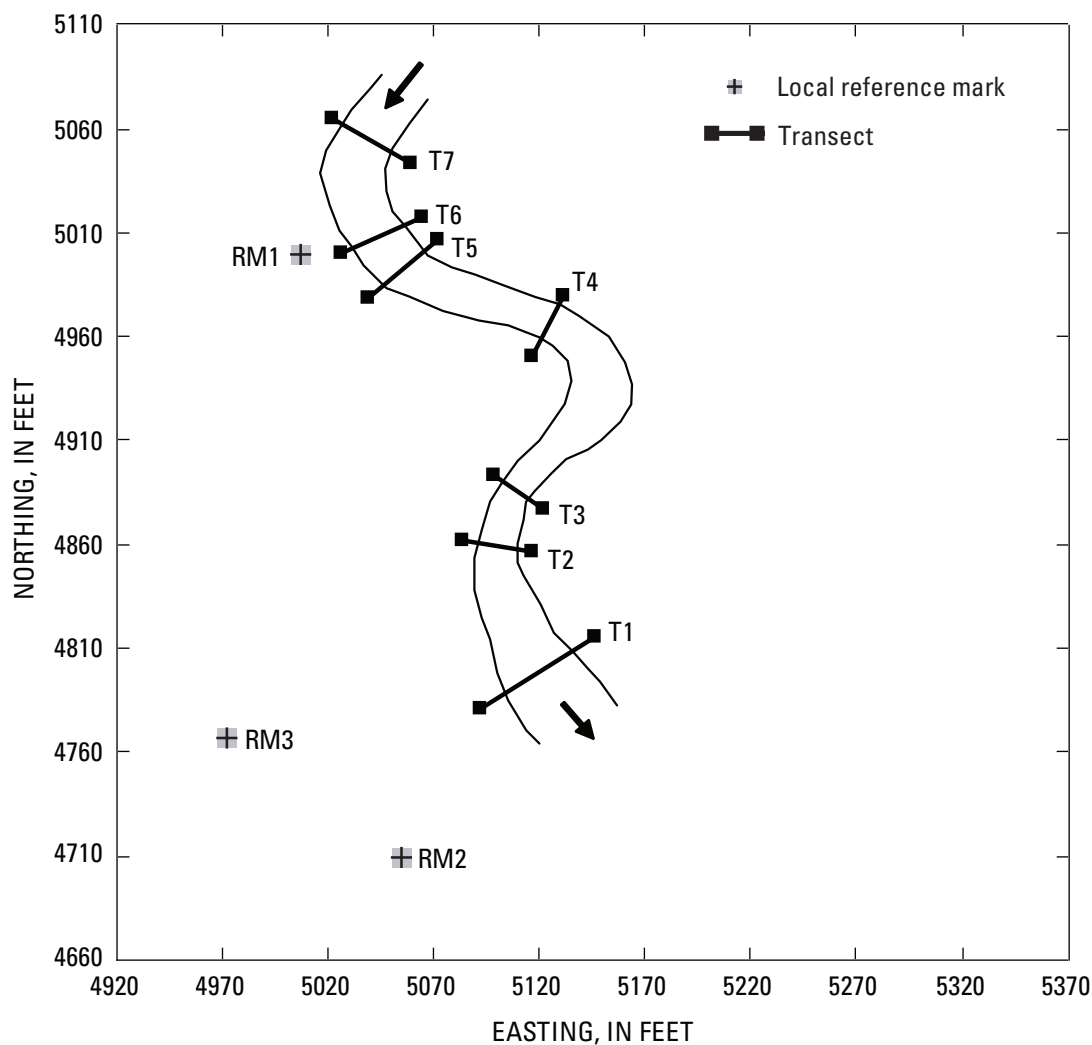


Appendix D. Plan view, weighted usable areas, and passage criteria assessments for bull trout, Chinook salmon, steelhead trout, and invertebrates for upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.



Transect Endpoint Coordinates (NAD 83)			Transect Endpoint Coordinates (NAD 83)		
Point	Latitude	Longitude	Point	Latitude	Longitude
RH1	44° 34' 14.69" N	114° 18' 11.52" W	LH4	44° 34' 16.02" N	114° 18' 12.01" W
LH1	44° 34' 14.33" N	114° 18' 12.23" W	RH5	44° 34' 16.54" N	114° 18' 12.67" W
RH2	44° 34' 15.09" N	114° 18' 11.96" W	LH5	44° 34' 16.26" N	114° 18' 13.11" W
LH2	44° 34' 15.12" N	114° 18' 12.43" W	RH6	44° 34' 16.64" N	114° 18' 12.78" W
RH3	44° 34' 15.29" N	114° 18' 11.9" W	LH6	44° 34' 16.46" N	114° 18' 13.3" W
LH3	44° 34' 15.45" N	114° 18' 12.23" W	RH7	44° 34' 16.9" N	114° 18' 12.86" W
RH4	44° 34' 16.31" N	114° 18' 11.82" W	LH7	44° 34' 17.09" N	114° 18' 13.41" W

For reference only; stream schematic not to scale.

Figure D1. Plan view of upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.

