PBS | Engineering + Environmental

Attachment B
Habitat Description for Blair Creek

Johnson Creek Dam Project
Bandon, Oregon

Prepared for:
Bandon Cranberry Water Control District
Bandon, Oregon

This document is a compilation of Excerpts from *Habitat Description for Blair and Schoolhouse Creeks,* Craven Consulting Group (June 4, 2007) with updates and revisions by PBS Engineering + Environmental

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271 N Baxter Street, Coquille, OR 97423
541.347.5923 Main
866.727.0140 Fax
www.pbsenv.com

TABLE OF CONTENTS

1.0 PURPOSE AND NEED

The Bandon area along the Southern Oregon Coast is a popular tourist area and the center of Oregon's cranberry industry. Both the tourist and cranberry industries have grown significantly during the past several years. With the growth of these two industries and the need for additional water for fishery interests, existing water supplies would not meet current or future water demands for these uses.

The Bandon Cranberry Water Control District (District) was formed to investigate potential water supplies for growth and develop the water resources in this area. The District is a Water Control District formed under ORS 553. It encompasses an area of approximately 18 square miles of the Coos County cranberry production area. The District is located between Cut Creek north of Bandon and the southern Coos County Line. This area represents approximately 50 percent of the cranberry production area in Coos and Curry Counties.

Subdistricts were formed to develop water supplies in specific areas within the District. For example, the Windhurst Road subdistrict was formed to construct a 405-acre-foot off-channel reservoir to provide water to seven (7) cranberry growers. The second subdistrict was formed for the Prosper Project, and the third for the Johnson Creek Project.

The proposed dam would be 90 feet high with a drainage basin of approximately 1.26 square miles. It would be a zoned earth fill dam with filters and drains. The core would be either a sloping upstream core with a downstream shell, or a central core with upstream and downstream shells. Embankment materials to construct the dam would come from on-site deposits within the reservoir or from surrounding areas.

The proposed dam site has a potential for storing up to 2,450 acre-feet of water; however, there is not sufficient yield in the watershed to supply that much storage. Hydrologic yield and flow balance studies were completed to determine the optimal dam height and reservoir size (CH2M Hill, 2006). The District's proposed reservoir size of approximately 1,565 acre-feet includes the following:

- 1,107 acre-feet water consumption
- 168 acre-feet for evaporation
- 190 acre-feet for seepage
- 100 acre-feet for dead storage

The yield hydrology for the relatively small drainage basin and geological conditions make it cost-ineffective to make the reservoir much larger than 1,565 acre-feet.

Creating fish passage at the proposed dam site is not cost effective, so the Bandon Cranberry Water Control District is seeking a Fish Passage Waiver from the Oregon Department of Fish and Wildlife (ODFW). Blocking stream miles from anadromous fish passage requires mitigation for stream reach lost as well as for habitat lost to the inundation area and dam footprint. A net benefit to fish must be shown in the mitigation. ODFW will complete a Benefit Analysis to determine if the mitigation provides a net benefit to fish.

Due to the presence of suitable Coho spawning habitat above the proposed dam site, opening passage to similar habitat elsewhere is necessary. Johnson Creek below the proposed dam site does not contain gravel suitable to Coho spawning. Therefore, an effort

was made to find nearby streams with passage issues that have similar habitat. One stream was identified that meets the needs of the District to provide mitigation for losses in Johnson Creek: Blair Creek.

This report will discuss the habitat and riparian of Blair Creek within the proposed mitigation area. In addition, in the mid-90s ODFW completed an Aquatic Habitat Survey of Blair Creek from the mouth to the Plum Creek Culvert located on mainstem Blair Creek (RM0.77). While this survey is over ten (10) years old, it provides some useful information about the habitat and stream channel.

2.0 STREAM LOCATION AND PHYSICAL DESCRIPTION

2.1 Blair Creek

Blair Creek is a second order stream approximately 5 miles east of Coquille, Oregon (Township 27 South, Range 12 West, Northwest quarter of Section 35). Blair Creek confluences with the North Fork Coquille River at RM 22.38. The mainstem of the stream is approximately 2.09 miles long with a primary tributary 0.88-mile in length, as shown on the McKinley, Oregon, USGS quadrangle map. The basin area is approximately 658 acres. Several small tributaries are present but not shown on the USGS map. Four culverts are located within the basin; three of which are believed to be total barriers to fish passage, one is a serious impediment to adults and a total barrier to juveniles, and all have size issues.

The culverts on Blair Creek are located at the following points: RM 0.04, 0.23, 0.77, and 0.15 on the unnamed tributary. The Lee Valley Road Culvert (RM 0.23) is a total barrier with the exception of those rare times when a large rainfall event happens in conjunction with coho salmon being at the culvert (or nearby) waiting to migrate. During these rare events, the North Fork Coquille backwaters to the Lee Valley Road culvert and allows fish to freely move upstream. Otherwise, the only other times adult anadromous fish species have been able to move past the RM 0.23 culvert is when either private landowners and/or ODFW staff have placed plywood pieces at the pool-tail crest of the plunge pool below the culvert which raised the pool elevation enough that some or most of the fish were able to pass after many attempts.

3.0 HABITAT DESCRIPTION

3.1 Channel Morphology

3.1.2 Blair Creek

North Fork Coquille River to First Culvert (RM 0.04)

This short section of Blair Creek is low gradient and constrained by alternating terraces and hill slope. The land use is rural residential and forested County Park.

First Culvert (RM 0.04) to Second Culvert (RM 0.23)

The first culvert on Blair Creek crosses Lee Valley Road and the stream continues for 0.19 miles through rural residential and agricultural land before reaching culvert #2. A small but significant tributary comes through from the north at approximately Blair Creek RM 0.13. This tributary likely provides some habitat for fish use but was not included in the summary of stream characteristics for the purposes of the Fish Passage Waiver Application. The active channel of Blair Creek, in this section, varies but is typically around 10 to 12 feet wide. The creek is constrained by alternating terraces and hill slope. The gradient is low, typically being less than 1 percent. Large woody debris is present although not overly abundant.

Second Culvert (RM 0.23) to Third Culvert (RM 0.77)
This section of Blair Creek runs through agricultural (beef grazing) and timber harvest land. Blair Creek narrows a little bit through this section with the active channel typically around 8 feet wide. The stream is constrained by alternating terraces and hill slope and is mostly low gradient with some small steps.

Third Culvert (RM 0.77) and Upstream on Blair Creek
The last section of Blair Creek includes the one tributary shown on the USGS map which confluences from the south just past the third culvert. This section starts off low gradient until it eventually increases towards the headwaters. This section is constrained by alternating terraces and hill slope. Near the headwaters it is constrained by hill slope. Large woody debris is present throughout this section due largely to logging activities. The entire section is in a timber harvest land use area.

Forth Culvert (RM 0.15) on Unnamed Tributary to Blair Creek
The unnamed tributary to Blair Creek that confluences with Blair Creek just upstream of the RM 0.77 culvert is a small yet significant tributary. The stream is constrained by alternating terraces and hill slope. The gradient ranges from 1 to 3 percent. The active channel width ranges from 3 to 6 feet.

Upstream of fourth culvert (RM 0.15)
The unnamed tributary to Blair Creek upstream of the RM 0.15 culvert is constrained by alternating terraces and hill slope. The gradient ranges from 1 to 3 percent until substantially steeper near the headwaters. The active channel width ranges from 3 to 6 feet and narrows near the headwaters.

3.2 Riparian Conditions

3.2.2 Blair Creek

North Fork Coquille to First Culvert (RM 0.04)
This small section of Blair Creek runs through a rural residential area and looks largely unimpacted on the south bank (BLM property – County Park) and in fair condition on the north bank (private property). Trees are a mix of deciduous and conifer. Shrubs, plants, and grasses are plentiful.

First Culvert (RM 0.04) to Second Culvert (RM 0.23)
This section of Blair Creek is mostly rural residential and timber/County Park with a small portion entering agricultural land (grazing) just before the second culvert. Again, the south bank appears unimpacted, with the north bank being largely unimpacted except for a small section which has a reduced riparian near a private property/garden. Shrubs, plants, and grasses are plentiful. Trees are mostly conifers with some deciduous trees present, especially willow right next to the creek. The riparian in the agricultural section is poor with few trees and shrubs. Some minor bank erosion is present due to grazing pressure.

