Appendix H.1

Fish and Fish Habitat Baseline Report - Part 3 of 5

APPENDIX D: INDIVIDUAL FISH DATA AND DETAILED FISH HABITAT MEASUREMENTS

Table 1. Detailed Fish Habitat Information, Part 1.

Surveyors	Survey Date	WC #	Reach #	Stream Order	Upstream Coordinates		Downstream Coordinates		Reach Length (m)	Gradient (%)	Entrenchment	Flow Type	Habitat Type	All included Habitat Types (Y OR N)				
					Easting	Northing	Easting	Northing			HE,ME,SE,NE			Riffle	Run	Flat	Pool	Other
TW,JM	200814	5	1	1	606128	5006680	606016	5006618	260	1-2	ME	I	Run (dry)		Y			
TW,JM	200814	4	1	1	606001	5006618	606017	5006618	19	<1	ME	I	Flat			Y		
TW,JM	200814	4	2	1	606017	5006618	606405	5006525	426	2-4	ME	I	Rif/Run (dry)	Y	Y		Y	
TW,JM	200814	6	1	1	606189	5006824	606253	5006754	103	2-4	SE	I	Rif/Run	Y	Y			Step-pools
TW,JM	200814	7	1	1-2	606218	5006897	606427	5006495	486	2-4	ME	P	Rif/Run	Y	Y	Y		
KF,DM	200818	1	1	1	606692	5006190	606719	5006100	90	1	ME	P	Run					
KF,DM	200818	1	2	1	606718	5006101	606834	5005869	273	2	SE	P	Riffle				Y	
KF,DM	200818	3	1	1-2	606320	5006162	606922	5005769	921	1	ME	I	Run	Y	Y			
KF,DM	200818	3	2	2	606922	5005769	606935	5005687	81	2		I	Riffle	Y				
KF,DM	200818	3	3	2	606935	5006787	607014	5005623	113	<1	SE	P	Flat					
TW,JM	200818	9	1	1	607713	5006654	607488	5006911	110	<1	SE	I	Flat					
TW,JM	200818	9	2	1	607488	5006911	607471	5007005	400	2-3	ME	I	Run (dry)					
TW,JM	200818	9	3	1	607471	5007005	607281	5007179	357	<1	SE	I	Flat	Y		Y		
TW,JM	200818	9	4	1	607281	5007179	607217	5007261	154	2-4	ME	I	Run (dry)		Y			
KF,OB	211014	8	1	1	606554	5006477	606626	5006496	75	<1	HE	P	Flat	Y				
KF,OB	211014	8	2	1	606626	5006496	606745	5006532	120	3	SE	P	Riffle			Y		
TW,JM	200818	8	3	2	606739	5006573	606723	5006621	70	~1	ME	P	Run (dry)	Y	Y		Y	
TW,JM	200818	8	4	2	606723	5006621	606722	5006660	145	2-4	ME	p	Riffle	Y				
TW,JM	200818	8	5	2	606723	5006677	606743	5006745	113	1	HE	P	Run (dry)					
KF, DB, JM, DM	210706	2	1	1	606349	5006348	606480	5006204	212	<1	NE	P	Flat	Y				
KF, DB, JM, DM	210706	45	1	1	608373	5007819	608259	5007730	160	<1	NE	P	Flat					
KF, DB, JM, DM	210706	45	2	1	608259	5007730	608247	5007730	16	2	SE	P	Riffle					
KF, DB, JM, DM	210706	45	3	1	608247	5007730	608097	5007523	256	<1	SE	P	Flat	Y			T	
KF, DB, JM, DM	210706	45	4	1	608097	5007523	608085	5007484	55	2	ME	P	Riffle					
KF, DM	210707	39	1	1	608199	5007323	608178	5007323	30	3	ME	P	Riffle-run					
KF, DM	210707	50	1	1	608122	5007445	608034	5007445	102	1	SE	P	Run					
KF, DM	210707	50	2	1	608034	5007445	607977	5007446	52	3	ME	P	Riffle-run					
KF, DM	210707	50	3	1	607977	5007446	607955	5007342	142	2	ME	P	Run	Y				
KF, DM	210707	14	1	1 to 2	608167	5007274	607959	5007334	245	1 to 2	SE	P	Riffle-run			Y		
KF, DM	210707	14	2	1 to 2	607959	5007334	607933	5007335	35	2	ME	P	Boulder-bed					
KF, DM	210707	14	3	1 to 2	607933	5007335	607796	5007417	160	<1	SE	P	Flat	Y				
KF, DM	210708	14	4	1 to 2	607796	5007417	607753	5007440	50	4	ME	P	Rapid					
KF, DM	210708	14	5	1 to 2	607753	5007440	607701	5007458	50	<1	ME	P	Flat					
KF, DM	210708	14	6	1 to 2	607701	5007458	607673	5007459	30	2	ME	P	Riffle					
KF, DM	210708	14	7	1 to 2	607673	5007459	607411	5007470	250	1	ME	P	Riffle-run	Y	Y			Rapid
KF, DM	210713	81	1	1	608960	5007970	608804	5007939	171	<1	SE	I	Flat					
KF, DM	210713	47	1	1	608274	5008054	608239	5008057	47	<1	SE	I	Flat					
KF, DM	210713	62	1	1	608627	5008447	608676	5008447	50	<1	SE	P	Flat					
KF, DM	210713	58	1	1	607812	5008973	607780	5009006	50	<1	SE	P	Flat					
KF, DM	210713	13	1	1	607214	5006692	607158	5006667	87	<1	SE	P	Flat					
KF, DM	210714	43	1	1	607842	5008779	608133	5008230	684	<1	SE	P	Flat					
KF, DM	210714	57	1	1	607694	5007913	607352	5008005	442	2 to 3	SE	P	Riffle-run					
KF, DM	210715	59	1	1	607398	5007897	607420	5008008	120	<1	ME	I	Flat					
KF, DM	210715	63	1	1	607325	5007954	607259	5007876	120	1 to 3	SE	P	Riffle					

Surveyors	Survey Date	WC #	Reach #	Stream Order	Upstream Coordinates		Downstream Coordinates		Reach Length (m)	Gradient (%)	Entrenchment	Flow Type	Habitat Type	All included Habitat Types (Y OR N)				
					Easting	Northing	Easting	Northing			HE,ME,SE,NE			Riffle	Run	Flat	Pool	Other
KF, DM	210715	61	1	1	607325	5007892	607259	5007876	81	1 to 3	SE	P	Riffle-run					
KF, DM	210715	65	1	1	607261	5007925	607237	5007885	52	1 to 3	SE	P	Riffle-run					
DB, JM	210714	11	1	1	608081	5006242	607531	5005845	756	<1	N/A	E	Flat					
DB, JM	210714	11	2	1	607531	5005845	607469	5005843	69	1 to 2	N/A	E	Riffle					
DB, JM	210714	11	3	1	607469	5005843	607396	5005831	94	<1	N/A	E	Flat					
DB, JM	210714	11	4	1	607396	5005831	607264	5005693	224	1 to 2	N/A	E	Riffle					
DB, JM	210714	11	5	1	607264	5005693	607175	5005529	229	<1	N/A	E	Flat					
DB, JM	210715	10	1	1	607352	5005721	607187	5005526	292	<1	N/A	P	Flat					
DB, JM	210715	10	2	1	607187	5005526	N/A	N/A	15	2	N/A	P	Riffle					
DB, JM	210707	69	1	1	606886	5009392	607018	5009144	325	<1	SE	P	Flat	Y		Y	Y	
DB, JM	210707	69	2	1	607018	5009144	607086	5009046	125	2	SE	P	Riffle					
DB, JM	210707	69	3	1	607086	5009046	607102	5009032	44	<1	ME	P	Pool					
DB, JM	210707	22	1	1	607112	5009031	607073	5008891	183	N/A	SE	P	Pool					
DB, JM	210707	22	2	1	607073	5008891	607145	5008816	117	<2	SE	P	Riffle	Y	Y		Y	
DB, JM	210707	22	3	1	607145	5008816	607137	5008733	113	N/A	SE	P	Pool					
DB, JM	210707	22	4	1	607137	5008733	607108	5008714	35	N/A	SE	P	Flat					
DB, JM	210707	22	5	1	607108	5008714	606957	5008162	722	<2	SE	P	Riffle-run					
DB, JM	210707	22	6	1	606957	5008162	606990	5008126	57	<1	SE	P	Flat					
DB, JM	210707	22	7	1	606990	5008126	606984	5008074	62	<2	SE	P	Riffle-run				Y	
DB, JM	210708	15	1	1	608144	5008232	608042	5007768	747	<1	SE	P	Flat					
DB, JM	210708	15	2	1	608042	5007768	608010	5007780	40	2	SE	P	Riffle-run					
DB, JM	210709	15	3	1	608010	5007780	607999	5007704	147	N/A	N/A	P	Flat					
DB, JM	210709	15	4	1	607999	5007704	608001	5007682	26	2	SE	P	Riffle					
DB, JM	210709	15	5	1	608001	5007682	607988	5007649	39	<1	SE	P	Flat					
DB, JM	210709	15	6	1	607988	5007649	607954	5007576	89	2	SE	P	Riffle					
DB, JM	210709	15	7	1	607954	5007576	607901	5007550	74	<1	SE	P	Flat					
DB, JM	210713	15	8	1	607901	5007550	607856	5007489	83	2	SE	P	Riffle					
DB, JM	210713	15	9	1	607856	5007489	607785	5007436	91	1	SE	P	Riffle-run					
DB, JM	210713	12	1	1	607695	5006290	607483	5006276	60	N/A	N/A	E	Flat (Dry)					
DB, JM	210713	12	2	1	607483	5006276	607469	5006264	41	N/A	N/A	E	Flat					
DB, JM	210713	12	3	1	607469	5006264	607139	5006215	59	N/A	N/A	P	Flat					
DB, JM	210713	12	4	1	607139	5006215	606066	5008468	252	N/A	N/A	P	Flat (Dry)					
ZS, DM	210720	51	1	1	606066	5008468	N/A	N/A	N/A	<1	ME	P	Flat					
ZS, DM	210720	19	1	1	605909	5008142	605943	5008164	40	<1	ME	P	Flat					
ZS, DM	210720	20	1	1	605963	5008201	606308	5007976	624	<1	ME	P	Flat					
ZS, DM	210721	20	2	1	606394	5007833	606387	5007809	26	6	SE	P	Rapid		Y			
ZS, DM	210721	23	1	1	606240	5007805	606370	5007795	143	<1	SE	P	Flat					
ZS, DM	210721	49	1	1	607385	5008304	607105/607056	5008019/5008069	855	1	SE	P	Flat	Y				
ZS, DM	210722	55	1	1	606908	5005464	607067	5005359	215	0	SE	P	Flat					

Table 2. Detailed Fish Habitat Information, Part 2.

