

APPENDIX B4: WHITEMAN CREEK

Habitat Mapping

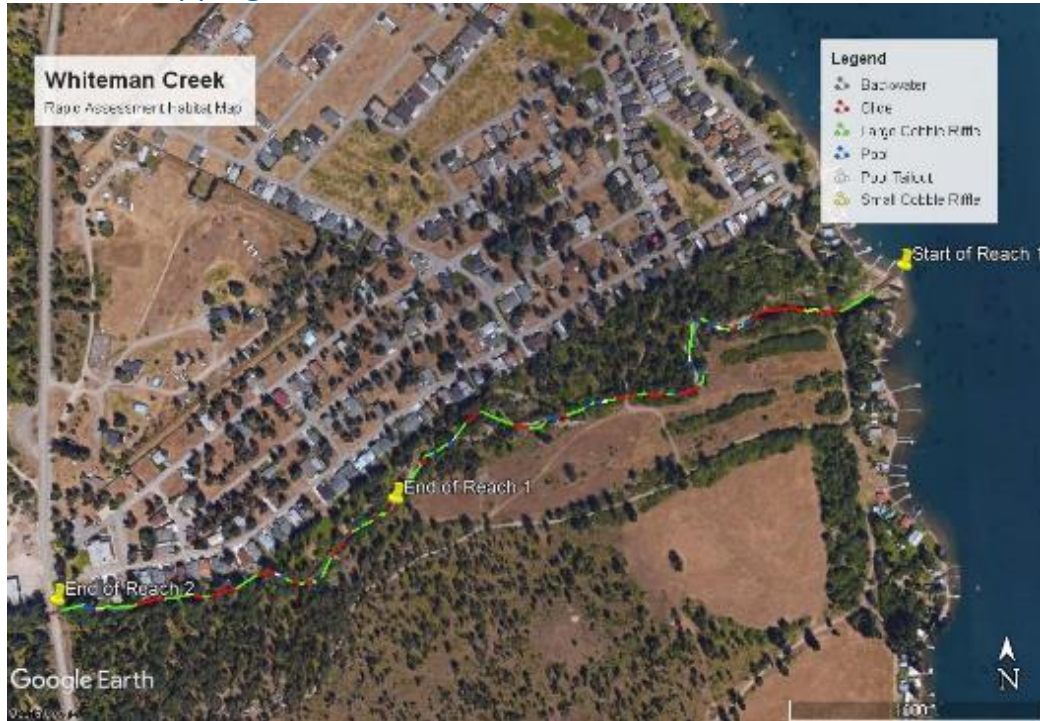


Figure B4-1: Map of habitat types recorded along Whiteman Creek near the outlet to Okanagan Lake in fall of 2016

Table B4-1: Habitat types recorded along Whiteman Creek in fall 2016

	Total Length (m)	% of Total Reach Length
Reach 1	791.1	
Backwater	39.1	5
Glide	242.4	31
Large cobble riffle	364.4	46
Pool	96.4	12
Pool tailout	29.7	4
Small cobble riffle	19.1	2
Reach 2	462.5	
Glide	183.6	40
Large cobble riffle	219.9	48
Pool	43.1	9
Pool tailout	6.8	2
Small cobble riffle	9.1	2

EFN Transect Locations



Figure B4-2: Location of EFN transects and hydrometric station along Whiteman Creek

Transect Descriptions

Whiteman Riffle 1

Install Date	August 12, 2016		
Lat./Long.	50.233513	-119.442320	
Width (install)	6.1 m	Depth (install)	0.28 m
Avg. reach width range	5.14 - 6.46 m	Avg. reach depth range	0.24 - 0.32 m
Selection comment	Large cobble riffle. Typical of reach.		



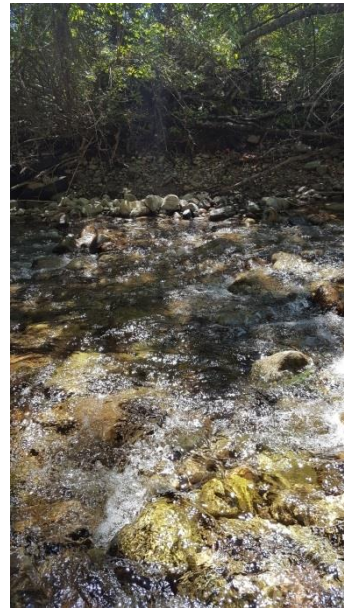
Looking upstream



Looking downstream



Looking right bank to left bank



Looking left bank to right bank

Whiteman Glide 1

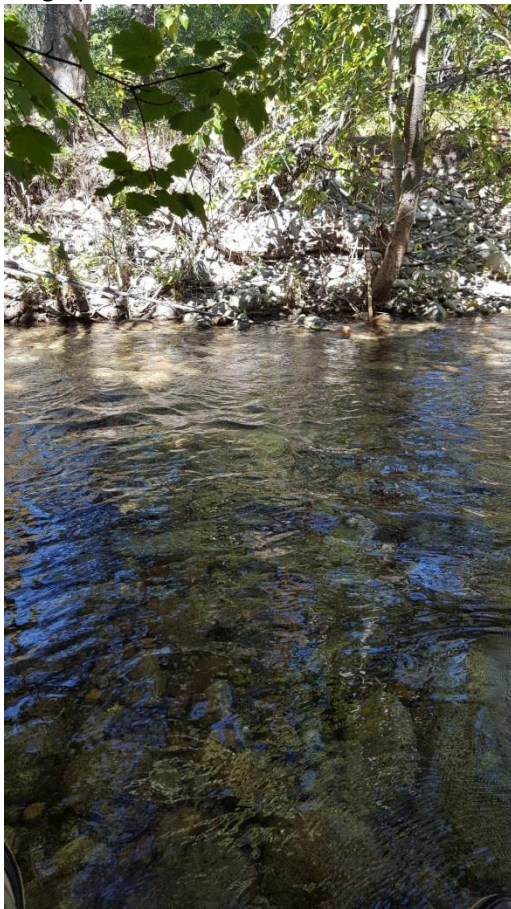
Install Date	August 12, 2016		
Lat./Long.	50.233536, -119.442479		
Width (install)	5.30 m	Depth (install)	0.36 m
Avg. width range	5.23 - 6.28 m	Avg. depth range	0.34 - 0.40 m
Comment	Typical of reach. Juvenile Rainbow observed during install.		



Looking upstream



Looking downstream



Looking right bank to left bank



Looking left bank to right bank

Whiteman Riffle 2

Install Date	August 12, 2016		
Lat./Long.	50.231323, -119.451384		
Width (install)	4.40 m	Depth (install)	0.30 m
Avg. width range	5.14 - 6.46 m	Avg. depth range	0.24 - 0.32 m
Comment	Large cobble riffle. Typical of reach.		