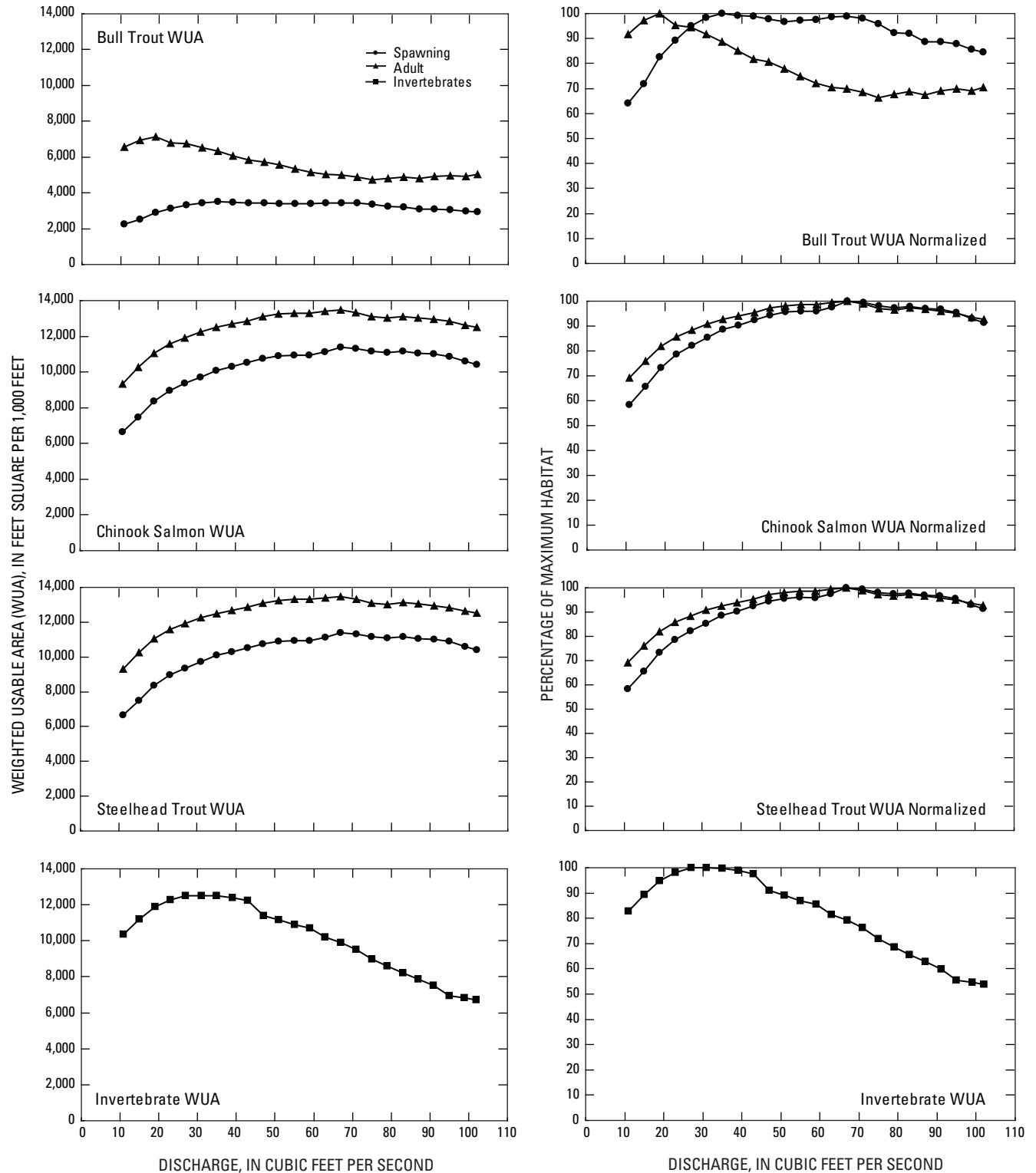


Figure D2. Weighted usable area and percentage of maximum habitat for bull trout, Chinook salmon, steelhead trout, and invertebrates, upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.

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Table D1. Weighted usable area for bull trout, Chinook salmon, steelhead trout life stages, and Ephemeroptera, Plecoptera, and Trichoptera (EPT) invertebrates, site CH3, upper middle Challis Creek, upper Salmon River Basin, Idaho, 2005.

[Site location shown in [figure 8](#). Abbreviations: WUA, weighted usable area; ft³/s, cubic foot per second; ft², square foot; ft²/1,000 ft, square foot per 1,000 feet]