Surveyors	Survey Date	WC #	Reach #	Water Quality						Cover %								Substrate (%)									Embeddedness (%)
				Temp (℃)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)	Turbidity	Large Woody Debris	Boulders	Undercut Banks	Deep Pools	Overhang	Emergent	Submergent	TOTAL	Bed	B	R	C	G	Sa	Si	M/D	C/M	
TW,JM	200814	5	1	N/A	N/A	N/A	N/A	N/A	N/A	2	0	0	0	2	0	0	4	0	15	65	5	0	0	0	15	0	20

Surveyors	Survey Date	WC #	Reach #	Water Quality						Cover %								Substrate (%)								Embeddedness (%)
				Temp (℃)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)	Turbidity	Large Woody Debris	Boulders	Undercut Banks	Deep Pools	Overhang	Emergent	Submergent	TOTAL	Bed	B	R	C	G	Sa	Si	M/D	C/M	
TW,JM	200814	4	1	16.8	5.06	0.2	40	30.55	M	2	0	0	0	2	2	2	8	0	0	20	0	0	0	0	80	0	85
TW,JM	200814	4	2	16.1	5.12	3.01	44.6	40.25	C	1	0	0	2	2	0	0	5	0	10	50	20	2	0	0	18	0	10
TW,JM	200814	6	1	17.6	4.61	3.1	42.2	31.85	L	5	0	0	0	3	0	0	8	0	10	20	5	0	0	0	65	0	60
TW,JM	200814	7	1	16.7	5.15	2.8	37.6	29.25	L	10	2	0	1	5	0	0	18	0	10	30	10	5	0	0	45	0	50
KF,DM	200818	1	1	19.5	7.11	5.1	168	122.2	C	2	2	1	5	2	0	0	12	0	20	20	10	0	0	0	50	0	20
KF,DM	200818	1	2	19.7	7.38	6.7	166.7	120.25	C	10	5	1	2	5	2	2	27	0	60	20	10	0	0	0	30	0	30
KF,DM	200818	3	1	14.8	5.44	1.8	33.5	27.3	L	2	10	1	1	2	0	0	16	0	50	20	10	0	0	0	20	0	25
KF,DM	200818	3	2	17.9	7.67	9.3	149.2	112.45	C	1	10	0	1	5	0	0	17	0	50	20	15	5	0	0	10	0	20
KF,DM	200818	3	3	18.1	7.71	9.2	147.7	110.5	L	0	1	0	0	2	50	5	58	0	10	10	0	0	0	0	80	0	75
KF, OB	211014	8	1	15.7	5.62	107.90%	63	N/A	M	5	15	5	20	5	2	1	53	20	10	10	20	10	5	0	5	20	30
KF, OB	211014	8	2	16.2	6.01	98.30%	70	N/A	M	7	3	10	10	4	2	1	37	5	15	15	25	25	10	0	5	0	40
TW,JM	200818	8	3	13.5	5.38	4.15	35.4	29.25	C	5	1	2	2	2	0	0	12	0	20	20	20	20	0	0	20	0	10
TW,JM	200818	8	4	14.4	4.9	4.91	34	27.95	C	20	0	10	0	2	0	0	32	0	10	30	30	30	0	0	0	0	10
TW,JM	200818	8	5	14.6	5.23	3.32	32	26	C	5	2	3	1	2	2	0	15	0	40	40	10	0	0	0	10	0	10
TW,JM	200818	9	1	17.2	5.56	3.91	53.6	10.95	L	25	0	25	3	10	10	5	78	0	10	0	0	0	0	0	90	0	100
TW,JM	200818	9	2	N/A	N/A	N/A	N/A	N/A	N/A	2	2	1	0	2	2	2	11	0	40	30	10	0	0	0	20	0	15
TW,JM	200818	9	3	17.3	4.58	5.52	38	29.25	N/A	5	2	3	0	5	0	0	15	0	20	10	10	0	0	0	60	0	50
TW,JM	200818	9	4	16.1	5.34	5.72	31.5	24.7	L	2	0	3	0	5	0	0	10	0	15	40	20	5	0	0	20	0	30
KF, DB, JM, DM	210706	2	1	12.1	5.67	N/A	54	N/A	L	10	0	2	0	65	5	5	87	0	10	0	0	0	0	0	90	0	70
KF, DB, JM, DM	210706	45	1	12.5	4.1	N/A	59	N/A	L	15	2	3	0	40	5	7	72	0	10	15	10	0	0	0	65	0	50
KF, DB, JM, DM	210706	45	2	13.2	4.06	111.1	67	N/A	C	15	2	3	0	40	5	5	70	0	20	30	20	0	0	0	30	0	50
KF, DB, JM, DM	210706	45	3	13.5	4.1	9.46	90	N/A	L	20	3	7	1	30	5	3	69	0	30	20	10	0	0	0	40	0	60
KF, DB, JM, DM	210706	45	4	12.8	4.01	9.84	109	N/A	L	20	3	7	1	30	5	3	69	0	30	20	10	0	0	0	40	0	60
KF, DM	210707	39	1	17.3	5.37	9.09	29	N/A	C	3	2	2	2	10	5	5	29	0	30	30	20	0	0	0	20	0	30
KF, DM	210707	50	1	11.1	3.93	7.5	47	N/A	L	5	1	5	2	10	20	7	50	0	5	20	10	5	0	0	60	0	90
KF, DM	210707	50	2	11.8	4.22	9.68	46	N/A	L	4	2	7	3	5	5	5	31	0	20	30	30	5	0	0	15	0	40
KF, DM	210707	50	3	12.3	4.27	8.76	46	N/A	L	5	4	7	3	7	7	10	43	0	20	20	20	0	0	0	40	0	40
KF, DM	210707	14	1	16.8	4.29	6.24	33	N/A	L	5	5	10	10	30	10	5	75	0	30	30	10	0	0	0	30	0	50
KF, DM	210707	14	2	17.9	4.37	8.72	33	N/A	C	5	40	5	2	10	5	5	72	0	70	20	0	0	0	0	10	0	30
KF, DM	210707	14	3	17	4.25	8.03	36	N/A	L	5	2	15	20	15	5	10	72	0	15	10	5	5	0	0	70	0	80
KF, DM	210708	14	4	14.3	4.27	11.84	37	N/A	C	5	25	2	5	3	2	5	47	0	75	10	5	0	0	0	10	0	50
KF, DM	210708	14	5	14.3	4.37	9.72	38	N/A	M	10	5	5	20	5	0	5	50	0	30	10	5	0	0	0	55	0	80
KF, DM	210708	14	6	14.9	4.4	9.47	37	N/A	C	2	10	2	2	5	2	10	33	0	40	30	20	0	0	0	20	0	55
KF, DM	210708	14	7	15.2	4.51	9.65	39	N/A	C	5	25	5	5	10	5	5	60	0	50	20	10	5	0	0	15	0	50
KF, DM	210713	81	1	14.3	4.65	8.62	78	N/A	L	10	2	5	1	25	5	3	51	0	10	5	5	0	0	0	80	0	70
KF, DM	210713	47	1	12.2	4.41	9.27	50	N/A	L	15	0	2	1	15	5	5	43	0	5	5	0	0	0	0	90	0	100
KF, DM	210713	62	1	15.6	4.05	5.46	58	N/A	M	10	1	5	2	20	5	3	46	0	5	5	0	0	0	0	90	0	100
KF, DM	210713	58	1	13.8	4.53	7.98	42	N/A	L	5	3	5	0	5	3	2	23	0	10	15	5	0	0	0	70	0	70
KF, DM	210713	13	1	14	4.38	7.93	44	N/A	L	5	2	3	2	4	2	2	20	0	10	5	0	0	0	0	80	0	80
KF, DM	210714	43	1	10.3	5.39	7.98	50	N/A	L	3	1	3	3	15	3	2	30	0	15	10	5	5	0	0	65	0	80

Surveyors	Survey Date	WC #	Reach #	Water Quality						Cover %								Substrate (%)								Embeddedness (%)
				Temp (℃)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)	Turbidity	Large Woody Debris	Boulders	Undercut Banks	Deep Pools	Overhang	Emergent	Submergent	TOTAL	Bed	B	R	C	G	Sa	Si	M/D	C/M	
KF, DM	210714	57	1	15.3	4.28	6.7	51	N/A	L	5	3	5	2	10	5	3	33	0	10	10	5	0	0	0	75	0	70
KF, DM	210715	59	1	15	4.76	2.93	56	N/A	M	3	3	5	1	1O	3	2	17	0	30	10	5	0	0	0	55	0	50
KF, DM	210715	63	1	14.1	4.31	3.76	53	N/A	M	4	2	5	2	15	5	3	36	0	20	10	5	0	0	0	65	0	75
KF, DM	210715	61	1	12.7	3.89	6.42	52	N/A	L	5	1	3	1	10	5	5	30	0	10	10	5	0	0	0	75	0	60
KF, DM	210715	65	1	14.5	4.22	9.01	50	N/A	L	7	1	3	1	15	5	5	37	0	10	5	5	0	0	0	80	0	80
DB, JM	210714	11	1	15.4	4.67	N/A	52	N/A	M	5	0	5	0	10	15	15	50	5	15	0	0	0	0	0	75	5	N/A
DB, JM	210714	11	2	21.1	4.66	N/A	49	N/A	L	25	25	0	0	25	0	0	75	0	75	0	0	0	0	0	25	0	N/A
DB, JM	210714	11	3	21.3	4.81	N/A	46	N/A	L	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	100	0	N/A
DB, JM	210714	11	4	20	4.71	N/A	47	N/A	L	0	25	0	0	25	0	0	50	0	75	0	0	0	0	0	25	0	N/A
DB, JM	210714	11	5	19	4.5	N/A	49	N/A	L	5	5	0	0	10	0	0	20	0	25	0	0	0	0	0	75	0	N/A
DB, JM	210715	10	1	17.1	4.76	N/A	47	N/A	L	5	2	0	0	10	0	0	17	50	0	0	0	0	0	0	50	0	N/A
DB, JM	210715	10	2	19.1	4.36	N/A	47	N/A	L	5	10	0	0	10	0	0	25	0	75	25	0	0	0	0	0	0	N/A
DB, JM	210707	69	1	18	4.5	N/A	62	N/A	L	5	5	5	1	0	0	0	16	50	0	10	10	0	0	0	30	0	N/A
DB, JM	210707	69	2	18.5	4.43	N/A	57	N/A	L	5	5	5	1	0	0	0	16	50	0	20	10	0	0	0	20	0	N/A
DB, JM	210707	69	3	17.7	4.4	N/A	62	N/A	L	2	2	2	90	0	0	0	96	0	30	30	20	0	0	0	20	0	N/A
DB, JM	210707	22	1	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	100	0	0	0	100	0	20	0	0	0	0	0	80	0	N/A
DB, JM	210707	22	2	22.7	4.11	N/A	67	N/A	C	2	5	2	0	0	0	0	9	0	50	0	20	0	0	0	30	0	N/A
DB, JM	210707	22	3	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	100	0	0	0	100	0	20	0	0	0	0	0	80	0	N/A
DB, JM	210707	22	4	21.4	4.21	N/A	63	N/A	L	2	5	0	0	5	0	0	12	0	30	10	10	0	0	0	50	0	N/A
DB, JM	210707	22	5	21	4.12	N/A	63	N/A	L	2	5	0	0	5	0	0	12	0	50	20	10	0	0	0	20	0	N/A
DB, JM	210707	22	6	18.5	4.66	N/A	46	N/A	L	2	5	0	0	5	0	0	12	0	10	20	20	0	0	0	50	0	N/A
DB, JM	210707	22	7	19.2	4.21	N/A	46	N/A	L	2	5	0	4	5	0	0	16	10	30	25	0	15	0	0	20	0	N/A
DB, JM	210708	15	1	17.6	4.75	N/A	49	N/A	L	5	5	1	0	80	0	5	96	0	30	10	10	0	0	0	50	0	N/A
DB, JM	210708	15	2	14.4	4.85	N/A	43	N/A	L	5	2	0	0	50	0	10	67	0	50	0	0	0	0	0	50	0	N/A
DB, JM	210708	15	3	15.2	4.62	N/A	43	N/A	L	5	25	0	0	15	0	0	45	0	20	0	0	0	0	0	70	0	N/A
DB, JM	210708	15	4	15.6	4.64	N/A	43	N/A	C	5	2	0	0	50	0	10	67	0	20	20	20	0	0	0	40	0	N/A
DB, JM	210708	15	5	16.3	4.64	N/A	42	N/A	L	5	0	0	0	50	0	10	65	50	0	0	0	0	0	0	50	0	N/A
DB, JM	210708	15	6	15.7	4.66	N/A	43	N/A	L	5	0	0	0	50	0	10	65	50	0	0	0	0	0	0	50	0	N/A
DB, JM	210708	15	7	14	4.6	N/A	42	N/A	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	20	20	20	0	0	0	40	0	N/A
DB, JM	210713	15	8	13.1	4.78	N/A	45	N/A	L	5	20	10	0	50	0	0	85	0	30	10	10	0	0	0	50	0	N/A
DB, JM	210713	15	9	13	5.1	N/A	40	N/A	L	0	0	0	0	15	5	0	20	10	0	0	0	0	0	0	90	0	N/A
DB, JM	210713	12	1	N/A	N/A	N/A	N/A	N/A	N/A	7	5	2	0	8	2	1	25	0	0	0	0	0	0	0	100	0	N/A
DB, JM	210713	12	2	19.6	5.23	N/A	N/A	N/A	N/A	9	5	3	0	10	3	5	35	50	0	25	0	0	0	0	25	0	N/A
DB, JM	210713	12	3	22	5.49	N/A	51	N/A	N/A	2	1	0	0	0	1	1	5	0	0	0	0	0	0	0	100	0	N/A
DB, JM	210713	12	4	N/A	N/A	N/A	N/A	N/A	N/A	3	2	1	0	50	3	1	60	0	0	0	0	0	0	0	100	0	N/A
ZS, DM	210720	51	1	14.7	4.76	7.46	47	N/A	C	4	3	2	8	15	6	7	45	0	0	5	5	0	0	0	90	0	70
ZS, DM	210720	19	1	13	5.07	9.93	40	N/A	C	5	1	30	0	5	0	0	41	0	2	0	0	0	0	0	98	0	40
ZS, DM	210720	20	1	13.3	4.96	9.96	38	N/A	C	2	8	30	10	3	1	0	54	0	50	0	0	0	0	0	50	0	80
ZS, DM	210721	20	2	21.4	4.52	4.52	39	N/A	C	0	50	10	0	2	3	0	65	0	95	0	0	0	0	0	5	0	10
ZS, DM	210721	23	1	14.2	5.31	8.64	47	N/A	C	3	3	10	0	5	2	0	23	0	1	5	0	0	0	0	94	0	40
ZS, DM	210721	49	1	16.7	4.72	8.99	48	N/A	C	3	12	10	0	40	2	0	67	0	40	5	0	0	0	0	45	0	0
ZS, DM	210722	55	1	11	5.12	6.13	51	N/A	C	1	8	3	0	10	8	0	30	0	20	5	0	0	0	0	75	0	60

Table 3. Detailed Fish Habitat information, Part 2.