Looking upstream



Looking downstream



Looking right bank to left bank



Looking left bank to right bank

Whiteman Glide 2

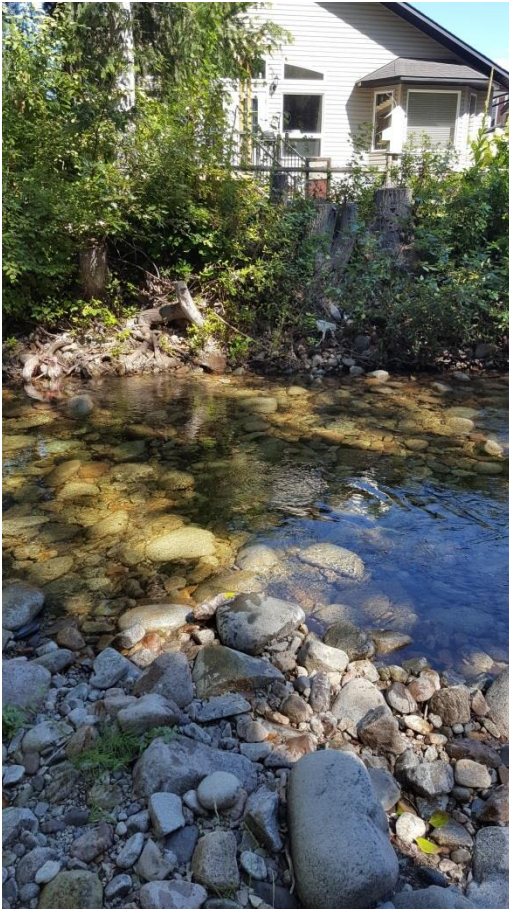
Install Date	August 12, 2016		
Latitude	50.231325, -119.451653		
Width (install)	5.70 m	Depth (install)	0.39 m
Avg. width range	5.23 - 6.28 m	Avg. depth range	0.34 - 0.40 m
Comment	Typical of reach. Juvenile Rainbow observed during install.		



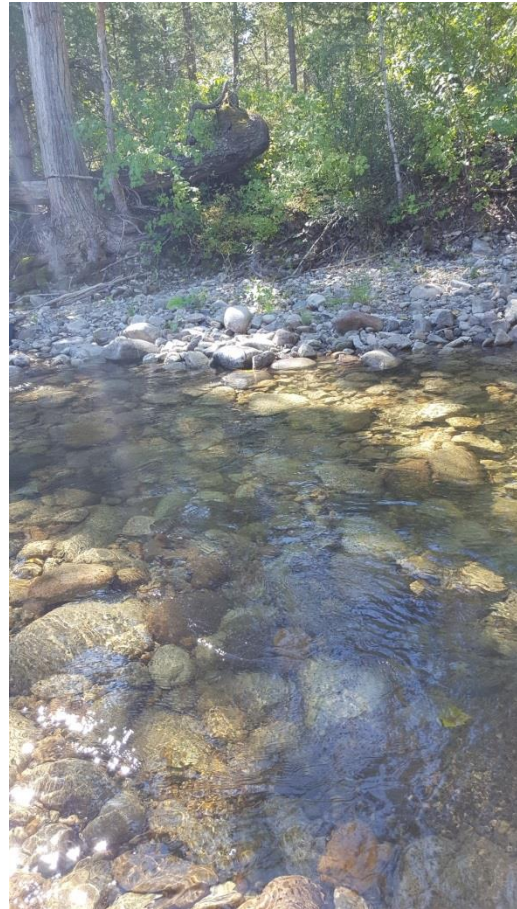
Looking upstream



Looking downstream



Looking right bank to left bank



Looking left bank to right bank

Whiteman Hydrometric Station

Install Date Aug 30, 2016

Lat./Long. 50.233564, -119.443078

Comment On large cottonwood upstream of Glide 1.



Discharge Records



Figure B4-3: Mean daily discharge measured at Whiteman Creek hydrometric station from 2017 to 2018

Historical WSC Discharge - Whiteman Creek

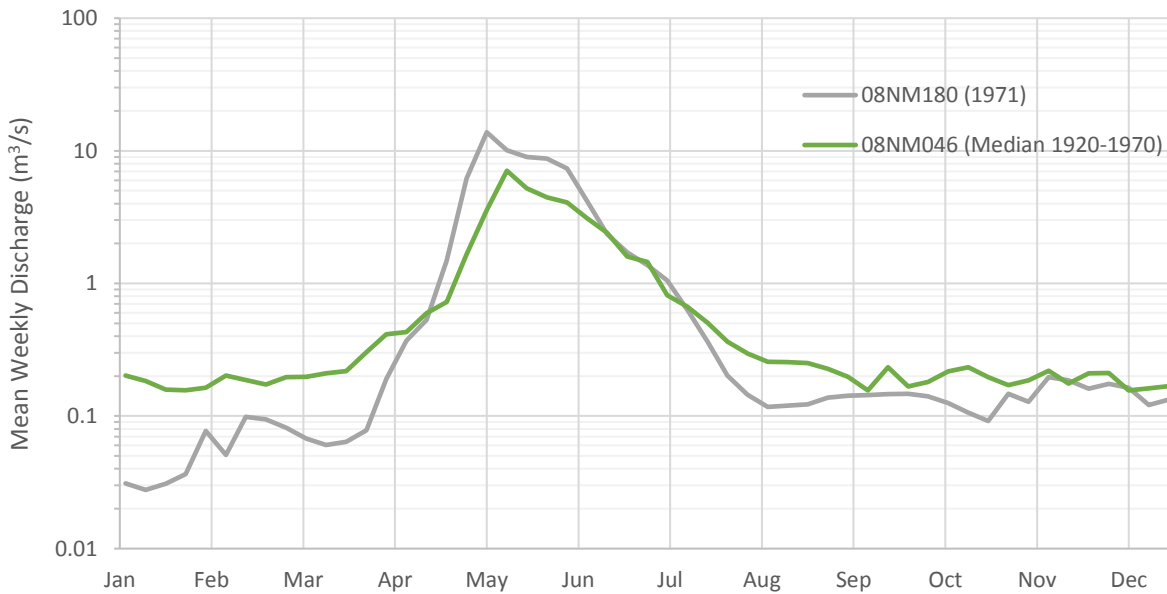


Figure B4-4: Mean weekly historic discharge recorded at WSC stations 08NM046 (Whiteman Creek near Vernon) and 08NM180 (Whiteman Creek at the mouth)