Discharge (ft³/s)	Total area (ft²)	Summary of WUA (ft²/1,000 ft)		Percentage of maximum habitat		Discharge (ft³/s)	Total area (ft²)	Summary of WUA (ft²/1,000 ft)		Percentage of maximum habitat	
		Adult	Spawning	Adult	Spawning			Adult	Spawning	Adult	Spawning
Bull trout						Steelhead trout					
10.9	20,178	6,544	2,236	91.8	64.0	10.9	20,178	9,322	6,657	69.1	58.4
15	20,724	6,938	2,509	97.3	71.9	15	20,724	10,254	7,478	76.0	65.7
19	21,146	7,128	2,881	100.0	82.5	19	21,146	11,042	8,353	81.9	73.3
23	21,528	6,786	3,115	95.2	89.2	23	21,528	11,567	8,958	85.8	78.6
27	21,880	6,735	3,323	94.5	95.1	27	21,880	11,916	9,361	88.3	82.2
31	22,212	6,542	3,435	91.8	98.4	31	22,212	12,246	9,725	90.8	85.4
35	22,513	6,326	3,492	88.8	100.0	35	22,513	12,493	10,089	92.6	88.6
39	22,797	6,056	3,463	85.0	99.2	39	22,797	12,677	10,294	94.0	90.4
43	23,093	5,821	3,451	81.7	98.8	43	23,093	12,858	10,521	95.3	92.4
47	23,555	5,741	3,419	80.5	97.9	47	23,555	13,110	10,752	97.2	94.4
51	23,999	5,555	3,379	77.9	96.8	51	23,999	13,243	10,887	98.2	95.6
55	24,295	5,327	3,393	74.7	97.2	55	24,295	13,308	10,942	98.7	96.1
59	24,624	5,132	3,402	72.0	97.4	59	24,624	13,301	10,924	98.6	95.9
63	24,937	5,021	3,446	70.4	98.7	63	24,937	13,401	11,111	99.4	97.6
67	25,221	4,988	3,451	70.0	98.8	67	25,221	13,489	11,390	100.0	100.0
71	25,529	4,891	3,420	68.6	98.0	71	25,529	13,337	11,314	98.9	99.3
75	25,897	4,724	3,352	66.3	96.0	75	25,897	13,104	11,160	97.1	98.0
79	26,260	4,816	3,225	67.6	92.4	79	26,260	13,027	11,094	96.6	97.4
83	26,531	4,900	3,213	68.7	92.0	83	26,531	13,117	11,150	97.2	97.9
87	26,818	4,796	3,100	67.3	88.8	87	26,818	13,042	11,051	96.7	97.0
91	27,084	4,917	3,097	69.0	88.7	91	27,084	12,937	11,013	95.9	96.7
95	27,360	4,973	3,068	69.8	87.9	95	27,360	12,828	10,879	95.1	95.5
99	27,642	4,931	2,993	69.2	85.7	99	27,642	12,620	10,589	93.6	93.0
102	27,849	5,030	2,949	70.6	84.4	102	27,849	12,513	10,401	92.8	91.3
Chinook salmon						Discharge (ft³/s)	Total area (ft²)	Summary of WUA (ft²/1,000 ft)		Percentage of maximum habitat	
10.9	20,178	9,322	6,657	69.1	58.4			EPT Invertebrates			
15	20,724	10,254	7,478	76.0	65.7	10.9	20,178	10,366		82.8	
19	21,146	11,042	8,353	81.9	73.3	15	20,724	11,185		89.3	
23	21,528	11,567	8,958	85.8	78.6	19	21,146	11,873		94.8	
27	21,880	11,916	9,361	88.3	82.2	23	21,528	12,292		98.2	
31	22,212	12,246	9,725	90.8	85.4	27	21,880	12,519		100.0	
35	22,513	12,493	10,089	92.6	88.6	31	22,212	12,517		100.0	
39	22,797	12,677	10,294	94.0	90.4	35	22,513	12,496		99.8	
43	23,093	12,858	10,521	95.3	92.4	39	22,797	12,375		98.8	
47	23,555	13,110	10,752	97.2	94.4	43	23,093	12,226		97.7	
51	23,999	13,243	10,887	98.2	95.6	47	23,555	11,378		90.9	
55	24,295	13,308	10,942	98.7	96.1	51	23,999	11,157		89.1	
59	24,624	13,301	10,924	98.6	95.9	55	24,295	10,880		86.9	
63	24,937	13,401	11,111	99.4	97.6	59	24,624	10,691		85.4	
67	25,221	13,489	11,390	100.0	100.0	63	24,937	10,187		81.4	
71	25,529	13,337	11,314	98.9	99.3	67	25,221	9,910		79.2	
75	25,897	13,104	11,160	97.1	98.0	71	25,529	9,528		76.1	
79	26,260	13,027	11,094	96.6	97.4	75	25,897	8,986		71.8	
83	26,531	13,117	11,150	97.2	97.9	79	26,260	8,598		68.7	
87	26,818	13,042	11,051	96.7	97.0	83	26,531	8,211		65.6	
91	27,084	12,937	11,013	95.9	96.7	87	26,818	7,863		62.8	
95	27,360	12,828	10,879	95.1	95.5	91	27,084	7,503		59.9	
99	27,642	12,620	10,589	93.6	93.0	95	27,360	6,937		55.4	
102	27,849	12,513	10,401	92.8	91.3	99	27,642	6,828		54.5	
						102	27,849	6,722		53.7	