Surveyors	Survey Date	WC #	Reach #	Banks and Riparian Area							
				Bank (L or R)	% Trees	% Shrubs	% Grass	% Bare	% Eroding	% Shade	Dominant Riparian Veg.
TW,JM	200814	5	1	L	60	65	20	0	0	40	Mixed-wood Forest
TW,JM	200814	5	1	R	60	65	20	0	0	40	Mixed-wood Forest
TW,JM	200814	4	1	L	30	60	15	0	0	75	Mixed-wood Forest
TW,JM	200814	4	1	R	30	60	15	0	0	75	Mixed-wood Forest
TW,JM	200814	4	2	L	100	30	20	0	0	50	Mixed-wood Forest
TW,JM	200814	4	2	R	100	30	20	0	0	50	Mixed-wood Forest
TW,JM	200814	6	1	L	100	20	10	0	0	50	Mixed-wood Forest
TW,JM	200814	6	1	R	100	20	10	0	0	50	Mixed-wood Forest
TW,JM	200814	7	1	L	90	50	20	0	0	50	Mixed-wood Forest
TW,JM	200814	7	1	R	90	50	20	0	0	50	Mixed-wood Forest
KF,DM	200818	1	1	L	10	60	40	0	2	15	Wetland
KF,DM	200818	1	1	R	10	60	40	0	2	15	Wetland
KF,DM	200818	1	2	L	15	80	40	0	5	25	Wetland
KF,DM	200818	1	2	R	15	8	40	0	5	25	Wetland
KF,DM	200818	3	1	L	20	70	30	0	2	5	Wetland
KF,DM	200818	3	1	R	20	70	30	0	2	5	Wetland
KF,DM	200818	3	2	L	20	70	30	0	1	5	Wetland
KF,DM	200818	3	2	R	20	70	30	0	1	5	Wetland
KF,DM	200818	3	3	L	0	50	60	0	5	0	Wetland
KF,DM	200818	3	3	R	2	80	40	0	5	0	Wetland
KF,OB	211014	8	1	L	40	30	10	20	10	80	Decididuous Forest
KF,OB	211014	8	1	R	60	30	10	20	10	80	Decididuous Forest
KF,OB	211014	8	2	L	60	30	10	20	10	80	Decididuous Forest
KF,OB	211014	8	2	R	60	30	10	20	10	80	Decididuous Forest
TW,JM	200818	8	3	L	50	20	30	0	2	40	Mixed-wood Forest
TW,JM	200818	8	3	R	50	20	30	0	2	40	Mixed-wood Forest
TW,JM	200818	8	4	L	30	100	10	0	20	70	Mixed-wood Forest
TW,JM	200818	8	4	R	30	100	10	0	20	70	Mixed-wood Forest
TW,JM	200818	8	5	L	20	80	40	0	5	40	Mixed-wood Forest
TW,JM	200818	8	5	R	20	80	40	0	5	40	Mixed-wood Forest
TW,JM	200818	9	1	L	10	60	80	0	0	50	Wetland
TW,JM	200818	9	1	R	10	60	80	0	0	50	Wetland
TW,JM	200818	9	2	L	25	75	15	0	0	60	Wetland
TW,JM	200818	9	2	R	25	75	15	0	0	60	Wetland
TW,JM	200818	9	3	L	15	85	10	0	0	60	Wetland
TW,JM	200818	9	3	R	15	85	10	0	0	60	Wetland
TW,JM	200818	9	4	L	35	80	15	0	0	65	Wetland
TW,JM	200818	9	4	R	35	80	15	0	0	65	Wetland
KF, DM, DB, JM	210706	2	1	L	40	70	25	10	5	95	Mixed-wood Forest

Surveyors	Survey Date	WC #	Reach #	Banks and Riparian Area							
				Bank (L or R)	% Trees	% Shrubs	% Grass	% Bare	% Eroding	% Shade	Dominant Riparian Veg.
KF, DM, DB, JM	210706	2	1	R	40	70	25	10	5	95	Mixed-wood Forest
KF, DM, DB, JM	210706	45	1	L	30	50	40	15	5	80	Wetland
KF, DM, DB, JM	210706	45	1	R	30	50	40	15	5	80	Wetland
KF, DM, DB, JM	210706	45	2	L	30	50	40	15	5	80	Wetland
KF, DM, DB, JM	210706	45	2	R	30	50	40	15	5	80	Wetland
KF, DM, DB, JM	210706	45	3	L	45	35	30	10	10	80	Wetland
KF, DM, DB, JM	210706	45	3	R	45	35	30	10	10	80	Wetland
KF, DM, DB, JM	210706	45	4	L	30	50	40	15	5	80	Wetland
KF, DM, DB, JM	210706	45	4	R	30	50	40	15	5	80	Wetland
KF, DM	210707	39	1	L	35	40	40	20	10	70	Wetland
KF, DM	210707	39	1	R	35	40	40	20	10	70	Wetland
KF, DM	210707	50	1	L	50	40	30	10	5	90	Wetland
KF, DM	210707	50	1	R	50	40	30	10	5	90	Wetland
KF, DM	210707	50	2	L	40	50	30	10	10	85	Wetland
KF, DM	210707	50	2	R	40	50	30	10	10	85	Wetland
KF, DM	210707	50	3	L	40	50	30	10	10	85	Wetland
KF, DM	210707	50	3	R	40	50	30	10	10	85	Wetland
KF, DM	210707	14	1	L	50	40	20	15	10	90	Wetland
KF, DM	210707	14	1	R	50	40	20	15	10	90	Wetland
KF, DM	210707	14	2	L	20	60	15	10	5	75	Wetland
KF, DM	210707	14	2	R	20	60	15	10	5	75	Wetland
KF, DM	210707	14	2	L	20	60	15	10	5	75	Wetland
KF, DM	210707	14	2	R	20	60	15	10	5	75	Wetland
KF, DM	210707	14	3	L	35	70	40	5	5	40	Wetland
KF, DM	210707	14	3	R	35	70	40	5	5	40	Wetland
KF, DM	210707	14	4	L	35	50	40	10	10	70	Wetland
KF, DM	210707	14	4	R	35	50	40	10	10	70	Wetland
KF, DM	210707	14	5	L	40	40	30	5	10	90	Wetland
KF, DM	210707	14	5	R	40	40	30	5	10	90	Wetland
KF, DM	210707	14	6	L	60	50	50	5	5	90	Wetland
KF, DM	210707	14	6	R	60	50	50	5	5	90	Wetland
KF, DM	210707	14	7	L	65	50	20	10	5	85	Wetland
KF, DM	210707	14	7	R	65	50	20	10	5	85	Wetland
KF, DM	210713	81	1	L	40	80	20	5	10	90	Wetland
KF, DM	210713	81	1	R	40	80	20	5	10	90	Wetland
KF, DM	210713	47	1	L	50	70	30	5	5	90	Wetland
KF, DM	210713	47	1	R	50	70	30	5	5	90	Wetland
KF, DM	210713	62	1	L	40	70	30	5	5	70	Wetland
KF, DM	210713	62	1	R	40	70	30	5	5	70	Wetland
KF, DM	210713	58	1	L	30	50	20	5	5	60	Wetland
KF, DM	210713	58	1	R	30	50	20	5	5	60	Wetland
KF, DM	210713	13	1	L	45	75	20	10	20	90	Wetland
KF, DM	210713	13	1	R	45	75	20	10	20	90	Wetland
KF, DM	210714	43	1	L	50	75	25	10	5	95	Wetland

Surveyors	Survey Date	WC #	Reach #	Banks and Riparian Area							
				Bank (L or R)	% Trees	% Shrubs	% Grass	% Bare	% Eroding	% Shade	Dominant Riparian Veg.
KF, DM	210714	43	1	R	50	75	25	10	5	95	Wetland
KF, DM	210714	57	1	L	60	60	10	5	10	90	Wetland
KF, DM	210714	57	1	R	60	60	10	5	10	90	Wetland
KF, DM	210715	59	1	L	50	60	20	10	10	80	Wetland
KF, DM	210715	59	1	R	50	60	20	10	10	80	Wetland
KF, DM	210715	63	1	L	60	50	30	10	10	90	Wetland
KF, DM	210715	63	1	R	60	50	30	10	10	90	Wetland
KF, DM	210715	61	1	L	50	50	30	10	5	80	Wetland
KF, DM	210715	61	1	R	50	50	30	10	5	80	Wetland
KF, DM	210715	65	1	L	50	60	25	15	10	95	Wetland
KF, DM	210715	65	1	R	50	60	25	15	10	95	Wetland
DB, JM	210714	11	1	L	50	25	35	N/A	N/A	75	Wetland
DB, JM	210714	11	1	R	50	25	25	N/A	N/A	75	Wetland
DB, JM	210714	11	2	L	50	25	25	N/A	N/A	N/A	Coniferous Forest
DB, JM	210714	11	2	R	50	25	25	N/A	N/A	N/A	Coniferous Forest
DB, JM	210714	11	3	L	N/A	N/A	N/A	N/A	N/A	N/A	Wetland
DB, JM	210714	11	3	R	N/A	N/A	N/A	N/A	N/A	N/A	Wetland
DB, JM	210714	11	4	L	50	25	25	N/A	N/A	N/A	Coniferous Forest
DB, JM	210714	11	4	R	50	25	25	N/A	N/A	N/A	Coniferous Forest
DB, JM	210714	11	5	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210714	11	5	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210715	10	1	L	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210715	10	1	R	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210715	10	2	L	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210715	10	2	R	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210707	69	1	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	69	1	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	69	2	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	69	2	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	69	3	L	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	69	3	R	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	1	L	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	1	R	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	2	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	2	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	3	L	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	3	R	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	4	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	4	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	5	L	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	5	R	50	25	25	N/A	N/A	N/A	Wetland
DB, JM	210707	22	6	L	25	25	50	N/A	N/A	N/A	Wetland