Water Temperature Records

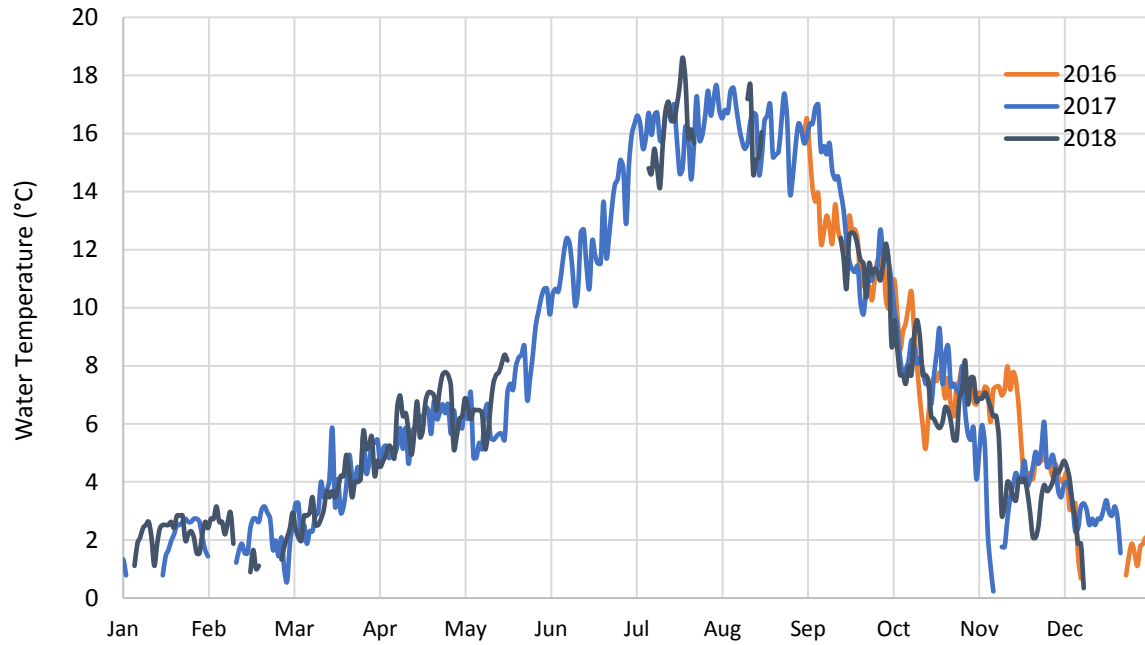


Figure B4-5: Daily maximum water temperatures recorded at the ONA Whiteman Hydrometric Station from 2016 to 2018

Flow standards and periodicity – Okanagan Tennant analysis for Whiteman Creek

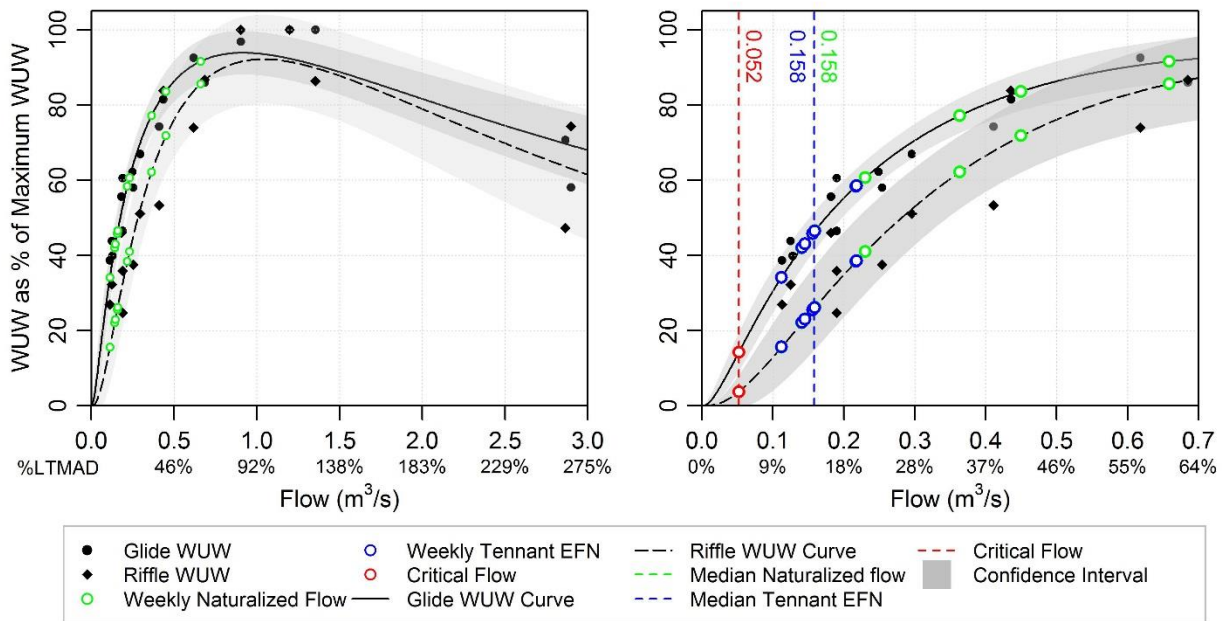
Week Ending	Life Stage/ Week	Rainbow						Kokanee				Ecological Flows	
		Adult migration	Spawning	Incubation	Rearing	Juvenile migration	Over-wintering	Adult migration	Spawning	Incubation	Juvenile migration	Wetland, side channel linkage, flushing and channel maintenance flow	Cottonwood ecosystems
Jan							20%			20%			
Feb							20%			20%			
Mar							20%			20%			
1-Apr	13				20%						50%	<input checked="" type="checkbox"/>	
8-Apr	14				20%						50%	<input checked="" type="checkbox"/>	
15-Apr	15	143%			20%						50%	<input checked="" type="checkbox"/>	
22-Apr	16	143%			20%						50%	<input checked="" type="checkbox"/>	
29-Apr	17	143%			20%						50%	<input checked="" type="checkbox"/>	
6-May	18	143%			20%	50%					50%	<input checked="" type="checkbox"/>	
13-May	19	143%			20%	50%					50%	<input checked="" type="checkbox"/>	
20-May	20	143%	40%		20%	50%					50%	710%	
27-May	21	143%	40%	20%	20%	50%					50%	710%	
3-Jun	22	143%	40%	20%	20%	50%						<input checked="" type="checkbox"/>	100%
10-Jun	23	143%	40%	20%	20%	50%						<input checked="" type="checkbox"/>	100%
17-Jun	24	143%	40%	20%	20%	50%						<input checked="" type="checkbox"/>	100%
24-Jun	25	143%	40%	20%	20%	50%							100%
1-Jul	26	143%	40%	20%	20%	50%							100%
8-Jul	27	143%	40%	20%	20%	50%							100%
15-Jul	28			20%	20%	50%							100%
22-Jul	29			20%	20%								100%
29-Jul	30			20%	20%								100%
5-Aug	31				20%								
12-Aug	32				20%								
19-Aug	33				20%								
26-Aug	34				20%			20%					
2-Sep	35				20%			20%					
9-Sep	36				20%			20%	20%	20%			
16-Sep	37				20%			20%	20%	20%			
23-Sep	38				20%			20%	20%	20%			
30-Sep	39				20%			20%	20%	20%			
7-Oct	40				20%			20%	20%	20%			
14-Oct	41				20%					20%			
21-Oct	42				20%					20%			
28-Oct	43				20%					20%			
Nov							20%			20%			
Dec							20%			20%			