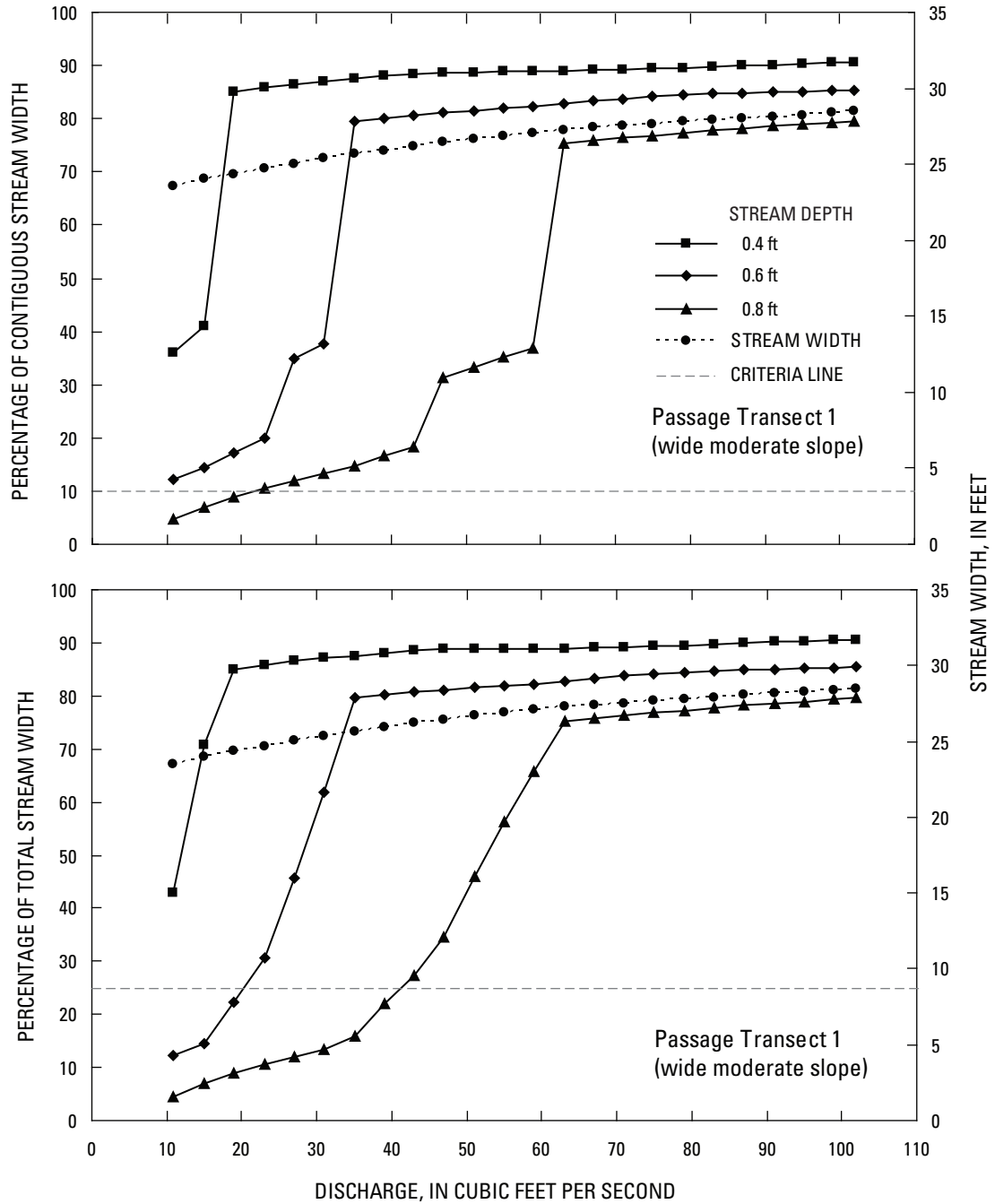


Figure D3. Percentages of contiguous and total stream width for passage transect 1, upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.

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Table D2. Passage criteria assessment for transect 1 (wide moderate slope), site CH3, upper middle Challis Creek, upper Salmon River Basin, Idaho, 2005.

[Site location shown in [figure 8](#). Abbreviations: ft, foot; ft³/s, cubic foot per second]