Second culvert (RM 0.23) to Third Culvert (RM 0.77)
The creek in this section starts in the agricultural property and continues into the Plum Creek Timber property until it reaches the third culvert. The downstream section of Blair Creek in the agricultural property is similar to the section before. Trees and bushes are sparse, and some bank erosion from grazing pressure is evident. The riparian conditions change approximately halfway between the second

culvert and the upstream end of the powerline corridor (near the Plum Creek Timber Company property). A recent clear-cut has left an approximately 50-foot-wide riparian area on each side of the creek on Plum Creek Timber property (starting just upstream of the powerline corridor). The remaining trees are largely deciduous with some conifers present.

Third Culvert (RM 0.77) and Upstream
Again this section of Blair Creek is very similar to that of the timber property below the third culvert. The land has been clear-cut except for a riparian section near the creek. Trees are mostly deciduous with some conifers present. Shrubs, plants, and grasses also are plentiful. Much of the surrounding area had not been replanted at the time of the survey (March, 2007). This pattern occurs into the headwaters of Blair Creek.

Confluence of Unnamed Tributary to Fourth Culvert on Unnamed Tributary (RM 0.15) and above Fourth Culvert
This unnamed tributary to Blair Creek is very similar to that of the timber property below the third culvert. The land has been clear-cut except for a riparian section near the creek. Trees are mostly deciduous with some conifers present. Shrubs, plants, and grasses also are plentiful. Much of the surrounding area had not been replanted at the time of the survey (March, 2007). This pattern occurs into the headwaters of the unnamed tributary.

3.3 Other Habitat Conditions of Importance to Anadromous Fish Species

3.3.2 Blair Creek

North Fork Coquille to First Culvert (RM 0.04)
Large woody debris is present, though not overly abundant in this short section of Blair Creek. This section of Blair Creek contains some gravel suitable for spawning but lacks many riffles. More than likely this section is used mostly for rearing rather than spawning, with the exception of Fall Chinook who use this section for spawning.

First Culvert (RM 0.04) to Second Culvert (RM 0.23)
Large woody debris is present although not overly abundant in this section of Blair Creek. Gravel and a few riffles suitable for spawning are present. Pools suitable for rearing also are present. A variety of unit types (i.e., pools, steps, riffles) show a moderate level of stream complexity.

Second Culvert (RM 0.23) to Third Culvert (RM 0.77)
Again, large woody debris is present in this section and begins to build as the creek heads into the timber harvest property due to logging activities. Gravel and riffles suitable for spawning are present. Rearing habitat also is available, in part due to the presence of large woody debris which scours out pools and provides cover from predators.

Third Culvert (RM 0.77) and Upstream
Large woody debris is present throughout this section of Blair Creek. Spawning gravel and riffles are present although not used by anadromous species due to the fact that the third culvert is a full barrier to fish passage. There appears to be signs of beaver activity in this section. Sufficient pools in size and depth exist to support rearing activities of anadromous species.

Confluence of Unnamed Tributary to Fourth Culvert on Unnamed Tributary (RM 0.15)

Large woody debris is present throughout this section of unnamed tributary to Blair Creek. Spawning gravel and riffles are present although not used by anadromous species due to the fact that the third culvert is a full barrier to fish passage. There appears to be signs of beaver activity in this section. Sufficient pools in size and depth exist to support rearing activities of anadromous species.

Upstream of fourth culvert (RM 0.15)

Large woody debris is present throughout this section of unnamed tributary to Blair Creek. Spawning gravel and riffles are present although not used by anadromous species due to the fact that the third culvert is a full barrier to fish passage. There appears to be signs of beaver activity in this section. Sufficient pools in size and depth exist to support rearing activities of anadromous species.

ODFW AQUATIC INVENTORY PROJECT

STREAM REPORT

STREAM: Blair Creek

BASIN: North Fork Coquille River

ECOREGION: Coastal Mountains

DATES: July 14, 1994

CREW: Jed Sproul, Preston Peper

REPORT AUTHOR: David Low

STREAM ORDER: 2 BASIN AREA: 2.84 sq km NUMBER TRIBS: 1

USGS MAPS: McKinley, Coquille

GENERAL DESCRIPTION: Blair Creek was surveyed from its confluence with the North Fork Coquille River for a distance of about 1.45km. The survey ended near the last marked tributary after a large dammed pool. Three reaches were identified based on channel and valley morphology, landform, and land use. Land use is dominated by young timber except for Reach 2 that is pastureland used for light grazing. Riparian vegetation is small deciduous trees 3-15cm. The habitat is predominantly dam pools. Land ownership is Georgia Pacific.

REACH DESCRIPTIONS:

Reach 1: (T27S-R12W-S35NW) Reach 1 begins at the confluence with the North Fork Coquille River and extends 314m to the first low water crossing at the edge of a pasture. The valley width index average is >20 and average unit gradient is 1.2%. Land use is young timber (3-15cm in diameter). Riparian vegetation is deciduous trees (3-15cm in diameter). There are 4 key pieces of wood in this reach (key piece is any wood ≥10m x 0.6m in diameter).

Reach 2: (T27S-R12W-S35NW) Reach 2 extends 308m and ends where the valley narrows and the powerlines cross overhead. This reach is unconstrained single channel with multiple terraces, primarily meadow. The valley width index is >20 and average unit gradient <1%. Stream habitat was dominated by pool-riffle. Instream substrate is sand (50%) and gravel (50%). Land use is light grazing. There was little sign of recent livestock grazing in the meadow and the stream banks were vegetativlely stable. Riparian vegetation is grass and shrubs. There was no large woody debris in this reach.

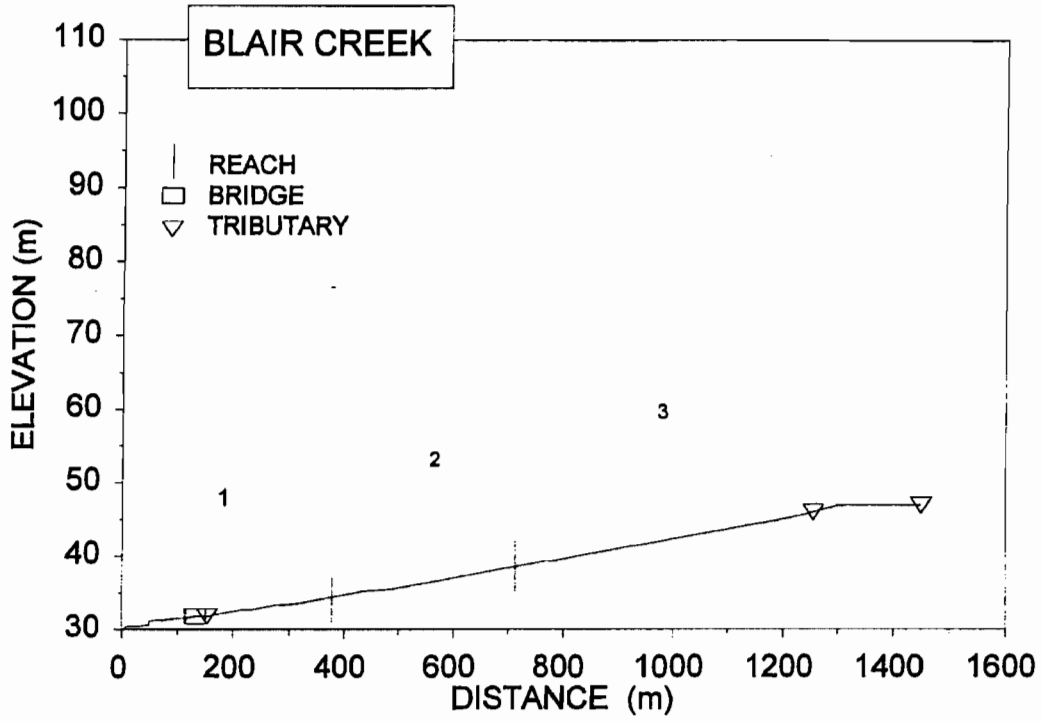
Reach 3: (T27S-R12W-S35NW) Reach 3 extends 827m and ends at the last marked tributary after a large dammed pool, just beyond a road crossing. The channel is constrained within moderate V-shaped hillslopes. The valley width index is 2.5. Land use is young timber (3-15cm) and riparian vegetation is young deciduous