EFNs and Critical Flows for Whiteman Creek

Week Ending	Okanagan Tennant EFN					WUW EFN (m ³ /s)					FINAL EFN		CRITICAL FLOW (m ³ /s)			
	EFN - all factors (%LTMAD)	EFN based on flow standards (m ³ /s)	Nat. median weekly Q (m ³ /s)	Discharge m ³ /s	%LTMAD	Rainbow rearing	Insect production	Kokanee spawning	Rainbow spawning	FINAL	Value (m ³ /s)	Dominant Species / Life Stage	Rainbow rearing & over wintering	Kokanee spawning	Rainbow spawning	FINAL
Jan	20%	0.218	0.138	0.138	13%						0.138	overwintering egg Incubation	0.052			0.052
Feb	20%	0.218	0.137	0.137	13%						0.137	overwintering egg Incubation	0.052			0.052
Mar	20%	0.218	0.179	0.179	16%						0.179	overwintering egg Incubation	0.052			0.052
1-Apr	50%	0.546	0.572	0.546	50%	0.158	0.158			0.158	0.546	RB juv. migration	0.052			0.052
8-Apr	50%	0.546	0.669	0.546	50%	0.158	0.158			0.158	0.546	RB juv. migration	0.052			0.052
15-Apr	143%	1.562	0.935	0.935	86%	0.158	0.158			0.158	0.935	RB adult migration	0.052		0.361	0.361
22-Apr	143%	1.562	1.639	1.562	143%	0.158	0.158			0.158	1.562	RB adult migration	0.052		0.361	0.361
29-Apr	143%	1.562	3.529	1.562	143%	0.158	0.158			0.158	1.562	RB adult migration	0.052		0.361	0.361
6-May	143%	1.562	4.147	1.562	143%	0.158	0.158			0.158	1.562	RB adult migration	0.052		0.361	0.361
13-May	143%	1.562	4.502	1.562	143%	0.158	0.158			0.158	1.562	RB adult migration	0.052		0.361	0.361
20-May	710%	7.757	5.699	5.699	522%	0.158	0.158			1.100	5.699	Ecosystem flows	0.052		0.361	0.361
27-May	710%	7.757	5.325	5.325	487%	0.158	0.158			1.100	5.325	Ecosystem flows	0.052		0.361	0.361
3-Jun	143%	1.562	3.535	1.562	143%	0.158	0.158			1.100	1.100	RB Spawning,	0.052		0.361	0.361
10-Jun	143%	1.562	3.332	1.562	143%	0.158	0.158			1.100	1.100	RB Spawning	0.052		0.361	0.361
17-Jun	143%	1.562	2.535	1.562	143%	0.158	0.158			1.100	1.100	RB Spawning	0.052		0.361	0.361
24-Jun	143%	1.562	1.701	1.562	143%	0.158	0.158			1.100	1.100	RB Spawning	0.052		0.361	0.361
1-Jul	143%	1.562	1.382	1.382	127%	0.158	0.158			1.100	1.100	RB Spawning	0.052		0.361	0.361
8-Jul	143%	1.562	0.961	0.961	88%	0.158	0.158			1.100	0.961	RB Spawning	0.052		0.361	0.361
15-Jul	100%	1.092	0.659	0.659	60%	0.158	0.158			0.158	0.659	RB incubation	0.052			0.052
22-Jul	100%	1.092	0.450	0.450	41%	0.158	0.158			0.158	0.450	RB incubation	0.052			0.052
29-Jul	100%	1.092	0.363	0.363	33%	0.158	0.158			0.158	0.363	RB incubation	0.052			0.052
5-Aug	20%	0.218	0.217	0.217	20%	0.158	0.158			0.158	0.217	RB parr rearing	0.052			0.052
12-Aug	20%	0.218	0.230	0.218	20%	0.158	0.158			0.158	0.230	RB parr rearing	0.052			0.052
19-Aug	20%	0.218	0.157	0.157	14%	0.158	0.158			0.158	0.157	RB parr rearing	0.052			0.052
26-Aug	20%	0.218	0.156	0.156	14%	0.158	0.158			0.158	0.156	RB parr rearing	0.052			0.052
2-Sep	20%	0.218	0.159	0.159	15%	0.158	0.158			0.158	0.159	RB parr rearing	0.052			0.052
9-Sep	20%	0.218	0.112	0.112	10%	0.158	0.158	0.141		0.158	0.112	KO Spawning	0.052	0.109		0.109
16-Sep	20%	0.218	0.141	0.141	13%	0.158	0.158	0.141		0.158	0.141	KO Spawning	0.052	0.109		0.109
23-Sep	20%	0.218	0.141	0.141	13%	0.158	0.158	0.141		0.158	0.141	KO Spawning	0.052	0.109		0.109
30-Sep	20%	0.218	0.145	0.145	13%	0.158	0.158	0.141		0.158	0.145	KO Spawning	0.052	0.109		0.109
7-Oct	20%	0.218	0.146	0.146	13%	0.158	0.158	0.141		0.158	0.146	KO Spawning	0.052	0.109		0.109
14-Oct	20%	0.218	0.140	0.140	13%	0.158	0.158			0.158	0.140	RB parr rearing	0.052			0.052
21-Oct	20%	0.218	0.196	0.196	18%	0.158	0.158			0.158	0.196	RB parr rearing	0.052			0.052
28-Oct	20%	0.218	0.168	0.168	15%	0.158	0.158			0.158	0.168	RB parr rearing	0.052			0.052
Nov	20%	0.218	0.177	0.177	16%						0.177	overwintering egg Incubation	0.052			0.052
Dec	20%	0.218	0.122	0.122	11%						0.122	overwintering egg Incubation	0.052			0.052

Weighted Usable Width

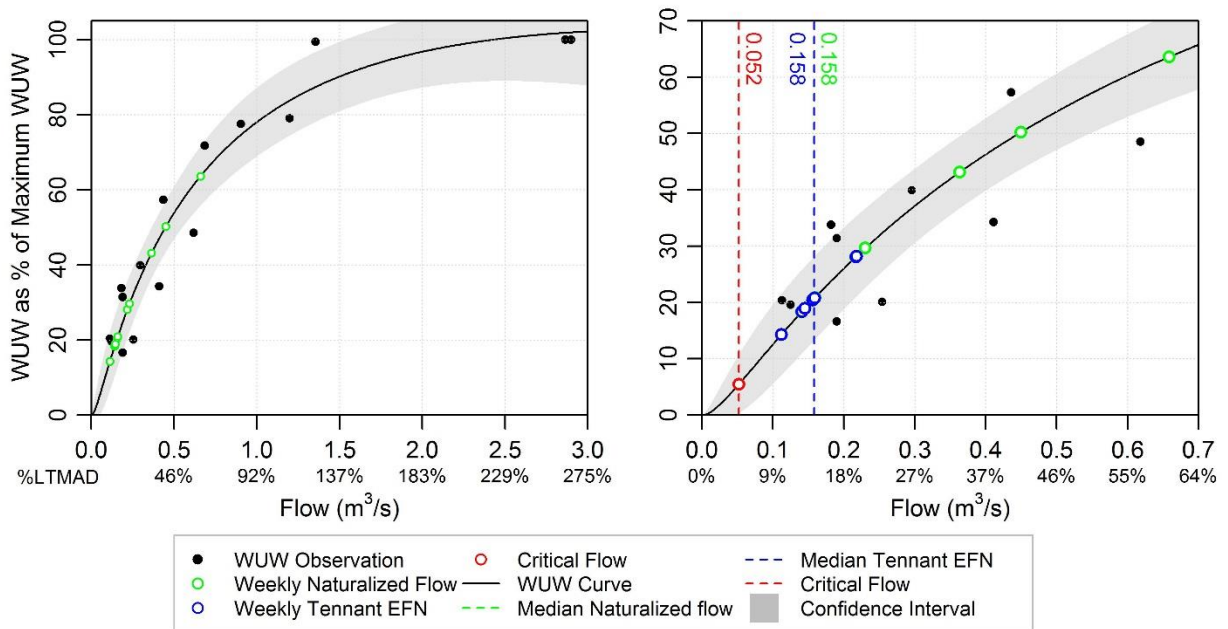
Whiteman Creek Rainbow Parr Rearing WUW



Median values from mid-July to end of September (week 28-39)