Surveyors	Survey Date	WC #	Reach #	Banks and Riparian Area							
				Bank (L or R)	% Trees	% Shrubs	% Grass	% Bare	% Eroding	% Shade	Dominant Riparian Veg.
DB, JM	210707	22	6	R	25	25	50	N/A	N/A	N/A	Wetland
DB, JM	210707	22	7	L	20	50	30	N/A	N/A	N/A	Wetland
DB, JM	210707	22	7	R	20	50	30	N/A	N/A	50	Wetland
DB, JM	210708	15	1	L	25	25	50	N/A	N/A	80	Grass
DB, JM	210708	15	1	R	25	25	50	N/A	N/A	80	Grass
DB, JM	210708	15	2	L	25	25	50	N/A	N/A	80	Grass
DB, JM	210708	15	2	R	25	25	50	N/A	N/A	80	Grass
DB, JM	210708	15	3	L	25	25	50	N/A	N/A	80	N/A
DB, JM	210708	15	3	R	25	25	50	N/A	N/A	80	N/A
DB, JM	210708	15	4	L	50	25	25	N/A	N/A	80	N/A
DB, JM	210708	15	4	R	50	25	25	N/A	N/A	80	N/A
DB, JM	210708	15	5	L	25	25	50	N/A	N/A	N/A	N/A
DB, JM	210708	15	5	R	25	25	50	N/A	N/A	80	N/A
DB, JM	210708	15	6	L	50	25	25	N/A	N/A	80	N/A
DB, JM	210708	15	6	R	50	25	25	N/A	N/A	80	N/A
DB, JM	210708	15	7	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DB, JM	210708	15	7	R	30	20	50	N/A	N/A	N/A	N/A
DB, JM	210713	15	8	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DB, JM	210713	15	8	R	60	20	20	N/A	N/A	N/A	N/A
DB, JM	210713	15	9	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DB, JM	210713	15	9	R	40	30	30	N/A	N/A	N/A	N/A
DB, JM	210713	12	1	L	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210713	12	1	R	50	25	25	N/A	N/A	80	Coniferous Forest
DB, JM	210713	12	2	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DB, JM	210713	12	2	R	50	25	25	N/A	N/A	N/A	Coniferous Forest
DB, JM	210713	12	3	L	N/A	0	N/A	100	N/A	N/A	None
DB, JM	210713	12	3	R	N/A	0	N/A	100	N/A	N/A	None
DB, JM	210713	12	4	L	0	0	0	100	0	0	N/A
DB, JM	210713	12	4	R	50	25	25	N/A	N/A	N/A	N/A
ZS, DM	210720	51	1	L	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZS, DM	210720	51	1	R	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ZS, DM	210720	19	1	L	5	30	5	0	0	40	Mixed-wood Forest
ZS, DM	210720	19	1	R	5	30	5	0	0	40	Mixed-wood Forest
ZS, DM	210720	20	1	L	5	15	20	0	0	40	Wetland
ZS, DM	210720	20	1	R	5	15	20	0	0	40	Wetland
ZS, DM	210721	20	2	L	3	5	7	0	5	20	Mixed-wood Forest
ZS, DM	210721	20	2	R	3	5	7	0	5	20	Mixed-wood Forest
ZS, DM	210721	23	1	L	30	10	5	0	0	45	Wetland
ZS, DM	210721	23	1	R	30	10	5	0	0	45	Wetland
ZS, DM	210721	49	1	L	7	20	10	0	0	40	Wetland
ZS, DM	210721	49	1	R	7	20	10	0	0	40	Wetland
ZS, DM	210722	55	1	L	25	25	5	0	0	55	Wetland

Surveyors	Survey Date	WC #	Reach #	Banks and Riparian Area							
				Bank (L or R)	% Trees	% Shrubs	% Grass	% Bare	% Eroding	% Shade	Dominant Riparian Veg.
ZS, DM	210722	55	1	R	25	25	5	0	0	55	Wetland

Table 4. Detailed Fish Habitat information, Part 4. Transect Data

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
200814	5	1	1	606170	5006662	Run(dry)	N/A	0.4	0	0.15													0.4	0.15										
200814	5	1	2	606292	5006672	Run(dry)	N/A	0.5	0	0.25													0.5	0.26										
200814	4	1	1	606007	5006617	Flat	0.64	0.9	0	0													0.9	0.25										
200814	4	2	1	606166	5006570	Run(dry)	1.2	1.4	0	0.21													1.4	0	1.35	0.18	1.3	0.16	1.25	0.16	1.2	0.18				
200814	4	2	2	606187	5006552	Pool	2	2.6	0	0													2.6	0.32										
200814	6	1	1	606202	5006799	Step-pool (dry)	N/A	0.9	0	0.26													0.9	0.24										
200814	6	1	2	606207	500674	Run(dry)	N/A	0.6	0	0.15													0.6	0.18										
200814	6	1	3	606252	5006761	Run	0.5	0.5	0	0.18													0.5	0.2										
200814	7	1	1	606284	5006854	Rif/Run (dry)	N/A	0.9	0	0.13													0.9	0.17										
200814	7	1	2	606279	5006804	Rif/Run (dry)	0.5	0.5	0	0.25													0.5	0.22										
200814	7	1	3	606268	5006749	Rif/Run (dry)	0.7	0.7	0	0.3													0.7	0.32										
200814	7	1	4	606306	5006706	Rif/Run (dry)	0.5	0.5	0	0.26													0.5	0.02										
200814	7	1	5	606337	5006672	Flat	1	1	0	0.23													1	0.2										
200814	7	1	6	606358	5006624	Rif/Run (dry)	1.5	1.5	0	0.2													1.5	0.25										
200814	7	1	7	606379	5006577	Pool/Flat	1.2	1.2	0	0.22													1.2	0.19										
200814	7	1	8	606407	5006529	Rif/Run (dry)	0.8	0.8	0	0.27													0.8	0.28										
200818	1	1	1	606705	5006155	Run	1.4	2	0	0	0.1	0.1	0.2	0.26	0.3	0.29							2	0	1.9	0.04	1.8	0.08	1.7	0.1				
200818	1	2	1	606725	5006089	Riffle	1.2	1.6	0	0.06													1.6	0	1.5	0.24	1.4	0.16	1.3	0.16	1.2	0.22		
200818	1	2	2	606758	5006057	Pool	2.1	2.1	0	0.18													2.1	0.26										
200818	1	2	3	606759	5005998	Riffle	0.8	2	0	0	0.15	0.05	0.3	0.14	0.45	0.17	0.6	0.16					2	0	1.85	0.21	1.7	0.14	1.55	0.11	1.4	0.17		
200818	1	2	4	606764	5005950	Riffle	0.8	1.7	0	0	0.1	0.1	0.2	0.18	0.3	0.23	0.4	0.04					1.7	0	1.6	0.2	1.5	0.17	1.4	0.16	1.3	0.2	1.2	0.33
200818	1	2	5	606791	5005905	Riffle	0.5	1.5	0	0	0.05	0.08	0.1	0.04	0.15	0.03	0.2	0.3					1.5	0	1.3	0.16	1.1	0.21	0.9	0.15	0.7	0.22		
200818	1	2	6	606831	5005867	Riffle	1.2	1.4	0	0	0.05	0.12	0.1	0.11	0.15	0.14	0.2	0.15					1.4	0.19										
200818	3	1	1	606346	5006161	Run	0.5	0.5	0	0.1													0.5	0.2										
200818	3	1	2	606394	5006139	Run	0.8	1	0	0	0.05	0.03	0.1	0.04	0.15	0.08	0.2	0.22					1	0.3										
200818	3	1	3	606450	5006139	Run (dry)	N/A	1.5	0	0.26													1.5	0.39										
200818	3	1	4	606497	5006144	Run	0.5	0.8	0	0.42													0.5	0.31	0.55	0.3	0.6	0.23	0.65	0.22	0.7	0.2	0.75	..21	0.8	0.24

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
200818	3	1	5	606516	5006097	Run	0.4	0.7	0	0	0.05	0.02	0.1	0.05	0.15	0.07	0.2	0.29	0.25	0.34	0.3	0.32	0.7	0.09												
200818	3	1	6	606533	5006035	Run (dry)	N/A	0.7	0	0.2													0.7	0.27										
200818	3	1	7	606568	5005994	Run	0.2	1.8	0	0	0.15	0.04	0.3	0.08	0.45	0.16	0.6	0.1					1.8	0	1.7	0.29	1.5	0.25	1.3	0.24	1.1	0.08	0.9	0.05	0.8	0.27
200818	3	1	8	606619	5005956	Run (dry)	N/A	1.7	0	0													1.7	0										
200818	3	1	9	606671	5005930	Run (dry)	N/A	1.1	0	0.14													1.1	0.25										
200818	3	1	10	606736	5005906	Run (dry)	N/A	0.7	0	0.04													0.7	0.12										
200818	3	1	11	606796	5005875	Run	0.35	1.6	0	0	0.15	0.04	0.3	0.12	0.45	0.14	0.6	0.28	0.75	0.36			1.6	0	1.5	0.24	1.4	0.26	1.3	0.28	1.2	0.3	1.1	0.33		
200818	3	1	12	606854	5005855	Run	1.1	2.4	0	0	0.1	0.22	0.3	0.25	0.4	0.14	0.5	0.2					2.4	0	2.2	0.1	2	0.03	1.8	0.02	1.6	0.15				
200818	3	1	13	606884	5005281	Riffle	1.4	1.4	0	0.22													1.4	0.28										
200818	3	2	1	606920	5005744	Riffle	0.75	1.2	0	0	0.05	0.01	0.1	0.15	0.15	0.16	0.2	0.25					1.2	0										
200818	3	3	1	606953	5005668	Flat	1.1	1.6	0	0.13													1.6	0	1.5	0.15	1.4	0.19	1.3	0.17	1.2	0.19	1.1	0.2		
200818	3	3	2	607000	5005648	Flat	0.9	1.4	0	0.02													1.4	0	1.3	0.14	1.2	0.15	1.1	0.13	1	0.13	0.9	0.12		
211014	8	1	1	606584	5006489	Riffle	0.5	1.1	0.2	0	0.25	0.05	0.3	0.06	0.35	0.07	0.4	0.09	0.45	0.12			1.1	0	1.05	0.14	1	0.14	0.95	0.18						
211014	8	1	2	606624	5006493	Flat	2	2.4	0.2	0	0.25	0.07	0.3	0.11	0.35	0.17	0.4	0.23					2.6	0	2.55	0.36	2.5	0.36	2.45	0.36	2.4	0.36				
211014	8	2	1	606675	5006501	Riffle	1	1.3	0.2	0	0.25	0.16	0.3	0.17	0.35	0.17							1.5	0	1.45	0.17	1.4	0.18	1.35	0.19						
211014	8	2	2	606717	5006523	Riffle	1.55	1.55	0.2	0.4									30cm undercut bank				1.75	0.1										
211014	8	2	3			flat	0.6	0.85	0.2	0	0.25	0.17	0.3	0.23	0.35	0.03							1.05	0	1	0.17	0.95	0.17						
200818	8	3	1	606729	5006618	Run (dry)	N/A	0.7	0	0.16													0.7	0.13										
200818	8	3	2	606724	5006619	Pool	0.8	0.8	0	0.3													0.8	0.14										
200818	8	4	1	606723	5006622	Riffle (dry)	N/A	0.65	0	0.13													0.65	0.26										
200818	8	4	2	606750	5006611	Riffle (dry)	N/A	1	0	0.29													1	0.34										
200818	8	5	1	606733	500707	Run (dry)	0.5	1.1	0	0	0.1	0.1	0.2	0.22	0.3	0.26	0.4	0.28					1.1	0	1.05	0.38	1	0.4						
200818	9	1	1	607704	5006660	Flat	1	1	0	0.11													1	0										
200818	9	1	2	607664	5006684	Flat	0.8	0.8	0	0													0.8	0										
200818	9	1	3	607628	5000223	Flat	1.3	1.3	0	0.05													1.3	0										
200818	9	1	4	607604	5006764	Flat	0.9	0.9	0	0													0.9	0										
200818	9	1	5	607560	5006790	Flat	0.8	0.8	0	0.19													0.8	0.19										
200818	9	1	6	607526	5006824	Flat	0.5	0.8	0	0	0.05	0.06	0.1	0.07									0.8	0	0.75	0.06	0.7	0.04	0.65	0.07	0.6	0.12				
200818	9	2	1	607464	5006960	Run (dry)	N/A	0.8	0	0.14													0.8	0.16										
200818	9	3	1	607478	5007008	Flat	1.1	1.9		0	0.05	0	0.1	0.17	0.15	0.2	0.2	0.21					1.9	0	1.8	0.15	1.7	0.22	1.6	0.22	1.5	0.21	1.4	0.24	1.3	0.25
200818	9	3	2	607499	5007051	Flat	0.6	0.6	0	0.04													0.6	0.08										
200818	9	3	3	607451	5007068	Riffle	0.2	0.2	0	0.12													0.2	0.09										