Discharge (ft³/s)	Stream width (ft)	Passage criteria assessment				Discharge (ft³/s)	Stream width (ft)	Passage criteria assessment			
		Total	Percentage	Contiguous	Percentage contiguous			Total	Percentage	Contiguous	Percentage contiguous
Stream widths greater than 0.4-ft depth						Stream widths greater than 0.8-ft depth					
10.9	23.5	10.1	42.9	8.5	36.0	10.9	23.5	1.1	4.6	1.1	4.6
15	24.0	17.0	70.7	9.8	41.0	15	24.0	1.7	7.0	1.7	7.0
19	24.4	20.7	85.0	20.7	85.0	19	24.4	2.2	8.9	2.2	8.9
23	24.7	21.2	85.9	21.2	85.9	23	24.7	2.6	10.6	2.6	10.6
27	25.0	21.7	86.5	21.7	86.5	27	25.0	3.0	12.0	3.0	12.0
31	25.4	22.1	87.1	22.1	87.1	31	25.4	3.4	13.3	3.4	13.3
35	25.6	22.5	87.6	22.5	87.6	35	25.6	4.1	16.0	3.8	14.7
39	25.9	22.8	88.1	22.8	88.1	39	25.9	5.7	22.0	4.3	16.5
43	26.2	23.2	88.5	23.2	88.5	43	26.2	7.2	27.3	4.8	18.2
47	26.4	23.5	88.7	23.5	88.7	47	26.4	9.1	34.5	8.3	31.3
51	26.7	23.7	88.8	23.7	88.8	51	26.7	12.2	45.9	8.9	33.3
55	26.9	23.9	88.8	23.9	88.8	55	26.9	15.1	56.2	9.5	35.2
59	27.1	24.1	88.8	24.1	88.8	59	27.1	17.8	65.6	10.0	36.9
63	27.3	24.2	89.0	24.2	89.0	63	27.3	20.5	75.3	20.5	75.3
67	27.4	24.4	89.1	24.4	89.1	67	27.4	20.8	75.8	20.8	75.8
71	27.5	24.6	89.2	24.6	89.2	71	27.5	21.0	76.3	21.0	76.3
75	27.7	24.7	89.4	24.7	89.4	75	27.7	21.2	76.8	21.2	76.8
79	27.8	24.9	89.6	24.9	89.6	79	27.8	21.5	77.3	21.5	77.3
83	27.9	25.1	89.8	25.1	89.8	83	27.9	21.7	77.7	21.7	77.7
87	28.0	25.2	90.0	25.2	90.0	87	28.0	21.9	78.1	21.9	78.1
91	28.2	25.4	90.2	25.4	90.2	91	28.2	22.1	78.6	22.1	78.6
95	28.3	25.5	90.3	25.5	90.3	95	28.3	22.3	78.9	22.3	78.9
99	28.4	25.7	90.5	25.7	90.5	99	28.4	22.5	79.3	22.5	79.3
102	28.5	25.8	90.7	25.8	90.7	102	28.5	22.7	79.6	22.7	79.6
Stream widths greater than 0.6-ft depth											
10.9	23.5	2.9	12.2	2.9	12.2						
15	24.0	3.5	14.5	3.5	14.5						
19	24.4	5.4	22.2	4.2	17.2						
23	24.7	7.6	30.7	4.9	19.8						
27	25.0	11.4	45.6	8.7	34.8						
31	25.4	15.7	61.9	9.6	37.8						
35	25.6	20.4	79.6	20.4	79.6						
39	25.9	20.8	80.2	20.8	80.2						
43	26.2	21.1	80.6	21.1	80.6						
47	26.4	21.4	81.1	21.4	81.1						
51	26.7	21.7	81.5	21.7	81.5						
55	26.9	22.0	81.9	22.0	81.9						
59	27.1	22.3	82.3	22.3	82.3						
63	27.3	22.6	82.8	22.6	82.8						
67	27.4	22.8	83.3	22.8	83.3						
71	27.5	23.1	83.8	23.1	83.8						
75	27.7	23.3	84.2	23.3	84.2						
79	27.8	23.5	84.5	23.5	84.5						
83	27.9	23.6	84.7	23.6	84.7						
87	28.0	23.8	84.8	23.8	84.8						
91	28.2	23.9	85.0	23.9	85.0						
95	28.3	24.1	85.2	24.1	85.2						
99	28.4	24.2	85.3	24.2	85.3						
102	28.5	24.3	85.4	24.3	85.4						