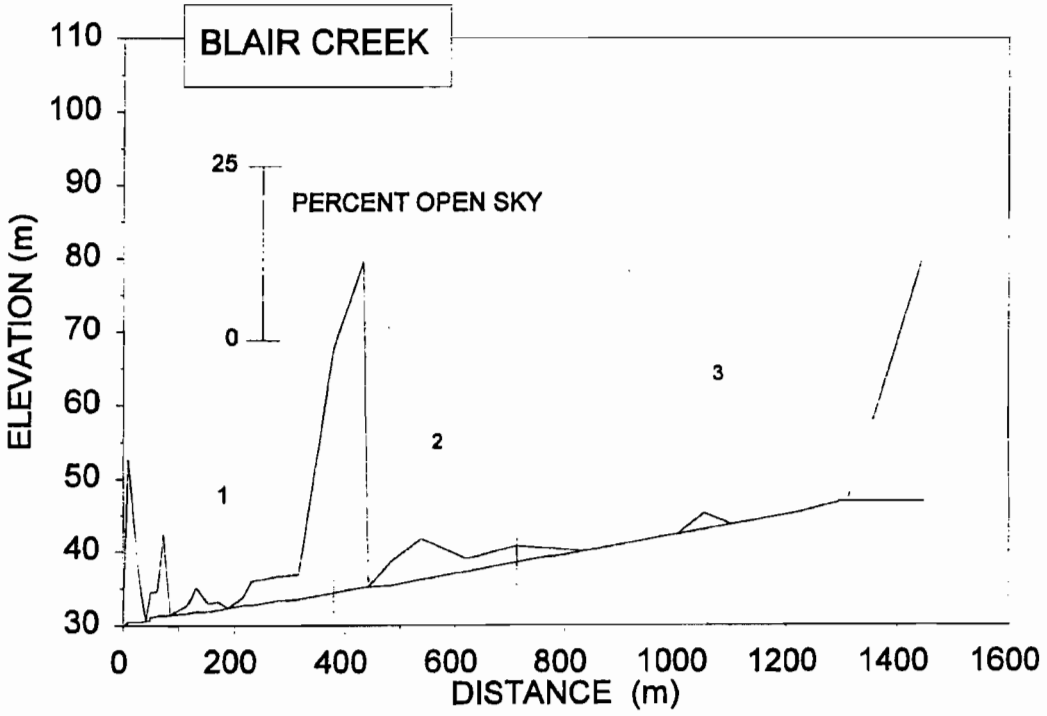
trees (3-15cm). The average unit gradient is 1.2%. There are no key pieces of wood in this reach.

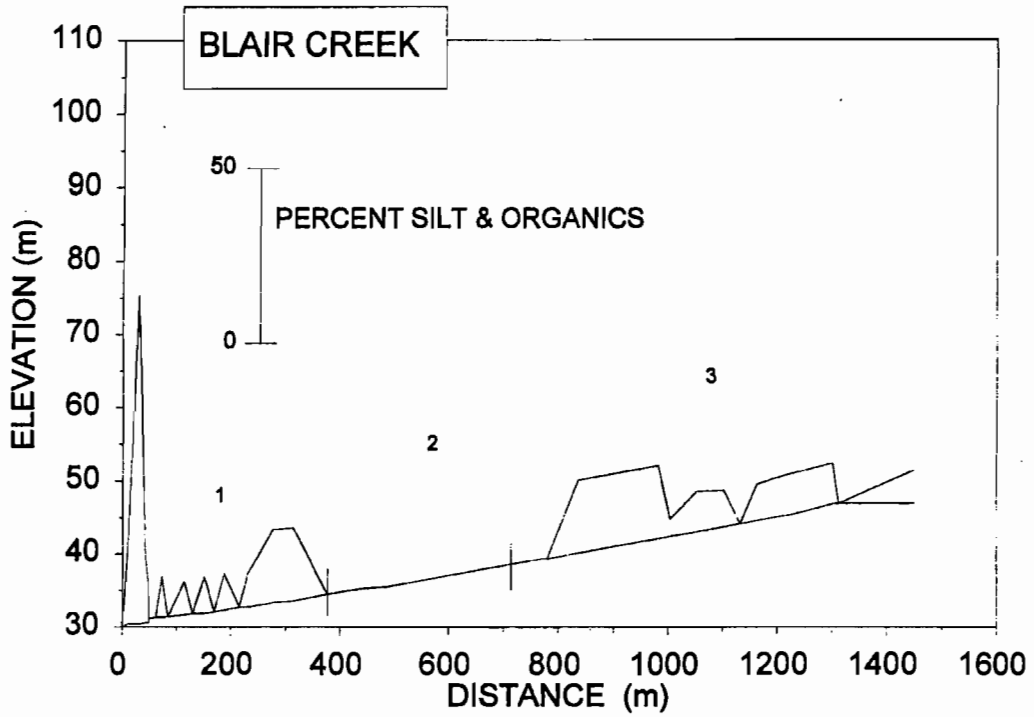
COMMENTS:

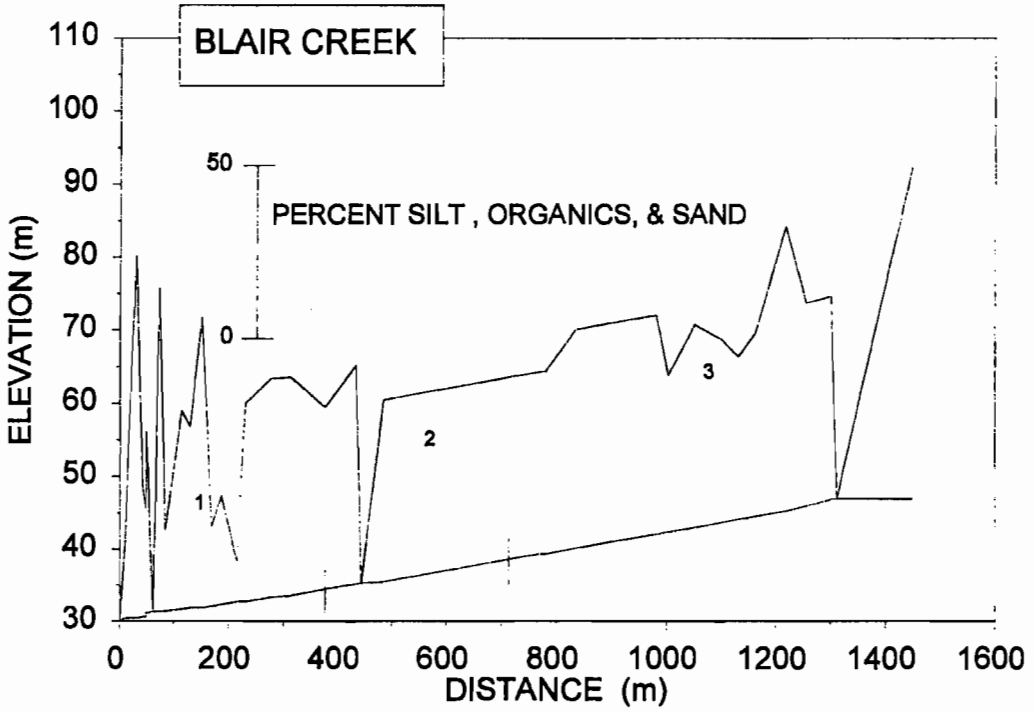
The dammed pool at the end of the survey measures 25m X 150m. It appears to result from beaver activity jamming the culvert and blocking drainage.

