

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

STREAM: West Fork Ecola Creek (#NC 114)  
 BASIN: Ecola Creek  
 SURVEY TYPE: Reference  
 DATE: November 3, 2003  
 REPORT PREPARED BY: Paul Jacobsen

The West Fork Ecola Creek reference site is located just upstream of the companion West Fork Ecola Creek treatment site. This site was surveyed for reference conditions in 1992, 1996 and 2001. Pool area has reduced through time, while both complex pools and the frequency of pools has improved. Riffle gravel is higher while riffle fines are generally lower. Large wood pieces are higher, while volume was the same as in 1992, but key pieces are very low.

	ODFW	Benchmark		AQI Survey	Post Project	Post Project	
Habitat Variable	Desirable	Undesirable		7/1/92	9/18/96	7/23/01	
Pool Area	>35%	<10%		64.5	58.9	43.5	
Pool Frequency	5-8	>20%		4.4	3.9	3.8	
Residual Pool Depth	.5-1m	.2-.5m		.55	.92	.79	
Complex Pools/km	>2.5	<1		0.0	4.4	4.4	
Width/Depth Ratio	<15	>30		28.8	16.2	24.2	
Riffle Gravel % area	>35%	<15%		30	40	43	
Silt-Sand-Organic %	<8%	>15%		30	5	14	
Shade %	>70%	< 60%		80	89	89	
LWD - pieces/100m	>20	<10		4.7	9.1	11.1	
LWD - Volume/100m	>30	<20		9.7	19.2	9.7	
LWD - Key pieces/ 100m	>3	<1		0.5	0.3	0.0	

**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: West Fork Ecola Creek (NC-114)  
BASIN: Ecola Creek  
SURVEY TYPE: Reference  
DATE: July 23, 2001  
SURVEY CREW: Rachel Werner, Sean Allen  
REPORT PREPARED BY: Paul Jacobsen  
BASIN AREA: 24.3 km<sup>2</sup>  
USGS MAPS: Arch Cape  
ECOREGION: Coast Range Astoria Willapa

**GENERAL DESCRIPTION:**

The West Fork Ecola Creek habitat survey extended 368 meters. The channel was alternately constrained by hillslopes and terraces in a broad valley floor. The average valley width index was 9.4 (range: 6.0 – 15.0). Land use for the reach was second growth (15-30 cm dbh) trees. The average unit gradient was 1.3 percent. Riffles (54%) and scour pools (44%) dominated stream habitat. Gravel (46%) and cobble (31%) dominated stream substrate. Wood volume was low at 9.7 m<sup>3</sup>/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: West Fork Ecola Creek (#NC 114)  
 BASIN: Ecola Creek  
 SURVEY TYPE: Reference  
 DATE: September 9, 2002  
 SURVEY CREW: Sean Allen, Rachel Werner  
 REPORT PREPARED BY: Paul Jacobsen  
 BASIN AREA: 24.3 km<sup>2</sup>  
 USGS MAPS: Arch Cape  
 ECOREGION: Coast Range Astoria Willapa