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height									
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
200818	9	3	4	607420	5007112	Flat	1	1.2	0	0.2													1.2	0	1.15	0.11	1.1	0.11	1.05	0.14	1	0.16				
200818	9	3	5	607365	5007137	Flat	2.4	2.4	0	0.1													2.4	0												
200818	9	3	6	607330	5007159	Flat	1	1.1	0	0.13													1.1	0	1.05	0.05	1	0.1								
200818	9	3	7	607281	5007177	Flat	1.1	1.8	0	0.28													1.8	0	1.65	0.2	1.5	0.25	1.35	0.19	1.2	0.23	1.05	0.32		
200818	9	4	1	607271	5007185	Run (dry)	N/A	1.5	0	0.36													1.5	0												
200818	9	4	2	607230	5007221	Run	1	1	0	0.09													1	0.11												
06-Jul-21	WC2	1	1	606378	5006310	Flat	0.8	1.4	0.3	0	0.35	0.05	0.4	0.23									1.7	0	1.6	0.05	1.5	0.09	1.4	0.11	1.3	0.08	1.2	0.1		
06-Jul-21	WC2	1	2	606421	5006293	Flat	0.7	1.3	0.2	0	0.25	0.01	0.3	0.03									1.3	0	1.25	0.08	1.2	0.03	1.15	0.07	1.1	0.08	1.05	0.08	1	0.1
06-Jul-21	WC2	1	3	606448	5006255	Flat	0.4	0.8	0.15	0	0.2	0.01	0.25	0.1									0.8	0	0.75	0.1	0.7	0.11	0.65	0.11						
06-Jul-21	WC2	1	4	606482	5006228	Riffle	0.7	0.95	0.25	0	0.3	0.09	0.35	0.09									0.95	0	0.9	0.01	0.85	0.05								
06-Jul-21	WC45	1	1	608363	5007820	Flat	1.1	1.3	0.2	0	0.25	0.04	0.3	0.13									1.5	0	1.45	0.01	1.4	0.01								
06-Jul-21	WC45	1	2	608323	5007799	Flat	0.45	0.6	0.35	0	0.4	0.04	0.45	0.11									0.95	0	0.9	0.1										
06-Jul-21	WC45	1	3	608312	5007753	Flat	0.5	0.85	0.35	0	0.4	0.06	0.45	0.08	0.5	0.12							1.2	0	1.15	0.01	1.1	0.01	1.05	0.09	1	0.08				
06-Jul-21	WC45	1	4	608266	5007730	Flat	1.65	1.85	0.15	0	0.2	0.04	0.25	0.12									2	0	1.95	0.05	1.9	0.03								
06-Jul-21	WC45	2	1	608259	5007730	Riffle	0.65	0.95	0.2	0	0.25	0.09	0.3	0.24									1.15	0	1.1	0.05	1.05	0.09	1	0.13	0.95	0.13				
06-Jul-21	WC45	3	1	608211	5007747	Flat	0.5	0.65	0.15	0	0.2	0.09											0.8	0	0.75	0.02	0.7	0.04								
06-Jul-21	WC45	3	2	608172	5007729	Flat	1.55	1.7	0.25	0	0.3	0.05											1.95	0	1.9	0.02	1.85	0.05								
06-Jul-21	WC45	3	3	608135	5007720	Riffle	0.95	1.2	0.25	0	0.3	0.06	0.35	0.3	0.3	0.29							1.45	0	1.4	0.03	1.35	0.06								
06-Jul-21	WC45	3	4	608120	5007671	Flat	0.9	1.5	0.2	0	0.25	0.12	0.3	0.14	0.35	0.19	0.4	0.17					1.7	0	1.6	0.16	1.5	0.13	1.4	0.11	1.3	0.11				
06-Jul-21	WC45	3	5	608080	5007642	Flat	0.4	0.8	0.2	0	0.25	0.03	0.3	0.14	0.35	0.23							1	0	0.95	0.03	0.9	0.1	0.85	0.15	0.8	0.2	0.75	0.24		
06-Jul-21	WC45	3	6	608062	5007592	Pool	1.3	1.45	0.3	0	0.35	0.05	0.4	0.08									1.75	0	1.7	0.04										
06-Jul-21	WC45	3	7	608090	5007248	Flat	1.2	1.45	0.2	0	0.25	0.01	0.3	0.03	0.35	0.03	0.4	0.05					1.65	0	1.6	0.09										
06-Jul-21	WC45	4	1	608098	5007519	Riffle	0.6	0.75	0.2	0	0.25	0.12											0.95	0	0.9	0.02	0.85	0.08								
07-Jul-21	WC39	1	1	608183	5007323	Riffle-Run	0.35	0.95	0.2	0	0.3	0.12	0.4	0.13	0.5	0.13							1.15	0	1.05	0.11	0.95	0.12	0.85	0.12	0.8	0.11				
07-Jul-21	WC50	1	1	608096	5007456	Run	0.35	0.55	0.2	0	0.25	0.02	0.3	0.11	0.35	0.11							0.75	0	0.7	0.12										
07-Jul-21	WC50	1	2	608050	5007453	Run	1.75	1.9	0.2	0	0.25	0.15											2.1	0	2.05	0.01	2	0.19								
07-Jul-21	WC50	2	1	608010	5007451	Riffle-Run	0.55	0.7	0.15	0	0.2	0.05	0.25	0.15									0.85	0	0.8	0.04	0.75	0.08	0.7	0.15						
07-Jul-21	WC50	3	1	607976	5007436	Run	0.9	1.2	0.25	0	0.3	0.09	0.35	0.13	0.4	0.29							1.45	0	1.4	0.01	1.35	0.09	1.3	0.2						
07-Jul-21	WC50	3	2	607975	5007410	Riffle	0.55	0.8	0.2	0	0.25	0.05	0.3	0.11									1	0	0.95	0.07	0.9	0.07	0.85	0.1						
07-Jul-21	WC50	3	3	607974	5007357	Run	1	1.2	0.2	0	0.25	0.06	0.3	0.28									1.4	0	1.35	0.05	1.3	0.2								
07-Jul-21	WC14	1	1	608149	5007301	Riffle-Run	1.7	1.9	0.2	0	0.25	0.04	0.3	0.13									2.1	0	2.05	0.18	2	0.16								

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
07-Jul-21	WC14	1	2	608146	5007331	Flat	2.6	2.7	0.35	0	0.4	0.03											3.05	0	3	0.05								
07-Jul-21	WC14	1	3	608104	5007354	Riffle-Run	2.8	3.25	0.15	0	0.2	0.05	0.25	0.21	0.3	0.28	0.35	0.29					3.4	0	3.35	0.02	3.3	0.03	3.25	0.09	3.2	0.1	3.15	0.12		
07-Jul-21	WC14	1	4	608057	5007340	Riffle-Run	1.55	1.9	0.2	0	0.25	0.24											2.1	0	2.05	0.01	2	0.06	1.95	0.08	1.9	12	1.85	0.17	1.8	0.35
07-Jul-21	WC14	1	5	608001	5007337	Flat	1.6	1.8	0.15	0	0.2	0.02	0.25	0.14									1.95	0	1.9	0.02	1.85	0.22								
07-Jul-21	WC14	2	1	607956	5007338	Boulder-bed	1.5	1.75	0.2	0	0.25	0.13											1.95	0	1.9	0.01	1.85	0.02	1.8	0.04	1.75	0.48				
07-Jul-21	WC14	3	1	607919	5007323	Flat	1.55	1.8	0.15	0	0.2	0.37											1.95	0	1.9	0.01	1.85	0.02	1.8	0.3	1.75	0.38				
07-Jul-21	WC14	3	2	607920	5007282	Flat	1.1	1.35	0.15	0	0.2	0.35											1.5	0	1.45	0.19	1.4	0.18	1.35	0.2	1.3	0.2				
08-Jul-21	WC14	3	3	607877	5007273	Flat	~7	~9																										
08-Jul-21	WC14	3	4	607865	5007313	Flat	~5	~6																										
08-Jul-21	WC14	3	5	607866	5007337	Flat	2.45	2.65	0.15	0	0.2	0.04	0.25	0.12									2.8	0	2.75	0.06	2.7	0.07								
08-Jul-21	WC14	3	6	607843	5007382	Flat	2.3	2.5	0.15	0	0.2	0.17	0.25	0.2	0.3	0.29							2.65	0	2.6	0.07	2.55	0.32								
08-Jul-21	WC14	3	7	607814	5007409	Riffle	1.75	2	0.15	0	0.2	0.01	0.25	0.25									2.15	0	2.1	0.03	2.05	0.36	2	0.38						
08-Jul-21	WC14	4	1	607771	5007430	Rapid	2.5	2.95	0.15	0	0.2	0.03	0.25	0.33									3.1	0	3	0.03	2.9	0.03	2.8	0.06	2.7	0.25	2.75	0.25		
08-Jul-21	WC14	5	1	607716	5007459	Flat	~8	~9																										
08-Jul-21	WC14	5	2	607702	5007452	Flat	1.7	1.8	0.15	0	0.2	0.01	0.25	0.12									2.05	0	2	0.05	1.95	0.22								
08-Jul-21	WC14	6	1	607679	5007459	Riffle	1.8	1.95	0.2	0	0.25	0.26											2.15	0	2.1	0.2	2.05	0.21								
08-Jul-21	WC14	7	1	607623	5007459	Run	1.55	2.45	0.15	0	0.2	0.03	0.25	0.05	0.3	0.3							2.6	0	2.45	0.13	2.3	0.15	2.15	0.18	2	0.22	1.85	0.24		
08-Jul-21	WC14	7	2	607577	5007465	Riffle	1.65	1.9	0.2	0	0.25	0.05	0.3	0.28									2.1	0	2.05	0.12	2	0.2	1.95	0.32						
08-Jul-21	WC14	7	3	607527	5007470	Run	2.3	2.85	0.15	0	0.2	0.01	0.25	0.06	0.3	0.1	0.35	0.12	0.4	0.17	0.45	28	3	0	2.95	0.05	2.9	0.11	2.85	0.21	2.8	0.2	2.75	0.35		
08-Jul-21	WC14	7	4	607486	5007490	Rapid	3.25	4.25	0.15	0	0.2	0.01	0.25	0.06	0.3	0.29	0.35	0.3					4.4	0	4.2	0.05	4	0.12	3.9	0.17	3.8	0.21	3.7	0.24	3.6	0.71
08-Jul-21	WC14	7	5	607436	5007476	Run	1.35	2.25	0.15	0	0.25	0.01	0.35	0.04	0.45	0.17	0.55	0.25	0.65	0.04	0.75	0.19	2.4	0	2.35	0.11	2.3	0.12	2.25	0.1	2.2	0.11	2.15	0.09	2.05	0.21
13-Jul-21	WC81	1	1	608919	5007948	Flat	1.3	1.4	0.15	0	0.2	0.18											1.55	0	1.5	0.16								
13-Jul-21	WC81	1	2	608873	5007961	flat	0.65	0.9	0.2	0	0.25	0.1	0.3	0.09									1.1	0	1.05	0.1	1	0.06	0.95	0.09						
13-Jul-21	WC81	1	3	608830	5007948	Flat	0.55	1.25	0.2	0	0.25	0.21											1.45	0	1.35	0.12	1.25	0.16	1.15	0.17	1.05	0.15	0.95	0.15	0.8	0.17
13-Jul-21	WC47	1	1	609261	5008053	Flat	0.65	0.8	0.2	0	0.25	0.16											1	0	0.95	0.02	0.9	0.22								
13-Jul-21	WC62	1	1	608630	5008444	Flat	0.55	0.7	0.2	0	0.25	0.05	0.3	0.07									0.9	0	0.85	0.03								
13-Jul-21	WC62	1	2	608664	5008443	Flat	0.25	0.35	0.15	0	0.2	0.07											0.5	0	0.45	0.13								
13-Jul-21	WC62	1	3	608676	5008447	Flat	0.5	0.65	0.2	0	0.25	0.09	0.3	0.08									0.85	0	0.8	0.04								
13-Jul-21	WC58	1	1	607802	5008974	Flat	0.65	0.8	0.15	0	0.2	0.18											0.95	0	0.9	0.19	0.85	0.17								
13-Jul-21	WC58	1	2	607780	5009006	Flat	0.4	0.6	0.15	0	0.2	0.03	0.25	0.05	0.3	0.17							0.75	0	0.7	0.18								
13-Jul-21	WC13	1	1	607182	5006688	Flat	0.55	0.65	0.2	0	0.25	0.11											0.85	0	0.8	0.12								
13-Jul-21	WC13	1	2	607159	5006688	Flat	1	1.25	0.15	0	0.2	0.03	0.25	0.17									1.4	0	1.35	0.08	1.3	0.09	1.25	0.2						

