

**APPENDIX 4C**  
**KLAMATH RIVER HABITAT MAPPING DATABASE**



**APPENDIX 4C-1**

**J.C. BOYLE BYPASS REACH HABITAT MAPPING DATA (100 CFS RELEASE)**



Appendix 4C-1. J.C. Boyle Bypass Reach habitat mapping data (100 cfs release).

### J.C. Boyle Bypass Reach Habitat Mapping (100 cfs Release)

(Original Mapping)

(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
	START	0	0						Start - first unit upstream of PH tailwater Pool	START	0	0
1	HGR/CAS	173	173	4.3	76	6.33	ss	LB/SB		RIFFLE	173	173
2	POOL	219	46	5.3	79	0.00		LB/SB	Chute/Rapid RB	POOL	219	46
3	CAS	229	10	---	67	14.00	ss	LB/SB		CAS	229	10
4	RUN	348	119	5.0+	52	0.00	ls	LB/SB				
5	POOL	481	133	5.7	56	0.00		LB/SB		POOL	481	252
6	HGR/CAS	546	65	4.1+	67	4.74	ss	LB/SB		RIFFLE	546	65
7	POW	663	117	5.6	89	0.90	ls	LB/SB	Small riffle (~10 feet long) between Pow and Run	POW	663	117
8	RUN	764	101	3.0+	64	0.92	ls	LB/SB	Fast	RUN	764	101
9	HGR	818	54	3.0+	48	5.21	ss	LB/SB	Rapid	RIFFLE	818	54
10	RUN	872	54	4.0+	48	0.00	ls	LB/SB				
11	POOL	995	123	4.8+	69	0.00		LB/SB	Straight Scour; BW LB	POOL	995	177
12	POW	1033	38	3.7+	65	0.00	ls	LB/SB	SC starts @ 995 LB - trickle	POW	1033	38
12.1	S/C LGR		836	1.0	4	---		SB/LC		S/C RIF		
13	HGR	1050	17	---	59	8.24	ss	LB/SB		RIFFLE	1050	17
14	POW	1086	36	4.0+	66	1.70	ms	LB/SB		POW	1086	36
15	HGR	1147	61	---	64	3.00	ms	LB/SB		RIFFLE	1147	61
16	CAS	1171	24	---	52	9.58	ss	LB/SB		CAS	1171	24
17	POW	1228	57	4.2	58	1.67	ms	LB/SB	Pool-like	POW	1228	57
18	HGR	1274	46	3.7	61	3.03	ms	LB/SB		RIFFLE	1274	46
19	POOL	1292	18	4.1+	57	0.00		LB/SB		POOL	1292	18
20	HGR/CAS	1350	58	4.0+	59	3.85	ms	LB/SB		RIFFLE	1350	58
21	RUN	1464	114	3.9	68	1.43	ms	LB/SB	Some Pool mid-unit - did not break out	RUN	1464	114
22	HGR	1493	29	4.0+	68	5.17	ss	LB/SB		RIFFLE	1493	29
23	CAS	1499	6	---	71	6.50	ss	LB/SB	Step	CAS	1499	6
24	POW	1526	27	3.2	67	1.20	ms	SB/LB		POW	1526	27

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25	CAS	1536	10	---	69	6.50	ss	SB/LB	Step	CAS	1536	10
26	POW	1616	80	4.0+	67	1.19	ms	SB/LB		POW	1616	80
27	POOL	1664	48	5.8	79	0.00		SB/LB	Boulder mid-channel	POOL	1664	48
28	HGR	1673	9	---	75	5.60	ss	SB/LC	Step	RIFFLE	1673	9
29	POW	1961	288	3.8+	102	1.03	ms	SB/LC	Flat-water, run and pool areas	POW	1961	288
30	LGR	1972	11	2.5+	98	2.73	ms	SB/LC	Top SC LB @ 1831	RIFFLE	1972	11
31	RUN	2035	63	4.5+	97	0.00	ls	LB/SB				
32	POOL	2100	65	6.2+	105	0.00		LB/SB	Boulder Scour - large bld's in channel, some pockets	POOL	2100	128
33	POW	2303	203	5.0+	102	0.00	ls	LB/SB				
34	POOL	2407	104	5.1+	118	0.00		LB/SB	Boulder Scour	POOL	2407	307
35	POW	2474	67	4.7	99	1.00	ms	LB/SB		POW	2474	67
36	HGR	2490	16	---	89	5.63	ss	LB/SB	Step	RIFFLE	2490	16
37	POW	2670	180	5.2	87	1.00	ms	LB/SB		POW	2670	180
38	RUN	2717	47	5.0+	74	0.00	ls	LB/SB		RUN	2717	47
39	POW	2752	35	4.0+	68	0.00	ls	LB/SB		POW	2752	35
40	HGR	2775	23	---	79	3.91	ms	LB/SB	Step	RIFFLE	2775	23
41	POW	2792	17	3.0+	86	0.00	ls	LB/SB		POW	2792	17
42	R/G	2832	40	5.4	80	0.00	ls	SB/LC				
43	POOL	2934	102	5.0+	78	0.00		SB/LC	MC Pool	POOL	2934	142
44	LGR	2945	11	---	74	1.82	ls	LB/SB	Step between pools	RIFFLE	2945	11
45	RUN	3024	79	4.8	63	0.00	ls	LB/SB	Trail access from road?			
46	POOL	3101	77	5.5	75	0.00	ls	LB/SB	N 42° 05.319', W 122° 03.753'	POOL	3101	156
47	HGR/CAS	3204	103	---	64	4.63	ss	LB/SB	Some POW	RIFFLE	3204	103
48	POW	3342	138	3.9+	74	2.00	ss	LB/SB		POW	3342	138
49	RUN	3397	55	4.6	78	0.00	ls	LB/SB	Pool-like LB mid-unit	RUN	3397	55
50	POW	3455	58	3.7	94	1.30	ms	LB/SB		POW	3455	58
51	HGR	3463	8	---	102	4.00	ss	LB/SB	Step	RIFFLE	3463	8
52	POW	3542	79	4.9	83	1.30	ms	LB/SB	w/Step RB	POW	3542	79

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
53	HGR	3556	14	---	91	3.93	ms	LB/SB	Step	RIFFLE	3556	14
54	POW	3592	36	4.2	112	0.00	ls	LB/SB		POW	3592	36
55	RUN	3824	232	3.5+	103	0.00	ls	SC/GR	Some pockets at bottom	RUN	3824	232
56	LGR	3848	24	2.5	90	4.58	ss	SC/GR	Step - deep slot RB; some gravel in unit r/g u/s	RIFFLE	3848	24
57	R/G	3890	42	4.2	110	0.00	ls	SC/LC	Mostly Glide			
58	POOL	4083	193	15.0+	78	0.00		LB/SB	Trail access from road?; starting Big Bend	POOL	4083	235
59	HGR/CAS	4280	197	---	43	10.91	ss	LB/SB	Rapids - some Pow - all white water	RIFFLE	4280	197
60	RUN	4316	36	5.4	36	0.00	ls	LB/SB	Rapids - Chute all white water			
61	POOL	4351	35	5.8	44	0.00		LB/SB	Rapids - all white water - plunge pool; flyfisherman	POOL	4351	71
62	CAS	4407	56	---	63	7.50	ss	LB/SB		CAS	4407	56
63	POOL	4460	53	5.6	52	0.00		LB/SB	Trench - narrow, fast	POOL	4460	53
64	HGR/CAS	4536	76	3.5	65	5.33	ss	LB/SB	w/pockets	RIFFLE	4536	76
65	CAS	4597	61	6.1	71	6.46	ss	LB/SB		CAS	4597	61
66	POW	4664	67	3.4	94	0.80	ls	LB/SB	split - mult. WSE	POW	4664	67
67	POOL	4748	84	5.0+	121	0.00		LB/SB	near mid-point of bend in channel; ~ 80 feet wide	POOL	4748	84
68	POW	4795	47	3.8	99	1.60	ms	LB/SB		POW	4795	47
69	LGR	4807	12	1.5	89	2.50	ms	LB/SB	Step; mostly boulder	RIFFLE	4807	12
70	POW	4858	51	3.0+	85	0.33	ls	LB/SB				
71	GLIDE	4930	72	3.5	80	0.00		SB/SA				
72	POOL	5210	280	8.2	72	0.00		LB/SB		POOL	5210	403
73	LGR	5233	23	2.6	70	1.52	ms	LB/SB	Step; boulder, TRV, deep	RIFFLE	5233	23
74	RUN	5297	64	4.4	62	0.00	ls	LB/SB				
75	POOL	5358	61	4.2	60	0.00	ls	LB/SB		POOL	5358	125
76	HGR/CAS	5388	30	2.8	64	5.17	ss	LB/SB		RIFFLE	5388	30
77	POOL	5441	53	4.7	61	0.00	ss	LB/SB	Trench	POOL	5441	53
78	CAS	5453	12	4.0+	67	14.17	ss	LB/SB		CAS	5453	12
79	POOL	5482	29	5.8	75	0.00		LB/SB	Plunge	POOL	5482	29
80	CAS	5495	13	---	58	7.69	ss	LB/SB	Slide LB - water flows under boulders LB	CAS	5495	13

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
81	POOL	5649	154	6.2+	55	0.00		LB/SB	Corner; N 42° 05.207', W 122° 03.442'	POOL	5649	154
82	CAS	5789	140	---	82	6.45	ss	LB/SB		CAS	5789	140
83	POW	5952	163	4.0+	92	2.73	ss	LB/SB	w/Step	POW	5952	163
84	POOL	6148	196	6.0+	61	0.00	ls	LB/SB	Straight Scour	POOL	6148	196
85	HGR	6230	82	3.7	58	6.70	ss	LB/SB		RIFFLE	6230	82
86	RUN	6322	92	4.0+	58	1.89	ms	LB/SB	Fast/Narrow; next 5 units in Step/Rapid - white water	RUN	6322	92
87	HGR	6328	6	---	59	6.67	ss	LB/SB	Step	RIFFLE	6328	6
88	POOL	6364	36	4.2	74	0.00		LB/SB	Plunge	POOL	6364	36
89	HGR	6383	19	3.9	64	7.37	ss	LB/SB	Step	RIFFLE	6383	19
90	POOL	6464	81	4.6	68	0.00		LB/SB	Spring/Seep LB @ 6460	POOL	6464	81
91	CAS	6479	15	---	59	8.00	ss	LB/SB		CAS	6479	15
92	RUN	6541	62	4.0+	48	0.00	ls	LB/SB	Pow @ bottom			
93	POOL	6621	80	9.0+	55	0.00		LB/SB	Large boulder mid-chan @ top; corner	POOL	6621	142
94	HGR/CAS	6704	83	2.1+	61	6.60	ss	LB/SB		RIFFLE	6704	83
95	RUN	6758	54	3.5+	97	0.00	ls	LB/SB	Some pockets	RUN	6758	54
96	POOL	6881	123	5.5+	124	0.00		LB/SB	SC starts RB @ top (Boulder Bar)	POOL	6881	123
97	RUN	6959	78	5.5+	120	0.00	ls	LB/SB		RUN	6959	78
97.1	S/C RUN		78	---	~12.0	---		LB/SB	SC RB	S/C RUN		
97.2	S/C HGR		89	---	~12.0	---		LB/SB	SC RB	S/C RIF		
98	HGR/CAS	7048	89	2.5+	117	6.52	ss	LB/SB	w/pockets	RIFFLE	7048	89
99	POW	7081	33	4.6	111	0.00	ls	LB/SB	Water flowing under boulders LB	POW	7081	33
100	HGR	7094	13	---	96	8.46	ss	LB/SB	Water flowing under boulders LB	RIFFLE	7094	13
101	RUN	7127	33	3.7	92	0.00	ls	LB/SB	Water flowing under boulders LB	RUN	7127	33
102	HGR	7150	23	---	95	4.23	ss	LB/SB	Step	RIFFLE	7150	23
103	RUN	7208	58	4.5+	85	0.00	ls	LB/SB		RUN	7208	58
104	HGR	7219	11	---	83	5.45	ss	LB/SB	Step	RIFFLE	7219	11
105	POW	7325	106	4.4	97	0.00	ls	LB/SB		POW	7325	106
106	RUN	7524	199	6.5	92	0.00	ls	LB/SB	4 feet deep			



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107	POOL	7582	58	6.0+	68	0.00		LB/SB				
108	RUN	7673	91	6.0	55	0.00	ls	LB/SB	Some pockets	RUN	7673	348
109	POOL	7721	48	5.5	64	0.00		LB/SB	Looks deep	POOL	7721	48
110	RUN	7827	106	5.5	55	1.67	ms	LB/SB	w/submerged boulders	RUN	7827	106
111	POOL	7901	74	6.5	55	0.00		LB/SB	Boulder @ top mid-chan; small step pool to run	POOL	7901	74
112	RUN	7951	50	5.7	46	0.52	ls	LB/SB	small boulder step between run and pool	RUN	7951	50
113	POOL	8053	102	7.0	52	0.00	ls	LB/SB	w/small break mid-pool	POOL	8053	102
114	RUN	8139	86	5.0	55	2.20	ss	LB/SB	<u>Note</u> : pools in this stretch run-like, quiet margins	RUN	8139	86
115	POW	8164	25	5.6	57	2.20	ss	LB/SB		POW	8164	25
116	HGR	8170	6	---	61	2.50	ms	LB/SB	Step	RIFFLE	8170	6
117	POOL	8208	38	5.4	52	0.00	ss	LB/SB	Step between pools			
118	POOL	8256	48	5.0+	62	0.00		LB/SB				
119	RUN	8314	58	4.0+	80	0.00	ls	LB/SB		POOL	8314	144
120	HGR	8654	340	---	81	5.56	ss	LB/SB	w/pockets - long rapid; Spring? Seep LB @ 8528	RIFFLE	8654	340
121	POW	8704	50	3.7	91	1.10	ms	LB/SB	Mult. WSE; Spring? Seep LB @ 8706	POW	8704	50
122	HGR	8746	42	3.0+	79	4.05	ss	LB/SB		RIFFLE	8746	42
123	POW	8786	40	4.8	82	1.00	ms	LB/SB		POW	8786	40
124	HGR	8799	13	---	83	6.15	ss	LB/SB	Step; Tallis slope LB	RIFFLE	8799	13
125	POW	8977	178	5.0+	77	1.05	ms	LB/SB	Run-like @ bottom (few boulders)	POW	8977	178
126	HGR/CAS	9055	78	3.5+	93	5.33	ss	LB/SB	w/pockets - flow under boulders into hole LB @ 8998	RIFFLE	9055	78
127	POW	9114	59	5.3	95	0.70	ss	LB/SB		POW	9114	59
128	POOL	9176	62	6.8	97	0.00	ls	LB/SB		POOL	9176	62
129	POW	9365	189	5.8	107	0.71	ls	LB/SB		POW	9365	189
130	RUN	9424	59	5.0+	86	0.00	ls	LB/SB				
131	POOL	9538	114	6.5+	78	0.00		LB/SB	Spring? Seep LB @ 9525			
132	RUN	9667	129	6.6	60	0.00	ls	LB/SB				
133	POOL	9857	190	12.3	65	0.00		LB/SB		POOL	9857	492
134	CAS/HGR	10110	253	4.1	68	7.80	ss	LB/SB	w/pockets and steps	CAS	10110	253