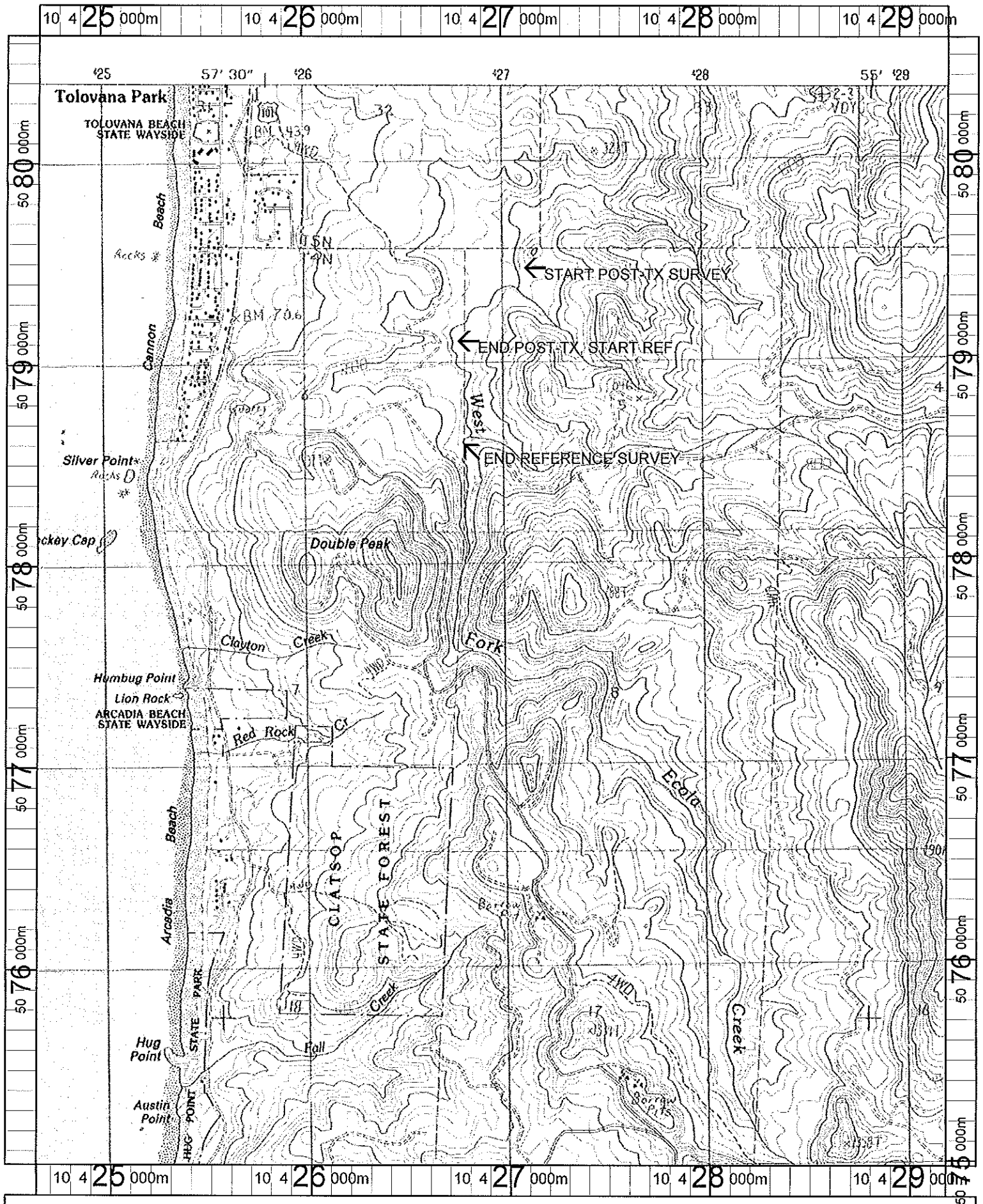
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	ODFW	Benchmark		AQI Survey	Post Project	Post Project	Post Project
Habitat Variable	Desirable	Undesirable		7/1/92	9/18/96	7/23/01	2/22/02
Pool Area	>35%	<10%		64.5	58.9	43.5	58.2
Pool Frequency	5-8	>20%		4.4	3.9	3.8	3.4
Residual Pool Depth	.5-1m	.2-.5m		.55	.92	.79	.87
Complex Pools/km	>2.5	<1		0.0	4.4	4.4	8.7
Width/Depth Ratio	<15	>30		28.8	16.2	24.2	22.2
Riffle Gravel % area	>35%	<15%		30	40	43	30
Silt-Sand-Organic %	<8%	>15%		30	5	14	15
Shade %	>70%	< 60%		80	89	89	
LWD - pieces/100m	>20	<10		4.7	9.1	11.1	11.0
LWD - Volume/100m	>30	<20		9.7	19.2	9.7	13.2
LWD - Key pieces/ 100m	>3	<1		0.5	0.3	0.0	0.0