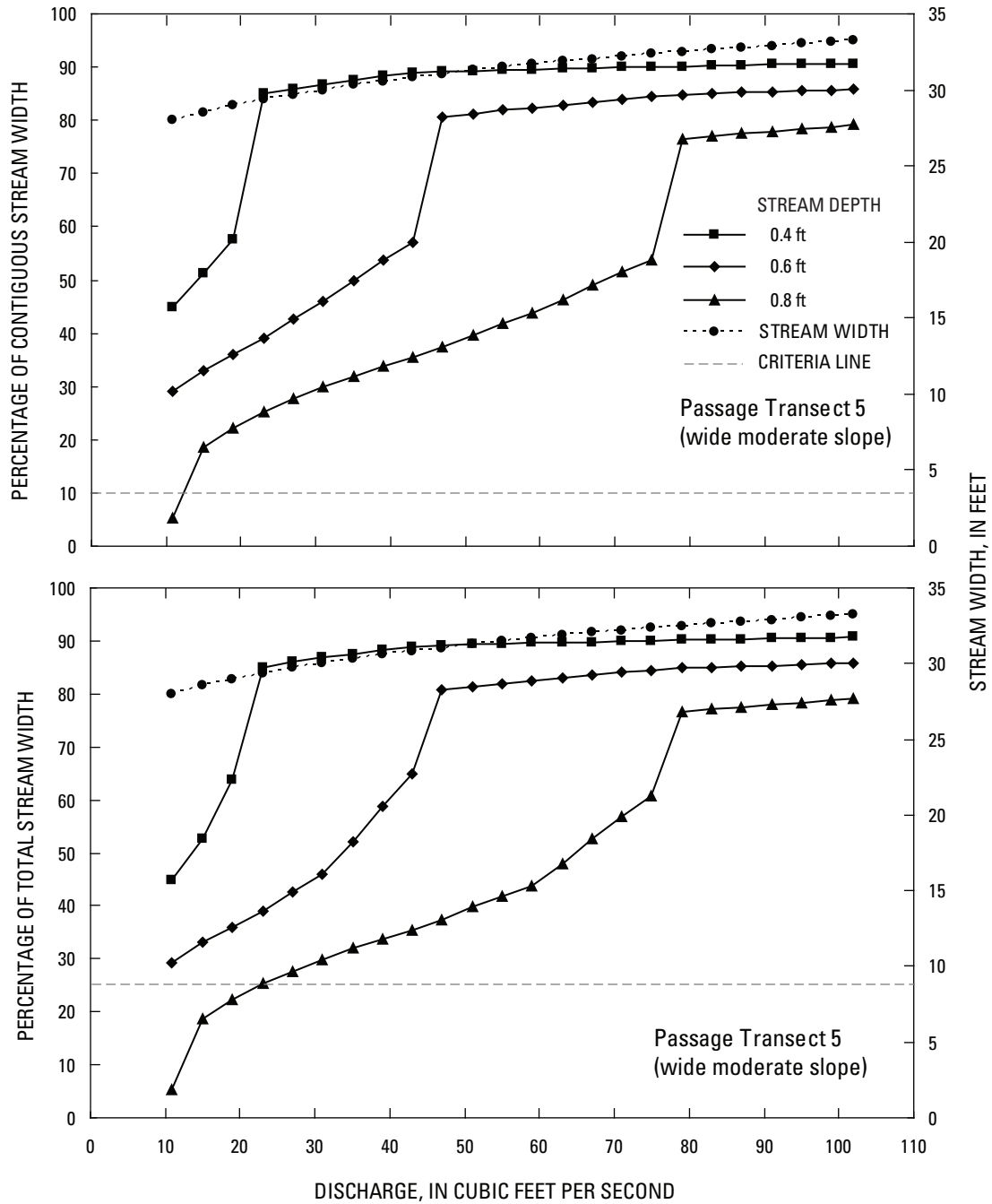


Figure D4. Percentages of contiguous and total stream width for passage transect 5, upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.

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Table D3. Passage criteria assessment for transect 5 (wide moderate slope), site CH3, upper middle Challis Creek, upper Salmon River Basin, Idaho, 2005.

[Site location shown in [figure 8](#). Abbreviations: ft, foot; ft³/s, cubic foot per second]

Discharge (ft ³ /s)	Stream width (ft)	Passage criteria assessment				Discharge (ft ³ /s)	Stream width (ft)	Passage criteria assessment			
		Total	Percentage	Contiguous	Percentage contiguous			Total	Percentage	Contiguous	Percentage contiguous
Stream widths greater than 0.4-ft depth						Stream widths greater than 0.8-ft depth					
10.9	28.0	12.6	44.9	12.6	44.9	10.9	28.0	1.5	5.4	1.5	5.4
15	28.5	15.0	52.5	14.6	51.1	15	28.5	5.3	18.6	5.3	18.6
19	29.0	18.5	63.7	16.7	57.5	19	29.0	6.4	22.2	6.4	22.2
23	29.4	25.0	85.1	25.0	85.1	23	29.4	7.4	25.2	7.4	25.2
27	29.7	25.5	86.0	25.5	86.0	27	29.7	8.2	27.7	8.2	27.7
31	30.0	26.1	86.8	26.1	86.8	31	30.0	9.0	29.9	9.0	29.9
35	30.3	26.5	87.6	26.5	87.6	35	30.3	9.7	31.9	9.7	31.9
39	30.6	27.0	88.3	27.0	88.3	39	30.6	10.3	33.7	10.3	33.7
43	30.8	27.4	88.9	27.4	88.9	43	30.8	10.9	35.3	10.9	35.3
47	31.0	27.7	89.2	27.7	89.2	47	31.0	11.6	37.4	11.6	37.4
51	31.3	27.9	89.3	27.9	89.3	51	31.3	12.4	39.7	12.4	39.7
55	31.5	28.2	89.5	28.2	89.5	55	31.5	13.2	41.8	13.2	41.8
59	31.7	28.4	89.6	28.4	89.6	59	31.7	13.9	43.8	13.9	43.8
63	31.9	28.6	89.7	28.6	89.7	63	31.9	15.3	48.0	14.8	46.4
67	32.0	28.8	89.8	28.8	89.8	67	32.0	16.9	52.6	15.7	49.0
71	32.2	29.0	89.9	29.0	89.9	71	32.2	18.3	56.9	16.6	51.5
75	32.3	29.1	90.1	29.1	90.1	75	32.3	19.7	60.9	17.4	53.8
79	32.5	29.3	90.2	29.3	90.2	79	32.5	24.9	76.5	24.9	76.5
83	32.6	29.5	90.3	29.5	90.3	83	32.6	25.1	77.0	25.1	77.0
87	32.8	29.6	90.4	29.6	90.4	87	32.8	25.4	77.5	25.4	77.5
91	32.9	29.8	90.5	29.8	90.5	91	32.9	25.7	78.0	25.7	78.0
95	33.0	29.9	90.6	29.9	90.6	95	33.0	25.9	78.4	25.9	78.4
99	33.2	30.0	90.6	30.0	90.6	99	33.2	26.1	78.8	26.1	78.8
102	33.2	30.2	90.7	30.2	90.7	102	33.2	26.3	79.1	26.3	79.1
Stream widths greater than 0.6-ft depth											
10.9	28.0	8.2	29.1	8.2	29.1						
15	28.5	9.4	33.1	9.4	33.1						
19	29.0	10.4	36.1	10.4	36.1						
23	29.4	11.5	39.1	11.5	39.1						
27	29.7	12.7	42.6	12.7	42.6						
31	30.0	13.8	45.9	13.8	45.9						
35	30.3	15.8	52.2	15.1	49.8						
39	30.6	18.0	58.9	16.4	53.6						
43	30.8	20.0	64.9	17.6	57.0						
47	31.0	25.0	80.7	25.0	80.7						
51	31.3	25.4	81.3	25.4	81.3						
55	31.5	25.8	81.9	25.8	81.9						
59	31.7	26.1	82.4	26.1	82.4						
63	31.9	26.4	83.0	26.4	83.0						
67	32.0	26.7	83.5	26.7	83.5						
71	32.2	27.0	84.0	27.0	84.0						
75	32.3	27.3	84.5	27.3	84.5						
79	32.5	27.6	84.9	27.6	84.9						
83	32.6	27.8	85.1	27.8	85.1						
87	32.8	27.9	85.2	27.9	85.2						
91	32.9	28.1	85.4	28.1	85.4						
95	33.0	28.2	85.5	28.2	85.5						
99	33.2	28.4	85.7	28.4	85.7						
102	33.2	28.5	85.7	28.5	85.7						