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
14-Jul-21	WC43	1	1	607861	5008748	Flat	0.3	0.5	0.15	0	0.2	0.05	0.25	0.11									0.65	0	0.6	0.05	0.55	0.14								
14-Jul-21	WC43	1	2	607881	5008688	Flat	0.65	0.9	0.15	0	0.2	0.04	0.25	0.14	0.3	0.27							1.05	0	1	0.08	0.95	0.29								
14-Jul-21	WC43	1	3	607907	5008652	Flat	0.65	0.95	0.15	0	0.2	0.23											1.1	0	1.05	0.24	1	0.24	0.95	0.21	0.9	0.21	0.85	0.22		
14-Jul-21	WC43	1	4	607932	5008611	Flat	0.6	0.75	0.15	0	0.2	0.28											0.9	0	0.85	0.03	0.8	0.27								
14-Jul-21	WC43	1	5	607953	5008572	Flat	1.2	1.45	0.15	0	0.2	0.03	0.25	0.32									1.6	0	1.55	0.04	1.5	0.06	1.45	0.14						
14-Jul-21	WC43	1	6	607992	5008488	Flat	0.45	0.65	0.15	0	0.2	0.02	0.25	0.06	0.3	0.19							0.8	0	0.75	0.15										
14-Jul-21	WC43	1	7	608041	5018433	Flat	1.3	1.6	0.15	0	0.2	0.01	0.25	0.21									1.75	0	1.7	0.03	1.65	0.06	1.6	0.22	1.55	0.19				
14-Jul-21	WC43	1	8	608051	5008383	Flat	1.5	1.6	0.2	0	0.25	0.24											1.8	0	1.75	0.22										
14-Jul-21	WC43	1	9	608076	5008333	Flat	0.85	1.05	0.15	0	0.2	0.2	0.25	0.2									1.2	0	1.15	0.06	1.1	0.1								
14-Jul-21	WC43	1	10	608095	5008291	Flat	0.85	1.1	0.15	0	0.2	0.16											1.25	0	1.2	0.21	1.15	0.22	1.1	0.19	1.05	0.23				
14-Jul-21	WC43	1	11	608117	5008252	Flat	0.75	1	0.15	0	0.2	0.13											1.15	0	1.1	0.05	1.05	0.1	1	0.25	0.95	0.24				
14-Jul-21	WC57	1	1	607662	5007952	run	0.95	1.3	0.15	0	0.2	0.08	0.25	0.12	0.3	0.24							1.45	0	1.4	0.18	1.35	0.18	1.3	0.17	1.25	0.16				
14-Jul-21	WC57	1	2	607617	5007970	Riffle	0.75	0.95	0.15	0	0.2	0.01	0.25	0.19	0.3	0.21							1.1	0	1.05	0.16										
14-Jul-21	WC57	1	3	607585	5008023	Riffle	0.65	0.95	0.15	0	0.2	0.04	0.25	0.06	0.3	0.07	0.35	0.08	0.4	0.22			1.1	0	1.05	0.2										
14-Jul-21	WC57	1	4	607537	5008024	run	1.1	1.35	0.2	0	0.25	0.21											1.55	0	1.5	0.04	1.45	0.12	1.4	0.19	1.35	0.18				
14-Jul-21	WC57	1	5	607491	5008008	run	0.65	0.95	0.15	0	0.2	0.03	0.25	0.07	0.3	0.12							1.1	0	1.05	0.05	1	0.2	0.95	0.16						
14-Jul-21	WC57	1	6	607440	5007998	Riffle	0.6	0.95	0.15	0	0.2	0.1	0.25	0.1	0.3	0.24							1.1	0	1.05	0.15	1	0.16	0.95	0.17	0.9	0.23				
14-Jul-21	WC57	1	7	607395	5008015	Run	0.7	1.1	0.15	0	0.25	0.03	0.35	0.1	0.45	0.17	0.5	0.28					1.25	0	1.2	0.37										
15-Jul-21	WC59	1	1	607416	5007943	Flat	0.5	0.8	0.15	0	0.2	0.03	0.25	0.03	0.3	0.08	0.35	0.28					0.95	0	0.9	0.03	0.85	0.29								
15-Jul-21	WC59	1	2	607410	5007987	Flat	0	0.95	0.15	0													1.1	0												
15-Jul-21	WC63	1	1	607291	5007920	Riffle	0.4	0.8	0.15	0	0.2	0.21											0.95	0	0.9	0.04	0.85	0.06	0.8	0.11	0.75	0.11	0.7	0.15	0.6	0.17
15-Jul-21	WC63	1	2	607264	5007889	Riffle	0.15	0.3	0.15	0	0.2	0.05	0.25	0.15									0.45	0	0.4	0.12										
15-Jul-21	WC61	1	1	607325	5007892	Riffle	0.4	0.6	0.15	0	0.2	0.04	0.25	0.12									0.75	0	0.7	0.04	0.65	0.15								
15-Jul-21	WC61	1	2	607281	5007857	Riffle	0.85	1	0.15	0	0.2	0.04	0.25	0.13									1.15	0	1.1	0.05										
15-Jul-21	WC65	1	1	607253	5007898	Riffle	0.45	0.6	0.15	0	0.2	0.04	0.25	0.12									0.75	0	0.7	0.08										
14-Jul-21	WC11	1	1	20T 0608081	5006242	Flat	0.65	0.75	0.2	0	0.25	0.01	0.3	0.7									0.95	0												
14-Jul-21	WC11	1	2	20T 0608081	5006256	Flat	0.8	0.85	0.2	0	0.25	0.06											1.05	0												
14-Jul-21	WC11	1	3	20T 0608049	5006138	Flat	1.25	1.7	0.2	0	0.3	0.12	0.4	0.14	0.5	0.15							1.9	0	1.85	0.05	1.8	0.1	1.75	0.14						
14-Jul-21	WC11	1	4	20T 0608013	5006108	Flat	1.3	1.5	0.2	0	0.25	0.27											1.7	0	1.65	0.05	1.6	0.09	1.55	0.11						
14-Jul-21	WC11	1	5	20T 0607977	5006054	Flat	1.05	1.15	0.2	0	0.25	0.05	0.3	0.12									1.35	0												
14-Jul-21	WC11	1	6	20T 0607967	5005989	Flat	0.6	0.8	0.2	0													1	0	0	0.02	0.8	0.02								

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				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
14-Jul-21	WC11	1	7	20T 0607936	5005961	Flat	0.55	0.55	0.15	0													0.7	0										
14-Jul-21	WC11	1	8	20T0607894	5005936	flat	0.35	0.35	0.2	0													0.55	0										
14-Jul-21	WC11	1	9	20T0607845	5005976	flat	0.7	0.7	0.2	0													0.9	0										
14-Jul-21	WC11	1	10	20T0607803	5006019	flat	0.3	0.3	0.3	0													0.6	0										
14-Jul-21	WC11	1	11	20T0607802	5006019	Flat	0.75	0.75	0.25	0													1	0										
14-Jul-21	WC11	1	12	20T0607706	5006062	flat	0.4	0.5	0.2	0	0.25	0.05	0.3	0.23									0.7	0										
14-Jul-21	WC11	1	13	20T0607660	5006024	Flat	0.9	1	0.2	0													1.2	0	1.15	0.03	1.1	0.05						
14-Jul-21	WC11	1	14	20T0607592	5005979	flat	1.45	1.65	0.2	0	0.3	0	0.4	0.02									1.85	0										
14-Jul-21	WC11	1	15	20T0607559	5005898	flat	0.45	0.45	0.2	0													0.65	0										
14-Jul-21	WC11	2	1	20T0607495	5005832	riffle	0.3	0.4	0.2	0													0.7	0	0.6	0.1	0.5	0.1						
14-Jul-21	WC11	3	1	20T0607469	5005843	Flat	1	1.25	0.2	0.3	0.06	0.4	0.07	0.03									1.45	0	1.4	0.03								
14-Jul-21	WC11	4	1	20T0607396	5005831	riffle	0.6	1.1	0.2	0	0.3	0.07	0.4	0.12	0.5	0.14	0.6	0.21					1.3	0	1.2	0.1								
14-Jul-21	WC11	4	2	20T0607298	5005796	riffle	0.6	1	0.2	0	0.3	0.13	0.4	0.15									1.2	0	1.1	0.14	1	0.16						
14-Jul-21	WC11	5	1	20T0607264	5005693	flat	0.6	0.7	0.2	0	0.3	0											0.9	0										
14-Jul-21	WC11	5	2	20T0607198	5005664	Flat	0.61	1	0.2	0	0.3	0.05	0.4	0.18									1.2	0	1.1	0.12								
14-Jul-21	WC11	5	3	20T0607182	5005616	flat	0.7	1.1	0.3	0													1.4	0	1.3	0.1	1.2	0.11	1	0.12				
14-Jul-21	WC11	5	4	20T0607040	5005533	Flat	1.25	1.45	0.2	0	0.3	0.11	0.4	0.35									1.65	0										
15-Jul-21	WC10	1	1	20T0607352	5005721	Flat	0.3	0.3	0.2	0													0.5	0										
15-Jul-21	WC10	1	2	20T0607317	5005655	Flat	0.4	0.45	0.2	0	0.25	0.01											0.65	0										
15-Jul-21	WC10	1	3	20T0607305	5005606	Flat	0.7	0.8	0.2	0													1	0	0.95	0.04	0.9	0.08						
15-Jul-21	WC10	1	4	20T0607265	5005568	Flat	0.4	0.8	0.2	0	0.3	0.1	0.4	0.14									1	0	0.95	0.1	0.9	0.18	0.85	0.19	0.8	0.19		
15-Jul-21	WC10	1	5	20T0607224	5005544	Flat	0.85	0.9	0.2	0	0.25	0.03											1.1	0										
15-Jul-21	WC10	2	1	20T0607187	5005526	Riffle	0.7	0.8	0.2	0													1	0	0.95	0.11	0.9	0.1						
07-Jul	WC69	1	1	20T0606886	5009392	Pool	1.7	1.9	0.1	0	0.25	0.01											2	0	1.95	0.06	1.9	0.04	1.85	0.07				
07-Jul	WC69	1	2	20T0606902	5009380	Riffle	1.55	1.8	0.1	0	0.2	0.02											2	0	1.95	0.03	1.9	0.02	1.85	0.03	1.8	0.02	1.75	0.01
07-Jul	WC69	1	3	20T606903	5009375	Flats	1.5	1.8	0.2	0.03	0.25	0.05	0.3	0.18									2	0	1.95	0.01	1.9	0.03	1.85	0.05	1.8	0.08		
07-Jul	WC69	1	4	20T0606931	5009311	Flat	1.2	1.6	0.2	0.01	0.25	0.04	0.3	0.04	0.35	0.05							1.8	0	1.78	0.2	1.7	0.23	1.65	0.25	1.6	0.07	1.55	0.22
07-Jul	WC69	1	5	20T0606943	5009265	Flat	0.85	1.1	0.2	0	0.25	0.01											1.3	0	1.2	0.02	1.15	0.03	1.1	0.1				
07-Jul	WC69	1	6	20T0606930	5009323	Riffle	1.7	2	0.2	0	0.25	0.04	0.3	0.05	0.35	0.06	0.4	0.1					2.2	0	2.15	0.14	2.1	0.18						
07-Jul	WC69	1	7	20T0606999	5009194	Pool	1.75	2.1	0.2	0	0.25	0.01	0.35	0.1									2.3	-0.5	2.25	0.11	2.2	0.2	2.15	0.23	2.1	0.24		
07-Jul	WC69	2	1	20T0607018	5009144	Riffle	1.25	1.5	0.2	0	0.25	0.01	0.3	0.01	0.35	0.06							1.7	0	1.65	0.04	1.6	0.12						

