REPORT PREPARED BY: Paul Jacobsen
BASIN AREA: 15.5 km²
USGS MAPS: Tillamook
ECOREGION: Coast Range Sitka Spruce

GENERAL DESCRIPTION:

The Bewley Creek habitat survey extended 415 meters. The channel was unconstrained in a broad valley floor. The average valley width index was 7.8 (range: 5.0 – 10.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 0.4 percent. Slackwater pools (80%) and scour pools (14%) dominated stream habitat. Gravel (42%) and sand (22%) dominated stream substrate. Wood volume was very low at 3.7 m³/100m.

COMMENTS:

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

ODFW AQUATIC INVENTORY PROJECT
OREGON PLAN FOR SALMON & WATERSHEDS
STREAM RESTORATION HABITAT REPORT

STREAM: Bewley Creek (#NC 110)
 BASIN: Tillamook River
 SURVEY TYPE: Reference
 DATE: September 9, 2002
 SURVEY CREW: Sean Allen, Rachel Werner
 REPORT PREPARED BY: Paul Jacobsen
 BASIN AREA: 15.5 km²
 USGS MAPS: Tillamook
 ECOREGION: Coast Range Sitka Spruce

GENERAL DESCRIPTION:

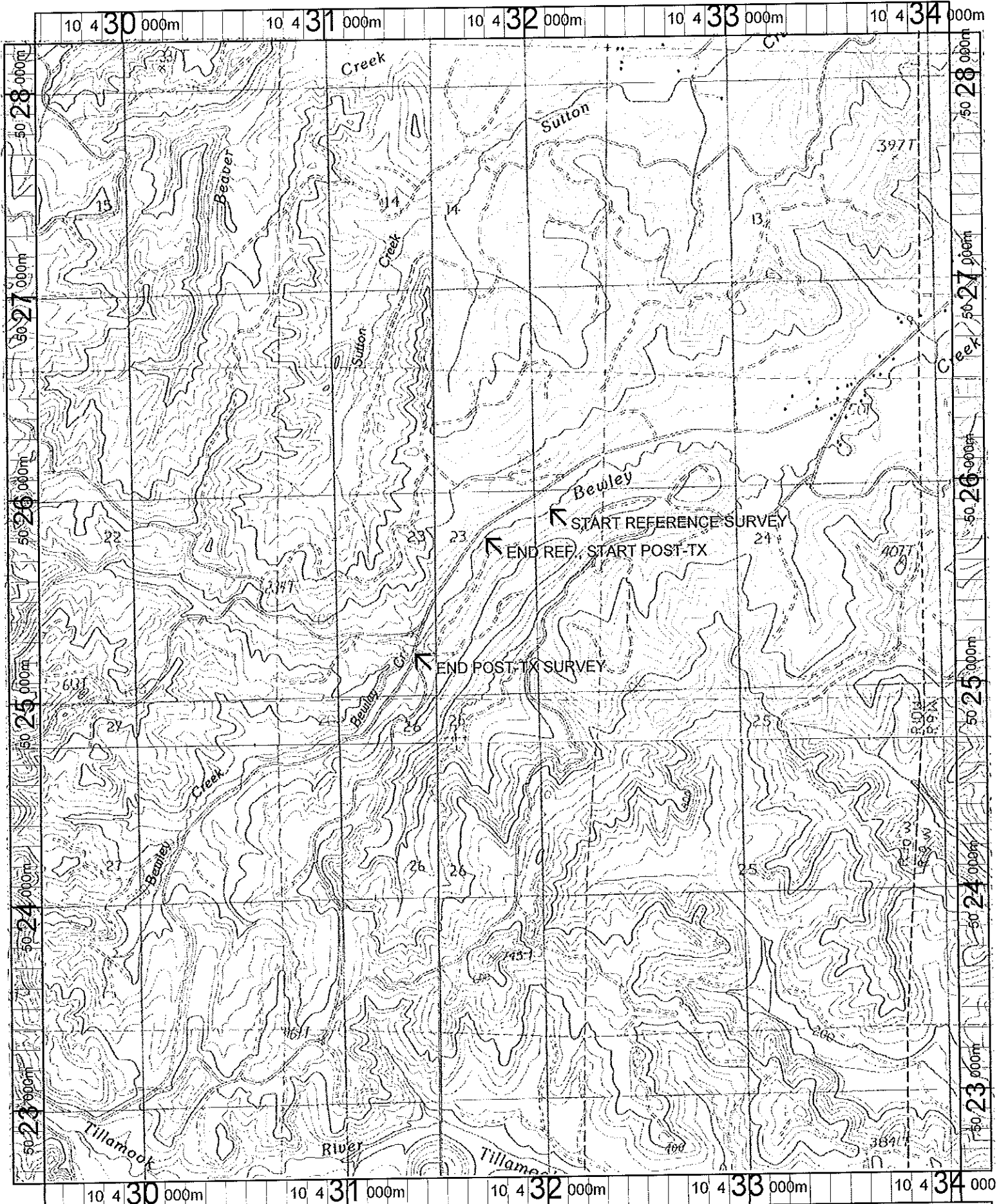
The Bewley Creek habitat survey extended 415 meters. The channel was unconstrained in a broad valley floor. The average valley width index was 7.8 (range: 5.0-10.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 0.4 percent. Beaver pools (80%) and scour pools (14%) 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	73.2	93.9	88.5
Pool Frequency	5-8	>20%		4.0	4.2	5.0	4.0
Residual Pool Depth	.5-1m	.2-.5m		.50	.44	.74	.66
Complex Pools/km	>2.5	<1		0.0	12.5	12.1	4.8
Width/Depth Ratio	<15	>30		11.3	13.4	10.9	13.2
Riffle Gravel % area	>35%	<15%		48	40	78	61
Silt-Sand-Organic %	<8%	>15%		20	30	19	10
Shade %	>70%	< 60%		74	87	68	
LWD - pieces/100m	>20	<10		14.5	10.2	7.2	5.6
LWD - Volume/100m	>30	<20		13.7	8	3.7	2.2
LWD - Key pieces/ 100m	>3	<1		.9	.4	0.0	0.0