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135	POW	10135	25	3.5+	81	1.10	ms	LB/LC	Flat on LB (~100 feet to trees)	POW	10135	25
136	POOL	10192	57	5.0	86	0.00	ls	LB/SB	corner	POOL	10192	57
137	HGR	10211	19	---	100	3.95	ms	LB/SB	Step	RIFFLE	10211	19
138	POW	10278	67	2.8	87	1.14	ms	LB/SB		POW	10278	67
139	GLIDE	10343	65	5.6	89	0.00	ls	LB/SB				
140	POOL	10676	333	7.6	79	0.00		LB/SB	Main Channel Pool	POOL	10676	398
141	HGR/CAS	10958	282	3.0+	98	5.38	ss	LB/SB	Rapid	RIFFLE	10958	282
142	RUN	11048	90	3.5+	75	0.50	ls	SB/LB	BW LB (1/2 unit)	RUN	11048	90
143	HGR	11083	35	3.0+	62	5.40	ss	SB/LB		RIFFLE	11083	35
143.1	S/C POOL		58	2.7	38	---		SB/LB	SC LB - Mult. WSE	S/C POOL		
143.2	S/C RUN		63	2.0	40	---		SB/LB	Side Channel created by deposition from canal spillway	S/C RUN		
143.3	S/C LGR		113	1.5	27	---		SB/LB		S/C RIF		
143.4	S/C POOL		41	2.5	32	---		SB/LB		S/C POOL		
143.5	S/C HGR		80	1.0	25	---		SB/LB		S/C RIF		
143.6	S/C RUN		65	2.0	34	---		SB/LB	End SC @ 11479	S/C RUN		
144	RUN	11207	124	3.0+	62	0.52	ls	SB/LB	These units in steep/fast section	RUN	11207	124
145	HGR	11260	53	2.7	60	3.30	ms	SB/LB		RIFFLE	11260	53
146	RUN	11316	56	3.8	45	1.00	ms	SB/LB		RUN	11316	56
147	HGR	11409	93	3.4	48	3.19	ms	SB/LB		RIFFLE	11409	93
148	RUN	11479	70	2.6	46	0.90	ss	LC/SC		RUN	11479	70
149	LGR	11535	56	2.4	77	1.25	ls	LC/SC		RIFFLE	11535	56
150	RUN	11632	97	---	46	0.89	ss	LB/SB		RUN	11632	97
151	POOL	11718	86	5.0	38	0.00	ls	LB/SB	Trench	POOL	11718	86
152	CAS	11800	82	---	30	4.84	ss	LB/SB	@ Base of Canal Spillway	CAS	11800	82
153	RUN	11823	23	4.0+	48	1.74	ms	LB/SB	Narrow, fast, deep	RUN	11823	23
154	R/G	12034	211	8.0	77	0.00	ls	SB/LC	Marsh area LB			
155	POOL	12713	679	14.2	102	0.00		SB/LC				

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156	RUN	12780	67	5.4	71	1.38	ms	LB/SB		POOL	12780	957
157	LGR	12790	10	2.8	66	4.00	ss	LB/SB	Step	RIFFLE	12790	10
158	R/G	12851	61	8.4	79	0.00	ls	LB/SB				
159	POOL	13220	369	10.1	81	0.00		LB/SB	Boulder break between pools			
160	POOL	13357	137	7.0	64	0.00	ls	LB/SB		POOL	13357	567
161	CAS/HGR	13507	150	6.0	64	6.07	ss	LB/BR		CAS	13507	150
162	POW	13536	29	5.6	80	1.70	ms	LB/BR	Dangerous	POW	13536	29
163	CAS/HGR	13627	91	4.6	76	7.33	ss	LB/SB		CAS	13627	91
164	HGR/CAS	13698	71	---	92	6.67	ss	LB/SB		RIFFLE	13698	71
165	POW	13769	71	5.0	103	1.71	ms	LB/SB	BW LB; Mult. WSE; Water flowing under boulders LB	POW	13769	71
166	HGR	13807	38	3.8	108	6.59	ss	LB/SB	Water flowing under boulders LB	RIFFLE	13807	38
167	POW	13862	55	5.0+	125	0.00	ls	LB/SB	Water flowing under boulders LB	POW	13862	55
168	HGR	13885	23	3.0	125	5.20	ss	LB/SB	Water flowing under boulders LB	RIFFLE	13885	23
169	POW	13922	37	4.8	92	0.00	ls	LB/SB	Water flowing under boulders LB, BW pool LB	POW	13922	37
170	HGR	14022	100	---	87	5.20	ss	LB/SB	Some pockets; Grove of oak LB	RIFFLE	14022	100
171	RUN	14088	66	5.0+	62	0.00	ls	SB/LB	Narrow			
172	POOL	14659	571	8.0	88	0.00		SB/LB	Large tallis slope LB, open hillside	POOL	14659	637
173	CAS	14676	17	---	60	8.40	ss	LB/SB	Cable overhead	CAS	14676	17
174	POOL	14704	28	---	---	0.00		LB/SB	Chute RB	POOL	14704	28
175	CAS	14720	16	---	58	8.39	ss	LB/SB		CAS	14720	16
176	HGR	14774	54	2.5	53	3.51	ms	LB/SB	Rapid	RIFFLE	14774	54
177	RUN	14833	59	4.0+	97	0.00	ls	LB/SB		RUN	14833	59
178	HGR	14850	17	---	95	5.56	ss	LB/SB	Step	RIFFLE	14850	17
179	POW	14883	33	5.4	99	2.80	ss	LB/SB		POW	14883	33
180	HGR	14969	86	2.0+	102	7.05	ss	LB/SB	Rapid; mult.WSE	RIFFLE	14969	86
181	POW	15011	42	3.0+	101	2.83	ss	LB/SB	Mult.WSE	POW	15011	42
182	LGR	15061	50	2.2	125	1.39	ls	LB/SB	w/pockets	RIFFLE	15061	50
183	POW	15102	41	4.5	112	1.46	ms	LB/SB	Some steps and WW	POW	15102	41

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(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
184	RUN	15298	196	4.5	111	1.00	ms	SB/LC	Rock outcrop along road LB	RUN	15298	196
185	LGR	15314	16	2.0	75	1.25	ls	SB/LC	Spring? Seep LB @ 15360	RIFFLE	15314	16
186	RUN	15402	88	3.6	69	1.00	ms	SB/LC	Some pool RB @ top	RUN	15402	88
187	HGR	15410	8	---	65	8.75	ss	LB/SB	Step	RIFFLE	15410	8
188	POW	15444	34	3.0	73	2.25	ss	LB/SB	Spring? Seep LB @ 15444	POW	15444	34
189	POOL	15489	45	4.8	68	0.00	ms	LB/SB	From POW @ 15444 to RUN/GLIDE @ 16469	POOL	15489	45
190	CAS	15501	12	1.8	63	17.08	ss	LB/SB	- water flows under boulders	CAS	15501	12
191	POOL	15542	41	3.7	65	0.00		LB/SB	Boulders large, side cast road and canal construction	POOL	15542	41
192	HGR/CAS	15553	11	3.0+	55	20.00	ss	SB/LB	w/pockets	RIFFLE	15553	11
193	POOL	15581	28	4.9	56	0.00	ss	SB/LB		POOL	15581	28
194	HGR/CAS	15709	128	3.0+	71	4.11	ss	SB/LB		RIFFLE	15709	128
195	RUN	15759	50	5.1	82	0.00	ls	SB/LB	SC LB	RUN	15759	50
196	POW	15795	36	4.8	79	2.81	ss	LB/SB		POW	15795	36
197	POOL	15833	38	6.3	74	0.00	ss	LB/SB		POOL	15833	38
198	HGR	15863	30	2.5+	38	11.33	ss	LB/SB		RIFFLE	15863	30
199	POOL	15896	33	4.0+	43	0.00		LB/SB		POOL	15896	33
200	CAS	15913	17	---	55	9.12	ss	LB/SB	TRVS	CAS	15913	17
201	RUN	15967	54	3.0+	49	3.93	ss	LB/SB	Fast, steep	RUN	15967	54
202	POOL	16004	37	6.1	47	0.00	ls	LB/SB				
203	POOL	16046	42	5.0+	54	0.00		LB/SB	Break between pools	POOL	16046	79
204	CAS	16055	9	---	48	14.44	ss	LB/SB	Step	CAS	16055	9
205	POOL	16143	88	6.0+	41	0.00	ls	LB/SB	Trench, narrow, deep	POOL	16143	88
206	CAS	16155	12	---	42	10.00	ss	LB/SB	Step	CAS	16155	12
207	RUN	16187	32	3.9	47	2.00	ss	SB/LB		RUN	16187	32
208	POW	16239	52	3.2	52	1.39	ms	SB/LB	w/steps	POW	16239	52
209	POOL	16269	30	3.8	46	0.00		LB/SB		POOL	16269	30
210	POW	16305	36	3.5	43	4.33	ss	LB/SB		POW	16305	36
211	HGR/CAS	16397	92	2.2	41	7.73	ss	LB/SB	Large boulders across channel - almost block	RIFFLE	16397	92

## J.C. Boyle Bypass Reach Habitat Mapping (100 cfs Release)

(Original Mapping)

(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
									channel			
212	R/G	16469	72	5.2	58	0.00	ls	LB/SB				
213	POOL	16988	519	17.0+	128	0.00		LB/SB	Dammed Pool; BW mid-pool LB	POOL	16988	591
214	RUN	17035	47	5.5	54	2.06	ss	LB/SB		RUN	17035	47
215	POOL	17149	114	6.8	70	0.00	ls	LB/SB	Boulder step between run and pool; corner	POOL	17149	114
216	HGR	17176	27	---	53	5.74	ss	LB/SB	Step	RIFFLE	17176	27
217	POOL	17370	194	6.0+	88	0.00		LB/SB	Water flowing under boulders LB	POOL	17370	194
218	CAS	17427	57	3.2	48	7.19	ss	LB/SB	Water flowing under boulders LB	CAS	17427	57
219	RUN	17490	63	3.4	51	1.67	ms	LB/SB	Water flowing under boulders LB	RUN	17490	63
220	POW	17529	39	4.0+	47	3.54	ss	LB/SB	Water flowing under boulders LB	POW	17529	39
221	POOL	17604	75	4.8	50	0.00	ms	LB/SB	Water flowing under boulders LB	POOL	17604	75
222	HGR/CAS	17687	83	3.2	49	9.13	ss	LB/SB	Water flowing under boulders LB	RIFFLE	17687	83
223	RUN	17794	107	5.5	44	1.67	ms	LB/SB	Water flowing under boulders LB	RUN	17794	107
224	HGR	17847	53	3.3	41	5.22	ss	LB/SB	Water flowing under boulders LB; shallow run-like rapid	RIFFLE	17847	53
225	RUN	17905	58	5.4	42	1.62	ms	LB/SB	Water flowing under boulders LB	RUN	17905	58
226	R/G	18009	104	13.2	40	0.00	ls	LB/SB	Boulder break between run and r/g			
227	POOL	18128	119	12.5	41	0.00	ls	LB/SB		POOL	18128	223
228	RUN	18163	35	8.8	35	2.05	ss	LB/SB	Narrow	RUN	18163	35
229	R/G	18211	48	9.4	52	0.00	ls	LB/SB				
230	POOL	18326	115	9.3	66	0.00		LB/SB	<b>Major Spring/seep LB</b>	POOL	18326	163
231	RUN	18358	32	3.3	48	4.06	ss	LB/SB	Fast, nasty	RUN	18358	32
232	CAS	18370	12	---	47	12.08	ss	LB/SB		CAS	18370	12
233	RUN	18405	35	5.4	43	1.60	ms	LB/SB	Narrow, some boulders	RUN	18405	35
234	R/G	18536	131	5.1	64	0.00	ls	LB/SB	Some boulders			
235	POOL	18738	202	12.6	61	0.00		LB/SB	<b>Major Spring/seep LB/RB</b>	POOL	18738	333
236	POW	18779	41	4.5	43	2.44	ss	LB/SB	N 42° 06.809', W 122° 03.393'	POW	18779	41
237	RUN	18825	46	3.7	38	1.67	ms	LB/SB	Chute RB; boulders down center of unit	RUN	18825	46
238	HGR/CAS	18858	33	2.1	45	6.67	ss	LB/SB	<b>Water flowing under boulders LB</b>	RIFFLE	18858	33

## J.C. Boyle Bypass Reach Habitat Mapping (100 cfs Release)

(Original Mapping)

(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
239	POW	18905	47	---	41	2.23	ss	LB/SB	- this point upstream 2,000 feet	POW	18905	47
240	RUN	18941	36	4.0+	41	1.67	ms	LB/SB	Narrow	RUN	18941	36
241	R/G	19100	159	5.9	60	0.00	ls	LB/SB	Some boulders			
242	POOL	19181	81	5.8	54	0.00		LB/SB	Major Spring/seep LB/RB - clear plume	POOL	19181	240
243	POW	19187	6	3.5	59	2.50	ss	LB/SB	Step	POW	19187	6
244	POOL	19248	61	4.0	57	0.00		LB/SB	Large drop in flow noticeable u/s of springs	POOL	19248	61
245	POW	19253	5	2.5	48	0.91	ls	LB/SB	Step	POW	19253	5
246	POW	19434	181	4.2	50	4.85	ss	LB/SB	w/steps	POW	19434	181
247	POOL	19470	36	4.6	45	0.00		LB/SB		POOL	19470	36
248	POW	19494	24	4.3	49	2.80	ss	LB/SB		POW	19494	24
249	HGR	19518	24	1.5	47	6.46	ss	LB/SB		RIFFLE	19518	24
250	POW	19561	43	3.2	53	2.80	ss	LB/SB	Run RB	POW	19561	43
251	HGR	19576	15	1.0	59	10.00	ss	LB/SB	TRVS Step	RIFFLE	19576	15
252	RUN	19709	133	5.2	40	1.03	ms	LB/SB		RUN	19709	133
253	HGR	19733	24	2.8	52	8.95	ss	LB/SB	Step	RIFFLE	19733	24
254	POW	19761	28	4.9	50	2.78	ss	LB/SB		POW	19761	28
255	RUN	19846	85	4.8	44	0.24	ls	LB/SB	some boulders			
256	POOL	20129	283	6.9	75	0.00		LB/SB				
257	R/G	20181	52	6.2	71	0.00	ls	LB/SB	w/boulders mid-pool			
258	POOL	20328	147	8.6	40	0.00	ls	LB/SB	Lone pine (small) at road edge	POOL	20328	567
259	HGR	20361	33	3.8	16	9.70	ss	LB/SB	Rapid; isolated pool RB	RIFFLE	20361	33
260	RUN	20457	96	4.9	26	1.14	ms	LB/SB	Narrow	RUN	20457	96
261	HGR	20481	24	3.3	25	7.92	ss	LB/SB	Step	RIFFLE	20481	24
262	POOL	20523	42	6.9	29	0.00		LB/SB	Boulder Bar RB - 1785 to 2005	POOL	20523	42
263	POW	20548	25	5.0+	32	0.00	ls	LB/SB		POW	20548	25
264	HGR/CAS	20580	32	2.8	30	5.63	ss	LB/SB		RIFFLE	20580	32
265	POW	20633	53	4.0+	39	3.00	ss	LB/SB		POW	20633	53
266	RUN	20743	110	4.0+	42	0.91	ls	LB/SB	End water flowing under boulders LB			

## J.C. Boyle Bypass Reach Habitat Mapping (100 cfs Release)

(Original Mapping)

(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
267	POOL	21162	419	12.0+	71	0.00		SB/LB	Clams found + heavy beaver activity	POOL	21162	529
268	POW	21233	71	3.7	77	1.33	ms	LB/SB		POW	21233	71
269	HGR/CAS	21267	34	1.7	82	11.58	ss	LB/SB		RIFFLE	21267	34
270	POW	21308	41	2.0	71	2.50	ss	LB/SB	Water flowing under bar and grass	POW	21308	41
271	POOL	21338	30	4.0+	64	0.00		LB/SB	Water flowing under bar and grass	POOL	21338	30
272	POW	21366	28	2.4	63	3.57	ss	LB/SB	Small break between POW lumped	POW	21366	28
273	POW	21458	92	2.9	82	1.20	ms	LB/SB	Boulder Bar LB - 2720 to 3053	POW	21458	92
274	POOL	21526	68	4.0+	72	0.00		LB/SB		POOL	21526	68
275	HGR	21535	9	1.0	69	6.11	ss	LB/SB	Step	RIFFLE	21535	9
276	POW	21601	66	3.5	59	1.06	ms	LB/SB		POW	21601	66
277	RUN	21656	55	3.4	63	0.00	ls	LB/SB	Split by boulder bar	RUN	21656	55
278	HGR	21663	7	1.5	66	18.57	ss	LB/SB		RIFFLE	21663	7
279	POW	21741	78	2.6	75	0.83	ls	LB/SB		POW	21741	78
280	POOL	21791	50	6.5	67	0.00	ls	LB/SB	BW/SC LB; Mult. WSE	POOL	21791	50
281	CAS	21797	6	1.0	58	41.67	ss	BR/LB	Bedrock outcrop LB	CAS	21797	6
282	POOL	21933	136	6.6	62	0.00	ls	LB/BR	BW @ top RB; control break between pools	POOL	21933	136
283	POOL	22079	146	4.1	66	0.00		BR/SA	Bedrock outcrop LB Ends	POOL	22079	146
284	HGR	22142	63	2.4	57	6.67	ss	LB/SB	N 42° 07.095', W 122° 02.902' @ 3341	RIFFLE	22142	63
285	POW	22190	48	2.7	69	2.08	ss	LB/SB	Steep gradient	POW	22190	48
286	HGR	22229	39	1.8	90	6.15	ss	BR/LB		RIFFLE	22229	39
287	POW	22248	19	2.5	86	0.00	ls	LB/BR				
288	POOL	22483	235	7.2	77	0.00		LB/BR	Boulder bar RB	POOL	22483	254
289	LGR	22567	84	2.9	87	2.62	ms	LB/SB	w/pockets, boulders	RIFFLE	22567	84
290	POW	22618	51	3.0	86	0.00	ls	LB/SB				
291	RUN	22681	63	4.2	82	0.00	ls	LB/SB	run ends at top of boulders			
292	POOL	22843	162	13.5	56	0.00		LB/SB	Top 30 feet run-like	POOL	22843	276
293	HGR	22877	34	4.2	66	7.50	ss	LB/SB		RIFFLE	22877	34
294	R/G	22912	35	4.0+	67	0.00	ls	LB/SB				

## J.C. Boyle Bypass Reach Habitat Mapping (100 cfs Release)

(Original Mapping)

(Final Mapping - Pool Tails  
Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
295	POOL	22972	60	4.5	49	0.00	ls	LB/SB	Actual pool length +50 feet	POOL	22972	95
296	HGR	23000	28	1.9	130	8.93	ss	LB/SB	TRVS Step, 60 degrees; SC RB	RIFFLE	23000	28
297	POOL	23455	455	9.0	63	0.00	ls	SC/LC	Bridge @ 4600, Penstock @ 4640	POOL	23455	455
These units not used for total reach calculations - not characteristic of reach												
298	RUN	23514	59									
299	POOL	23561	47									
300	POW	23597	36									
301	HGR	23606	9									
302	POW	23652	46									
303	RUN	23731	79									
304	POOL	23766	35									
305	CAS	23774	8									
306	RUN	23826	52									
307	CAS	23908	82									
308	RUN	24130	222									



**APPENDIX 4C-2**

**J.C. BOYLE BYPASS REACH HABITAT MAPPING DATA (475 CFS RELEASE)**



Appendix 4C-2. J.C. Boyle Bypass Reach habitat mapping data (475 cfs release).