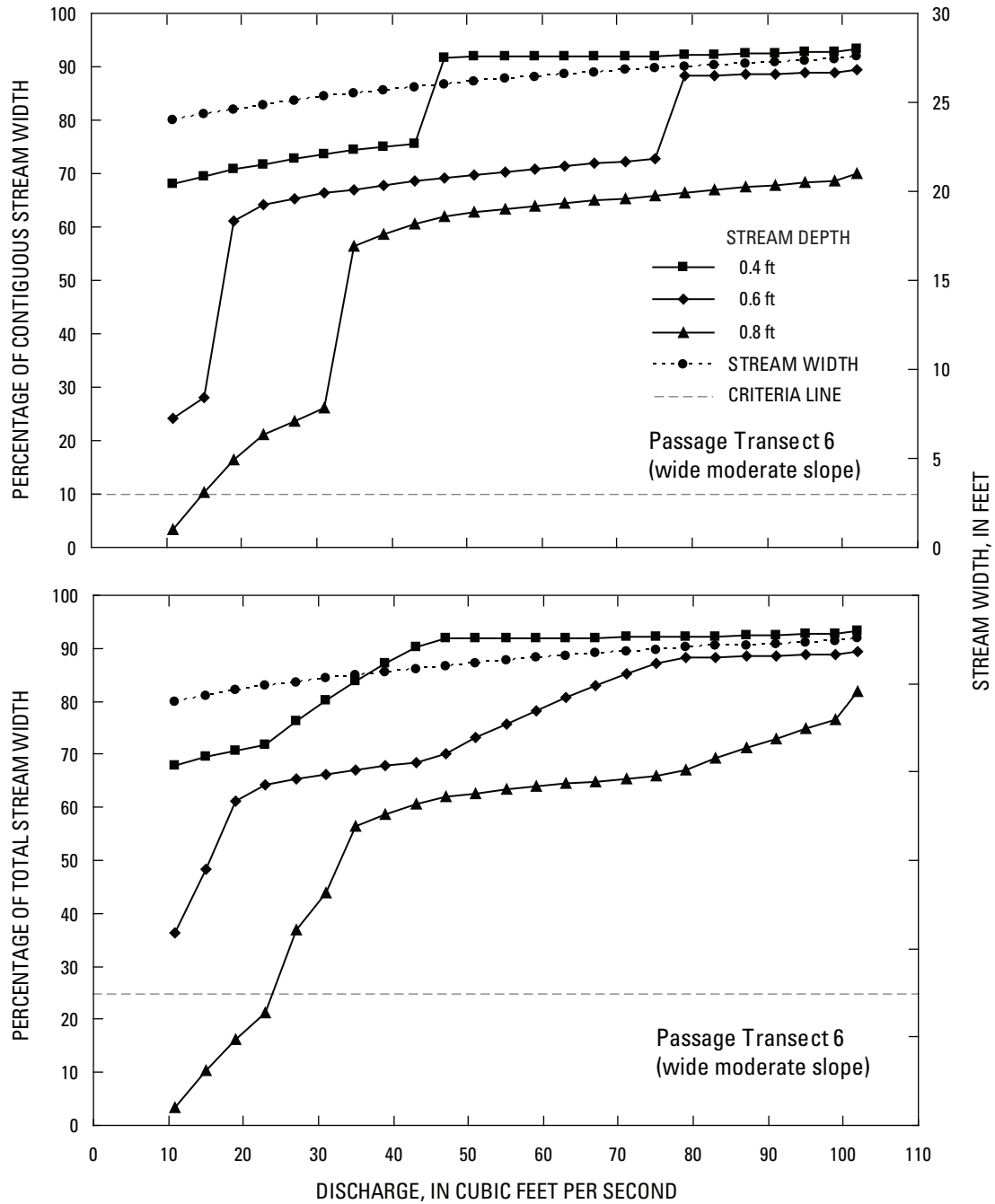


Figure D5. Percentages of contiguous and total stream width for passage transect 6, upper middle Challis Creek (CH3), upper Salmon River Basin, Idaho, 2005.