Figure B4-6: WUW curves for Rainbow parr rearing in Whiteman Creek for all flows (left) and low flows (right)

Whiteman Creek Insect Production WUW



Median values from mid-July to end of September (week 28-39)

Figure B4-7: WUW curves for insect production in Whiteman Creek for all flows (left) and low flows (right)

Whiteman Creek Rainbow Spawning WUW

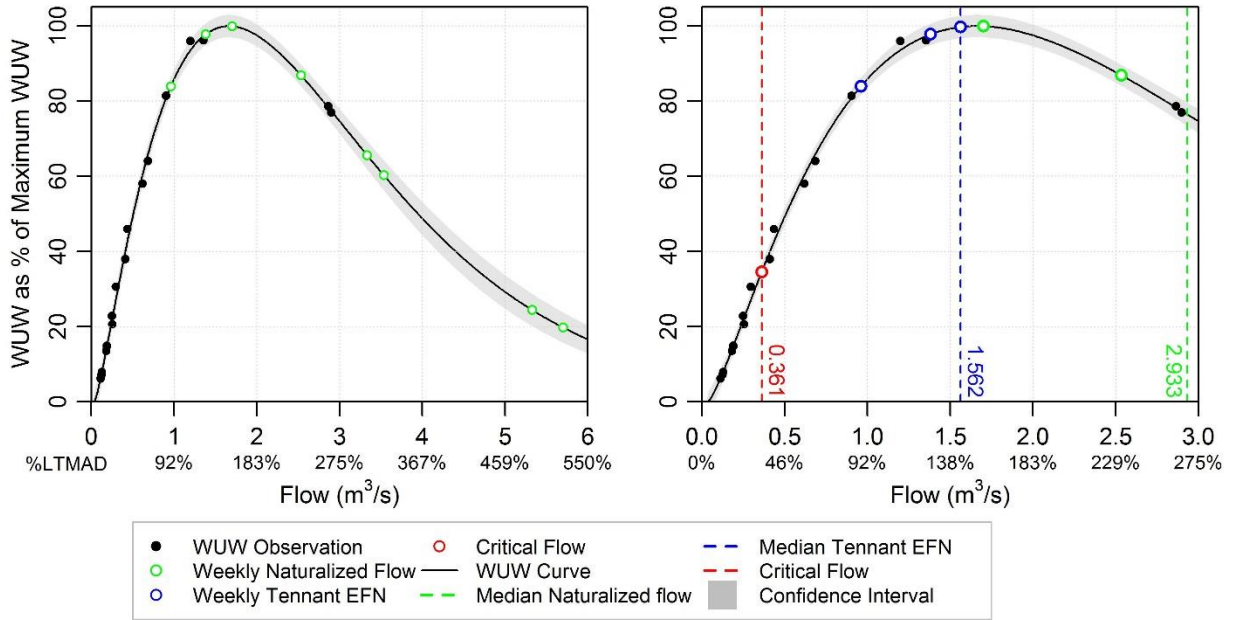


Figure B4-8: WUW curves for Rainbow spawning in Whiteman Creek for all flows (left) and low flows (right)

Whiteman Creek Kokanee Spawning WUW

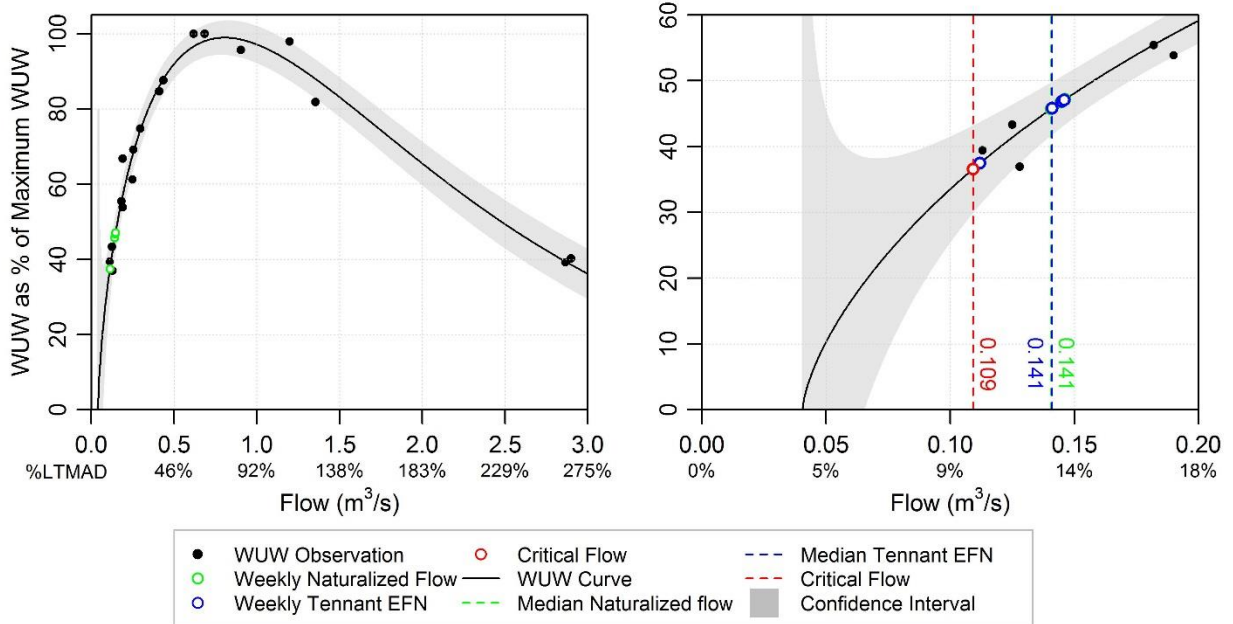


Figure B4-9: WUW curves for Kokanee spawning in Whiteman Creek for all flows (left) and low flows (right)