### J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)										(Final Mapping - 475 cfs)		
Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
	START	0	0						Start - first unit upstream of PH tailwater Pool	START	0	
1	HGR/CAS	173	173	4.3	76	6.33	ss	LB/SB		HGR	210	210
2	POOL	219	46	5.3	79	0.00		LB/SB	Chute/Rapid RB	POW	252	42
3	CAS	229	10	---	67	14.00	ss	LB/SB		CAS	262	10
4	RUN	348	119	5.0+	52	0.00	ls	LB/SB		RUN	383	121
5	POOL	481	133	5.7	56	0.00		LB/SB		POOL	501	118
6	HGR/CAS	546	65	4.1+	67	4.74	ss	LB/SB		HGR	549	48
7	POW	663	117	5.6	89	0.90	ls	LB/SB	Small riffle (~10 feet long) between Pow and Run			
8	RUN	764	101	3.0+	64	0.92	ls	LB/SB	Fast	POW	704	155
9	HGR	818	54	3.0+	48	5.21	ss	LB/SB	Rapid	HGR	847	143
10	RUN	872	54	4.0+	48	0.00	ls	LB/SB				
11	POOL	995	123	4.8+	69	0.00		LB/SB	Straight Scour; BW LB	POOL	998	151
12	POW	1033	38	3.7+	65	0.00	ls	LB/SB	SC starts @ 995 LB - trickle	RUN	1029	31
12.1	S/C LGR		836	1.0	4	---		SB/LC				
13	HGR	1050	17	---	59	8.24	ss	LB/SB				
14	POW	1086	36	4.0+	66	1.70	ms	LB/SB				
15	HGR	1147	61	---	64	3.00	ms	LB/SB				
16	CAS	1171	24	---	52	9.58	ss	LB/SB				
17	POW	1228	57	4.2	58	1.67	ms	LB/SB	Pool-like			
18	HGR	1274	46	3.7	61	3.03	ms	LB/SB				
19	POOL	1292	18	4.1+	57	0.00		LB/SB				
20	HGR/CAS	1350	58	4.0+	59	3.85	ms	LB/SB		HGR	1357	328
21	RUN	1464	114	3.9	68	1.43	ms	LB/SB	Some Pool mid-unit - did not break out	RUN	1438	81
22	HGR	1493	29	4.0+	68	5.17	ss	LB/SB				
23	CAS	1499	6	---	71	6.50	ss	LB/SB	Step			
24	POW	1526	27	3.2	67	1.20	ms	SB/LB				

## J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
25	CAS	1536	10	---	69	6.50	ss	SB/LB	Step			
26	POW	1616	80	4.0+	67	1.19	ms	SB/LB				
27	POOL	1664	48	5.8	79	0.00		SB/LB	Boulder mid-channel			
28	HGR	1673	9	---	75	5.60	ss	SB/LC	Step			
29	POW	1961	288	3.8+	102	1.03	ms	SB/LC	Flat-water, run and pool areas	POW	1957	519
30	LGR	1972	11	2.5+	98	2.73	ms	SB/LC	Top SC LB @ 1831			
31	RUN	2035	63	4.5+	97	0.00	ls	LB/SB		RUN	2037	80
32	POOL	2100	65	6.2+	105	0.00		LB/SB	Boulder Scour - large bld's in channel, some pockets			
33	POW	2303	203	5.0+	102	0.00	ls	LB/SB		POW	2292	255
34	POOL	2407	104	5.1+	118	0.00		LB/SB	Boulder Scour	POOL	2400	108
35	POW	2474	67	4.7	99	1.00	ms	LB/SB		POW	2451	51
36	HGR	2490	16	---	89	5.63	ss	LB/SB	Step	HGR	2485	34
37	POW	2670	180	5.2	87	1.00	ms	LB/SB				
38	RUN	2717	47	5.0+	74	0.00	ls	LB/SB				
39	POW	2752	35	4.0+	68	0.00	ls	LB/SB		POW	2732	247
40	HGR	2775	23	---	79	3.91	ms	LB/SB	Step	HGR	2759	27
41	POW	2792	17	3.0+	86	0.00	ls	LB/SB				
42	R/G	2832	40	5.4	80	0.00	ls	SB/LC				
43	POOL	2934	102	5.0+	78	0.00		SB/LC	MC Pool			
44	LGR	2945	11	---	74	1.82	ls	LB/SB	Step between pools			
45	RUN	3024	79	4.8	63	0.00	ls	LB/SB	Trail access from road?			
46	POOL	3101	77	5.5	75	0.00	ls	LB/SB	N 42° 05.319', W 122° 03.753'	RUN	3095	336
47	HGR/CAS	3204	103	---	64	4.63	ss	LB/SB	Some POW	HGR/CAS	3185	90
48	POW	3342	138	3.9+	74	2.00	ss	LB/SB				
49	RUN	3397	55	4.6	78	0.00	ls	LB/SB	Pool-like LB mid-unit			
50	POW	3455	58	3.7	94	1.30	ms	LB/SB				
51	HGR	3463	8	---	102	4.00	ss	LB/SB	Step			
52	POW	3542	79	4.9	83	1.30	ms	LB/SB	w/Step RB	POW	3527	342

## J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
53	HGR	3556	14	---	91	3.93	ms	LB/SB	Step	HGR	3540	13
54	POW	3592	36	4.2	112	0.00	ls	LB/SB		POW	3563	23
55	RUN	3824	232	3.5+	103	0.00	ls	SC/GR	Some pockets at bottom	RUN	3811	248
56	LGR	3848	24	2.5	90	4.58	ss	SC/GR	Step - deep slot RB; some gravel in unit r/g u/s	LGR	3842	31
57	R/G	3890	42	4.2	110	0.00	ls	SC/LC	Mostly Glide			
58	POOL	4083	193	15.0+	78	0.00		LB/SB	Trail access from road?; starting Big Bend	POOL	4052	210
59	HGR/CAS	4280	197	---	43	10.91	ss	LB/SB	Rapids - some Pow - all white water			
60	RUN	4316	36	5.4	36	0.00	ls	LB/SB	Rapids - Chute all white water			
61	POOL	4351	35	5.8	44	0.00		LB/SB	Rapids - all white water - plunge pool; flyfisherman			
62	CAS	4407	56	---	63	7.50	ss	LB/SB				
63	POOL	4460	53	5.6	52	0.00		LB/SB	Trench - narrow, fast			
64	HGR/CAS	4536	76	3.5	65	5.33	ss	LB/SB	w/pockets	HGR/CAS	4463	411
65	CAS	4597	61	6.1	71	6.46	ss	LB/SB		CAS	4573	110
66	POW	4664	67	3.4	94	0.80	ls	LB/SB	split - mult. WSE	POW	4651	78
67	POOL	4748	84	5.0+	121	0.00		LB/SB	near mid-point of bend in channel; ~ 80 feet wide	POOL	4715	64
68	POW	4795	47	3.8	99	1.60	ms	LB/SB				
69	LGR	4807	12	1.5	89	2.50	ms	LB/SB	Step; mostly boulder			
70	POW	4858	51	3.0+	85	0.33	ls	LB/SB		POW	4844	129
71	GLIDE	4930	72	3.5	80	0.00		SB/SA				
72	POOL	5210	280	8.2	72	0.00		LB/SB		POOL	5175	331
73	LGR	5233	23	2.6	70	1.52	ms	LB/SB	Step; boulder, TRV, deep	HGR	5209	34
74	RUN	5297	64	4.4	62	0.00	ls	LB/SB				
75	POOL	5358	61	4.2	60	0.00	ls	LB/SB		RUN	5326	117
76	HGR/CAS	5388	30	2.8	64	5.17	ss	LB/SB				
77	POOL	5441	53	4.7	61	0.00	ss	LB/SB	Trench	HGR	5422	96
78	CAS	5453	12	4.0+	67	14.17	ss	LB/SB				
79	POOL	5482	29	5.8	75	0.00		LB/SB	Plunge			
80	CAS	5495	13	---	58	7.69	ss	LB/SB	Slide LB - water flows under boulders LB	CAS	5477	55

## J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
81	POOL	5649	154	6.2+	55	0.00		LB/SB	Corner; N 42° 05.207', W 122° 03.442'	POOL	5628	151
82	CAS	5789	140	---	82	6.45	ss	LB/SB		CAS	5767	139
83	POW	5952	163	4.0+	92	2.73	ss	LB/SB	w/Step	POW	5925	158
84	POOL	6148	196	6.0+	61	0.00	ls	LB/SB	Straight Scour	RUN	6136	211
85	HGR	6230	82	3.7	58	6.70	ss	LB/SB				
86	RUN	6322	92	4.0+	58	1.89	ms	LB/SB	Fast/Narrow; next 5 units in Step/Rapid - white water			
87	HGR	6328	6	---	59	6.67	ss	LB/SB	Step			
88	POOL	6364	36	4.2	74	0.00		LB/SB	Plunge			
89	HGR	6383	19	3.9	64	7.37	ss	LB/SB	Step			
90	POOL	6464	81	4.6	68	0.00		LB/SB	Spring/Seep LB @ 6460			
91	CAS	6479	15	---	59	8.00	ss	LB/SB		HGR	6490	354
92	RUN	6541	62	4.0+	48	0.00	ls	LB/SB	Pow @ bottom	RUN	6555	65
93	POOL	6621	80	9.0+	55	0.00		LB/SB	Large boulder mid-chan @ top; corner	POOL	6597	42
94	HGR/CAS	6704	83	2.1+	61	6.60	ss	LB/SB		CAS/HGR	6691	94
95	RUN	6758	54	3.5+	97	0.00	ls	LB/SB	Some pockets			
96	POOL	6881	123	5.5+	124	0.00		LB/SB	SC starts RB @ top (Boulder Bar)			
97	RUN	6959	78	5.5+	120	0.00	ls	LB/SB		RUN	6929	238
97.1	S/C RUN		78	---	~12.0	---		LB/SB	SC RB			
97.2	S/C HGR		89	---	~12.0	---		LB/SB	SC RB			
98	HGR/CAS	7048	89	2.5+	117	6.52	ss	LB/SB	w/pockets	HGR	7015	86
99	POW	7081	33	4.6	111	0.00	ls	LB/SB	Water flowing under boulders LB	POW	7058	43
100	HGR	7094	13	---	96	8.46	ss	LB/SB	Water flowing under boulders LB	HGR	7078	20
101	RUN	7127	33	3.7	92	0.00	ls	LB/SB	Water flowing under boulders LB	RUN	7110	32
102	HGR	7150	23	---	95	4.23	ss	LB/SB	Step	HGR	7132	22
103	RUN	7208	58	4.5+	85	0.00	ls	LB/SB		RUN	7180	48
104	HGR	7219	11	---	83	5.45	ss	LB/SB	Step			
105	POW	7325	106	4.4	97	0.00	ls	LB/SB		POW	7286	106
106	RUN	7524	199	6.5	92	0.00	ls	LB/SB	4 feet deep			

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(Original Mapping)

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
107	POOL	7582	58	6.0+	68	0.00		LB/SB				
108	RUN	7673	91	6.0	55	0.00	ls	LB/SB	Some pockets	RUN	7620	334
109	POOL	7721	48	5.5	64	0.00		LB/SB	Looks deep			
110	RUN	7827	106	5.5	55	1.67	ms	LB/SB	w/submerged boulders			
111	POOL	7901	74	6.5	55	0.00		LB/SB	Boulder @ top mid-chan; small step pool to run			
112	RUN	7951	50	5.7	46	0.52	ls	LB/SB	small boulder step between run and pool			
113	POOL	8053	102	7.0	52	0.00	ls	LB/SB	w/small break mid-pool	RUN	8020	400
114	RUN	8139	86	5.0	55	2.20	ss	LB/SB	<u>Note:</u> pools in this stretch run-like, quiet margins			
115	POW	8164	25	5.6	57	2.20	ss	LB/SB				
116	HGR	8170	6	---	61	2.50	ms	LB/SB	Step			
117	POOL	8208	38	5.4	52	0.00	ss	LB/SB	Step between pools	POW	8179	159
118	POOL	8256	48	5.0+	62	0.00		LB/SB				
119	RUN	8314	58	4.0+	80	0.00	ls	LB/SB		RUN	8278	99
120	HGR	8654	340	---	81	5.56	ss	LB/SB	w/pockets - long rapid; Spring? Seep LB @ 8528	HGR	8620	342
121	POW	8704	50	3.7	91	1.10	ms	LB/SB	Mult. WSE; Spring? Seep LB @ 8706	POW	8676	56
122	HGR	8746	42	3.0+	79	4.05	ss	LB/SB		HGR	8715	39
123	POW	8786	40	4.8	82	1.00	ms	LB/SB		POW	8754	39
124	HGR	8799	13	---	83	6.15	ss	LB/SB	Step; Tallis slope LB	HGR	8767	13
125	POW	8977	178	5.0+	77	1.05	ms	LB/SB	Run-like @ bottom (few boulders)	RUN	8879	112
126	HGR/CAS	9055	78	3.5+	93	5.33	ss	LB/SB	w/pockets - flow under boulders into hole LB @ 8998	POW	8951	72
127	POW	9114	59	5.3	95	0.70	ss	LB/SB		HGR	9209	258
128	POOL	9176	62	6.8	97	0.00	ls	LB/SB		RUN	9312	103
129	POW	9365	189	5.8	107	0.71	ls	LB/SB		POW	9362	50
130	RUN	9424	59	5.0+	86	0.00	ls	LB/SB				
131	POOL	9538	114	6.5+	78	0.00		LB/SB	Spring? Seep LB @ 9525			
132	RUN	9667	129	6.6	60	0.00	ls	LB/SB		RUN	9662	300
133	POOL	9857	190	12.3	65	0.00		LB/SB		POOL	9825	163
134	CAS/HGR	10110	253	4.1	68	7.80	ss	LB/SB	w/pockets and steps	CAS	10118	293