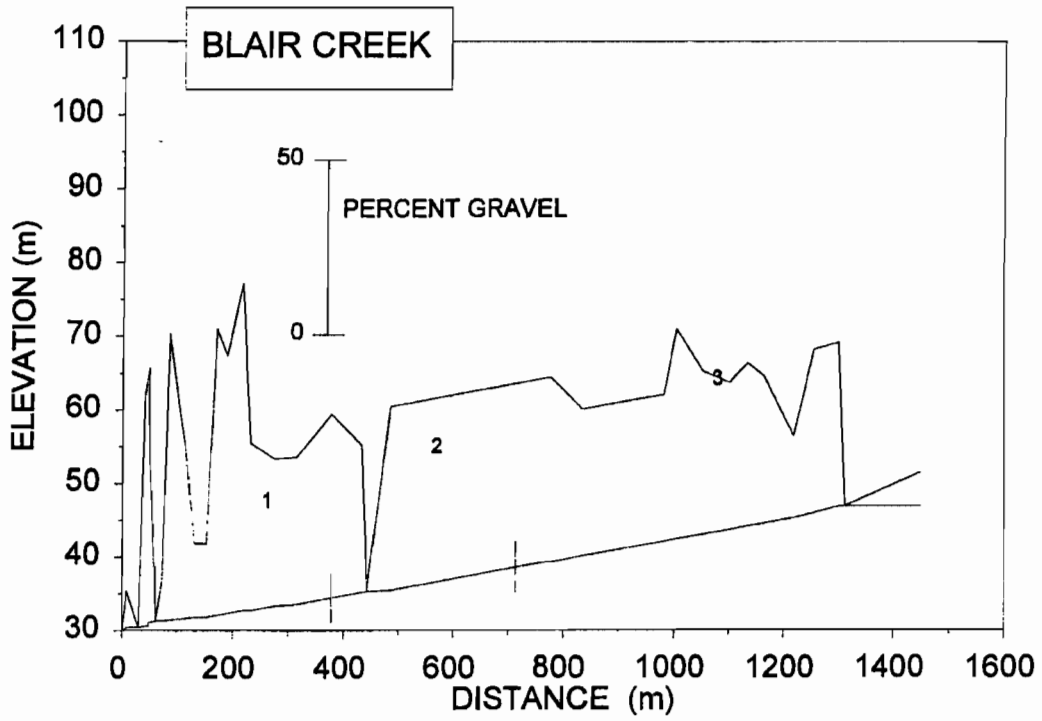
On the reach summary page the "Wetted Surface" width for reaches 1 and 3 is greater than both the "Active Channel" width and the "First Terrace" width. The "Wetted Surface" is an average of all units whereas the active channel and terrace are measured every tenth unit. The pools in Reach 1 and the pond in Reach 3 have caused the average wetted width to be exaggerated.

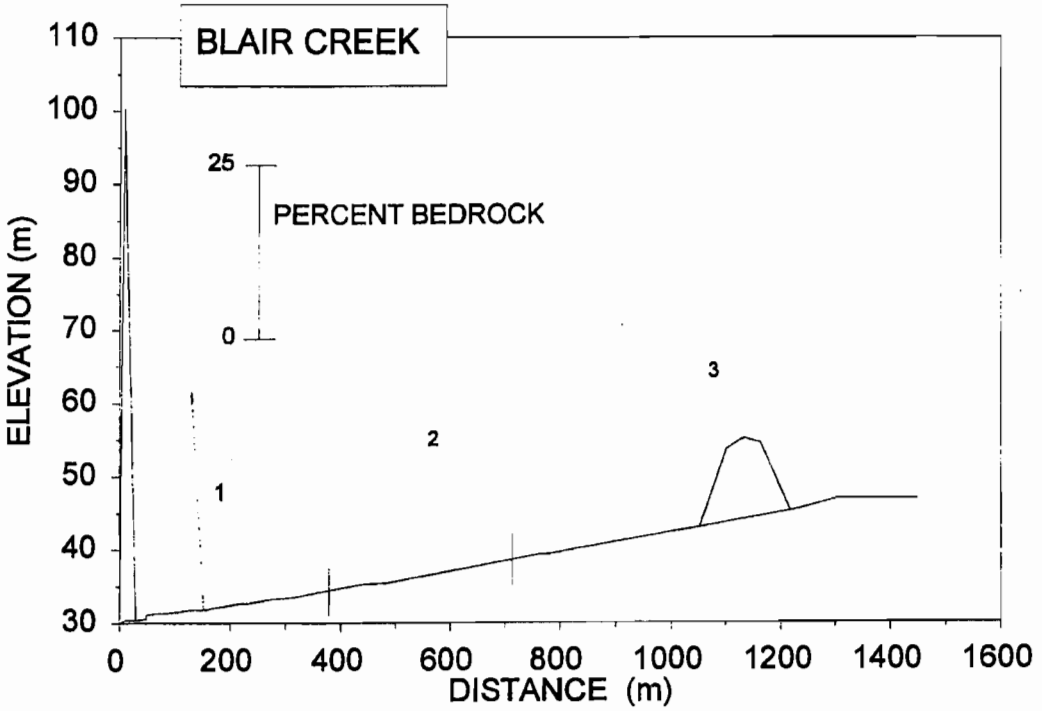

BLAIR CREEK
REACH
BRIDGE
TRIBUTARY
ELEVATION (m)
110
100
90
80
70
60
50
40
30
1
2
3
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

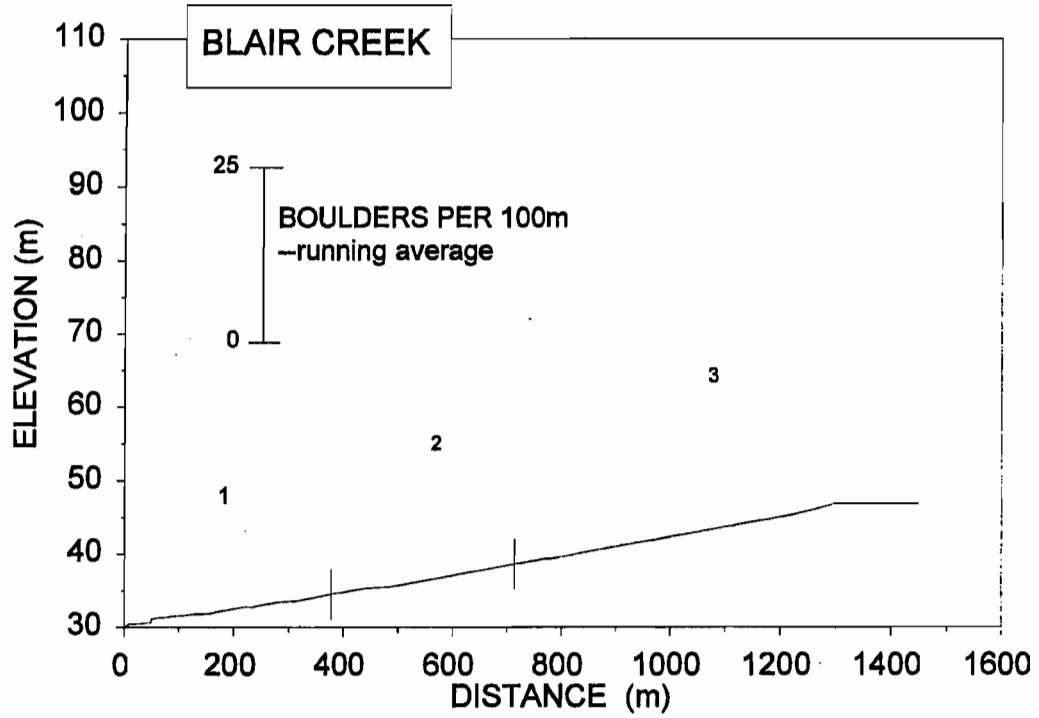

BLAIR CREEK
25
PERCENT OPEN SKY
0
ELEVATION (m)
110
100
90
80
70
60
50
40
30
1
2
3
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