Critical Flows

Table B4-2: Critical flow analysis for Whiteman Creek

Species / Life stage	Critical Flow Criteria	Riffle 1		Riffle 2		Average	
		(m ³ /s)	% LTMAD	(m ³ /s)	% LTMAD	(m ³ /s)	% LTMAD
	Naturalized LTMAD	1.09	100%	1.09	100%		
	Wetted Width at 100% LTMAD (m)	7.08		6.45			
Insect production, Rainbow rearing & overwintering	60% of width at 100% LTMAD	0.057	5%	0.047	4%	0.052	5%
Rainbow Spawning	25% of width at 100% LTMAD is ≥0.18m deep	0.293	27%	0.430	39%	0.361	33%
Kokanee spawning	25% of width at 100% LTMAD is ≥0.12m deep	0.129	12%	0.230	21%	0.180	16%

Table B4-3: Final critical flows for Whiteman Creek

Species/Life stage	Final Critical Flow (m ³ /s)	% LTMAD	Criteria Used
Rainbow rearing & insect production	0.052	5%	5% LTMAD
Rainbow spawning	0.361	33%	0.18m depth criterion
Kokanee spawning	0.109	10%	10% LTMAD
Rainbow overwintering	0.052	5%	5% LTMAD

Table B4-4: 30 day naturalized low flows for Summer and Winter (Associated 2019)

	(m ³ /s)	% LTMAD
Summer (July 1 to September 30) Minimum		
Summer 1:2-year return period 30 Day Naturalized Low	0.108	10%
Summer 1:5-year return period 30 Day Naturalized Low	0.057	5%
Summer 1:10-year return period 30 Day Naturalized Low	0.042	4%
Summer 1:20-year return period 30 Day Naturalized Low	0.033	3%
Winter (November 1 to March 31) Minimum		
Winter 1:2-year return period 30 Day Naturalized Low	0.098	9%
Winter 1:5-year return period 30 Day Naturalized Low	0.060	5%
Winter 1:10-year return period 30 Day Naturalized Low	0.046	4%
Winter 1:20-year return period 30 Day Naturalized Low	0.037	3%

Percentile Flows for Whiteman Creek

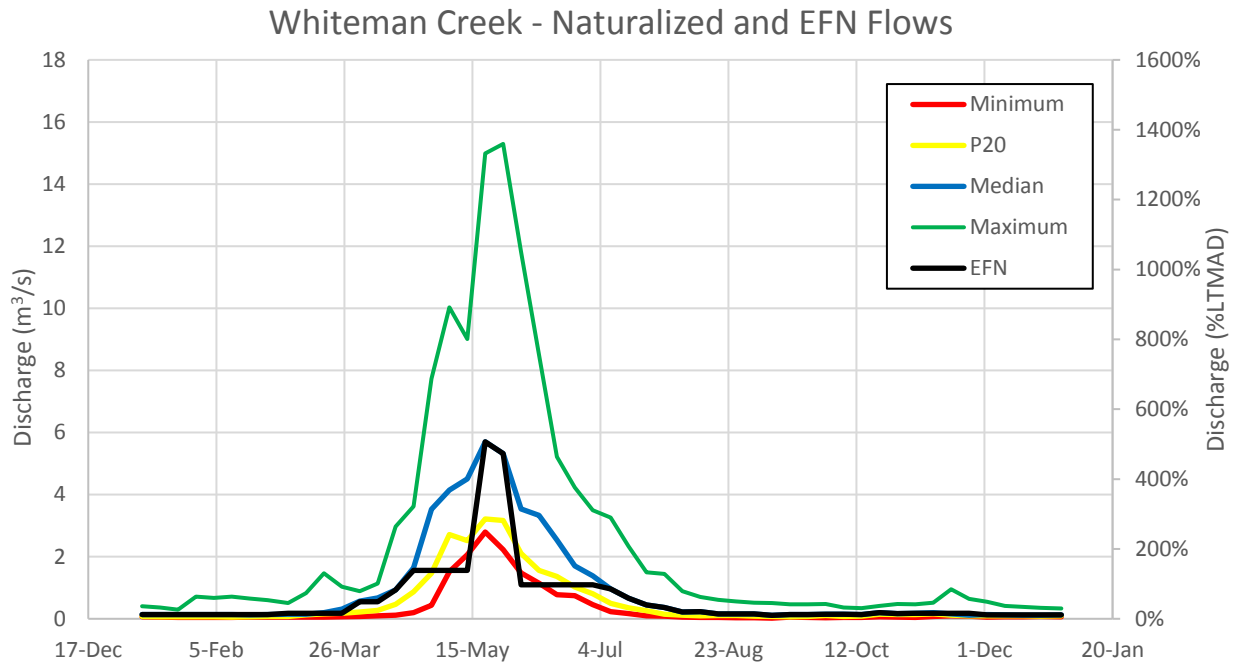


Figure B4-10: EFN flows compared with naturalized flow percentiles in Whiteman Creek (Discharge & %LTMAD)

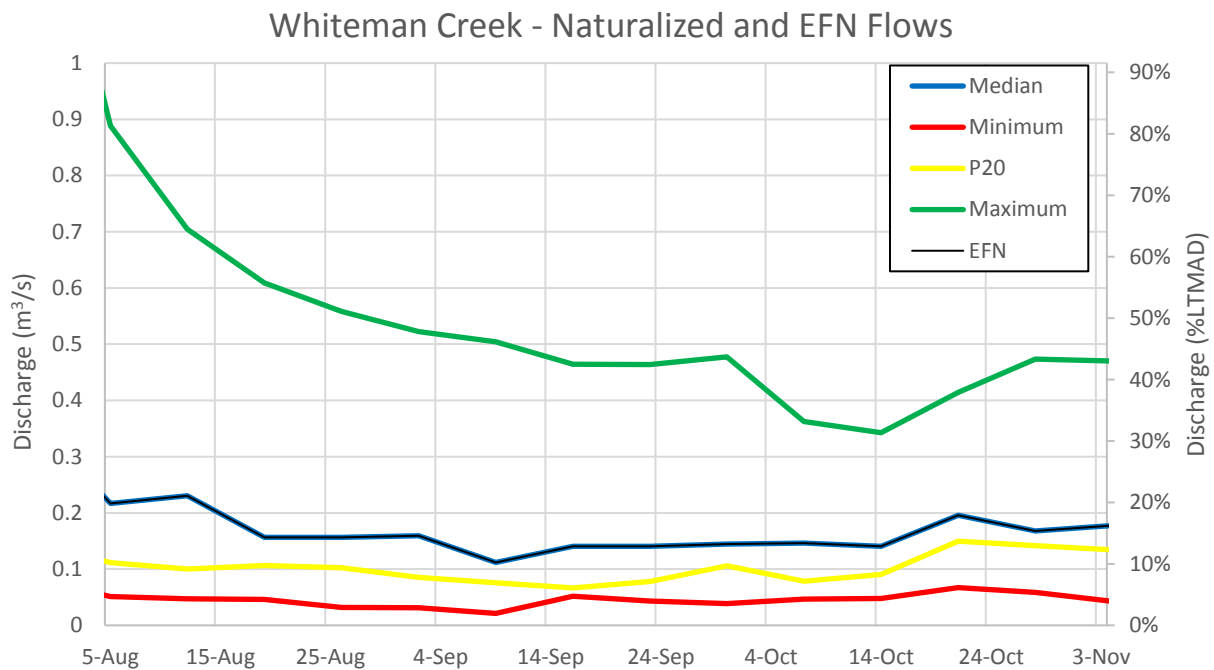


Figure B4-11: EFN flows compared with naturalized flow percentiles in Whiteman Creek Aug-Nov (Discharge & %LTMAD)