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				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
07-Jul	WC69	2	2	20T0607047	5009096	Flat	1.3	1.45	0.25	0	0.3	0.05	0.35	0.05	0.4	0.05							1.85	0	1.8	0.6	1.75	0.12	1.7	0.18						
07-Jul	WC69	3	1	20T0607086	5009046	Pool	3.85	4	0.2	0	0.3	0.29											4.3	0	4.25	0.04	4.15	0.05	4.1	0.1	4.05	0.11				
07-Jul	WC22	2	1	20T0607073,	5008891	Riffle	1.4	1.7	0.2	0	0.02	0.01											1.9	0	1.8	0.02	1.75	0.1	1.7	0.12	1.65	0.16				
07-Jul	WC22	2	2	20T0607077	5008885	Pool	1.35	1.55	0.3	0	0.35	0.11	0.4	0.25									1.85	0	1.8	0.01	1.75	0.05								
07-Jul	WC22	2	3	20T0607086	5008873	Riffle-Run	2.15	2.45	0.25	0	0.3	0.04	0.35	0.06	0.4	0.4							2.7	0	2.65	0.8	2.55	0.12								
07-Jul	WC22	2	4	20T0607085	5008878	Riffle	2.5	2.7	0.2	0	0.25	0.04	0.3	0.09									2.9	0	2.8	0.02	2.8	0.2								
07-Jul	WC22	4	1	20T0607137	5008733	Flat	3.2	3.5	0.2	0	0.25	0.01	0.3	0.11									3.7	0	3.65	0.01	3.6	0.03	3.55	0.05	3.5	0.24				
07-Jul	WC22	5	1	20T0607108	5008714	Riffle-Run	1.5	1.7	0.2	0	0.25	0.01	0.3	0.03									1.9	0	1.85	0.04	1.8	0.18								
07-Jul	WC22	5	2	20T0607093	5008659	Riffle-Run	3.1	3.35	0.2	0	0.25	0.09	0.3	0.08									3.55	0	3.5	0.09	3.45	0.05	3.4	0.05						
07-Jul	WC22	5	3	20T0607032	5008105	Riffle-Run	2.2	2.3	0.2	0	0.3	0.14											2.5	0												
07-Jul	WC22	5	4	20T0606984	5008547	Riffle-Run	2.55	2.75	0.25	0	0.3	0.13											3	0	2.95	0.01	2.9	0.02	2.85	0.19						
07-Jul	WC22	5	5	20T0606898	5008514	Riffle-Run	4.7	4.95	0.2	0	0.25	0.04	0.3	0.11	0.35	0.2	0.4	0.22					5.15	0	5.1	0.01										
07-Jul	WC22	5	6	20T0606919	5008417	Riffle-Run	3.7	3.8	0.2	0													4	0	3.95	0.02	3.9	0.1								
07-Jul	WC22	5	7	20T0606925	5008422	Riffle Run	2.4	2.7	0.2	0	0.3	0.04	0.4	0.08	0.5	0.1							2.9	0												
07-Jul	WC22	5	8	20T0606935	5008224	Riffle-Run	2.2	3.2	0.2	0	0.25	0	0.3	0.01	0.35	0.06	0.4	0.2	0.45	0.22			3.4	0	3.3	0.02	3.2	0.01	3.1	0.05						
07-Jul	WC22	5	9	20T0606999	5008176	Riffle Run	3.5	3.5	0.2	0													3.7	0												
07-Jul	WC22	6	1	20T0606957	5008162	Flat	3.1	3.1	0.2	1													3.3	0												
07-Jul	WC22	7	1	20T0606990	5008162	Riffle Run	1.3	2	0.2	0	0.3	0.12	0.4	0.24	0.5	0.27							2.2	0	2.1	0.18	2	0.22	1.9	0.26	1.8	0.27				
08-Jul	WC15	1	1	20T0608166	5008175	Flat	0.9	1.3	0.2	0	0.3	0.1											1.3	0	1.25	0.02	1.2	0.12								
08-Jul	WC15	1	2	20T0608217	5008135	Flat	1	1.5	0.2	0	0.3	0.05	0.4	0.19	0.5	0.17							1.7	0	1.6	0.16	1.5	0.29								
08-Jul	WC15	1	3	20T0608218	5008134	flat	0.6	0.6	0														0.6	0												
08-Jul	WC15	1	4	20T0608231	5008084	Flat	0.6	0.6	0.2	0													0.6	0												
08-Jul	WC15	1	5	20T0608232	5008090	Flat	1.25	1.7	0.2	0	0.3	0.08	0.4	0.14	0.5	0.22							1.9	0	1.85	0.01	1.8	0.12	1.75	0.14						
08-Jul	WC15	1	6	20T0608147	5008049	flat	1.7	1.7	0.2	0													1.9	0												
08-Jul	WC15	1	7	20T0608090	5008020	Flat	1.7	2	0.2	0	0.3	0.08											2.2	0	2.1	0.11	2	0.14								
08-Jul	WC15	1	8	20T0608085	5007962	Flat	0.7	0.9	0.2	0													1.2	0	1.1	0.01										
08-Jul	WC15	1	9	20T0608096	5007932	Flat	0.8	1	0.2	0	0.3	0.12	0.35	0.27	0.4	0.31							1.2	0												
08-Jul	WC15	1	10	20T0608095	5007861	Flat	0.9	1.2	0.2	0	0.25	0.03											1.4	0	1.3	0.01	1.2	0.1								
08-Jul	WC15	1	11	20T0608072	5007816	Flat	0.25	0.25	0.2	0													0.45	0												
08-Jul	WC15	2	1	20T0608402	5007768	riffle-run	0.6	0.6	0.2	0													0.8	0												
09-Jul	WC15	3	1	20T060010	5007780	Flat	1.25	1.8	0.2	0	0.3	0.02	0.4	0.08	0.5	0.05	0.6	0.05	0.7	0.1	0.8	0.1	2.1	0	2.05	0.02	2	0.1								

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
09-Jul	WC15	3	2	20T0608003	5007723	Flat	1.5	1.7	0.2	0	0.25	0.01	0.3	0.03	0.35	0.1	0.4	0.18									1.9	0										
09-Jul	WC15	4	1	20T0607999	5007704	Riffle	0.7	1.5	0.2	0	0.3	0.1	0.4	0.1	0.5	0.06	0.6	0.17									1.7	0	1.6	0.35	1.5	0.4	1.4	0.22	1.3	0.08		
09-Jul	WC15	5	1	20T0608001	5007682	flat	1.8	2.1	0.2	0	0.3	0.01	0.4	0.06	0.5	0.33											2.3	0										
09-Jul	WC15	6	1	20T0607968	5007649	Riffle	1.6	1.9	0.2	0																	2.1	0	2	0.15	1.9	0.17	1.8	0.17				
09-Jul	WC15	6	2	20T0607972	5007590	pool	1.45	1.7	0.2	0	0.3	0.02															1.9	0	1.85	0.08	1.8	0.1	1.75	0.04				
09-Jul	WC15	7	1	20T0607972	5007590	flat	1.4	2.1	0.2	0	0.3	0.06	0.4	0.08	0.5	0.12											2.3	0	2.2	0.01	2.1	0.08	1.9	0.01				
13-Jul	WC15	8	1	20T0607901	5007550	riffle	0.8	0.95	0.2	0																	1.15	0	1.1	0.08								
13-Jul	WC15	8	2	20T0607902	5007550	Riffle	0.61	1	0.2	0	0.3	0.11	0.4	0.14													1.2	0	1.1	0.26								
13-Jul	WC15	9	1	20T0607856	5007489	riffle-run	2.5	2.9	0.2	0	0.3	0.29	0.4	0.27													3.1	0	3	0.07	2.9	0.09						
13-Jul	WC15	9	1	20T0607836	5007437	Riffle-Run	1	1.2	0.2	0																	1.4	0	1.3	0.09	1.2	0.14						
13-Jul	WC12	2	1	20T0607483	5006276	flat	0.4	1.2	0.2	0	0.3	0.07	0.4	0.12	0.5	0.08	0.6	0.13									1.4	0	1.3	0.12	1.2	0.13	1.1	0.16	1	0.22		
13-Jul	WC12	3	1	20T0607457	5006218	Flat	1.45	1.45	0.2	0																	1.65	0										
13-Jul	WC12	3	2	20T0607449	5006154	flat	0.9	0.9	0.2	0																	1.1	0										
13-Jul	WC12	3	3	20T0607360	5006161	flat	0.25	0.35	0.2	0	0.3	0.07															0.55	0	0.55	0.05								
13-Jul	WC12	3	4	20T0607300	5006150	flat	0.5	0.5	0.2	0																	0.7	0										
13-Jul	WC12	3	5	20T0607296	5006167	flat	0.3	0.3	0.2	0																	0.5	0										
13-Jul	WC12	3	6	20T0607258	5006228	flat	2.3	2.7	0.2	0	0.3	0.08	0.4	0.1													2.9	0	2.8	0.01	2.7	0.06						
13-Jul	WC12	3	7	20T0607204	5006221	Flat	2.5	2.7	0.2	0	0.3	0.05	0.4	0.08	0.5	0.1											2.9	0	2.8	0.06	2.7	0.08						
2021-07-20	51	1	1	606078	5008425	Flat	0.8	1.35	0	0	0.05	0.25															1.35	0	1.25	0.07	1.15	0.1	1.05	0.11	0.95	0.14	0.85	0.15
2021-07-20	51	1	2	606103	5008385	Flat	1.4	2	0	0	0.1	0.11	0.2	0.16	0.3	0.21	0.4	0.14	0.5		0.12	0.55	0.13				2.15	0	2.1	0.17								
2021-07-20	51	1	3	606149	5008373	Flat	1.7	2.75	0	0	0.05	0.05	0.1	0.1	0.15	0.3											2.75	0	2.6	0.15	2.45	0.12	2.3	0.15	2.15	0.13	2	0.13	1.85	0.12
2021-07-20	51	1	4	606154	5008325	Flat	2.05	2.15	0	0	0.05	0.23															2.15	0	2.1	0.23								
2021-07-20	51	1	5	606171	5008305	Riffle	0.9	1.05	0	0	0.05	0.06	0.1	0.21													1.05	0	1	0.27								
2021-07-20	19	1	1	605927	5008144	Flat	0.65	1.2	0	0	0.1	0.18	0.15	0.16	0.2	0.14	0.25	0.13	0.3		0.13	0.45	0.14				1.2	0	1.15	0.06	1.1	0.16						
2021-07-20	20	1	1	606009	5008198	Flat	0.65	1	0	0	0.05	0.03	0.1	0.17	0.15	0.1	0.2	0.08	0.25		0.32						1	0	0.95	0.03	0.9	0.27						
2021-07-20	20	1	2	606056	5008192	flat	0.55	1	0		0.05	0.08	0.1	0.12	0.15	0.13	0.2	0.12									1	0	0.95	0.05	0.9	0.05	0.85	0.14	0.8	0.18	0.75	0.15
2021-07-20	20	1	3	606099	5008162	Flat	0.6	0.75	0	0	0.05	0.04	0.1	0.12													0.75	0	0.7	0.1								
2021-07-20	20	1	4	606137	5008129	flat	1.05	1.2	0	0	0.05	0.15															2.2	0	2.15	0.01	2.1	0.2						
2021-07-20	20	1	5	606184	5008123	Flat	1.15	1.3	0	0	0.05	0.14															2.3	0	2.25	0.11	2.2	0.27						
2021-07-20	20	1	6	606230	5008112	flat	0.45	0.7	0	0	0.05	0.06	0.1	0.23													0.7	0	0.65	0.04	0.6	0.08	0.55	0.32				
2021-07-20	20	1	7	606270	5008086	flat	1.2	1.6	0	0	0.05	0.05	0.1	0.22													1.6	0	1.5	0.01	1.45	0.01	1.4	0.02	1.35	0.03	1.3	0.08