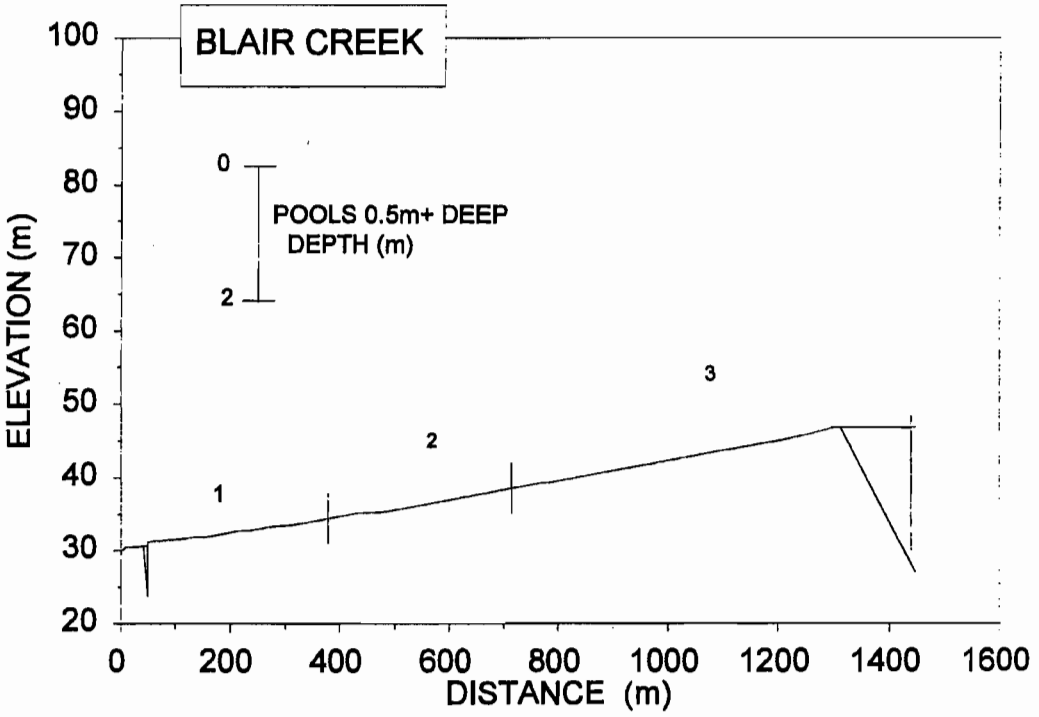

BLAIR CREEK
50
PERCENT SILT & ORGANICS
0
1
2
3
ELEVATION (m)
110
100
90
80
70
60
50
40
30
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

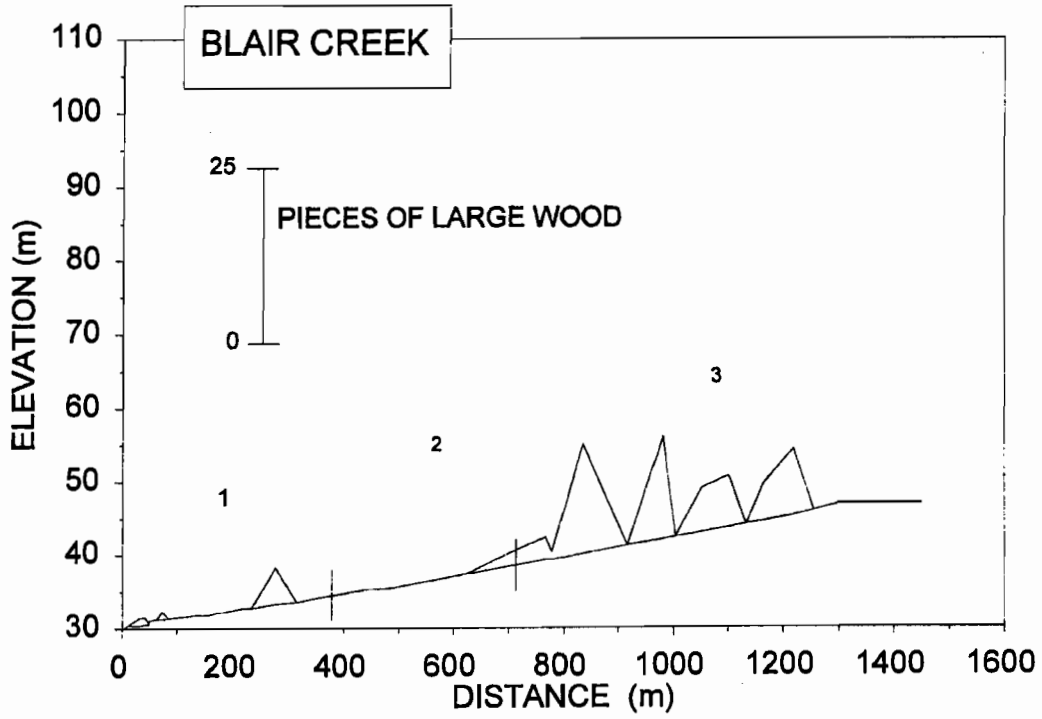

BLAIR CREEK
50
PERCENT SILT , ORGANICS, & SAND
0
1
2
3
ELEVATION (m)
110
100
90
80
70
60
50
40
30
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

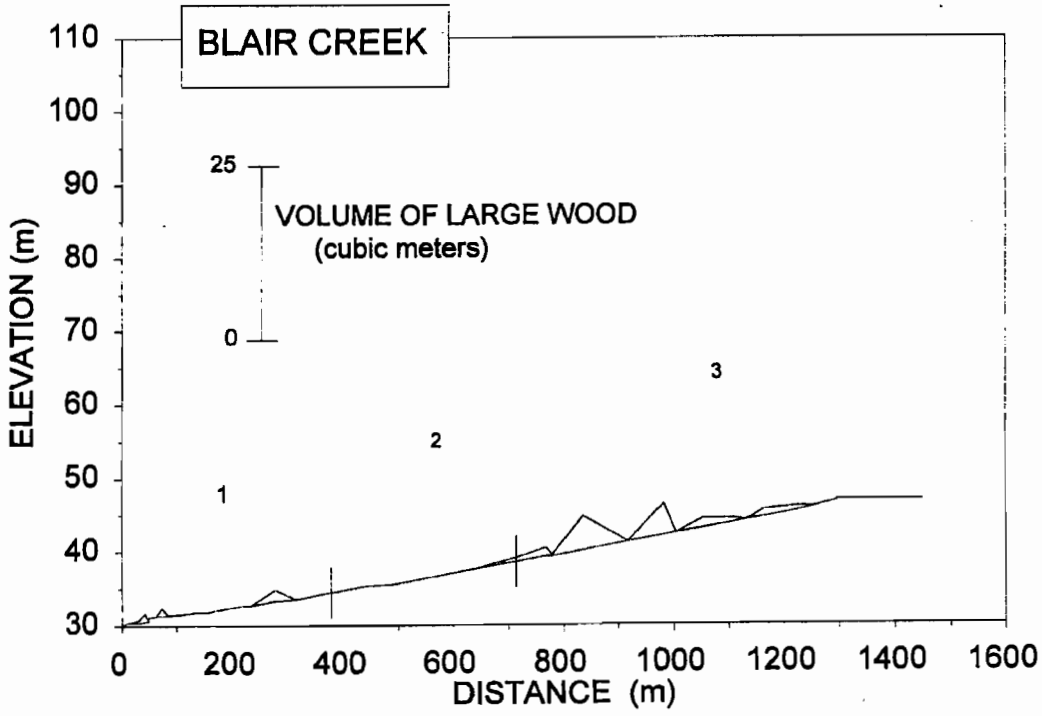

BLAIR CREEK
50
PERCENT GRAVEL
0
ELEVATION (m)
110
100
90
80
70
60
50
40
30
1
2
3
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)


BLAIR CREEK
25
PERCENT BEDROCK
0
ELEVATION (m)
110
100
90
80
70
60
50
40
30
1
2
3
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

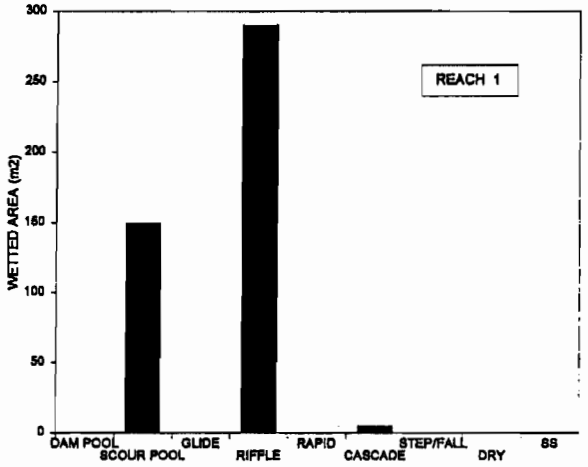

BLAIR CREEK
25
BOULDERS PER 100m
--running average
0
1
2
3
ELEVATION (m)
110
100
90
80
70
60
50
40
30
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