Naturalized Percentile Flows for Whiteman Creek

NATURALIZED FLOW		as m ³ /s				as %LTMD			
Week	Ending	Min	P20	Median	Max	Min	P20	Median	Max
01	7-Jan	0.067	0.071	0.142	0.407	6%	6%	13%	37%
02	14-Jan	0.050	0.066	0.138	0.367	5%	6%	13%	34%
03	21-Jan	0.049	0.061	0.140	0.294	4%	6%	13%	27%
04	28-Jan	0.045	0.063	0.133	0.711	4%	6%	12%	65%
05	4-Feb	0.043	0.064	0.138	0.669	4%	6%	13%	61%
06	11-Feb	0.039	0.055	0.135	0.709	4%	5%	12%	65%
07	18-Feb	0.050	0.063	0.128	0.647	5%	6%	12%	59%
08	25-Feb	0.056	0.072	0.138	0.603	5%	7%	13%	55%
09	4-Mar	0.050	0.078	0.150	0.505	5%	7%	14%	46%
10	11-Mar	0.056	0.124	0.144	0.828	5%	11%	13%	76%
11	18-Mar	0.058	0.154	0.196	1.466	5%	14%	18%	134%
12	25-Mar	0.067	0.177	0.308	1.037	6%	16%	28%	95%
13	1-Apr	0.078	0.222	0.572	0.889	7%	20%	52%	81%
14	8-Apr	0.100	0.275	0.669	1.141	9%	25%	61%	104%
15	15-Apr	0.120	0.464	0.935	2.974	11%	42%	86%	272%
16	22-Apr	0.203	0.870	1.639	3.623	19%	80%	150%	332%
17	29-Apr	0.441	1.468	3.529	7.735	40%	134%	323%	708%
18	6-May	1.515	2.715	4.147	10.028	139%	249%	380%	918%
19	13-May	2.066	2.519	4.502	9.009	189%	231%	412%	825%
20	20-May	2.795	3.216	5.699	14.986	256%	294%	522%	1372%
21	27-May	2.227	3.166	5.325	15.294	204%	290%	487%	1400%
22	3-Jun	1.478	2.105	3.535	11.818	135%	193%	324%	1082%
23	10-Jun	1.144	1.556	3.332	8.509	105%	142%	305%	779%
24	17-Jun	0.779	1.358	2.535	5.220	71%	124%	232%	478%
25	24-Jun	0.750	1.028	1.701	4.233	69%	94%	156%	387%
26	1-Jul	0.459	0.806	1.382	3.500	42%	74%	127%	320%
27	8-Jul	0.233	0.499	0.961	3.257	21%	46%	88%	298%
28	15-Jul	0.169	0.350	0.659	2.333	16%	32%	60%	214%
29	22-Jul	0.093	0.257	0.450	1.502	9%	24%	41%	137%
30	29-Jul	0.082	0.147	0.363	1.444	8%	13%	33%	132%
31	5-Aug	0.051	0.112	0.217	0.889	5%	10%	20%	81%
32	12-Aug	0.047	0.100	0.230	0.705	4%	9%	21%	65%
33	19-Aug	0.046	0.106	0.157	0.609	4%	10%	14%	56%
34	26-Aug	0.032	0.102	0.156	0.558	3%	9%	14%	51%
35	2-Sep	0.031	0.085	0.159	0.522	3%	8%	15%	48%
36	9-Sep	0.021	0.076	0.112	0.504	2%	7%	10%	46%
37	16-Sep	0.052	0.067	0.141	0.464	5%	6%	13%	42%
38	23-Sep	0.043	0.078	0.141	0.464	4%	7%	13%	42%
39	30-Sep	0.039	0.106	0.145	0.477	4%	10%	13%	44%
40	7-Oct	0.047	0.079	0.146	0.363	4%	7%	13%	33%
41	14-Oct	0.048	0.091	0.140	0.342	4%	8%	13%	31%
42	21-Oct	0.067	0.150	0.196	0.415	6%	14%	18%	38%
43	28-Oct	0.058	0.142	0.168	0.473	5%	13%	15%	43%
44	4-Nov	0.042	0.134	0.177	0.470	4%	12%	16%	43%
45	11-Nov	0.070	0.160	0.202	0.520	6%	15%	18%	48%
46	18-Nov	0.093	0.121	0.157	0.955	9%	11%	14%	87%
47	25-Nov	0.089	0.098	0.119	0.638	8%	9%	11%	58%
48	2-Dec	0.058	0.092	0.136	0.547	5%	8%	12%	50%
49	9-Dec	0.069	0.095	0.122	0.410	6%	9%	11%	38%
50	16-Dec	0.062	0.092	0.115	0.381	6%	8%	11%	35%
51	23-Dec	0.073	0.089	0.116	0.357	7%	8%	11%	33%
52	31-Dec	0.069	0.093	0.126	0.331	6%	9%	12%	30%