**COMMENTS:**

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



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

Location: 10 426937 E 5077808 N  
 Caption: 4-6 YEAR POST-TX AND REFERENCE SURVEYS -  
 WF ECOLA CREEK - ECOLA BASIN

REACH 1

T5N-R10W-S6NE

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	100
Moderate V-shape	0	Multiple Terraces	0
Open V-shape	0	Wide Floodplain	0

Valley Width Index avg: 9.4 range: 6.0-15.0

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

<u>Type</u>	<u>Length(m)</u>	<u>Area (m2)</u>	<u>Dry Units</u>
Primary	368	3,158	0
Secondary	90	117	0

Channel Dimensions (m)

<u>Wetted</u>		<u>Active</u>		<u>Floodprone</u>	<u>First Terrace</u>
Width	7.8	Width	17.3	39.8	38.3
Depth	0.47	Height	0.7	1.4	1.7
		W:D ratio	24.2	Entrenchment	2.3

Stream Flow Type: LF Water Temp: 13.0-13.0°C  
 Avg. Unit Gradient: 1.3% Habitat Units/100m: 3.9

Riparian, Bank, and Wood Summary

	<u>Primary</u>	<u>Secondary</u>
Land Use:	ST	
Riparian Vegetation:	D15	

Bank Condition and Shade

<u>Bank Status</u>	<u>Percent Reach Length</u>	<u>Shade (% of 180)</u>
Actively Eroding	6%	Reach avg: 89%
Undercut Banks	7%	Range: 75-100

Large Woody Debris

	<u>Total</u>	<u>Total/100m</u>
All pieces (≥3m x 0.15m)	41	11.1
Volume (m <sup>3</sup> )	36	9.7
Key pieces (≥10m x 0.6m)	0	0.0

REACH 1

T5N-R10W-S6NE

REACH 1

HABITAT DETAIL

Habitat Type	Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Large Boulders (#>0.5m)	Substrate Percent Wetted Area					
							S/O	Snd	Grvl	Cbbl	Bldr	Bdrk
POOL-LATERAL SCOUR	4	92	8.7	0.83	888	9	2	7	50	26	15	0
POOL-STRAIGHT SCOUR	3	64	8.3	1.07	538	0	1	7	60	25	7	0
RAPID/BOULDERS	1	19	4.5	0.20	87	1	0	2	23	45	30	0
RIFFLE	9	256	7.3	0.17	1,493	13	3	11	43	32	11	0
RIFFLE W/ POCKETS	1	26	10.2	0.30	269	0	0	5	35	40	20	0
<b>Total:</b>	<b>18</b>	<b>458</b>	<b>7.8</b>	<b>0.47</b>	<b>3,275</b>	<b>23</b>	<b>Avg: 2</b>	<b>9</b>	<b>46</b>	<b>31</b>	<b>13</b>	<b>0</b>

HABITAT SUMMARY

Habitat Group	No. Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Wetted Area (m <sup>2</sup> )	Percent	Large Boulders Number	#/100m <sup>2</sup>
Dammed & BW Pools	0	0	-	-	0	0.00	0	0.0
Scour Pools	7	157	8.5	0.93	1,425	43.52	9	0.6
Glides	0	0	-	-	0	0.00	0	0.0
Riffles	10	282	7.6	0.18	1,762	53.82	13	0.7
Rapids	1	19	4.5	0.20	87	2.67	1	1.1
Cascades	0	0	-	-	0	0.00	0	0.0
Step/Falls	0	0	-	-	0	0.00	0	0.0
Dry	0	0	-	-	0	0.00	0	0.0

POOL SUMMARY

All Pools	<u>Total</u>	<u>#/Km</u>
	7	15.3
Pools ≥1m deep:	2	4.4
Complex pools (LWD pieces ≥3):	2	4.4
Pool Frequency (channel widths/pool):	3.8	
Residual pool depth (avg)	0.79m	

STREAM SUMMARY

WF ECOLA CR REFERENCE (#114)