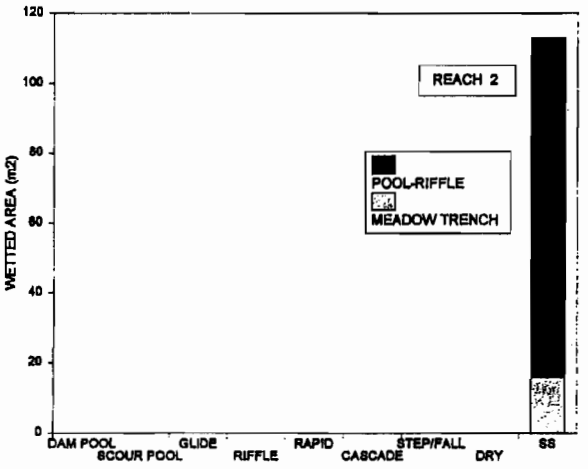

BLAIR CREEK
0
POOLS 0.5m+ DEEP
DEPTH (m)
2
1
2
3
ELEVATION (m)
100
90
80
70
60
50
40
30
20
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

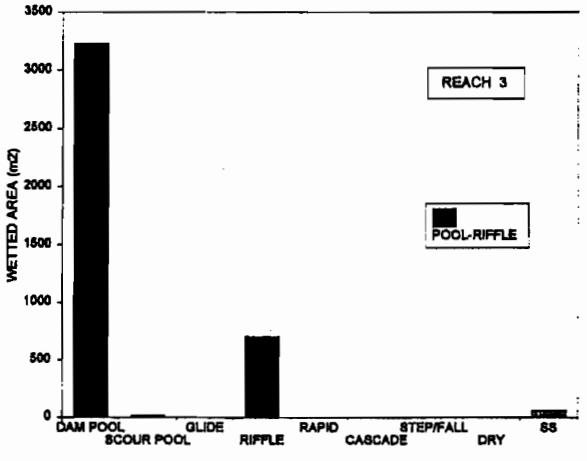

BLAIR CREEK
25
PIECES OF LARGE WOOD
0
1
2
3
ELEVATION (m)
110
100
90
80
70
60
50
40
30
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)


BLAIR CREEK
25
VOLUME OF LARGE WOOD
(cubic meters)
0
1
2
3
ELEVATION (m)
110
100
90
80
70
60
50
40
30
0
200
400
600
800
1000
1200
1400
1600
DISTANCE (m)

BLAIR CREEK: HABITAT DISTRIBUTION







REACH 1 T27S-R12W-S35NW REACH 1

Valley and Channel Summary

Valley Characteristics (Percent Reach Length)

Narrow Valley Floor		Broad Valley Floor	
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: 20.0 range: 20.0-20.0

Channel Morphology (Percent Reach Length)

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

Channel Characteristics

Type	Length(m)	Area (m2)	Dry Units
Primary	314	447	0
Secondary	0	0	0

Channel Dimensions(m)

Wetted Surface		Active Channel		First Terrace	
Width	1.5	Width	1.3	Width	7.0
Depth	0.14	Height	0.2	Height	2.0
W:D	26.4				

Stream Flow Type: LF Water Temp: 13.0-13.0°C
Avg. Unit Gradient: 1.2% Habitat Units/100m: 5.4

Riparian, Bank, and Wood Summary

Land Use: YT/YT Riparian Veg.: D3-15/D3-15

Bank Stability

Bank Class	Percent Reach Length
Non-Erodible	4.1
Vegetation Stabilized	93.0
Boulder-cobble	0.0
Actively Eroding	2.9

Undercut Banks
Unit Average: 0.00%

Open Sky (% of 180)
Unit Average: 4
Range: 0-22

Large Woody Debris

	Total	Total/100m
All pieces (≥3m x 0.15m)	8	2.5
Volume (m^3)	4	1.4
Key pieces (≥10m x 0.6m)	0	0.0

Average Complexity Score: 1.2

REACH 2 T27S-R12W-S35NW REACH 2

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: 20.0 range: 20.0-20.0

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	308	117	0
Secondary	0	0	0

Channel Dimensions(m)

Wetted Surface		Active Channel		First Terrace	
Width	0.4	Width	1.3	Width	3.0
Depth	0.05	Height	0.2	Height	0.1
W:D	-				

Stream Flow Type: LF Water Temp: 13.0-13.0°C
Avg. Unit Gradient: 1.2% Habitat Units/100m: 1.9

Riparian, Bank, and Wood Summary

Land Use: LG/ Riparian Veg.: G/S

Bank Stability

Bank Class	Percent Reach Length
Non-Erodible	3.6
Vegetation Stabilized	96.4
Boulder-cobble	0.0
Actively Eroding	0.0

Undercut Banks
Unit Average: 0.00%

Open Sky (% of 180)
Unit Average: 15
Range: 0-44

Large Woody Debris

	Total	Total/100m
All pieces (≥3m x 0.15m)	0	0.0
Volume (m^3)	0	0.0
Key pieces (≥10m x 0.6m)	0	0.0

Average Complexity Score: 1.0

REACH 3 T27S-R12W-S35NW REACH 3

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

Valley Width Index avg: 2.0 range: 2.0-2.0

Channel Morphology (Percent Reach Length)

Constrained		Unconstrained	
Hillslope	100	Single Channel	0
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	827	4,016	0
Secondary	0	0	0

Channel Dimensions (m)

Wetted Surface		Active Channel		First Terrace	
Width	2.5	Width	2.0	Width	3.0
Depth	0.24	Height	0.2	Height	1.0
W:D	12.0				

Stream Flow Type: LF Water Temp: 13.0-13.0°C
Avg. Unit Gradient: 1.2% Habitat Units/100m: 1.9

Riparian, Bank, and Wood Summary

Land Use: YT/ Riparian Veg.: D3-15/

Bank Stability

Bank Class	Percent Reach Length
Non-Erodible	1.3
Vegetation Stabilized	98.7
Boulder-cobble	0.0
Actively Eroding	0.0

Undercut Banks
Unit Average: 0.00%

Open Sky (% of 180)
Unit Average: 2
Range: 0-33

Large Woody Debris

	Total	Total/100m
All pieces (≥3m x 0.15m)	62	7.5
Volume (m^3)	14	1.8
Key pieces (≥10m x 0.6m)	0	0.0

Average Complexity Score: 1.0

OREGON DEPT. FISH AND WILDLIFE **BLAIR CREEK**
HABITAT INVENTORY Report Date: 03/14/95 Survey Date: 07/14/94

REACH 1 **T27S-R12W-S35NW** **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
CASCADE/BEDROCK	1	9	0.5	0.03	5	0	20	0	10	0	0	70
CULVERT CROSSING	1	13	0.2	0.02	3	0	0	0	0	0	0	0
POOL-LATERAL SCOUR	4	69	1.6	0.19	111	0	30	51	19	0	0	0
POOL-PLUNGE	1	7	5.3	0.70	39	0	10	20	70	0	0	0
RIFFLE	5	84	1.5	0.06	132	0	4	25	66	0	0	6
RIFFLE W/ POCKETS	4	131	1.3	0.14	157	0	15	36	49	0	0	0
STEP/STRUCTURE	1	0	0.2	0.01	0	0	0	50	50	0	0	0
Total:	17	314	1.5	0.14	447	0	**Avg:** 13	32	43	0	0	6

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	Wood Class
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	5	76	2.4	0.29	150	33.58	0	0.00	1.0
Glides	0	0	.	.	0	0.00	0	0.00	.
Riffles	9	216	1.4	0.09	290	64.81	0	0.00	1.3
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	1	9	0.5	0.03	5	1.03	0	0.00	1.0
Step/Falls	1	0	0.2	0.01	0	0.00	0	0.00	1.0
Small Streams (SS)	0	0	.	.	0	0.00	0	0.00	.
Dry	0	0	.	.	0	0.00	0	0.00	.

POOL SUMMARY

	Total	#/Km
All Pools	5	15.9
Pools ≥1m deep:	0	0.0
Complex pools (wood score≥4):	0	0.0
Pool Frequency (channel widths/pool):	48.3	

REACH 2 T27S-R12W-S35NW REACH 2

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
(SS) MEADOW TRENCH	1	40	0.4	0.07	16	0	0	50	50	0	0	0
(SS) POOL-RIFFLE	4	257	0.4	0.05	97	0	0	53	48	0	0	0
CULVERT CROSSING	1	11	0.3	0.01	3	0	0	0	0	0	0	0
Total:	6	308	0.4	0.05	117	0	**Avg:** 0	43	40	0	0	0

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	Wood Class
Dammed & BW Pools	0	0	.	.	0	0.00	0	0.00	.
Scour Pools	0	0	.	.	0	0.00	0	0.00	.
Glides	0	0	.	.	0	0.00	0	0.00	.
Riffles	0	0	.	.	0	0.00	0	0.00	.
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	0	0	.	.	0	0.00	0	0.00	.
Small Streams (SS)	5	297	0.4	0.05	113	97.17	0	0.00	1.0
Dry	0	0	.	.	0	0.00	0	0.00	.