COMMENTS:

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

The crew noted evidence of beaver activity during the survey.



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

REACH 1

T2S-R10W-S23NE

REACH 1

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

<u>Narrow Valley Floor</u>		<u>Broad Valley Floor</u>	
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: 7.8 range: 5.0-10.0

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

<u>Type</u>	<u>Length(m)</u>	<u>Area (m2)</u>	<u>Dry Units</u>
Primary	415	2,613	0
Secondary	0	0	0

Channel Dimensions (m)

<u>Wetted</u>		<u>Active</u>		<u>Floodprone</u>	<u>First Terrace</u>
Width	5.6	Width	8.4	25.9	22.0
Depth	0.54	Height	0.8	1.5	1.9
		W:D ratio	10.9	Entrenchment	3.2

Stream Flow Type: LF Water Temp: 14.0-14.0°C
 Avg. Unit Gradient: 0.4% Habitat Units/100m: 3.9

Riparian, Bank, and Wood Summary

	<u>Primary</u>	<u>Secondary</u>
Land Use:	ST	
Riparian Vegetation:	D3	C3

Bank Condition and Shade

<u>Bank Status</u>	<u>Percent Reach Length</u>	<u>Shade (% of 180)</u>
Actively Eroding	2%	Reach avg: 68%
Undercut Banks	22%	Range: 53-100

Large Woody Debris

	<u>Total</u>	<u>Total/100m</u>
All pieces ($\geq 3m \times 0.15m$)	30	7.2
Volume (m ³)	16	3.7
Key pieces ($\geq 10m \times 0.6m$)	0	0.0

REACH 1

T2S-R10W-S23NE

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
POOL-BEAVER DAM	5	290	6.7	0.88	2,018	0	12	24	26	16	3	18
POOL-DAMMED	1	17	4.7	0.80	78	0	15	30	30	20	0	5
POOL-LATERAL SCOUR	4	69	5.1	0.78	356	0	8	14	33	9	5	32
RIFFLE	3	37	3.9	0.08	150	0	2	17	78	3	0	0
STEP/BEAVER DAM	3	2	6.3	0.01	11	0	17	33	50	0	0	0
Total:	16	415	5.6	0.54	2,613	0	Avg:10	22	42	9	2	14

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m ²)	Percent	Large Boulders Number	Boulders #/100m ²
Dammed & BW Pools	6	306	6.4	0.87	2,096	80.23	0	0.0
Scour Pools	4	69	5.1	0.78	356	13.62	0	0.0
Glides	0	0	-	-	0	0.00	0	0.0
Riffles	3	37	3.9	0.08	150	5.75	0	0.0
Rapids	0	0	-	-	0	0.00	0	0.0
Cascades	0	0	-	-	0	0.00	0	0.0
Step/Falls	3	2	6.3	0.01	11	0.41	0	0.0
Dry	0	0	-	-	0	0.00	0	0.0

POOL SUMMARY

All Pools	<u>Total</u>	<u>#/Km</u>
	10	24.1
Pools ≥1m deep:	1	2.4
Complex pools (LWD pieces ≥3):	5	12.1
Pool Frequency (channel widths/pool):	5.0	
Residual pool depth (avg)	0.74m	

STREAM SUMMARY

BEWLEY CREEK REFERENCE (#110)