Number Units	Total Length (m)	Avg Width (m)	Avg Depth (m)	Total Area (m <sup>2</sup> )	Substrate Percent Wetted Area						Total Large Boulder
					S/O	Sand	Grvl	Cbbl	Bldr	Bdrk	
18	458	7.8	0.47	3,275	2	9	46	31	13	0	23

Wetted Area

Habitat Group	(m <sup>2</sup> )	Percent
Scour Pool	1,425	43.5
Backwater Pools	0	0.0
Glide	0	0.0
Riffle	1,762	53.8
Rapid	87	2.7
Cascade	0	0.0
Step	0	0.0
Dry	0	0.0

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REACH 1

RIPARIAN ZONE VEGETATION SUMMARY

REACH 1

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

Total hardwoods/1000 ft	650
Total conifers/1000 ft	894
Total conifers >20" dbh/1000 ft	61
Total conifers >35" dbh/1000 ft	0

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	3.0	0.7	2.0	0.3	0.7	0.0	5.7	1.0
15-30cm	1.7	4.7	0.3	1.0	4.3	1.0	6.3	6.7
30-50cm	0.7	1.7	0.7	0.0	0.3	1.3	1.7	3.0
50-90cm	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m <sup>2</sup>	5.3	7.0	4.0	1.3	5.3	2.3	4.9	3.6

Canopy closure and ground cover

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters	
	(%)		(%)		(%)	
Canopy closure	62		69		63	
Shrub cover	2		0		0	
Grass/forb cover	86		83		86	

Predominant landform in each zone

	Zone 1 0-10 meters		Zone 2 10-20 meters		Zone 3 20-30 meters	
	Hillslope	33		33		33
High terrace	33		33		33	
Low terrace	33		33		33	
Floodplain	0		0		0	
Wetland/meadow	0		0		0	
Stream channel	0		0		0	
Roadbed/Railroad	0		0		0	
Riprap	0		0		0	
Surface slope (%)	15		10		4	



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	650
Total conifers/1000 ft	894
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	5.7	1.0
15-30cm	6.3	6.7
30-50cm	1.7	3.0
50-90cm	1.0	0.0
>90cm	0.0	0.0

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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	
5	LF	1	HS	45.0	80	0	25	Conifer	3	1	1	0	0	
								Hardwood	1	4	1	0	0	
5	LF	2	HS	50.0	80	0	25	Conifer	0	0	1	0	0	
								Hardwood	0	0	0	0	0	
5	LF	3	HS	15.0	25	0	40	Conifer	0	3	1	0	0	
								Hardwood	0	0	0	0	0	
5	RT	1	HT	6.0	65	0	100	Conifer	2	0	1	0	0	
								Hardwood	0	3	0	0	0	
5	RT	2	HT	0.0	75	0	90	Conifer	3	0	0	0	0	
								Hardwood	0	1	0	0	0	
5	RT	3	HT	4.0	80	0	95	Conifer	1	6	0	0	0	
								Hardwood	0	0	0	0	0	
9	LF	1	LT	0.0	60	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	1	0	0	0	
9	LF	2	LT	0.0	55	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
9	LF	3	LT	0.0	65	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	2	0	0	0	
9	RT	1	HT	0.0	60	0	100	Conifer	4	3	0	0	0	
								Hardwood	1	1	1	0	0	
9	RT	2	HT	0.0	70	0	100	Conifer	3	0	0	2	0	
								Hardwood	1	0	0	0	0	SPRUCE
9	RT	3	HT	0.0	70	0	100	Conifer	0	2	0	0	0	
								Hardwood	0	1	2	0	0	
11	LF	1	LT	4.0	60	5	95	Conifer	0	1	0	0	0	
								Hardwood	0	5	3	0	0	
11	LF	2	LT	2.0	60	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
11	LF	3	LT	0.0	65	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	2	0	0	
11	RT	1	HS	34.0	45	5	95	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
11	RT	2	HS	10.0	75	0	85	Conifer	0	1	1	1	0	
								Hardwood	0	2	0	0	0	
11	RT	3	HS	6.0	70	0	80	Conifer	1	2	0	0	0	
								Hardwood	0	0	0	0	0	