POOL SUMMARY

	Total	#/Km
All Pools	0	0.0
Pools ≥1m deep:	0	0.0
Complex pools (wood score≥4):	0	0.0
Pool Frequency (channel widths/pool):	0.0	

REACH 3 T27S-R12W-S35NW REACH 3

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
(SS) POOL-RIFFLE	2	147	0.5	0.05	61	0	0	50	50	0	0	0
CULVERT CROSSING	1	11	0.2	0.10	2	0	0	0	0	0	0	0
POOL-DAMMED	1	138	23.5	2.00	3,234	0	9	82	9	0	0	0
POOL-LATERAL SCOUR	1	11	1.5	0.15	17	0	0	50	50	0	0	0
RIFFLE	2	52	1.2	0.10	64	0	2	41	51	0	0	6
RIFFLE W/ POCKETS	9	469	1.4	0.14	640	0	14	44	39	0	0	2
Total:	16	827	2.5	0.24	4,016	0	**Avg:** 9	45	39	0	0	2

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	Wood Class
Dammed & BW Pools	1	138	23.5	2.00	3234	80.52	0	0.00	1.0
Scour Pools	1	11	1.5	0.15	17	0.41	0	0.00	1.0
Glides	0	0	.	.	0	0.00	0	0.00	.
Riffles	11	521	1.3	0.13	703	17.51	0	0.00	1.0
Rapids	0	0	.	.	0	0.00	0	0.00	.
Cascades	0	0	.	.	0	0.00	0	0.00	.
Step/Falls	0	0	.	.	0	0.00	0	0.00	.
Small Streams (SS)	2	147	0.5	0.05	61	1.51	0	0.00	1.0
Dry	0	0	.	.	0	0.00	0	0.00	.

POOL SUMMARY

	Total	#/Km
All Pools	2	2.4
Pools ≥1m deep:	1	1.2
Complex pools (wood score≥4):	0	0.0
Pool Frequency (channel widths/pool):	206.8	

STREAM SUMMARY **BLAIR CREEK**

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
39	1,449	1.7	0.17	4,579	9	39	41	0	0	3	0

Wetted Area

Habitat Group	(m^2)	Percent
Scour Pool	167	3.6
Backwater Pools	3,234	70.6
Glide	0	0.0
Riffle	993	21.7
Rapid	0	0.0
Cascade	5	0.1
Step	0	0.0
Dry	0	0.0

REACH 1 RIPARIAN ZONE VEGETATION SUMMARY REACH 1

Summary of Riparian Zone (0-30m) (1 transects)

Total hardwoods/1000 ft	244
Total conifers/1000 ft	0
Total conifers >20" dbh/1000 ft	0

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	1.0	0.0	1.0	0.0	1.0	0.0	3.0
15-30cm	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m^2	0.0	1.0	0.0	1.0	0.0	2.0	0.0	1.3

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10-20 meters (%)	Zone 3 20-30 meters (%)
Canopy closure	35	45	35
Shrub cover	30	30	30
Grass/forb cover	25	70	70

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10-20 meters	Zone 3 20-30 meters
Hillslope	0	0	0
High terrace	100	100	100
Low terrace	0	0	0
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 (%)	12	13	15

REACH 2 RIPARIAN ZONE VEGETATION SUMMARY REACH 2

Summary of Riparian Zone (0-30m) (1 transects)

Total hardwoods/1000 ft	244
Total conifers/1000 ft	305
Total conifers >20" dbh/1000 ft	0

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	1.0	2.0	0.0	1.0	2.0	1.0	3.0	4.0
15-30cm	0.0	0.0	1.0	0.0	1.0	0.0	2.0	0.0
30-50cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m^2	1.0	2.0	1.0	1.0	3.0	1.0	1.7	1.3

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10-20 meters (%)	Zone 3 20-30 meters (%)
Canopy closure	40	40	40
Shrub cover	20	30	30
Grass/forb cover	80	70	70

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10-20 meters	Zone 3 20-30 meters
Hillslope	0	0	0
High terrace	100	100	100
Low terrace	0	0	0
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 (%)	6	8	5

REACH 3 RIPARIAN ZONE VEGETATION SUMMARY REACH 3

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

Total hardwoods/1000 ft	406
Total conifers/1000 ft	488
Total conifers >20" dbh/1000 ft	0

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	0.7	4.3	0.7	0.3	1.0	0.3	2.3	5.0
15-30cm	0.7	0.7	2.3	0.0	2.7	0.7	5.7	1.3
30-50cm	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3
50-90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>90cm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total/100m^2	1.3	5.3	3.0	0.3	3.7	1.0	2.7	2.2

Canopy closure and ground cover

	Zone 1 0-10 meters (%)	Zone 2 10-20 meters (%)	Zone 3 20-30 meters (%)
Canopy closure	85	85	85
Shrub cover	50	50	50
Grass/forb cover	50	50	50

Predominant landform in each zone

	Zone 1 0-10 meters	Zone 2 10-20 meters	Zone 3 20-30 meters
Hillslope	100	100	100
High terrace	0	0	0
Low terrace	0	0	0
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 (%)	23	23	26

Summary of Riparian Zone (0-30m) for all reaches (5 transects)

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

Total hardwoods/1000 ft	341
Total conifers/1000 ft	354
Total conifers >20" dbh/1000 ft	0

Average number of trees in a 5-meter wide band

Diameter class (cm)	Zones 1-3 Conifer	Hardwood
3-15cm	2.0	4.4
15-30cm	3.8	1.0
30-50cm	0.0	0.2
50-90cm	0.0	0.0
>90cm	0.0	0.0

OREGON DEPARTMENT OF FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 03/14/95

BLAIR CREEK
Survey Date: 07/14/94

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	
1	LF	1	HT	5.0	70	60	40	Conifer	0	0	0	0	0	
								Hardwood	1	0	0	0	0	ALDER, WILLOWS
1	LF	2	HT	7.0	70	60	40	Conifer	0	0	0	0	0	
								Hardwood	1	0	0	0	0	MYRTLE, WILLOWS
1	LF	3	HT	10.0	70	60	40	Conifer	0	0	0	0	0	
								Hardwood	1	0	0	0	0	ALDER, WILLOWS
1	RT	1	HT	19.0	0	0	10	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
1	RT	2	HT	19.0	19	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
1	RT	3	HT	19.0	0	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	1	0	0	0	MYRTLE

OREGON DEPARTMENT OF FISH AND WILDLIFE
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BLAIR CREEK
Survey Date: 07/14/94

RIPARIAN ZONE VEGETATION

Reach 2

Reach 2

VEGETATION DETAIL

Unit	Side	Zone	Surface	Slope	Cover (percent) Canopy	Shrub	Grass		Diameter class (cm) 3-15	15-30	30-50	50-90	>90	Notes
18	LF	1	HT	7.0	0	0	100	Conifer	1	0	0	0	0	
								Hardwood	0	0	0	0	0	
18	LF	2	HT	10.0	0	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
18	LF	3	HT	10.0	0	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
18	RT	1	HT	4.0	80	40	60	Conifer	0	0	0	0	0	
								Hardwood	2	0	0	0	0	ALDER
18	RT	2	HT	6.0	80	60	40	Conifer	0	1	0	0	0	
								Hardwood	1	0	0	0	0	DOUGLAS FIR, MYRTL
18	RT	3	HT	0.0	80	60	40	Conifer	2	1	0	0	0	
								Hardwood	1	0	0	0	0	DOUGLAS FIR, MYRLT