Residual Percentile Flows for Whiteman Creek

RESIDUAL FLOW		as m ³ /s				as %LTMAD			
Week	Ending	Min	P20	Median	Max	Min	P20	Median	Max
01	7-Jan	0.067	0.071	0.142	0.407	6%	6%	13%	37%
02	14-Jan	0.050	0.066	0.138	0.367	5%	6%	13%	34%
03	21-Jan	0.048	0.061	0.140	0.294	4%	6%	13%	27%
04	28-Jan	0.045	0.063	0.133	0.711	4%	6%	12%	65%
05	4-Feb	0.043	0.064	0.138	0.669	4%	6%	13%	61%
06	11-Feb	0.039	0.055	0.135	0.709	4%	5%	12%	65%
07	18-Feb	0.050	0.062	0.128	0.647	5%	6%	12%	59%
08	25-Feb	0.056	0.072	0.138	0.603	5%	7%	13%	55%
09	4-Mar	0.050	0.078	0.150	0.505	5%	7%	14%	46%
10	11-Mar	0.056	0.124	0.144	0.828	5%	11%	13%	76%
11	18-Mar	0.058	0.154	0.196	1.466	5%	14%	18%	134%
12	25-Mar	0.067	0.177	0.308	1.037	6%	16%	28%	95%
13	1-Apr	0.078	0.222	0.572	0.889	7%	20%	52%	81%
14	8-Apr	0.100	0.275	0.669	1.141	9%	25%	61%	104%
15	15-Apr	0.120	0.464	0.935	2.974	11%	42%	86%	272%
16	22-Apr	0.203	0.870	1.639	3.623	19%	80%	150%	332%
17	29-Apr	0.441	1.468	3.529	7.735	40%	134%	323%	708%
18	6-May	1.515	2.715	4.147	10.028	139%	249%	380%	918%
19	13-May	2.066	2.519	4.502	9.009	189%	231%	412%	825%
20	20-May	2.795	3.216	5.699	14.986	256%	294%	522%	1372%
21	27-May	2.227	3.166	5.325	15.294	204%	290%	487%	1400%
22	3-Jun	1.478	2.105	3.535	11.818	135%	193%	324%	1082%
23	10-Jun	1.144	1.556	3.331	8.509	105%	142%	305%	779%
24	17-Jun	0.779	1.358	2.535	5.220	71%	124%	232%	478%
25	24-Jun	0.749	1.028	1.701	4.233	69%	94%	156%	387%
26	1-Jul	0.459	0.806	1.382	3.500	42%	74%	127%	320%
27	8-Jul	0.233	0.499	0.961	3.257	21%	46%	88%	298%
28	15-Jul	0.169	0.350	0.659	2.333	16%	32%	60%	214%
29	22-Jul	0.093	0.257	0.450	1.502	9%	24%	41%	137%
30	29-Jul	0.082	0.147	0.363	1.444	8%	13%	33%	132%
31	5-Aug	0.051	0.112	0.217	0.889	5%	10%	20%	81%
32	12-Aug	0.047	0.100	0.230	0.705	4%	9%	21%	65%
33	19-Aug	0.046	0.106	0.156	0.609	4%	10%	14%	56%
34	26-Aug	0.032	0.102	0.156	0.558	3%	9%	14%	51%
35	2-Sep	0.031	0.085	0.159	0.522	3%	8%	15%	48%
36	9-Sep	0.021	0.076	0.112	0.504	2%	7%	10%	46%
37	16-Sep	0.052	0.067	0.141	0.464	5%	6%	13%	42%
38	23-Sep	0.043	0.078	0.141	0.464	4%	7%	13%	42%
39	30-Sep	0.039	0.106	0.145	0.477	4%	10%	13%	44%
40	7-Oct	0.047	0.079	0.146	0.363	4%	7%	13%	33%
41	14-Oct	0.048	0.090	0.140	0.342	4%	8%	13%	31%
42	21-Oct	0.067	0.150	0.196	0.415	6%	14%	18%	38%
43	28-Oct	0.058	0.141	0.168	0.473	5%	13%	15%	43%
44	4-Nov	0.042	0.134	0.177	0.470	4%	12%	16%	43%
45	11-Nov	0.070	0.160	0.202	0.520	6%	15%	18%	48%
46	18-Nov	0.093	0.121	0.157	0.955	9%	11%	14%	87%
47	25-Nov	0.089	0.098	0.119	0.638	8%	9%	11%	58%
48	2-Dec	0.058	0.092	0.136	0.547	5%	8%	12%	50%
49	9-Dec	0.069	0.095	0.122	0.410	6%	9%	11%	38%
50	16-Dec	0.062	0.092	0.115	0.381	6%	8%	11%	35%
51	23-Dec	0.073	0.089	0.116	0.357	7%	8%	11%	33%
52	31-Dec	0.069	0.093	0.126	0.331	6%	9%	12%	30%

Maximum Licensed Percentile Flows for Whiteman Creek

MAX LICENSED FLOW		as m3/s				as %LTMAD			
Week	Ending	Min	P20	Median	Max	Min	P20	Median	Max
01	7-Jan	0.067	0.071	0.142	0.406	6%	6%	13%	37%
02	14-Jan	0.050	0.066	0.138	0.367	5%	6%	13%	34%
03	21-Jan	0.048	0.061	0.140	0.293	4%	6%	13%	27%
04	28-Jan	0.045	0.062	0.132	0.710	4%	6%	12%	65%
05	4-Feb	0.043	0.064	0.138	0.669	4%	6%	13%	61%
06	11-Feb	0.039	0.054	0.135	0.709	4%	5%	12%	65%
07	18-Feb	0.050	0.062	0.128	0.647	5%	6%	12%	59%
08	25-Feb	0.056	0.072	0.137	0.603	5%	7%	13%	55%
09	4-Mar	0.050	0.078	0.150	0.504	5%	7%	14%	46%
10	11-Mar	0.056	0.123	0.143	0.828	5%	11%	13%	76%
11	18-Mar	0.058	0.153	0.195	1.466	5%	14%	18%	134%
12	25-Mar	0.067	0.177	0.308	1.036	6%	16%	28%	95%
13	1-Apr	0.078	0.222	0.572	0.888	7%	20%	52%	81%
14	8-Apr	0.100	0.275	0.669	1.141	9%	25%	61%	104%
15	15-Apr	0.120	0.463	0.935	2.973	11%	42%	86%	272%
16	22-Apr	0.202	0.869	1.635	3.620	19%	80%	150%	331%
17	29-Apr	0.441	1.468	3.529	7.719	40%	134%	323%	707%
18	6-May	1.512	2.715	4.147	10.007	138%	248%	380%	916%
19	13-May	2.064	2.503	4.462	8.990	189%	229%	408%	823%
20	20-May	2.761	3.186	5.658	14.962	253%	292%	518%	1369%
21	27-May	2.172	3.110	5.266	15.238	199%	285%	482%	1395%
22	3-Jun	1.419	2.043	3.470	11.776	130%	187%	318%	1078%
23	10-Jun	1.083	1.505	3.268	8.435	99%	138%	299%	772%
24	17-Jun	0.716	1.294	2.464	5.150	66%	118%	226%	471%
25	24-Jun	0.686	0.958	1.654	4.171	63%	88%	151%	382%
26	1-Jul	0.379	0.740	1.300	3.425	35%	68%	119%	313%
27	8-Jul	0.148	0.407	0.874	3.175	14%	37%	80%	291%
28	15-Jul	0.078	0.275	0.581	2.252	7%	25%	53%	206%
29	22-Jul	0.001	0.164	0.353	1.433	0%	15%	32%	131%
30	29-Jul	0.000	0.051	0.276	1.348	0%	5%	25%	123%
31	5-Aug	0.000	0.030	0.125	0.791	0%	3%	11%	72%
32	12-Aug	0.000	0.020	0.151	0.606	0%	2%	14%	55%
33	19-Aug	0.000	0.046	0.082	0.533	0%	4%	7%	49%
34	26-Aug	0.000	0.033	0.088	0.468	0%	3%	8%	43%
35	2-Sep	0.000	0.021	0.109	0.447	0%	2%	10%	41%
36	9-Sep	0.000	0.016	0.050	0.452	0%	1%	5%	41%
37	16-Sep	0.001	0.013	0.083	0.433	0%	1%	8%	40%
38	23-Sep	0.000	0.032	0.094	0.447	0%	3%	9%	41%
39	30-Sep	0.006	0.077	0.125	0.469	1%	7%	11%	43%
40	7-Oct	0.030	0.065	0.137	0.357	3%	6%	13%	33%
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49	9-Dec	0.068	0.094	0.121	0.410	6%	9%	11%	38%
50	16-Dec	0.062	0.092	0.115	0.380	6%	8%	10%	35%
51	23-Dec	0.073	0.089	0.115	0.357	7%	8%	11%	33%
52	31-Dec	0.069	0.093	0.126	0.331	6%	9%	12%	30%