## J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
135	POW	10135	25	3.5+	81	1.10	ms	LB/LC	Flat on LB (~100 feet to trees)			
136	POOL	10192	57	5.0	86	0.00	ls	LB/SB	corner	RUN	10179	61
137	HGR	10211	19	---	100	3.95	ms	LB/SB	Step	HGR	10190	11
138	POW	10278	67	2.8	87	1.14	ms	LB/SB		POW	10237	47
139	GLIDE	10343	65	5.6	89	0.00	ls	LB/SB		GLIDE	10308	71
140	POOL	10676	333	7.6	79	0.00		LB/SB	Main Channel Pool	POOL	10649	341
141	HGR/CAS	10958	282	3.0+	98	5.38	ss	LB/SB	Rapid	CAS/HGR	10861	212
142	RUN	11048	90	3.5+	75	0.50	ls	SB/LB	BW LB (1/2 unit)	POW	10909	48
143	HGR	11083	35	3.0+	62	5.40	ss	SB/LB		HGR	10986	77
143.1	S/C POOL		58	2.7	38	---		SB/LB	SC LB - Mult. WSE	S/C POOL	11207	
143.2	S/C RUN		63	2.0	40	---		SB/LB	Side Channel created by deposition from canal spillway	S/C RIFFLE	11249	
143.3	S/C LGR		113	1.5	27	---		SB/LB		S/C RUN	11303	
143.4	S/C POOL		41	2.5	32	---		SB/LB		S/C POW	11367	
143.5	S/C HGR		80	1.0	25	---		SB/LB		S/C HGR	11459	
143.6	S/C RUN		65	2.0	34	---		SB/LB	End SC @ 11479	S/C RIFFLE	11525	
144	RUN	11207	124	3.0+	62	0.52	ls	SB/LB	These units in steep/fast section	RUN	11049	63
145	HGR	11260	53	2.7	60	3.30	ms	SB/LB				
146	RUN	11316	56	3.8	45	1.00	ms	SB/LB				
147	HGR	11409	93	3.4	48	3.19	ms	SB/LB				
148	RUN	11479	70	2.6	46	0.90	ss	LC/SC		HGR	11525	476
149	LGR	11535	56	2.4	77	1.25	ls	LC/SC		RUN	11634	109
150	RUN	11632	97	---	46	0.89	ss	LB/SB		HGR	11705	71
151	POOL	11718	86	5.0	38	0.00	ls	LB/SB	Trench	RUN	11801	96
152	CAS	11800	82	---	30	4.84	ss	LB/SB	@ Base of Canal Spillway	CAS	11905	104
153	RUN	11823	23	4.0+	48	1.74	ms	LB/SB	Narrow, fast, deep	RUN	11980	75
154	R/G	12034	211	8.0	77	0.00	ls	SB/LC	Marsh area LB	R/G	12123	143
155	POOL	12713	679	14.2	102	0.00		SB/LC		POOL	12674	551



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(Original Mapping)

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
156	RUN	12780	67	5.4	71	1.38	ms	LB/SB		RUN	12860	186
157	LGR	12790	10	2.8	66	4.00	ss	LB/SB	Step	LGR	12894	34
158	R/G	12851	61	8.4	79	0.00	ls	LB/SB		R/G	13006	112
159	POOL	13220	369	10.1	81	0.00		LB/SB	Boulder break between pools	POOL	13220	214
160	POOL	13357	137	7.0	64	0.00	ls	LB/SB		RUN	13462	242
161	CAS/HGR	13507	150	6.0	64	6.07	ss	LB/BR		CAS	13601	139
162	POW	13536	29	5.6	80	1.70	ms	LB/BR	Dangerous	POW	13670	69
163	CAS/HGR	13627	91	4.6	76	7.33	ss	LB/SB				
164	HGR/CAS	13698	71	---	92	6.67	ss	LB/SB		CAS/HGR	13820	150
165	POW	13769	71	5.0	103	1.71	ms	LB/SB	BW LB; Mult. WSE; Water flowing under boulders LB	POW	13872	52
166	HGR	13807	38	3.8	108	6.59	ss	LB/SB	Water flowing under boulders LB	HGR	13906	34
167	POW	13862	55	5.0+	125	0.00	ls	LB/SB	Water flowing under boulders LB	POW	13978	72
168	HGR	13885	23	3.0	125	5.20	ss	LB/SB	Water flowing under boulders LB			
169	POW	13922	37	4.8	92	0.00	ls	LB/SB	Water flowing under boulders LB, BW pool LB			
170	HGR	14022	100	---	87	5.20	ss	LB/SB	Some pockets; Grove of oak LB	HGR	14144	166
171	RUN	14088	66	5.0+	62	0.00	ls	SB/LB	Narrow	RUN	14288	144
172	POOL	14659	571	8.0	88	0.00		SB/LB	Large tallis slope LB, open hillside	POOL	14789	501
173	CAS	14676	17	---	60	8.40	ss	LB/SB	Cable overhead			
174	POOL	14704	28	---	---	0.00		LB/SB	Chute RB			
175	CAS	14720	16	---	58	8.39	ss	LB/SB				
176	HGR	14774	54	2.5	53	3.51	ms	LB/SB	Rapid	HGR	14899	110
177	RUN	14833	59	4.0+	97	0.00	ls	LB/SB		RUN	14971	72
178	HGR	14850	17	---	95	5.56	ss	LB/SB	Step			
179	POW	14883	33	5.4	99	2.80	ss	LB/SB				
180	HGR	14969	86	2.0+	102	7.05	ss	LB/SB	Rapid; mult.WSE			
181	POW	15011	42	3.0+	101	2.83	ss	LB/SB	Mult.WSE	CAS	15093	122
182	LGR	15061	50	2.2	125	1.39	ls	LB/SB	w/pockets	LGR	15139	46
183	POW	15102	41	4.5	112	1.46	ms	LB/SB	Some steps and WW	POW	15233	94

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(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
184	RUN	15298	196	4.5	111	1.00	ms	SB/LC	Rock outcrop along road LB			
185	LGR	15314	16	2.0	75	1.25	ls	SB/LC	<b>Spring? Seep LB @ 15360</b>			
186	RUN	15402	88	3.6	69	1.00	ms	SB/LC	Some pool RB @ top	RUN	15518	285
187	HGR	15410	8	---	65	8.75	ss	LB/SB	Step	HGR	15534	16
188	POW	15444	34	3.0	73	2.25	ss	LB/SB	<b>Spring? Seep LB @ 15444</b>			
189	POOL	15489	45	4.8	68	0.00	ms	LB/SB	<b>From POW @ 15444 to RUN/GLIDE @ 16469</b>	RUN	15607	73
190	CAS	15501	12	1.8	63	17.08	ss	LB/SB	<b>- water flows under boulders</b>			
191	POOL	15542	41	3.7	65	0.00		LB/SB	Boulders large, side cast road and canal construction			
192	HGR/CAS	15553	11	3.0+	55	20.00	ss	SB/LB	w/pockets			
193	POOL	15581	28	4.9	56	0.00	ss	SB/LB		CAS	15753	146
194	HGR/CAS	15709	128	3.0+	71	4.11	ss	SB/LB		HGR	15837	84
195	RUN	15759	50	5.1	82	0.00	ls	SB/LB	SC LB			
196	POW	15795	36	4.8	79	2.81	ss	LB/SB				
197	POOL	15833	38	6.3	74	0.00	ss	LB/SB		POW	15938	101
198	HGR	15863	30	2.5+	38	11.33	ss	LB/SB				
199	POOL	15896	33	4.0+	43	0.00		LB/SB				
200	CAS	15913	17	---	55	9.12	ss	LB/SB	TRVS	CAS	16032	94
201	RUN	15967	54	3.0+	49	3.93	ss	LB/SB	Fast, steep			
202	POOL	16004	37	6.1	47	0.00	ls	LB/SB		RUN	16137	105
203	POOL	16046	42	5.0+	54	0.00		LB/SB	Break between pools			
204	CAS	16055	9	---	48	14.44	ss	LB/SB	Step	POW	16189	52
205	POOL	16143	88	6.0+	41	0.00	ls	LB/SB	Trench, narrow, deep	RUN	16270	81
206	CAS	16155	12	---	42	10.00	ss	LB/SB	Step	CAS	16285	15
207	RUN	16187	32	3.9	47	2.00	ss	SB/LB		RUN	16336	51
208	POW	16239	52	3.2	52	1.39	ms	SB/LB	w/steps	POW	16380	44
209	POOL	16269	30	3.8	46	0.00		LB/SB				
210	POW	16305	36	3.5	43	4.33	ss	LB/SB		RUN	16435	55
211	HGR/CAS	16397	92	2.2	41	7.73	ss	LB/SB	Large boulders across channel - almost block channel	CAS	16529	94

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(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
212	R/G	16469	72	5.2	58	0.00	ls	LB/SB		RUN	16618	89
213	POOL	16988	519	17.0+	128	0.00		LB/SB	Dammed Pool; BW mid-pool LB	POOL	17119	501
214	RUN	17035	47	5.5	54	2.06	ss	LB/SB				
215	POOL	17149	114	6.8	70	0.00	ls	LB/SB	Boulder step between run and pool; corner	RUN	17224	105
216	HGR	17176	27	---	53	5.74	ss	LB/SB	Step	HGR	17252	28
217	POOL	17370	194	6.0+	88	0.00		LB/SB	Water flowing under boulders LB	POOL	17445	193
218	CAS	17427	57	3.2	48	7.19	ss	LB/SB	Water flowing under boulders LB	CAS	17505	60
219	RUN	17490	63	3.4	51	1.67	ms	LB/SB	Water flowing under boulders LB	RUN	17564	59
220	POW	17529	39	4.0+	47	3.54	ss	LB/SB	Water flowing under boulders LB	POW	17605	41
221	POOL	17604	75	4.8	50	0.00	ms	LB/SB	Water flowing under boulders LB	RUN	17690	85
222	HGR/CAS	17687	83	3.2	49	9.13	ss	LB/SB	Water flowing under boulders LB	CAS/HGR	17774	84
223	RUN	17794	107	5.5	44	1.67	ms	LB/SB	Water flowing under boulders LB	RUN	17905	131
224	HGR	17847	53	3.3	41	5.22	ss	LB/SB	Water flowing under boulders LB; shallow run-like rapid	HGR	17948	43
225	RUN	17905	58	5.4	42	1.62	ms	LB/SB	Water flowing under boulders LB			
226	R/G	18009	104	13.2	40	0.00	ls	LB/SB	Boulder break between run and r/g			
227	POOL	18128	119	12.5	41	0.00	ls	LB/SB		RUN	18231	283
228	RUN	18163	35	8.8	35	2.05	ss	LB/SB	Narrow			
229	R/G	18211	48	9.4	52	0.00	ls	LB/SB				
230	POOL	18326	115	9.3	66	0.00		LB/SB	<b>Major Spring/seep LB</b>			
231	RUN	18358	32	3.3	48	4.06	ss	LB/SB	Fast, nasty	POOL	18446	215
232	CAS	18370	12	---	47	12.08	ss	LB/SB		CAS	18460	14
233	RUN	18405	35	5.4	43	1.60	ms	LB/SB	Narrow, some boulders			
234	R/G	18536	131	5.1	64	0.00	ls	LB/SB	Some boulders	RUN	18627	167
235	POOL	18738	202	12.6	61	0.00		LB/SB	<b>Major Spring/seep LB/RB</b>	POOL	18827	200
236	POW	18779	41	4.5	43	2.44	ss	LB/SB	N 42° 06.809', W 122° 03.393'			
237	RUN	18825	46	3.7	38	1.67	ms	LB/SB	Chute RB; boulders down center of unit	POW	18903	76
238	HGR/CAS	18858	33	2.1	45	6.67	ss	LB/SB	<b>Water flowing under boulders LB</b>	CAS	18952	49
239	POW	18905	47	---	41	2.23	ss	LB/SB	<b>- this point upstream 2,000 feet</b>			

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Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
240	RUN	18941	36	4.0+	41	1.67	ms	LB/SB	Narrow	RUN	19032	80
241	R/G	19100	159	5.9	60	0.00	ls	LB/SB	Some boulders	RUN	19143	111
242	POOL	19181	81	5.8	54	0.00		LB/SB	<b>Major Spring/seep LB/RB - clear plume</b>	POOL	19276	133
243	POW	19187	6	3.5	59	2.50	ss	LB/SB	Step			
244	POOL	19248	61	4.0	57	0.00		LB/SB	<i>Large drop in flow noticeable u/s of springs</i>			
245	POW	19253	5	2.5	48	0.91	ls	LB/SB	Step	RUN	19461	185
246	POW	19434	181	4.2	50	4.85	ss	LB/SB	w/steps	POW	19514	53
247	POOL	19470	36	4.6	45	0.00		LB/SB				
248	POW	19494	24	4.3	49	2.80	ss	LB/SB				
249	HGR	19518	24	1.5	47	6.46	ss	LB/SB		HGR	19598	84
250	POW	19561	43	3.2	53	2.80	ss	LB/SB	Run RB	POW	19646	48
251	HGR	19576	15	1.0	59	10.00	ss	LB/SB	TRVS Step	CAS	19665	19
252	RUN	19709	133	5.2	40	1.03	ms	LB/SB		RUN	19781	116
253	HGR	19733	24	2.8	52	8.95	ss	LB/SB	Step	HGR	19802	21
254	POW	19761	28	4.9	50	2.78	ss	LB/SB		POW	19876	74
255	RUN	19846	85	4.8	44	0.24	ls	LB/SB	some boulders	R/G	19971	95
256	POOL	20129	283	6.9	75	0.00		LB/SB				
257	R/G	20181	52	6.2	71	0.00	ls	LB/SB	w/boulders mid-pool	POOL	20385	414
258	POOL	20328	147	8.6	40	0.00	ls	LB/SB	Lone pine (small) at road edge	RUN	20430	45
259	HGR	20361	33	3.8	16	9.70	ss	LB/SB	Rapid; isolated pool RB	HGR	20470	40
260	RUN	20457	96	4.9	26	1.14	ms	LB/SB	Narrow	RUN	20549	79
261	HGR	20481	24	3.3	25	7.92	ss	LB/SB	Step	HGR/CAS	20585	36
262	POOL	20523	42	6.9	29	0.00		LB/SB	Boulder Bar RB - 1785 to 2005	POOL	20614	29
263	POW	20548	25	5.0+	32	0.00	ls	LB/SB		POW	20645	31
264	HGR/CAS	20580	32	2.8	30	5.63	ss	LB/SB		HGR	20723	78
265	POW	20633	53	4.0+	39	3.00	ss	LB/SB		RUN	20772	49
266	RUN	20743	110	4.0+	42	0.91	ls	LB/SB	<b>End water flowing under boulders LB</b>	RUN	20839	67
267	POOL	21162	419	12.0+	71	0.00		SB/LB	Clams found + heavy beaver activity	POOL	21322	483

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(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
268	POW	21233	71	3.7	77	1.33	ms	LB/SB				
269	HGR/CAS	21267	34	1.7	82	11.58	ss	LB/SB		HGR	21378	56
270	POW	21308	41	2.0	71	2.50	ss	LB/SB	Water flowing under bar and grass	POW	21430	52
271	POOL	21338	30	4.0+	64	0.00		LB/SB	Water flowing under bar and grass			
272	POW	21366	28	2.4	63	3.57	ss	LB/SB	Small break between POW lumped	HGR	21506	76
273	POW	21458	92	2.9	82	1.20	ms	LB/SB	Boulder Bar LB - 2720 to 3053	POW	21612	106
274	POOL	21526	68	4.0+	72	0.00		LB/SB				
275	HGR	21535	9	1.0	69	6.11	ss	LB/SB	Step	HGR	21646	34
276	POW	21601	66	3.5	59	1.06	ms	LB/SB		POW	21737	91
277	RUN	21656	55	3.4	63	0.00	ls	LB/SB	Split by boulder bar	HGR	21779	42
278	HGR	21663	7	1.5	66	18.57	ss	LB/SB				
279	POW	21741	78	2.6	75	0.83	ls	LB/SB				
280	POOL	21791	50	6.5	67	0.00	ls	LB/SB	BW/SC LB; Mult. WSE	RUN	21852	73
281	CAS	21797	6	1.0	58	41.67	ss	BR/LB	Bedrock outcrop LB	HGR	21862	10
282	POOL	21933	136	6.6	62	0.00	ls	LB/BR	BW @ top RB; control break between pools	RUN	22002	140
283	POOL	22079	146	4.1	66	0.00		BR/SA	Bedrock outcrop LB Ends	POOL	22103	101
284	HGR	22142	63	2.4	57	6.67	ss	LB/SB	N 42° 07.095', W 122° 02.902' @ 3341			
285	POW	22190	48	2.7	69	2.08	ss	LB/SB	Steep gradient			
286	HGR	22229	39	1.8	90	6.15	ss	BR/LB		HGR/CAS	22268	165
287	POW	22248	19	2.5	86	0.00	ls	LB/BR				
288	POOL	22483	235	7.2	77	0.00		LB/BR	Boulder bar RB	POOL	22506	238
289	LGR	22567	84	2.9	87	2.62	ms	LB/SB	w/pockets, boulders	HGR	22582	76
290	POW	22618	51	3.0	86	0.00	ls	LB/SB				
291	RUN	22681	63	4.2	82	0.00	ls	LB/SB	run ends at top of boulders	RUN	22722	140
292	POOL	22843	162	13.5	56	0.00		LB/SB	Top 30 feet run-like	POOL	22875	153
293	HGR	22877	34	4.2	66	7.50	ss	LB/SB		HGR	22924	49
294	R/G	22912	35	4.0+	67	0.00	ls	LB/SB				
295	POOL	22972	60	4.5	49	0.00	ls	LB/SB	Actual pool length +50 feet	RUN	23008	84

## J.C. Boyle Bypass Reach Habitat Mapping (475 cfs Release)

(Original Mapping)

(Final Mapping - 475 cfs)

Unit Number	Habitat Type	Total Length	Unit Length	Max Depth	Mean Width	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
296	HGR	23000	28	1.9	130	8.93	ss	LB/SB	TRVS Step, 60 degrees; SC RB	HGR	23044	36
297	POOL	23455	455	9.0	63	0.00	ls	SC/LC	Bridge @ 4600, Penstock @ 4640	R/G	23198	154
										POOL	23499	301
These units not used for total reach calculations - not characteristic of reach												
298	RUN	23514	59									
299	POOL	23561	47									
300	POW	23597	36									
301	HGR	23606	9									
302	POW	23652	46									
303	RUN	23731	79									
304	POOL	23766	35									
305	CAS	23774	8									
306	RUN	23826	52									
307	CAS	23908	82									
308	RUN	24130	222									

## **APPENDIX 4C-3**

### **J.C. BOYLE PEAKING REACH HABITAT MAPPING DATA (1,500 CFS RELEASE)**





Appendix 4C-3. J.C. Boyle Peaking Reach habitat mapping data (1,500 cfs release).