OREGON DEPARTMENT OF FISH AND WILDLIFE
HABITAT INVENTORY Report Date: 03/14/95

BLAIR CREEK
Survey Date: 07/14/94

RIPARIAN ZONE VEGETATION

Reach 3

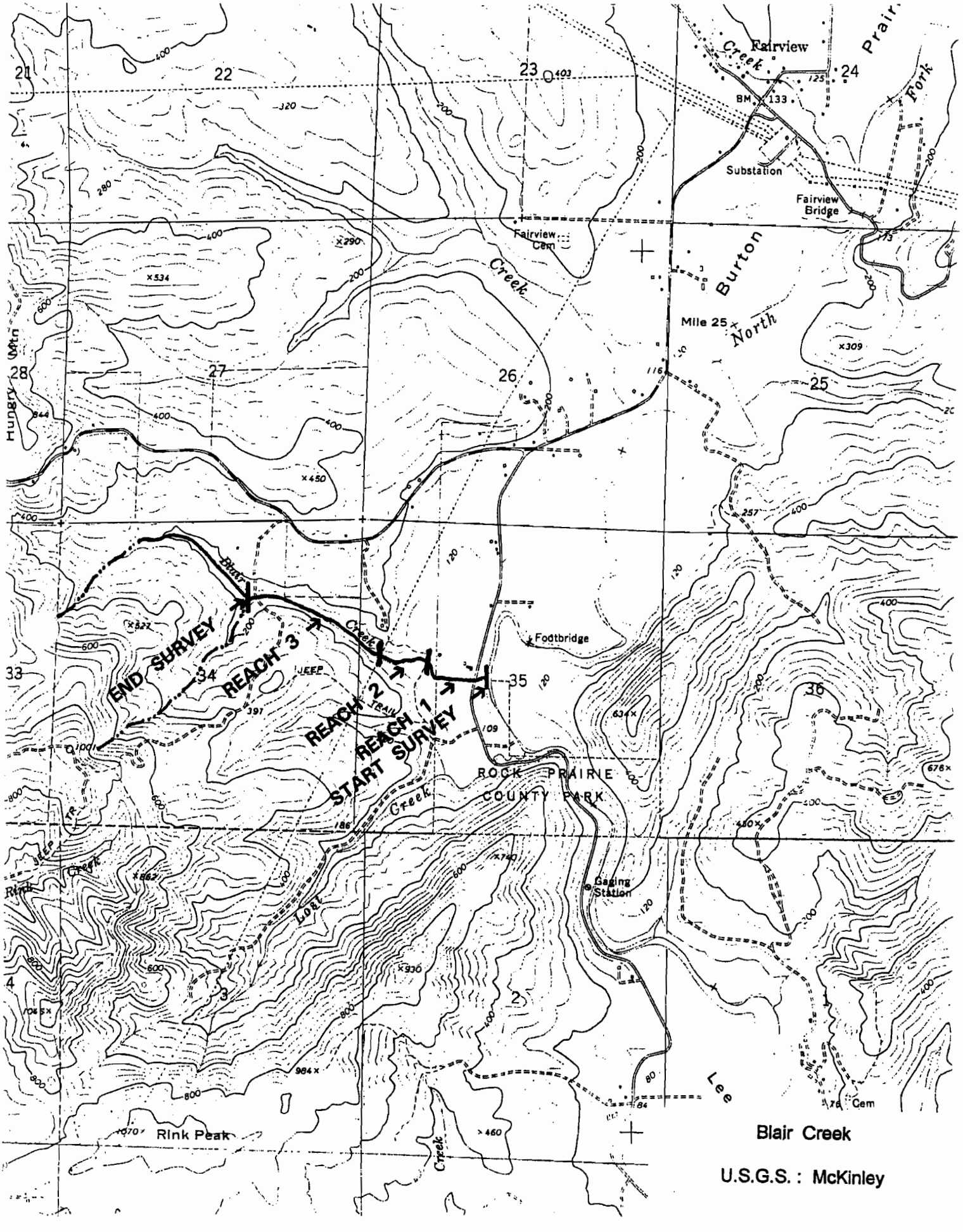
Reach 3

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	
24	LF	1	HS	26.0	90	100	0	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
24	LF	2	HS	30.0	90	100	0	Conifer	2	0	0	0	0	
								Hardwood	1	0	0	0	0	DOUGLAS FIR, RED AI
24	LF	3	HS	35.0	90	100	0	Conifer	2	0	0	0	0	
								Hardwood	1	0	0	0	0	DOUGLAS FIR, RED AI
24	RT	1	HS	15.0	30	0	100	Conifer	0	0	0	0	0	
								Hardwood	2	0	0	0	0	RED ALDER
24	RT	2	HS	15.0	30	0	100	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
24	RT	3	HS	20.0	30	0	100	Conifer	1	0	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
39	LF	1	HS	30.0	100	60	40	Conifer	2	0	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
39	LF	2	HS	30.0	100	60	40	Conifer	0	3	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
39	LF	3	HS	30.0	100	60	40	Conifer	0	3	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
39	RT	1	HS	29.0	100	60	40	Conifer	0	2	0	0	0	
								Hardwood	6	0	0	0	0	DOUGLAS FIR, DEAD 7
39	RT	2	HS	30.0	100	60	40	Conifer	0	2	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
39	RT	3	HS	29.0	100	60	40	Conifer	0	2	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
30	LF	1	HS	20.0	95	40	60	Conifer	0	0	0	0	0	
								Hardwood	2	2	1	0	0	RED ALDER
30	LF	2	HS	20.0	95	40	60	Conifer	0	0	0	0	0	
								Hardwood	0	0	0	0	0	
30	LF	3	HS	20.0	95	40	60	Conifer	0	0	0	0	0	
								Hardwood	0	2	0	0	0	RED ALDER
30	RT	1	HS	15.0	95	40	60	Conifer	0	0	0	0	0	
								Hardwood	3	0	0	0	0	RED ALDER
30	RT	2	HS	15.0	95	40	60	Conifer	0	2	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR
30	RT	3	HS	20.0	95	40	60	Conifer	0	3	0	0	0	
								Hardwood	0	0	0	0	0	DOUGLAS FIR

BLAIR CREEK: COMMENT SUMMARY

Reach	Unit	Type	Channel	Distance (m)	Code	Note 1	Note 2
1	1	CR	00	9		TEMP= 13 C, PHOTO 3	ENTERS RIVER, CLAY
1	2	LP	00	30	BC	FOOT BRIDGE	FOOT BRIDGE
1	5	SS	00	50	CE	HT= 0.4, CULVERT ENTRY	
1	6	CC	00	63		1.8 m X 30	
1	10	RI	00	130	BC BV		FOOT BRIDGE
1	11	LP	00	152	/TJ	/INT TJ	
1	12	RI	00	171	FC	OLD FC	OLD
1	13	RP	00	189	FC	OLD FC	
1	17	RP	00	314	FC		
2	18	PR	00	378			AG LAND
2	19	PR	00	433		PHOTO 4	
2	20	CC	00	444		30" X 24'	
2	21	MT	00	484	WL	SMALL FISH	SMALL FISH
2	22	PR	00	539		FC	
2	23	PR	00	622	FC		
3	24	PR	00	714		POWER LINES, PHOTO 5 9:18	POWER LINES
3	25	PR	00	769	FC	FC	
3	26	LP	00	780	WL	ALDER CANOPY, FISH	SMALL FISH
3	27	RP	00	835	WL		SMALL FISH
3	31	RP	00	1052		ALDER CANOPY	
3	34	RP	00	1163			MAN MADE DAM
3	35	RP	00	1218	SD	SD WELL PUMP	WATER WELL
3	36	RP	00	1255	/TJ	/TJ INT	
3	37	RP	00	1301	BV	BV	ACCUMULATION
3	38	CC	00	1312		36 X 12	15" X 36" HT= 0.25m
3	39	DP	00	1449	TJ/	TJ/ POND, PHOTO 6	POND


Fairview
Creek
Prair.
Fork
BM 133
Substation
Fairview Bridge
Fairview Cem
Burton
Creek
Mile 25
North
Hungry Mtn
Blair
Creek
END SURVEY
REACH 3
REACH 2
REACH 1
START SURVEY
Footbridge
JEEP TRAIL
ROCK PRAIRIE COUNTY PARK
Creek
Gaging Station
Lost
Creek
Rink Peak
Creek
Lee
Cem
Blair Creek
U.S.G.S. : McKinley

Blair Creek - Reach 1 - Unit 18. Pool-riffle. Grazing

Blair Creek - Reach 2 - Unit 39. Debris pool.