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Table D4. Passage criteria assessment for transect 6 (wide moderate slope), site CH3, upper middle Challis Creek, upper Salmon River Basin, Idaho, 2005.

[Site location shown in [figure 8](#). Abbreviations: ft, foot; ft³/s, cubic foot per second]

Discharge (ft ³ /s)	Stream width (ft)	Passage criteria assessment				Discharge (ft ³ /s)	Stream width (ft)	Passage criteria assessment			
		Total	Percentage	Contiguous	Percentage contiguous			Total	Percentage	Contiguous	Percentage contiguous
Stream widths greater than 0.4-ft depth						Stream widths greater than 0.8-ft depth					
10.9	24.0	16.3	67.9	16.3	67.9	10.9	24.0	0.8	3.3	0.8	3.3
15	24.3	16.9	69.5	16.9	69.5	15	24.3	2.5	10.4	2.5	10.4
19	24.6	17.4	70.7	17.4	70.7	19	24.6	4.0	16.3	4.0	16.3
23	24.9	17.8	71.8	17.8	71.8	23	24.9	5.3	21.2	5.3	21.2
27	25.1	19.1	76.1	18.2	72.7	27	25.1	9.2	36.8	6.0	23.7
31	25.3	20.3	80.3	18.6	73.6	31	25.3	11.1	43.9	6.6	26.0
35	25.5	21.4	83.9	19.0	74.3	35	25.5	14.4	56.4	14.4	56.4
39	25.7	22.4	87.2	19.3	75.0	39	25.7	15.1	58.6	15.1	58.6
43	25.8	23.3	90.2	19.6	75.6	43	25.8	15.7	60.7	15.7	60.7
47	26.0	23.9	91.8	23.9	91.8	47	26.0	16.1	62.0	16.1	62.0
51	26.2	24.0	91.8	24.0	91.8	51	26.2	16.4	62.7	16.4	62.7
55	26.3	24.2	91.9	24.2	91.9	55	26.3	16.6	63.3	16.6	63.3
59	26.4	24.3	91.9	24.3	91.9	59	26.4	16.9	63.8	16.9	63.8
63	26.6	24.4	92.0	24.4	92.0	63	26.6	17.1	64.4	17.1	64.4
67	26.7	24.6	92.0	24.6	92.0	67	26.7	17.3	64.9	17.3	64.9
71	26.8	24.7	92.0	24.7	92.0	71	26.8	17.5	65.4	17.5	65.4
75	26.9	24.8	92.1	24.8	92.1	75	26.9	17.7	65.9	17.7	65.9
79	27.0	24.9	92.2	24.9	92.2	79	27.0	18.1	67.0	17.9	66.3
83	27.1	25.0	92.3	25.0	92.3	83	27.1	18.7	69.1	18.1	66.9
87	27.2	25.1	92.5	25.1	92.5	87	27.2	19.3	71.1	18.3	67.4
91	27.3	25.2	92.6	25.2	92.6	91	27.3	19.9	73.0	18.5	67.8
95	27.3	25.3	92.7	25.3	92.7	95	27.3	20.4	74.8	18.7	68.3
99	27.4	25.4	92.8	25.4	92.8	99	27.4	21.0	76.6	18.8	68.7
102	27.6	25.7	93.2	25.7	93.2	102	27.6	22.6	82.0	19.3	70.1
Stream widths greater than 0.6-ft depth											
10.9	24.0	8.7	36.2	5.8	24.1						
15	24.3	11.8	48.4	6.8	28.0						
19	24.6	15.0	61.1	15.0	61.1						
23	24.9	16.0	64.3	16.0	64.3						
27	25.1	16.4	65.3	16.4	65.3						
31	25.3	16.8	66.3	16.8	66.3						
35	25.5	17.1	67.1	17.1	67.1						
39	25.7	17.4	67.8	17.4	67.8						
43	25.8	17.7	68.5	17.7	68.5						
47	26.0	18.3	70.2	18.0	69.1						
51	26.2	19.1	73.1	18.2	69.7						
55	26.3	19.9	75.8	18.5	70.3						
59	26.4	20.7	78.2	18.7	70.8						
63	26.6	21.4	80.6	19.0	71.3						
67	26.7	22.1	82.9	19.2	71.8						
71	26.8	22.8	85.1	19.4	72.3						
75	26.9	23.4	87.0	19.6	72.7						
79	27.0	23.8	88.2	23.8	88.2						
83	27.1	24.0	88.4	24.0	88.4						
87	27.2	24.1	88.5	24.1	88.5						
91	27.3	24.2	88.7	24.2	88.7						
95	27.3	24.3	88.8	24.3	88.8						
99	27.4	24.4	89.0	24.4	89.0						
102	27.6	24.7	89.4	24.7	89.4						