### J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number		Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate	Habitat Type	Unit Length	Total Length	Comments
			START	0	0						START	0	0	<i>JC Boyle PH - below tail pool</i>
1	1		RIF	1,003	1,003	---	135	---	ss	LB/SB	HGR	1,003	1,003	Rapid
2	1		RUN	210	1,213	---	145	---	ms	LB/SB	RUN	210	1,213	
3	1		RIF	174	1,387	---	124	---	ss	LB/SB	HGR	174	1,387	Rapid
4	1		POOL	246	1,633	10.8	134	0.0		LC/SB	POOL	246	1,633	<i>Spring Island Raft Launch</i>
5	1		RIF	55	1,688	3.5	81	4.3	ss	SB/LC	HGR	55	1,688	Rapid
5.1	S/C		RIF/RUN	495		2.0	40	---	---	SB/LC	RIF/RUN	495		Rif/Run/Pow (<5 cfs)
6	1		RUN	208	1,896	---	140	---	ms	LB/SB	RUN	208	1,896	Corner - Fast Run
7	1		RIF	398	2,294	---	101	---	ss	LB/SB	HGR	398	2,294	
8	1		RUN	206	2,500	5.7	123	1.2	ms	LB/SB	RUN	206	2,500	
9	1		RIF	246	2,746	3.6	125	2.7	ms	LB/SB	LGR	246	2,746	
10	1		RUN	634	3,380	6.0	135	---	ls	SB/LC	RUN	634	3,380	<b>Gage</b>
11	1		RIF	228	3,608	---	100	---	ss	SB/LC	HGR	228	3,608	Corner
12	1		RUN	492	4,100	4.5	92	---	ms	SB/LC	RUN	492	4,100	Fast w/standing waves
13	1		RIF	122	4,222	---	131	3.8	ms	LB/SB	LGR	122	4,222	Short-step/ S/C Top (~200 ft long, LB)
14	1		POOL	238	4,460	6.2	120	0.0		LC/SC	POOL	238	4,460	
15	1		RIF	364	4,824	4.2	162	3.9	ms/ss	SB/LB	LGR	364	4,824	lower 50' steep
16	1		RUN	429	5,253	4.7	120	0.7	ms	SB/LB	RUN	429	5,253	BW LB - very high flow channel
17	1		RIF	116	5,369	---	102	---	ms	LB/SB	LGR	116	5,369	Rapid
18	1		POOL	634	6,003	8.1	135	0.0		SB/LC	POOL	634	6,003	
19	1		RIF	102	6,105	---	97	3.9	ss	LB/SB	HGR	102	6,105	<i>Osprey Rpaid</i>
19.1	SPC		RIF	686		2.2	58	---	ms	LC/SC	LGR	686		
20	1		RUN	166	6,271	---	80	---	ms	SB/LC	RUN	166	6,271	Steep - Standing Waves
21	1		RIF	159	6,430	---	75	---	ss	LB/SB	HGR	159	6,430	
22	1		RUN	500	6,930	7.7	78	0.7	ms	LB/SB	RUN	500	6,930	
23	1		POOL	686	7,616	15.0	128	0.0		---				
24	1		GLIDE	287	7,903	6.2	157	0.0		LC/SC	POOL	973	7,903	
25	1		RIF	213	8,116	4.2	126	1.2	ls	SB/LC	LGR	213	8,116	
26	1		RUN	461	8,577	4.7	163	0.1	ls	SB/LC	RUN	461	8,577	Flat
27	1		RUN	350	8,927	4.4	183	---	ms	LC/SB	RUN	350	8,927	w/Waves
28	1		RIF	305	9,232	3.3	228	1.5	ls	LC/SB	LGR	305	9,232	
29	1		POOL	357	9,589	8.5	140	0.0		SB/LC	POOL	357	9,589	
30	1		RUN	328	9,917	4.8	181	0.9	ms	LB/SB	RUN	328	9,917	Some POW
31	1		POOL	898	10,815	11.5	169	0.0		LC/SC	POOL	898	10,815	
32	1		RIF	279	11,094	---	170	4.8	ss	SB/LC	HGR	279	11,094	Rif and upper part of Run - Same Rapid
33	1		RUN	224	11,318	---	166	---	ms	SB/LC				Standing Waves
34	1		POOL	486	11,804	5.3	175	0.0		LC/SB				

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate
35	1	GLIDE	200	12,004	---	185	0.0	ls	LC/SB
36	1	RIF/RUN	581	12,585	3.5	180	---	ls/ms	LC/SB
37	1	POOL	432	13,017	9.0	141	0.0		LC/SC
38	1	RUN	410	13,427	4.3	189	---	ls	SB/LC
39	1	RIF	127	13,554	3.5	158	---	ls	SB/LC
40	1	POOL	803	14,357	9.3	175	0.0		SB/LC
41	1	GLIDE	380	14,737	6.7	188	0.0		LC/SC
42	1	RUN/RIF	362	15,099	---	152	---	ls	LC/SC
43	1	POOL	506	15,605	8.9	110	0.0		SB/LC
44	1	RUN	239	15,844	3.8	165	0.0	ls	SB/LC
45	1	POOL	686	16,530	8.0	196	0.0		LC/SC
46	1	GLIDE	179	16,709	5.2	176	0.0		SC/LC
47	1	RIF	160	16,869	3.5	180	0.9	ls	LC/SB
48	1	RUN	275	17,144	3.2	135	---	ls	SB/LC
49	1	RIF/RUN	634	17,778	---	229	---	ls	LB/SB
50	1	RUN	396	18,174	5.0	129	---	ls	SB/LC
51	1	POOL	482	18,656	14.0	115	0.0		SB/LC
52	1	RIF	141	18,797	---	162	---	ls	LC/SC
53	1	POOL	792	19,589	12.4	229	0.0		LC/SC
54	1	RIF	336	19,925	---	182	1.9	ms	LB/SB
55	1	RUN	236	20,161	---	106	---	ls	LC/SC
56	1	POOL	465	20,626	6.2	134	0.0		LC/SC
57	1	R/G	412	21,038	4.0	163	0.0		LC/SC
57.5	1	RUN/RIF	327	21,365	---		---	ls	LC/SC
58	1	POOL	392	21,757	---	185	0.0		SC/LC
59	1	RUN/RIF	227	21,984	---	151	0.0	ls	SC/LC
60	1	POOL	686	22,670	5.1	187	0.0		SC/LC
61	1	RIF	269	22,939	4.0	190	0.6	ls	LC/SC
62	1	POOL	420	23,359	6.2	190	0.0		LC/SC
63	1	RIF	103	23,462	---	121	4.2	ss	LB/SB
64	1	POOL	421	23,883	11.8	139	0.0		LC/SB
65	1	RIF	74	23,957	---	110	4.3	ss	SB/LC
66	1	POOL	739	24,696	11.5	118	0.0		LC/SB
67	1	RIF	89	24,785	---	120	---	ss	SB/LB
68	1	POOL	292	25,077	7.8	151	0.0		LC/SC
69	1	GLIDE	415	25,492	6.2	131	0.0		LC/SC
70	1	RIF/RUN	190	25,682	---	164	0.6	ls	LC/SC
71	1	GLIDE	634	26,316	3.5	225	0.0		LC/SC
72	1	RIF/RUN	418	26,734	3.7	172	---	ls	LC/SC
73	1	GLIDE	1,848	28,582	5.1	187	0.0		SC/LC

(Final Mapping - Pool Tails Combined)

Habitat Type	Unit Length	Total Length	Comments
RUN	910	12,004	
RIF/RUN	581	12,585	
POOL	432	13,017	trvs step Rif between Pool and Run
RUN	410	13,427	
LGR	127	13,554	short - step
			<b>Enter Low Gradient - Frain Ranch Area</b>
POOL	1,183	14,737	
RUN/RIF	362	15,099	
POOL	745	15,844	Run/Break Separates 2 Pools
			<b>BLM Campground</b>
POOL	865	16,709	Pool Tail
LGR	160	16,869	Old Diversion LB
RUN	275	17,144	BW RB
RIF/RUN	634	17,778	
POOL	878	18,656	<b>Old Bridge Abutments</b>
LGR	141	18,797	Rif/Run
POOL	792	19,589	5 Western Pond Turtles
LGR	336	19,925	Rapid/Run (Beak upper control xsec)
POOL	1,113	21,038	R/G in notes
RUN/RIF	327	21,365	Run/Rif in field notes (327 ft)
POOL	392	21,757	Corner (~150' Glide @ tail)
LGR	227	21,984	Riffle circled in notes
POOL	686	22,670	BW LB @ top
LGR	269	22,939	
POOL	420	23,359	
HGR	103	23,462	Step-Rapid
POOL	421	23,883	Beaver Lodge LB
HGR	74	23,957	Step-Rapid
POOL	739	24,696	
HGR	89	24,785	Step
POOL	707	25,492	Run/Glide
RIF/RUN	190	25,682	
GLIDE	634	26,316	
RIF/RUN	418	26,734	
GLIDE	1,848	28,582	

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate
74	1	RIF	215	28,797	3.8	168	0.4	ls	LC/SB
75	1	RUN	445	29,242	4.3	196	---	ls	LC/SB
76	1	POOL	354	29,596	13.0	202	0.0		SB/LC
77	1	RIF	101	29,697	---	341	---	ls	LC/SB
78	1	POOL	303	30,000	12.0	168	0.0		LC/SB
79	1	RUN	355	30,355	4.0	188	---	ls	LC/SC
80	1	RIF	106	30,461	---	246	---	ls	SB/LC
81	1	RUN	581	31,042	3.6	228	0.2	ls	LC/SC
82	1	POOL	352	31,394	---	107	0.0		LC/SC
83	1	RIF	1,214	32,608	---	92	3.9	ss	LB/SB
84	1	POOL	479	33,087	---	95	0.0		LB/SB
85	1	RIF	158	33,245	---	72	---	ss	LB/SB
86	1	POOL	400	33,645	---	72	0.0		LB/SB
87	1	STEP	30	33,675	---	79	---	ss	LB/SB
88	1	POOL	634	34,309	---	94	0.0		LB/SB
89	1	STEP	68	34,377	---	89	---	ss	LB/SB
90	1	POOL	185	34,562	---	75	0.0		LB/SB
91	1	RUN	355	34,917	---	128	---	ms	LB/SB
92	1	RIF	706	35,623	---	62	---	ss	LB/SB
93	1	POOL	1,121	36,744	---	102	0.0		LB/SB
94	1	RIF	619	37,363	---	85	---	ss	LB/SB
95	1	POOL	362	37,725	---	131	0.0		LB/SB
96	1	RIF	204	37,929	---	69	---	ss	LB/SB
97	1	POOL	800	38,729	---	172	0.0		LB/SB
98	1	RIF	736	39,465	---	118	---	ss	LB/SB
98.1	S/C	RIF	566		---	33	---		LB/SB
99	1	POOL	306	39,771	---	184	0.0		LB/SB
100	1	RIF	1,189	40,960	---	89	11.0	ss	LB/SB
100.1	SPC	RIF	581		---	66	10.7	ss	LB/SB
101	1	POOL	415	41,375	---	98	0.0		LB/SB
102	1	RIF	566	41,941	---	105	3.9	ss	LB/SB
103	1	POOL	736	42,677	---	174	0.0		LB/SB
104	1	RIF	279	42,956	---	105	---	ss	LB/SB
105	1	RUN	208	43,164	---	213	---	?	LB/SB
106	1	RIF	849	44,013	---	246	---	ls	SB/LC
106.1	SPC	RIF	193		3.8	79	1.5	ls	SB/LC
107	1	RIF	475	44,488	---	85	---	ss	LB/SB
107.1	SPC	RIF	462		---	91	7.0	ss	LB/SB
107.2	SPC	POOL	75		---	85	---		---
108	1	POOL	234	44,722	---	125	0.0		LB/SB

(Final Mapping - Pool Tails Combined)

Habitat Type	Unit Length	Total Length	Comments
LGR	215	28,797	
RUN	445	29,242	Some Riffle
POOL	354	29,596	
LGR	101	29,697	Corner - TRVS, Small Boulder Bar LB
POOL	658	30,355	
LGR	106	30,461	Step
POOL	933	31,394	
HGR	1,214	32,608	<b>Enter Hell's Corner - Caldera Rapid</b>
POOL	479	33,087	
HGR	158	33,245	Rapid
POOL	400	33,645	
STEP	30	33,675	
POOL	634	34,309	
STEP	68	34,377	
POOL	185	34,562	
RUN	355	34,917	<b>Rock Creek LB</b>
HGR	706	35,623	Rapid
POOL	1,121	36,744	
HGR	619	37,363	Rapid
POOL	362	37,725	
HGR	204	37,929	Rapid
POOL	800	38,729	
HGR	736	39,465	Rapid
HGR	566		<5 cfs
POOL	306	39,771	
HGR	1,189	40,960	<b>Hell's Corner Rapid - LC</b>
HGR	581		Rapid
POOL	415	41,375	
HGR	566	41,941	Rapid
POOL	736	42,677	
HGR	279	42,956	Rapid
RUN	208	43,164	
LGR	849	44,013	Rapid
LGR	193		Small Grass/Boulder Island - Dance Hall?
HGR	475	44,488	RC
HGR	462		Ambush Rapid
POOL	75		BW Pool
POOL	234	44,722	