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m ²)	Substrate Percent Wetted Area					Total Large Boulder	
					S/O	Sand	Grvl	Cbbl	Bldr		Bdrk
16	415	5.6	0.54	2,613	10	22	42	9	2	14	0

Wetted Area

Habitat Group	(m ²)	Percent
Scour Pool	356	13.6
Backwater Pools	2,096	80.2
Glide	0	0.0
Riffle	150	5.7
Rapid	0	0.0
Cascade	0	0.0
Step	11	0.4
Dry	0	0.0

REACH 1

RIPARIAN ZONE VEGETATION SUMMARY

REACH 1

Summary of Riparian Zone (0-30m) (3 transects)

Total hardwoods/1000 ft	853
Total conifers/1000 ft	772
Total conifers >20" dbh/1000 ft	61
Total conifers >35" dbh/1000 ft	61

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters		Zones 1-3 0-30 meters	
	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood	Conifer	Hardwood
3-15cm	0.0	6.7	4.0	3.0	2.7	3.3	6.7	13.0
15-30cm	0.3	0.7	2.3	0.0	2.3	0.0	5.0	0.7
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3
>90cm	0.7	0.0	0.0	0.0	0.3	0.0	1.0	0.0
Total/100m ²	1.0	7.7	6.3	3.0	5.3	3.3	4.2	4.7

Canopy closure and ground cover

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters	
	(%)		(%)		(%)	
Canopy closure	58		72		71	
Shrub cover	16		23		20	
Grass/forb cover	84		41		38	

Predominant landform in each zone

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters	
	Hillslope	0		17		17
High terrace	67		50		67	
Low terrace	33		33		0	
Floodplain	0		0		0	
Wetland/meadow	0		0		0	
Stream channel	0		0		0	
Roadbed/Railroad	0		0		17	
Riprap	0		0		0	
Surface slope (%)	11		7		7	

Summary of Riparian Zone (0-30m) for all reaches (3 transects)

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

Total hardwoods/1000 ft	853
Total conifers/1000 ft	772
Total conifers >20" dbh/1000 ft	61

Average number of trees in a 5-meter wide band

<u>Diameter</u> <u>class (cm)</u>	<u>Zones 1-3</u>	
	<u>Conifer</u>	<u>Hardwood</u>
3-15cm	6.7	13.0
15-30cm	5.0	0.7
30-50cm	0.0	0.0
50-90cm	0.0	0.3
>90cm	1.0	0.0

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	
7	LF	1	LT	0.0	0	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	NATIVE GRASS
7	LF	2	LT	6.0	10	50	50	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	STINK CURRANT
7	LF	3	HS	30.0	85	20	80	Conifer	0	3	0	0	1	
								Hardwood	0	0	0	0	0	SPRUCE
7	RT	1	HT	20.0	70	5	95	Conifer	0	0	0	0	0	
								Hardwood	10	0	0	0	0	
7	RT	2	HT	1.0	90	0	5	Conifer	2	3	0	0	0	
								Hardwood	3	0	0	0	0	
7	RT	3	HT	2.0	90	0	5	Conifer	6	1	0	0	0	
								Hardwood	4	0	0	0	0	
11	LF	1	LT	6.0	60	20	80	Conifer	0	0	0	0	0	
								Hardwood	4	0	0	0	0	COW PARSNIP
11	LF	2	LT	2.0	75	40	60	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	WATER PARSLEY
11	LF	3	HT	1.0	75	40	60	Conifer	0	0	0	0	0	
								Hardwood	6	0	0	0	0	ELDERBERRY
11	RT	1	HT	8.0	80	40	60	Conifer	0	0	0	0	0	
								Hardwood	6	1	0	1	0	
11	RT	2	HT	0.0	90	0	10	Conifer	9	3	0	0	0	
								Hardwood	2	0	0	0	0	
11	RT	3	HT	0.0	90	0	20	Conifer	2	2	0	0	0	
								Hardwood	0	0	0	0	0	
13	LF	1	HT	25.0	65	10	90	Conifer	0	0	0	0	2	
								Hardwood	0	0	0	0	0	SPRUCE
13	LF	2	HT	1.0	80	30	70	Conifer	0	0	0	0	0	
								Hardwood	2	0	0	0	0	
13	LF	3	HT	10.0	75	60	40	Conifer	0	1	0	0	0	
								Hardwood	0	0	0	0	0	END @ HILLSLOPE
13	RT	1	HT	5.0	75	20	80	Conifer	0	1	0	0	0	
								Hardwood	0	1	0	0	0	
13	RT	2	HS	30.0	85	20	50	Conifer	1	1	0	0	0	
								Hardwood	2	0	0	0	0	
13	RT	3	RB	1.0	10	0	20	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	