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate
109	1	RIF	147	44,869	---	89	---	ss	LB/SB
110	1	POOL	162	45,031	8.2	95	0.0		SB/LC
111	1	RUN	427	45,458	---	75	---	ms	LB/SB
112	1	POOL	306	45,764	16.0	82	0.0		LB/BR
113	1	RIF	151	45,915	---	98	---	ss	LB/SB
114	1	RUN	472	46,387	---	131	---	?	LC/SC
115	1	RIF	868	47,255	---	115	---	ss	LB/SB
116	1	RUN	283	47,538	---	104	---	?	LC/SB
117	1	RIF	472	48,010	---	89	---	ss	SB/LC
118	1	POOL	1,373	49,383	14.0	197	0.0		SB/LC
119	1	RIF	566	49,949	---	98	---	ss	LB/SB
120	1	RUN	359	50,308	4.3	115	---	?	SB/LC
121	1	RIF	755	51,063	---	104	---	ss	LB/SB
122	1	RUN	566	51,629	---	149	---	ms	LB/SB
123	1	RIF	443	52,072	---	82	6.8	ss	LB/SB
123.1	SPC	RIF	170		---	125	6.9	ss	LB/SB
123.2	SPC	POOL	273		---	66	---		LB/SB
124	1	POOL	460	52,532	13.0	102	0.0		---
125	1	RIF/RUN	101	52,633	4.2	153	1.1	ls	SB/LC
126	1	RUN	457	53,090	4.0	158	---	ls	SB/LC
127	1	RIF	237	53,327	---	130	---	ss	SB/LC
128	1	POOL	510	53,837	10.0	125	0.0		LB/SB
129	1	RIF	76	53,913	---	98	---	ss	LB/SB
130	1	RUN	241	54,154	5.7	90	---	ms	LB/SB
131	1	RIF	213	54,367	---	120	---	ss	LB/SB
132	1	POOL	686	55,053	13.0	118	0.0		SB/LC
133	1	RIF	845	55,898	3.5	100	3.6	ss	LB/SB
134	1	RUN	146	56,044	11.0	79	---	?	LB/SB
135	1	POOL	379	56,423	9.5	121	0.0		LB/SB
136	1	RUN	203	56,626	---	158	---	?	LB/SB
137	1	STEP	28	56,654	---	160	---	ss	LB/SB
138	1	POOL	316	56,970	6.8	172	0.0		LB/SB
139	1	RIF	528	57,498	3.6	162	---	ss	LB/SB
140	1	RUN	360	57,858	6.5	106	0.1	ls	LB/SB
141	1	POOL	159	58,017	7.5	123	0.0		SB/LC
142	1	CAS	68	58,085	---	---	8.4	ss	LB/SB
143	1	RUN	285	58,370	4.0	---	---	ms	SB/LC
144	1	POOL	570	58,940	14.0	138	0.0		---
145	1	RUN	169	59,109	5.5	145	0.5	ls	LC/SC
146	1	RIF	217	59,326	---	137	1.1	ls	SB/LC

(Final Mapping - Pool Tails Combined)

Habitat Type	Unit Length	Total Length	Comments
HGR	147	44,869	Rapid
POOL	162	45,031	
RUN	427	45,458	
POOL	306	45,764	Trench Pool - Salt Caves/Cliffs
HGR	151	45,915	
RUN	472	46,387	
HGR	868	47,255	Rapid
RUN	283	47,538	
HGR	472	48,010	Rapid
POOL	1,373	49,383	2 pools separated by short run w/boulders
HGR	566	49,949	Rapid
RUN	359	50,308	
HGR	755	51,063	Rapid
RUN	566	51,629	
HGR	443	52,072	<b>Snag Island - RC</b>
HGR	170		LC
POOL	273		LC - BW Pool
POOL	460	52,532	
RIF/RUN	101	52,633	
RUN	457	53,090	
HGR	237	53,327	Rapid
POOL	510	53,837	
HGR	76	53,913	Step
RUN	241	54,154	
HGR	213	54,367	Rapid
POOL	686	55,053	
HGR	845	55,898	<b>Wells Fargo - Rapid;</b> Diversion LB @ top
POOL	728	56,626	
STEP	28	56,654	Diversion RB
POOL	316	56,970	150' of Run @ bottom
HGR	528	57,498	Rapid
POOL	519	58,017	
CAS	68	58,085	<b>Stateline Falls</b>
RUN	285	58,370	Rapid - narrow, fast
			<b>Start Low Gradient Reach (CA)</b>
POOL	739	59,109	<b>BLM Put-in @ Stateline</b>
LGR	217	59,326	

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate
147	1	POOL	501	59,827	8.8	106	0.0		SB/LC
148	1	RUN	452	60,279	8.0	74	---	ms	SB/LB
149	1	RIF	303	60,582	---	114	2.6	ms	SB/LB
150	1	RUN	223	60,805	6.5	130	1.8	ms	SB/LB
151	1	RIF	151	60,956	3.2	102	2.9	ms	SB/LC
152	1	R/G	634	61,590	7.0	106	---	ls	SB/LC
153	1	POOL	756	62,346	6.5	167	0.0		SB/LC
154	1	STEP	25	62,371	---	156	---	ss	LB/SB
155	1	RIF	210	62,581	---	111	6.7	ss	LB/SB
156	1	POOL	1214	63,795	12.5	137	0.0		---
157	1	STEP	38	63,833	---	153	---	ss	LB/SB
158	1	RUN	739	64,572	8.5	113	---	ls	SB/LC
159	1	RIF	719	65,291	2.8	167	1.5	ls	SB/LC
159.1	SPC	RIF	654		---	138	2.4	ms	LC/SC
160	1	POOL	150	65,441	14.0	165	0.0		LC/SC
161	1	RIF	187	65,628	3.0	132	2.8	ms	SB/LC
162	1	RUN	356	65,984	4.5	126	0.1	ls	SB/LC
163	1	POOL	284	66,268	11.5	145	0.0		GR/SA
164	1	RIF	343	66,611	4.0	180	---	ls	LC/SB
165	1	POOL	335	66,946	5.5	134	0.0		LC/SB
166	1	RIF	138	67,084	3.7	148	1.3	ls	LC/SB
167	1	RUN	581	67,665	4.2	118	---	ls	LC/SB
168	1	POOL	401	68,066	15.0	135	0.0		---
169	1	RIF	223	68,289	4.2	133	4.8	ss	SB/LC
170	1	RUN	249	68,538	6.5	111	0.8	ms	LC/SB
171	1	POOL	581	69,119	7.7	102	0.0		LC/SB
172	1	RUN	385	69,504	5.6	146	---	ls	LC/SB
173	1	R/G	595	70,099	5.7	173	---	ls	LC/SC
174	1	STEP	20	70,119	---	203	---	ss	LB/SB
175	1	RUN	233	70,352	6.4	194	---	ms	LC/SB
176	1	RIF	369	70,721	3.4	164	1.1	ls	LC/SB
177	1	RUN	898	71,619	5.2	112	---	ls	LC/SB
178	1	RIF	136	71,755	---	112	2.8	ms	LC/SB
179	1	RUN	950	72,705	6.5	116	---	ls	LC/SB
180	1	RIF	309	73,014	---	75	3.3	ss	LC/SB
180.1	S/C	RIF	159		2.5	40	---	---	SC/LC
180.2	S/C	RUN	105		4.0	50	---	---	SC/LC
180.3	S/C	POOL	235		6.8	50	---	---	---
181	1	RUN	271	73,285	4.3	74	0.8	ms	SB/LC
182	1	RIF	132	73,417	3.8	131	0.5	ls	LC/SC

(Final Mapping - Pool Tails Combined)

Habitat Type	Unit Length	Total Length	Comments
POOL	501	59,827	
RUN	452	60,279	Standing waves
LGR	303	60,582	
RUN	223	60,805	
LGR	151	60,956	
R/G	634	61,590	Glide ??
POOL	756	62,346	
STEP	25	62,371	Diversion (est. Length=25 feet)
HGR	210	62,581	
POOL	1214	63,795	
STEP	38	63,833	Diversion - <b>Fishing Access #6</b>
RUN	739	64,572	
LGR	719	65,291	RC of SPC
LGR	654		LC
POOL	150	65,441	
LGR	187	65,628	TRVS
POOL	640	66,268	
LGR	343	66,611	
POOL	335	66,946	
LGR	138	67,084	
RUN	581	67,665	
POOL	401	68,066	(R/G @ tail ~75')
HGR	223	68,289	
RUN	249	68,538	Steep Run
			Road LB
POOL	1,561	70,099	
STEP	20	70,119	Diversion
RUN	233	70,352	
LGR	369	70,721	
RUN	898	71,619	
LGR	136	71,755	<b>Bridge - Fishing Access #5</b>
RUN	950	72,705	<b>Shovel Creek LB</b>
HGR	309	73,014	LC of Split - Bottom of Riffle
HGR	159		WP38.1 S/C associated w/Run WP37
RUN	105		Diversion - with return. Island created by
POOL	235		degradation of diversion berm. Mult. WSE
RUN	271	73,285	LC of Split
LGR	132	73,417	

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate
183	1	RUN	845	74,262	8.0	116	---	ls	LC/SC
184	1	RIF	239	74,501	3.1	108	---	ms	LC/SC
185	1	POOL	307	74,808	11.0	105	0.0		LC/SC
185.1	S/C	RIF/RUN	434		2.0	20	---	---	SC/LC
185.2	S/C	BW POOL	200		---	30	---	---	---
186	1	R/G	273	75,081	5.2	138	0.7	ls	LC/SC
187	1	RIF	186	75,267	2.9	99	1.2	ls	LC/SC
187.1	S/C	RIF/RUN	383		1.0	25	---	---	SC/LC
188	1	RUN	247	75,514	2.8	129	---	ms	---
189	1	RIF	100	75,614	---	144	2.6	ms	SC/GR
190	1	POOL	528	76,142	7.3	115	0.0		SC/LC
191	1	RUN	523	76,665	3.6	121	0.1	ls	LC/SC
192	1	RIF	122	76,787	---	177	---	ms	LC/SC
193	1	POOL	239	77,026	7.8	107	0.0		---
194	1	R/G	474	77,500	5.6	131	0.4	ls	SC/LC
195	1	RIF	125	77,625	---	163	2.2	ms/ss	LC/SC
195.1	SPC	RIF	20		---	53	---	---	SC/LC
195.2	SPC	RUN	561		3.5	30	---	---	SC/LC
196	1	RUN	686	78,311	5.0	108	1.0	ms	LC/SC
197	1	POOL	378	78,689	6.2	167	0.0		LC/SC
198	1	RIF	191	78,880	4.0	128	---	ls	SC/LC
199	1	RUN	792	79,672	5.7	113	---	ls	SC/LC
200	1	RIF	365	80,037	---	91	---	ss	LC/SC
200.1	SPC	R/G	264		---	130	---	ls	---
200.12	S/C	RIF	190		---	---	3.9	ms	SC/GR
200.2	SPC	POOL	156		---	70	0.0		---
200.3	SPC	RUN	347		---	---	---	---	---
200.4	SPC	RIF	35		---	45	---	---	---
201	1	RUN	1,637	81,674	5.2	133	---	ls	LC/SC
202	1	RIF	182	81,856	3.5	160	0.5	ls	LC/SC
202.1	S/C	RIF/RUN	554		2.0	30	---	---	GR/SC
203	1	RUN	55	81,911	---	100	---	ms	SC/LC
204	1	POOL	739	82,650	9.5	128	0.0		SC/LC
205	1	R/G	226	82,876	5.8	134	---	ls	SC/LC
205.1	S/C	RUN	634		3.0	30	---	---	SC/LC
206	1	RIF	293	83,169	3.5	99	---	ls	SC/LC
207	1	RUN	845	84,014	7.2	105	0.9	ls	SC/LC
208	1	POOL	581	84,595	8.3	136	0.0		SC/LC
209	1	GLIDE	457	85,052	---	197	0.0		SC/LC
210	1	RIF	75	85,127	---	210	5.0	ss	SC/LC

(Final Mapping - Pool Tails Combined)

Habitat Type	Unit Length	Total Length	Comments
RUN	845	74,262	BW @ bottom RB
LGR	239	74,501	
POOL	307	74,808	
RIF/RUN	434		Flow ~ 3 cfs, some from diversion return
BW POOL	200		Side Channel
R/G	273	75,081	Slope @ bottom of unit
LGR	186	75,267	
RIF/RUN	383		
RUN	247	75,514	cut bank - 2-8' high
LGR	100	75,614	short step
POOL	528	76,142	
RUN	523	76,665	
LGR	122	76,787	
POOL	713	77,500	<b>Fishing Access #4</b>
LGR	125	77,625	
HGR	20		Split Channel
RUN	561		
RUN	686	78,311	RC of Split; Bridge @ bottom (8' cut bank)
POOL	378	78,689	Shallow
LGR	191	78,880	
RUN	792	79,672	
HGR	365	80,037	RC - Rapid
R/G	264		Width @ top of island 246'
LGR	190		S/C cuts across mid-island
POOL	156		
RUN	347		
HGR	35		
RUN	1,637	81,674	RC Run
LGR	182	81,856	
RIF/RUN	554		
RUN	55	81,911	Rapid - Cut Bank RB 10' high
			GR/SC at edge from scour
POOL	965	82,876	
RUN	634		Small Side Channel RB (<5 cfs)
LGR	293	83,169	
RUN	845	84,014	Power lines ovh
POOL	1,038	85,052	
HGR	75	85,127	LC

## J.C. Boyle Peaking Reach Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Chan	Habitat Type	Unit Length	Total Length	Max Depth	Mean Width	Unit Slope	Slope Category	Substrate	Habitat Type	Unit Length	Total Length	Comments
210.1	SPC	RIF	75		---	42	---	---	SC/LC	HGR	75		RC
210.2	SPC	RUN	295		---	58	---	ls	SC/LC	RUN	295		
211	1	RUN	1,362	86,489	6.0	152	0.2	ls	SC/GR	RUN	1,362	86,489	
211.1	SPC	RIF	70		---	---	---	---	SC/LC	HGR	70		LC
211.2	SPC	RUN	286		---	28	---	---	SC/LC	RUN	286		LC
212	1	RIF	150	86,639	---	129	2.1	ls	LC/SC	LGR	150	86,639	End @ Bottom of Island - Res. Influence
<b>End @ Copco Reservoir</b>													





**APPENDIX 4C-4**

**FALL CREEK BYPASS REACH HABITAT MAPPING DATA (2 CFS)**



Appendix 4C-4. Fall Creek Bypass Reach habitat mapping data (2 cfs).

**Fall Creek Bypass Reach - Habitat Mapping**

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
	Start	0	0						Heavy riparian, ~ 25' above the falls		0	0
1	Lgr	9	9	17.0	0.3	5.00	ss	BR	water temp 13.5°C @1400 hrs	Hgr	9	9
2	Run	25	16	11.0	1.0	0.06	ls	BR/SC		Run	25	16
3	Pow	43	18	15.0	0.8	0.06	ls	SB/LC		Pow	43	18
4	Pool	62	19	10.0	2.0	0.07	ls	SB/LC				
5	Pool	74	12	8.0	1.3	0.04	ls	BR/SC		Pool	74	31
6	Lgr	76	2	7.0	0.6	5.00	ss	BR	SC @ 74, RC 20% Q	Hgr	76	2
6.1	S/C Lgr		6	2.0	0.3	---		Same as	SC similar to main channel	S/C Riffle		6
6.2	S/C Pool		10	1.5	0.5	---			Main Channel	S/C Pool		10
6.3	S/C Run		28	1.5	0.5	---				S/C Run		28
6.4	S/C Hgr		30	5.0	0.3	---				S/C Riffle		30
7	Pool	87	11	5.0	1.3	0.85	ls	BR/SB		Pool	87	11
8	Hgr	89	2	2.0	0.7	8.00	ss	LB/SB	Bedrock step	Hgr	89	2
9	Run	112	23	7.0	0.8	1.77	ms	BR/SB		Run	112	23
10	Hgr	148	36	13.0	0.5	8.33	ss	BR/LC	end SC @ 148	Hgr	148	36
11	Pool	162	14	13.0	1.1	0.48	ls	BR/LC		Pool	162	14
12	Lgr	166	4	12.0	0.3	---	ls	BR	Bedrock step	Lgr	166	4
13	Pool	182	16	7.0	1.5	0.55	ls	BR/LC	SC @ 160, LC 20% flow.	Pool	182	16
13.1	S/C Lgr		23	3.0	0.4	---		Same as		S/C Riffle		23
13.2	S/C Pool		26	3.0	0.4	---			Main Channel	S/C Pool		26
13.3	S/C Cas		15	8.0	0.1	---				S/C Cas		15
14	Hgr	199	17	12.0	0.4	8.00	ss	SB/LC	Bedrock, boulder, cobble	Hgr	199	17
15	Pow	213	14	9.0	0.9	1.14	ms	SB/BR		Pow	213	14
16	Pool	225	12	14.0	3.1	0.98	ls	BR/LB	end SC @ 224	Pool	225	12
17	Cas	230	5	30.0	0.3	29.33	ss	BR	Falls 4' bedrock	Cas	230	5
18	Hgr	240	10	21.0	0.3	15.00	ss	BR	Bedrock slab	Hgr	240	10
19	Pool	254	14	19.0	1.6	0.00	ls	BR/SC	Backwater RB	Pool	254	14
20	Hgr	256	2	7.0	0.3	15.00	ss	BR	Bedrock step	Hgr	256	2
21	Pool	266	10	13.0	1.3	0.00	ls	BR/SB		Pool	266	10
22	Hgr	280	14	11.0	0.3	7.50	ss	BR		Hgr	280	14
23	Run	309	29	11.0	0.6	1.63	ms	BR	Bedrock	Run	309	29
24	Pool	327	18	10.0	1.3	1.01	ms	SB/LC	Two logs across/over top of pool	Pool	327	18
25	Hgr	344	17	13.0	0.2	10.59	ss	BR	Bedrock slab	Hgr	344	17
26	Run	354	10	11.0	0.6	0.00	ls	BR				
27	Pool	362	8	13.0	1.3	0.00	ls	LC/SB		Pool	362	18
28	Lgr	398	36	8.0	0.5	4.17	ss	BR/SC		Hgr	398	36
29	Pool	408	10	11.0	1.1	0.00	ls	BR/SB		Pool	408	10
30	Lgr	431	23	12.0	0.4	5.65	ss	SC/LC	Cobble and gravel substrate (end bedrock	Hgr	431	23

## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
									substrate)			
31	Pow	446	15	8.0	1.0	4.00	ss	LC/SC		Pow	446	15
32	Hgr	450	4	7.0	0.7	26.25	ss	LB/SB		Hgr	450	4
33	Run	468	18	8.0	0.7	0.00	ls	SC/LC		Run	468	18
34	Lgr	477	9	25.0	0.3	8.89	ss	LC/SB	Trv @ bottom	Hgr	477	9
35	Run	488	11	25.0	0.5	0.00	ls	LC/SC	Glide-like @ top			
36	Pool	511	23	12.0	1.5	0.00	ls	LC/SB				
37	Run	528	17	10.0	0.8	0.00	ls	BR/SB		Pool	528	51
38	Lgr	547	19	20.0	0.3	3.68	ms	LC/SB		Lgr	547	19
39	Pool	574	27	16.0	1.0	0.00	ls	SB/BR		Pool	574	27
40	Lgr	601	27	13.0	0.5	4.19	ss	SC/LC		Hgr	601	27
41	Lgr	605	4	8.0	0.6	4.19	ss	SC/LC	SC RB @ 601, 25% flow	Hgr	605	4
41.1	S/C Lgr		36	2.0	0.2	---			Same as 2nd SC LB @ 628-664, Seep	S/C Riffle		36
41.2	S/C Run		40	6.0	0.5	---			Main Channel	S/C Run		40
42	Run	620	15	8.0	0.6	0.60	ls	SC/LC		Run	620	15
43	Lgr	641	21	8.0	0.5	4.20	ss	SC/LC		Hgr	641	21
44	Run	664	23	8.0	0.5	0.57	ls	SC/LC				
45	Pool	681	17	12.0	1.0	0.42	ls	LC/BR	end SC at 681	Pool	681	40
46	Lgr	698	17	27.0	0.3	3.53	ms	LC/SC		Lgr	698	17
47	Run	716	18	16.0	0.5	0.00	ls	LC/SC		Run	716	18
48	Lgr	720	4	13.0	0.4	3.50	ms	LC/SC	Beyond riparian is oak and pine	Lgr	720	4
49	Run/Glide	737	17	12.0	0.8	0.00	ls	BR/LC				
50	Pool	748	11	14.0	1.3	0.00	ls	LC/BR		Pool	748	28
51	Lgr	782	34	12.0	0.8	4.26	ss	SC/LC		Hgr	782	34
52	Run	802	20	8.0	1.0	0.00	ls	LC/BR	SC @ 783	Run	802	20
52.1	S/C Run		20	3.0	0.4	---			Same as 3rd channel is seepage from canal	S/C Run		20
52.2	S/C Lgr		15	4.0	0.2	---			Main Channel - did not map	S/C Riffle		15
52.3	S/C Run		23	3.0	0.3	---				S/C Run		23
52.4	S/C Lgr		114	8.0	0.3	---				S/C Riffle		114
53	Pool	858	56	8.0	1.4	0.00	ls	BR/SM	Debris in channel			
54	Run	876	18	10.0	1.1	0.00	ls	BR/SM				
55	Pool	892	16	12.0	0.8	0.00	ls	BR/SM	Much of RC seep from canal (.25-.5 cfs)			
56	Run	906	14	9.0	0.9	0.00	ls	SB/LC				
57	Pool	920	14	11.0	1.3	0.00	ls	LC/SB		Pool	920	118
58	Run	933	13	14.0	0.6	0.40	ls	SB/LC	seep area	Run	933	13
59	Pow	942	9	10.0	0.8	0.28	ls	LC/SB		Pow	942	9
60	Pool	956	14	11.0	1.1	0.43	ls	LC/SB		Pool	956	14
61	Hgr	961	5	10.0	0.3	24.00	ss	LC/SB		Hgr	961	5
62	Pool	974	13	9.0	1.1	0.00	ls	LC/SC		Pool	974	13
63	Lgr	985	11	8.0	0.6	2.73	ms	SB/LC		Lgr	985	11

## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
64	Pool	997	12	8.0	1.0	0.00	ls	BR/LC	? Run	Pool	997	12
65	Lgr	1015	18	9.0	0.6	2.70	ms	LC/SC	End SC and seepage @ 1015	Lgr	1015	18
66	Pool	1052	37	15.0	1.7	0.00	ls	SB/LC				
67	Run	1064	12	9.0	1.1	0.00	ls	BR/LC		Pool	1064	49
68	Lgr	1082	18	16.0	0.6	2.70	ms	LC/SC		Lgr	1082	18
69	Hgr	1099	17	14.0	0.6	24.00	ss	LC/SC		Hgr	1099	17
70	Pool	1140	41	20.0	1.3	0.00	ls	LC/SM	Two pools separated by small 3' Run .			
71	Pool	1162	22	20.0	0.8	0.00	ls	BR/SM	Log at bottom, dammed.	Pool	1162	63
72	Lgr	1174	12	16.0	0.4	2.70	ms	BR		Lgr	1174	12
73	Run	1197	23	9.0	0.6	0.00	ls	BR	Bedrock slab, split	Run	1197	23
74	Lgr	1216	19	11.0	0.4	1.30	ls	BR	Bedrock slab, split	Lgr	1216	19
75	Pool	1242	26	12.0	1.3	0.00	ls	BR/SB		Pool	1242	26
76	Pow	1275	33	15.0	0.6	0.00	ls	SB/LC		Pow	1275	33
77	Hgr	1280	5	12.0	0.3	25.00	ss	BR/SB	Bedrock	Hgr	1280	5
78	Run	1304	24	10.0	1.2	0.00	ls	LC/SB		Run	1304	24
79	Lgr	1328	24	13.0	0.5	1.33	ls	SC/LC	Boulder and cobble	Lgr	1328	24
80	Lgr	1349	21	16.0	0.3	1.33	ls	BR/LC	Bedrock slab	Lgr	1349	21
81	Run/Glide	1389	40	14.0	0.4	0.00	ls	BR/SC	Bedrock slab, glide-like			
82	Pool	1407	18	10.0	1.1	0.00	ls	LC/SC		Pool	1407	58
83	Lgr	1422	15	10.0	0.2	4.67	ss	LC/SC		Hgr	1422	15
84	Pool	1434	12	12.0	1.2	0.00	ls	LC/BR				
85	Run	1463	29	12.0	0.5	0.00	ls	LC/SC		Pool	1463	41
86	Lgr	1473	10	13.0	0.3	5.00	ss	LC/SB		Hgr	1473	10
87	Run	1486	13	12.0	0.6	0.00	ls	SB/LB		Run	1486	13
88	Lgr	1489	3	13.0	0.4	5.00	ss	SB/LB	Step	Hgr	1489	3
89	Run/Glide	1500	11	13.0	0.7	0.00	ls	LC/SC				
90	Pool	1523	23	13.0	1.2	0.00	ls	LC/SB		Pool	1523	34
91	Lgr	1541	18	16.0	0.4	3.61	ms	LC/SC		Lgr	1541	18
92	Run	1562	21	16.0	0.6	0.00	ls	LC/SC	Debris in channel	Run	1562	21
93	Lgr	1577	15	20.0	0.3	6.00	ss	LC/SC		Hgr	1577	15
94	Run/Glide	1593	16	17.0	0.5	0.00	ls	SC/LC				
95	Pool	1611	18	20.0	1.5	0.00	ls	BR/SM		Pool	1611	34
96	Cas	1616	5	16.0	0.2	25.00	ss	BR/LB		Cas	1616	5
97	Run	1642	26	10.0	1.0	0.00	ls	LC/SC	Start Braid @ 1616	Run	1642	26
97.1	SPC Run		26	3.0	0.2	---		Same as	Split/Braided	SPC Run		26
97.2	SPC Pool		19	3.0	0.1	---		Main Channel	Split	SPC Pool		19
98	Pool	1661	19	8.0	1.3	0.00	ls	SC/LC	End Braid @ 1661	Pool	1661	19
99	Hgr	1666	5	7.0	0.5	15.00	ss	SB/LC		Hgr	1666	5
100	Run	1676	10	12.0	0.7	0.00	ls	LC/SC		Run	1676	10
101	Lgr	1681	5	12.0	0.3	8.00	ss	LC/SB		Hgr	1681	5

## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
102	Pow	1689	8	14.0	0.8	0.00	ls	LC/SB		Pow	1689	8
103	Lgr	1721	32	12.0	0.5	8.00	ss	BR/SB		Hgr	1721	32
104	Run	1742	21	16.0	0.6	0.00	ls	BR/SB		Run	1742	21
105	Lgr	1753	11	15.0	0.4	4.55	ss	BRLC		Hgr	1753	11
106	Run	1773	20	16.0	0.7	0.00	ls	LC/SB		Run	1773	20
106.1	S/C Lgr		138	6.0	0.2	---			SC LB 1/20 of flow	S/C Riffle		138
107	Lgr	1790	17	11.0	0.4	3.24	ms	LC/SB		Lgr	1790	17
108	Run	1802	12	10.0	0.9	0.00	ls	BR/SC		Run	1802	12
109	Pow	1822	20	10.0	0.8	0.00	ls	BR/LB	100% bedrock slab w/ one large boulder	Pow	1822	20
110	Hgr	1826	4	10.0	0.5	17.50	ss	BR	Step, bedrock slab	Hgr	1826	4
111	Run	1859	33	8.0	0.6	0.00	ls	BR/SB	bedrock slab	Run	1859	33
112	Lgr	1870	11	8.0	0.4	5.00	ss	BR/GR		Hgr	1870	11
113	Run	1882	12	8.0	0.6	0.00	ls	BR/SC		Run	1882	12
114	Lgr	1889	7	10.0	0.3	5.00	ss	SC/GR		Hgr	1889	7
115	Run	1907	18	10.0	0.6	0.00	ls	BR/SC		Run	1907	18
116	Lgr	1911	4	15.0	0.3	5.00	ss	BR	end SC @ 1911	Hgr	1911	4
117	Run	1935	24	22.0	0.7	0.00	ls	LC/SB				
118	Pool	1983	48	10.0	2.1	0.00	ls	BR/SB		Pool		
119	Run	2015	32	10.0	0.8	0.00	ls	LC/SC	spawning gravel near top.	Pool	2015	104
120	Lgr	2030	15	12.0	0.5	4.33	ss	LC/SC		Hgr	2030	15
121	Pow	2040	10	13.0	0.6	0.00	ls	LC/SB	Debris @ top			
122	Pool	2049	9	18.0	1.1	0.00	ls	LC/SB	partially dammed	Pool	2049	19
123	Lgr	2083	34	24.0	0.3	3.09	ms	SC/LC		Lgr	2083	34
124	Run	2099	16	12.0	0.6	0.00	ls	BR/LC		Run	2099	16
125	Lgr	2102	3	12.0	0.5	3.10	ms	LC/SC	Step	Lgr	2102	3
126	Run	2143	41	12.0	0.5	0.00	ls	BR/LC	Bedrock			
127	Pool	2166	23	15.0	0.6	0.00	ls	LC/SC	Shallow, w/slab MC, log RB @ top	Pool	2166	64
128	Lgr	2172	6	15.0	0.4	---	ss	BR/LC	Step, bedrock slab	Hgr	2172	6
129	Pool	2189	17	15.0	0.8	0.00	ls	BR/SB		Pool	2189	17
130	Run	2226	37	8.0	0.6	2.57	ss	BR		Run	2226	37
131	Lgr	2233	7	10.0	0.5	4.29	ss	BR/LC		Hgr	2233	7
132	Run	2263	30	14.0	0.5	0.00	ls	BR/LC	Seep RB	Run	2263	30
133	Lgr	2283	20	18.0	0.4	2.00	ms	SC/GR		Lgr	2283	20
134	Pool	2295	12	10.0	0.8	0.00	ls	BR/LC	Split, tree MC, shallow.	Pool	2295	12
135	Lgr	2299	4	14.0	0.3	2.00	ms	SC/LC	Step	Lgr	2299	4
136	Run	2329	30	18.0	0.4	0.00	ls	SC/GR		Run	2329	30
137	Lgr	2333	4	20.0	0.3	---	ss	SC/GR		Hgr	2333	4
138	Run	2372	39	14.0	0.5	0.00	ls	SC/GR		Run	2372	39
139	Lgr	2381	9	18.0	0.2	5.00	ss	SC/GR		Hgr	2381	9
140	Run	2429	48	12.0	0.6	0.00	ls	BR/LC	Mostly bedrock	Run	2429	48
141	Lgr	2435	6	20.0	0.4	8.33	ss	LC/SB	Tree MC	Hgr	2435	6

## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
142	Run	2456	21	22.0	0.4	0.00	ls	SC/GR		Run	2456	21
143	Lgr	2461	5	16.0	0.4	8.33	ss	SC/GR		Hgr	2461	5
144	Run/Glide	2511	50	16.0	0.5	0.00	ls	BR/SC	Open RB			
145	Pool	2575	64	20.0	1.1	0.00	ls	LC/SC		Pool	2575	114
146	Lgr	2603	28	16.0	0.3	2.86	ms	SC/GR	Marshy RB	Lgr	2603	28
147	Run/Glide	2614	11	12.0	0.8	0.00	ls	BR/LC	Open RB			
148	Pool	2631	17	16.0	1.4	0.00	ls	BR/SC		Pool	2631	28
149	Lgr	2661	30	16.0	0.5	1.50	ls	SC/LC		Lgr	2661	30
150	Run	2678	17	24.0	0.5	0.00	ls	GR/SC				
151	Pool	2699	21	20.0	1.2	0.00	ls	SM/GR		Pool	2699	38
151.1	SPC Run		15	3.0	0.5	---		Same as	Split (debris), equal flow			15
151.2	SPC Pool		15	3.0	0.5	---		Main Channel	Split (debris), heavy riparian			15
151.3	SPC Run		12	8.0	0.5	---				SPC Pool		42
152	Run	2714	15	8.0	0.6	0.00	ls	FI/GR				
153	Pool	2733	19	8.0	0.9	0.00	ls	BR/SB				
154	Run	2741	8	6.0	0.6	0.00	ls	LC/SB	end split @ 2741			
155	Pool	2822	81	14.0	1.2	0.00	ls	SM/GR	Dammed, heavy silt			
156	Run	2829	7	7.0	0.8	0.00	ls	LC/SB				
157	Pool	2837	8	8.0	1.0	0.00	ls	LC/SB				
158	Run	2852	15	8.0	0.8	0.00	ls	LC/SC	Debris, RB seep, marshy			
159	Pool	2859	7	8.0	0.8	0.00	ls	GR/SA				
160	Run	2869	10	8.0	0.7	0.00	ls	BR/LC		Pool	2869	170
161	Lgr	2876	7	8.0	0.5	3.50	ms	GR/SC	Gravels Embedded	Lgr	2876	7
162	Run	2893	17	8.0	0.5	0.00	ls	SC/GR				
163	Pool	2910	17	10.0	0.8	0.00	ls	GR/SA	Gravels Embedded			
164	Run	2921	11	12.0	0.7	0.00	ls	BR/LC		Pool	2921	45
165	Lgr	2938	17	8.0	0.4	3.53	ms	GR/SA		Lgr	2938	17
166	Run/Glide	2952	14	12.0	0.7	0.00	ls	GR/SA				
167	Pool	2967	15	12.0	0.8	0.00	ls	SC/SM	Marshy RB			
168	Run	2978	11	9.0	0.6	0.00	ls	BR/SB		Pool	2978	40
169	Lgr	2984	6	8.0	0.3	7.50	ss	SC/LC		Hgr	2984	6
170	Pool	3016	32	14.0	0.9	0.00	ls	LC/SC	Two logs across channel @ top.	Pool	3016	32
171	Lgr	3034	18	16.0	0.3	2.50	ms	LC/SC		Lgr	3034	18
172	Run	3051	17	16.0	0.6	0.00	Ls	SC/GR		Run	3051	17
173	Lgr	3058	7	19.0	0.3	2.50	Ms	SC/LC		Lgr	3058	7
174	Run	3072	14	16.0	0.5	0.00	Ls	SC/LC	Open area	Run	3072	14
175	Lgr	3088	16	18.0	0.3	2.81	Ms	LC/SC		Lgr	3088	16
176	Pool	3137	49	16.0	1.2	0.00	Ls	BR/SM	Log (rotten) across mid-pool	Pool	3137	49
177	Lgr	3144	7	16.0	0.3	3.57	Ms	SC/LC		Lgr	3144	7
178	Pool	3214	70	15.0	1.2	0.00	Ls	BR/SM	Marshy RB			

## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
179	Run	3238	24	10.0	0.8	0.00	Ls	SC/GR		Pool	3238	94
180	Lgr	3247	9	20.0	0.2	3.33	Ms	GR/SC	Gravels Embedded, Grass	Lgr	3247	9
181	Pool	3283	36	10.0	1.4	0.00	Ls	SM/SB		Pool	3283	36
181.1	SPC Pool		36	3.0	0.5	---		Same as		SPC Pool		36
181.2	SPC Lgr		4	1.0	0.1	---			Main Channel	SPC Riffle		4
182	Lgr	3287	4	9.0	0.3	---	Ms	OR/GR	Changed from Cas to Lgr (root step)	Lgr	3287	4
183	Pool	3311	24	12.0	1.0	0.00	Ls	SM/GR		Pool	3311	24
184	Run	3339	28	9.0	0.6	0.54	Ls	SC/GR		Run	3339	28
185	Pool	3363	24	9.0	1.3	0.00	Ls	SM/GR	Debris @ top			
186	Run	3386	23	5.0	0.8	0.00	Ls	BR/LC	Narrow			
187	Pool	3437	51	16.0	1.1	0.00	Ls	SM/BR	Dammed with log at bottom.	Pool	3437	98
188	Lgr	3449	12	15.0	0.2	2.50	Ms	BR/LC	Debris and bedrock slab.	Lgr	3449	12
189	Run	3467	18	16.0	0.5	0.00	Ls	BR/SC		Run	3467	18
190	Lgr	3479	12	14.0	0.3	3.33	Ms	SC/LC		Lgr	3479	12
191	Run	3495	16	13.0	0.4	0.00	Ls	LC/SC	Overgrown with riparian vegetation			
192	Run	3522	27	14.0	0.4	0.19	Ls	SC/LC				
193	Pool	3544	22	14.0	1.0	0.00	Ls	SC/GR		Pool	3544	65
194	Lgr	3548	4	12.0	0.6	3.30	Ms	BR/LB		Lgr	3548	4
195	Pool	3581	33	12.0	1.1	0.00	Ls	BR/SM		Pool	3581	33
196	Lgr	3598	17	11.0	0.3	2.35	Ms	SC/LC		Lgr	3598	17
197	Pool	3612	14	12.0	1.0	0.00	Ls	SM/SC	Dammed	Pool	3612	14
198	Lgr	3622	10	19.0	0.3	5.50	Ss	SC/GR		Hgr	3622	10
199	Run	3644	22	15.0	0.6	0.00	Ls	GR/SC				
200	Pool	3718	74	16.0	0.8	0.00	Ls	BR/SM	Mostly bedrock, seep RB @ bottom.			
201	Run	3741	23	5.5	0.7	0.00	Ls	SC/BR		Pool	3741	119
202	Lgr	3768	27	12.0	0.3	1.30	ls	SC/GR		Lgr	3768	27
203	Pool	3818	50	10.0	1.1	0.00	ls	SC/SM	seep RB	Pool	3818	50
204	Lgr	3846	28	17.0	0.3	1.79	ls	GR/SC		Lgr	3846	28
205	Run	3869	23	18.0	0.6	0.00	ls	SC/GR		Run	3869	23
206	Lgr	3879	10	18.0	0.3	3.00	ms	SC/GR		Lgr	3879	10
207	Run	3912	33	15.0	0.4	0.00	ls	LC/SC	w/ 2' riffle mid-unit.	Run	3912	33
208	Lgr	3916	4	18.0	0.3	3.00	ms	BR/LC	trv step	Lgr	3916	4
209	Run	3963	47	13.0	0.7	0.00	ls	SC/LC		Run	3963	47
210	Lgr	3976	13	13.0	0.2	3.46	ms	SC/GR		Lgr	3976	13
211	Run	3988	12	13.0	0.4	0.00	ls	SC/LC		Run	3988	12
212	Lgr	4016	28	22.0	0.3	0.89	ls	LC/SC		Lgr	4016	28
213	Run/Glide	4051	35	13.0	0.4	0.00	ls	LC/SC				
214	Pool	4060	9	16.0	0.6	0.00	ls	BR/SC	Debris	Pool	4060	44
215	Lgr	4063	3	12.0	0.3	0.90	ls	BR/SC	Step	Lgr	4063	3
216	Run	4084	21	15.0	0.5	0.00	ls	BR/SA	Pow at higher flows.	Run	4084	21
217	Lgr	4093	9	14.0	0.4	2.22	ms	BR/LC		Lgr	4093	9



## Fall Creek Bypass Reach - Habitat Mapping

(Original Mapping)

(Final Mapping - Pool Tails Combined)

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Max Depth	Unit Slope	Slope Category	Sub Dom/Sub	Comments	Habitat Type	Total Length	Unit Length
218	Pool	4143	50	20.0	0.9	0.00	ls	SM/BR	Debris, log across bottom, some riffle LB at top.	Pool	4143	50
219	Lgr	4148	5	5.0	0.2	2.20	ms	SC/GR		Lgr	4148	5
220	Pool	4168	20	10.0	1.4	0.00	ls	SM/SC		Pool	4168	20
221	Lgr	4185	17	11.0	0.3	2.35	ms	GR/SC		Lgr	4185	17
222	Pool	4216	31	13.0	1.2	0.00	ls	SM/SC				
223	Run	4228	12	14.0	0.5	0.00	ls	GR/SC		Pool	4228	43
224	Lgr	4236	8	14.0	0.2	3.13	ms	SC/GR		Lgr	4236	8
225	Run	4268	32	12.0	0.5	0.00	ls	SC/GR				
226	Pool	4286	18	13.0	1.0	0.00	ls	BR/SC		Pool	4286	50
227	Lgr	4296	10	10.0	0.4	1.50	ls	SC/GR		Lgr	4296	10
228	Pool	4320	24	11.0	1.3	0.00	ls	SM/GR	open marsh RB	Pool	4320	24
229	Lgr	4338	18	9.0	0.3	4.44	ss	SC/GR		Hgr	4338	18
230	Run	4346	8	7.0	0.7	0.00	ls	GR/SC		Run	4346	8
230.1	SPC Run		8	2.0	0.2	---		Same as	Split	SPC Run		8
230.2	SPC Lgr		8	2.0	0.1	---			Main Channel	SPC Riffle		8
230.3	SPC Run		10	2.5	0.2	---				SPC Run		10
231	Pool	4351	5	7.0	0.9	0.00	ls	SC/LC		Pool	4351	5
232	Lgr	4354	3	6.0	0.3	---	ls	LC/SC		Lgr	4354	3
233	Pool	4364	10	8.0	1.0	0.00	ls	SC/LC				
234	Run	4389	25	8.0	0.5	0.00	ls	SC/GR	end split @ 4389			
235	Pool	4466	77	8.0	1.3	0.00	ls	SM/LC				
236	Run	4483	17	9.0	0.9	0.00	ls	LC/GR	Chock full of debris, nice gravel	Pool	4483	129
237	Lgr	4490	7	6.0	0.3	5.00	ss	GR/SB		Hgr	4490	7
238	Pool	4505	15	8.0	0.7	0.00	ls	GR/SA		Pool	4505	15
239	Lgr	4521	16	7.0	0.3	4.69	ss	LC/SC		Hgr	4521	16
240	Pool	4540	19	8.0	1.2	0.00	ls	SM/OR		Pool	4540	19
241	Lgr	4547	7	10.0	0.3	4.29	ss	SC/LC		Hgr	4547	7
242	Run	4571	24	10.0	1.0	0.00	ls	SC/LC		Run	4571	24
243	Lgr	4587	16	15.0	0.3	3.44	ms	LC/GR	Grass growing in riffle	Lgr	4587	16
244	Pool	4605	18	36.0	1.3	0.00	ls	SM/SC	Pool @ diversion base	Pool	4605	18
	End											



**APPENDIX 4C-5**

**COPCO 2 BYPASS REACH HABITAT MAPPING DATA (200 CFS)**



Appendix 4C-5. Copco 2 Bypass Reach habitat mapping data (200 cfs).

**Copco 2 Bypass Reach - Habitat Mapping**

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Sub Dom/Sub	Comments
	START	0	0			Upstream of Copco 2 Powerhouse
1	CAS	45	45	45	LB/SB	Same start as '02 mapping
2	POOL	109	64	55	LB/SB	
3	CAS	143	34	60	BDRK	
4	RUN	286	143	60	LB/SB	w/step
5	HGR/POW	343	57	60	LB/SB	
6	POW/RUN	418	75	70	LB/SB	
7	RUN	598	180	65	LB/SB	
8	POOL	673	75	65	LB/SB	
9	HGR	694	21	65	LB/SB	
10	RUN	746	52	60	LB/SB	
11	POOL	884	138	60	LB/SB	6+ feet deep
12	RUN	983	99	35	LB/SB	Chute
13	CAS	1012	29	40	LB/SB	
14	RUN	1064	52	40	LB/SB	
15	CAS	1078	14	45	BK/LB	
16	RUN	1119	41	100	BK/LB	Bedrock Spine/Split 1119-1389
17	POW	1327	208	100	BK/LB	Mapped LC of Spine
18	POOL	1389	62	100	BK/LB	RC - HGR/MGR to 1301, LGR to 1389
19	CAS	1406	17	100	BK/LB	
20	RUN	1435	29	100	LB/SB	Rif LB
20.1	S/C Rif		97			
20.2	S/C Pow		100			
21	HGR/MGR	1532	97	80	LB/SB	
22	POW	1743	211	70	LB/SB	
23	POOL	1833	90	50	BK/LB	Cliff overhang RB
24	HGR/CAS	1914	81	75	BK/LB	Reset Start
25	RUN/POW	2010	96	75	LB/SB	Unit split by boulder bar w/ alders
26	HGR	2066	56	70	LB/SB	some pow, run LB
27	POW	2119	53	60	LB/SB	
28	CAS	2128	9	50	LB/SB	
29	POW	2157	29	50	LB/SB	
30	HGR	2171	14	35	LB/SB	In Large bend in channel - Basalt cliffs LB
31	POOL	2342	171	40	LB/SB	Run @ tail ~100'
32	POW	2384	42	40	LB/SB	

## Copco 2 Bypass Reach - Habitat Mapping

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Sub Dom/Sub	Comments
33	POOL	2441	57	50	LB/SB	
34	POW	2475	34	55	LB/SB	
35	POOL	2955	480	40	BDRK	Large Pool - Unique to Reach/ Bedrock Slope RB
36	POOL	3021	66	----	BDRK	Control break between pools
37	HGR/CAS	3103	82	40	BDRK	
38	RUN	3167	64	40	BDRK	
39	STEP	3192	25	60	BDRK	
40	POOL	3240	48	55	BDRK	
41	STEP	3254	14	50	BDRK	
42	POOL	3337	83	60	BDRK	
43	CAS/HGR	3379	42	20	BDRK	Potential Low Flow Passage Impediment
44	POOL	3409	30	50	BDRK	Multiple channels through bedrock
45	CAS/HGR	3533	124	50	BDRK	
46	CAS	3596	63	55	BDRK	
47	POW	3704	108	90	BDRK	
48	STEP	3717	13	90	BDRK	
49	RUN	3789	72	80	BDRK	
50	HGR	3838	49	80	BDRK	
51	RUN	4018	180	60	SB/LB	BW @ bottom
52	LGR	4034	16	45	SB/LB	Step
53	RUN	4171	137	----	SB/LB	Some pockets
53.1	S/C Pool		97			S/C 2160-2397
53.2	S/C Pow		140			
54	MGR/HGR	4234	63	35	SB/LB	
55	POW	4275	41	40	SB/LB	Moderate gradient Pow
56	RUN/POW	4418	143	50	SB/LB	Some pockets @ top
57	HGR	4434	16	50	SB/LB	
58	POW	4477	43	50	SB/LB	Alcove RB - leakage
59	RUN	4584	107	50	SB/LB	Pool Tail
60	POOL	4829	245	60	SB/LB	
61	CAS/HGR	4892	63	50	LB/BK	
62	RUN/POW	4975	83	50	SB/LB	Moderate gradient
63	RUN	5223	248	40	SB/LB	BW RB @ bottom, inflow @ 3081
63.1	S/C Run		211			S/C Separated by bar with trees
63.2	S/C Pow		126			S/C 3309-3664
63.3	S/C Hgr		18			
64	MGR	5266	43	----	SB/LB	
65	RUN	5355	89	----	SB/LB	
66	MGR	5434	79	----	SB/LB	

## Copco 2 Bypass Reach - Habitat Mapping

Unit Number	Habitat Type	Total Length	Unit Length	Mean Width	Sub Dom/Sub	Comments
67	RUN	5476	42	65	SB/CB	
68	HGR	5578	102	55	SB/CB	
69	LGR	5650	72	60	SB/CB	
70	RUN	5841	191	55	SB/CB	Some pockets @ bottom
71	POOL	5907	66	70	BDRK	Control break / pool and run, Chute RB + BW
72	RUN	6003	96	30	BDRK	
73	CAS	6013	10	35	BDRK	Chute
74	RUN	6141	128	40	BDRK	Some pool/plunge @ top
75	CAS	6156	15	----	BDRK	Steps over bedrock - step-runs
76	POOL	6214	58	35	BDRK	
76.1	S/C Rif/Pow		195			S/C over boulder bar
77	CAS	6234	20	----	BDRK	
78	POOL	6273	39	----	BDRK	
79	CAS	6298	25	----	BDRK	Chute - End bedrock steps
80	RUN	6357	59	40	LB/SB	
81	LGR	6379	22	60	LB/SB	
82	RUN	6450	71	65	LB/SB	
83	POW	6607	157	55	LB/SB	
84	STEP	6619	12	50	LB/SB	Begin straight/narrow upper section of reach
85	POW	6685	66	45	LB/SB	Pool-like/slow
86	POW	6714	29	45	LB/SB	w/steps
87	POOL	6793	79	45	LB/SB	plunge
88	CAS	6824	31	40	LB/SB	
89	POW	6876	52	40	LB/SB	pool-like
90	CAS/HGR	6904	28	40	LB/SB	
91	POW	7028	124	40	LB/SB	
91.1	S/C Run		95			S/C 5130-5313
91.2	S/C Rif		33			
91.3	S/C Run		37			
91.4	S/C Rif		18			
92	CAS/HGR	7089	61	40	LB/SB	
93	RUN	7122	33	40	LB/SB	white-water chute
94	HGR/CAS	7209	87	55	LB/SB	
95	POW	7238	29	50	LB/SB	w/steps
96	HGR	7254	16	45	LB/SB	
97	POW	7305	51	50	LB/SB	w/steps
98	POOL	7438	133	45	LB/SB	corner
99	CAS/HGR	7505	67	35	LB/SB	End at Diversion Pool Tail