Survey Date	WC #	Reach #	Transect #	Waypoint		Habitat Type	Width (m)		Left Bank Measurements (m) D = Distance, H = Height												Right Bank Measurements (m) D = Distance, H = Height											
				Easting	Northing		Wetted	Bankfull	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D	H
2021-07-20	20	1	8	606323	5008057	flat	2.05	2.15	0	0	0.05	0.08											2.15	0	2.1	0.15								
2021-07-20	20	1	9	606352	5008018	Flat	3.05	3.2	0	0	0.05	0.05	0.1	0.17									3.2	0	3.15	0.11								
2021-07-21	20	1	10	606355	5007972	flat	5.05	5.2	0	0	0.05	0.13											5.2	0	5.15	0.1	5.1	0.17						
2021-07-21	20	1	11	606320	5007968	Flat	0.6	0.9	0	0	0.05	0.05	0.1	0.08	0.15	0.13							0.9	0	0.85	0.1	0.8	0.11	0.75	0.17				
2021-07-21	20	2	1	606397	5007827	Run	3	3.3	0	0	0.05	0.04	0.1	0.1	0.15	0.16							3.3	0	3.25	0.05	3.2	0.08	3.15	0.2				
2021-07-21	20	2	2	606393	5007816	Rapid	1.5	2.6	0	0	0.1	0.08	0.2	0.17	0.3	0.2	0.4	0.27	0.5	0.1	0.6	0.17	2.6	0	2.5	0.03	2.4	0.04	2.3	0.03	2.2	0.03	2.1	0.07
2021-07-21	23	1	1	606282	5007796	flat	1.1	1.5	0	0	0.05	0.06	0.1	0.12									1.5	0	1.45	0.02	1.4	0.07	1.35	0.08	1.3	0.1	1.25	0.09	1.2	0.12
2021-07-21	23	1	2	606356	5007790	Flat	0.95	1.2	0	0	0.05	0.06	0.1	0.37	0.15	0.29							1.2	0	1.15	0.05	1.1	0.35						
2021-07-21	49	1	1	607346	5008279	Flat	1	1.4	0	0	0.05	0.08	0.1	0.28									1.4	0	1.35	0.03	1.3	0.31	1.25	0.32	1.2	0.34		
2021-07-21	49	1	2	607317	5008241	Riffle	0.25	1	0	0	0.1	0.12	0.15	0.12	0.2	0.2	0.25	0.23	0.3	0.23	0.4	0.22	1	0	0.9	0.09	0.85	0.16	0.8	0.17	0.75	0.19	0.7	0.19	0.65	0.27
2021-07-21	49	1	3	607290	5008201	Flat	0.55	1	0	0	0.05	0.17											1	0	0.9	0.07	0.8	0.06	0.75	0.08	0.7	0.09	0.65	0.09	0.6	0.11
2021-07-21	49	1	4	607244	5008206	Flat	0.45	1	0	0	0.1	0.12	0.15	0.17	0.2	0.23	0.25	0.26	0.3	0.24	0.4	0.25	1	0	0.95	0.05	0.9	0.1	0.85	0.28				
2021-07-22	49	1	5	607197	5008199	Flat	0.9	1	0	0	0.05	0.19											1	0	0.95	0.19								
2021-07-22	49	1	6	607150	5008209	Flat	1.3	1.55	0	0	0.05	0.03	0.1	0.25									1.55	0	1.5	0.06	1.4	0.32						
2021-07-22	49	1	7	607136	5008165	Flat	0.45	0.55	0	0	0.05	0.22											0.55	0	0.5	0.2								
2021-07-22	49	1	8	607119	5008120	Flat	0.6	0.75	0	0	0.05	0.15											0.75	0	0.7	0.1	0.65	0.18						
2021-07-22	49	1	9	607106	5008075	Flat	0.95	1.1	0	0	0.05	0.03	0.1	0.21									1.1	0	1.05	0.32								
2021-07-22	49	1	10	607106	5008028	Flat	0.55	1	0	0	0.05	0.01	0.1	0.05	0.15	0.21							1	0	0.95	0.1	0.9	0.18	0.85	0.2	0.8	0.16	0.75	0.14	0.65	0.18
2021-07-22	49	1	11	607094	5008122	Riffle	0.3	0.6	0	0	0.05	0.04	0.1	0.13	0.15	0.17	0.2	0.3					0.6	0	0.55	0.09	0.5	0.22						
2021-07-22	49	1	12	607066	5008103	Flat	0.7	1.15	0	0	0.05	0.29											1.15	0	1.05	0.23	0.95	0.23	0.9	0.24	0.85	0.23	0.8	0.22	0.75	0.24
2021-07-22	55	1	1	606959	5005417	flat	0.3	1	0	0	0.05	0.15											1	0	0.95	0.04	0.8	0.15	0.65	0.1	0.5	0.11	0.4	0.07	0.35	0.09
2021-07-22	55	1	2	607006	5005410	Flat	0.25	0.7	0	0	0.05	0.07	0.1	0.1	0.15	0.11	0.2	0.13	0.25	0.14	0.35	0.14	0.7	0	0.65	0.03	0.6	0.15						
2021-07-22	55	1	3	607047	5005374	Flat	0.9	1	0	0	0.05	0.13											1	0	0.95	0.09								

Table 5. Detailed Fish Habitat Information, Part 5. Transect Data.

Survey Date	WC #	Reach #	Transect #	**Depths and Velocities** - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
200814	5	1	1	0.1	0.15	N/A	0.2	0.12	N/A	0.3	0.07	N/A	0.4	0.07	N/A																				
200814	5	1	2	0.1	0.19	N/A	0.2	0.25	N/A	0.3	0.26	N/A	0.4	0.24	N/A																				
200814	4	1	1	0.3	0.009	0.05	0.4	0.15	0.05	0.5	0.06	0.05	0.6	0.09	0.05	0.7	0.11	0.05	0.8	0.17	0.05	0.9	0.17	0.05											
200814	4	2	1	0.12	0.01	0.05	0.24	-0.1	N/A	0.36	-0.08	N/A	0.48	0.03	0.05	0.6	0.09	0.5	0.72	0.04	0.05	0.84	0.1	0.05	0.96	0.05	0.05	1.08	0.12	0.05	1.2	0.07	0.05		
200814	4	2	2	0.8	0.15	0.05	1	0.2	0.05	1.2	0.26	0.05	1.4	0.31	0.05	1.6	0.46	0.05	1.8	0.39	0.05	2	0.35	0.05	2.2	0.22	0.05	2.4	0.09	0.05	2.6	0.07	0.05		

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
200814	6	1	1	0	0.26	N/A	0.9	0.24	N/A																									
200814	6	1	2	0	0.15	N/A	0.6	0.18	N/A																									
200814	6	1	3	0.1	0.04	0.05	0.2	0.11	0.05	0.3	0.11	0.05	0.4	0.11	0.05	0.5	0.09	0.05	0.6	0.06	0.05													
200814	7	1	1	0.1	0.15	0.05	0.2	0.21	0.05	0.3	0.25	0.05	0.4	0.22	0.05	0.5	0.22	0.05	0.6	0.22	0.05	0.7	0.2	0.05	0.8	0.18	0.05							
200814	7	1	2	0.1	0.06	0.05	0.2	0.08	0.05	0.3	0.08	0.05	0.4	0.05	0.05																			
200814	7	1	3	0	0.06	0.05	0.1	0.06	0.05	0.2	0.07	0.05	0.3	0.08	0.05	0.4	0.1	0.05	0.5	0.12	0.05	0.6	0.12	0.05	0.7	0.13	0.05							
200814	7	1	4	0	0.02	0.05	0.1	0.06	0.05	0.2	0.1	0.05	0.3	0.08	0.05	0.4	0.06	0.05	0.5	0.08	0.05													
200814	7	1	5	0	0.1	0.05	0.1	0.11	0.05	0.2	0.14	0.05	0.3	0.17	0.05	0.4	0.12	0.05	0.5	0.12	0.05	0.6	0.05	0.05	0.7	0.1	0.05	0.8	0.07	0.05	0.9	0.08	0.05	1	0.03	0.05
200814	7	1	6	0.15	0.07	N/A	0.3	0.16	N/A	0.45	0.2	N/A	0.6	0.22	N/A	0.75	0.13	N/A	0.9	0.12	N/A	1.05	0.24	N/A	1.2	0.2	N/A	1.35	0.15	N/A	1.5	0	N/A			
200814	7	1	7	0.12	0.09	0.05	0.24	0.09	0.05	0.36	0.07	0.05	0.48	0.08	0.05	0.6	0.08	0.05	0.72	0.09	0.05	0.84	0.01	0.05	0.96	-0.02	N/A	1.08	0.1	0.05	1.2	0.11	0.05			
200814	7	1	8	0.1	0.29	N/A	0.2	0.31	N/A	0.3	0.27	N/A	0.4	0.27	N/A	0.5	0.27	N/A	0.6	0.28	N/A	0.7	0.27	N/A												
200818	1	1	1	0.45	0.01	0.1	0.6	0.05	0.1	0.75	0.1	0.1	0.9	0.14	0.1	1.05	0.16	0.1	1.2	0.15	0.1	1.35	0.16	0.1	1.5	0.1	0.1	1.65	0.09	0.1						
200818	1	2	1	0.1	0	0.2	0.2	0.04	N/A	0.3	0.05	N/A	0.4	0.02	N/A	0.5	0.02	N/A	0.6	0.04	N/A	0.7	0.07	N/A	0.8	0.07	N/A	0.9	0.1	N/A	1	0.09	N/A	1.1	0.03	N/A
200818	1	2	2	0.2	0.07	0.05	0.4	0.17	0.05	0.6	0.15	0.05	0.8	0.14	0.05	1	0.15	0.05	1.2	0.14	0.05	1.4	0.25	0.05	1.6	0.22	0.05	1.8	0.23	0.05	2	0.15	0.05			
200818	1	2	3	0.6	0.04	0.1	0.7	0.02	0.1	0.8	0.03	0.1	0.9	0.04	0.1	1	0.1	0.1	1.1	0.2	0.1	1.2	0.02	0.1	1.3	0.03	0.1	1.4	0.01	0.1						
200818	1	2	4	0.5	0.14	0.2	0.6	0.01	0.2	0.7	0.01	0.2	0.8	0.01	0.2	0.9	0.07	0.2	1	0.02	0.2	1.1	0	0.2	1.2	0.03	0.2									
200818	1	2	5	0.2	0.06	0.1	0.3	0.03	0.1	0.4	0.06	0.1	0.5	0.1	0.1	0.6	0.03	0.1	0.7	0.01	0.1													
200818	1	2	6	0.3	0.03	0.1	0.4	0.03	0.1	0.5	0.09	0.1	0.6	0.02	0.1	0.7	0	0.1	0.8	0	0.1	0.9	0	..1	1	0.01	0.1	1.2	0.01	0.1	1.4	0.01	0.1			
200818	3	1	1	0	0	0.05	0.1	0.01	0.05	0.2	0.08	0.05	0.3	0.04	0.05	0.3	0.04	0.05	0.4	0	0.05	0.5	0	0.05												
200818	3	1	2	0.2	0.1	0.05	0.3	0.07	0.05	0.4	0.12	0.05	0.5	0.14	0.05	0.6	0.16	0.05	0.7	0.15	0.05	0.8	0.11	0.05	0.9	0.04	0.05									
200818	3	1	3	0.15	0.26	N/A	0.3	0.23	N/A	0.45	0.21	N/A	0.6	0.31	N/A	0.75	0.29	N/A	0.9	0.31	N/A	1.05	0.33	N/A	1.2	0.3	N/A	1.35	0.12	N/A	1.5	0.39	N/A			
200818	3	1	4	0.1	0.14	0.05	0.2	0.09	0.05	0.3	0.06	0.05	0.4	0.07	0.05	0.5	2	0.05																		
200818	3	1	5	0.3	0.02	0.05	0.4	0.06	0.05	0.5	0.06	0.05	0.6	0.05	0.05																					
200818	3	1	6	0.1	0.21	N/A	0.2	0.22	N/A	0.3	0.2	N/A	0.4	0.17	N/A	0.5	0.22	N/A	0.6	0.23	N/A														
200818	3	1	7	0.6	0.03	0.05	0.7	0.03	0.05	0.8	0.03	0.05																								
200818	3	1	8	0.15	0.1	N/A	0.3	0.31	N/A	0.45	0.19	N/A	0.6	0.11	N/A	0.75	0.04	N/A	0.9	0.07	N/A	1.05	0.11	N/A	1.2	0.19	N/A	1.35	0.24	N/A	1.5	0.21	N/A	1.65	0.23	N/A
200818	3	1	9	0.1	0.14	N/A	0.2	0.13	N/A	0.3	0.14	N/A	0.4	0.13	N/A	0.5	0.15	N/A	0.6	0.22	N/A	0.7	0.19	N/A	0.8	0.18	N/A	0.9	0.19	N/A	1	0.22	N/A			
200818	3	1	10	0.1	0.04	N/A	0.2	0.28	N/A	0.3	0.21	N/A	0.4	0.16	N/A	0.5	0.18	N/A	0.6	0.2	N/A														
200818	3	1	11	0.8	0.04	0.05	0.9	0.03	0.05	1	0	N/A	1.1	0.01	0.05																				
200818	3	1	12	0.6	0.08	0.1	0.7	0.13	0.05	0.8	0.11	0.1	0.9	0.11	0.1	1	0.09	0.1	1.1	0.06	0.1	1.2	0.01	0.1	1.3	0.08	0.1	1.4	0.08	0.1	1.5	0.06	0.1	1.6	0.08	0.1
200818	3	1	13	0.15	0.01	0.2	0.3	0.02	0.2	0.45	0.02	0.2	0.6	0.02	0.2	0.75	0.01	0.2	0.9	0.02	0.2	1.05	0.03	0.2	1.2	0.04	0.2	1.3	0.06	0.2	1.4	0.01	0.2			
200818	3	2	1	0.3	0.08	0.05	0.4	0.11	0.05	0.5	0.13	0.15	0.6	0.07	0.2	0.8	0.03	0.15	0.9	0.01	0.05															
200818	3	3	1	0.1	0.01	0.05	0.2	0.04	0.05	0.3	0.04	0.05	0.4	0.1	0.05	0.5	0.14	0.05	0.6	0.14	0.05	0.7	0.07	0.05	0.8	0.13	0.05	0.9	0.15	0.05	1	0.14	0.05	1.1	0.05	0.05
200818	3	3	2	0.1	0.04	0.05	0.2	0.09	0.05	0.3	0.1	0.05	0.4	0.08	0.05	0.5	0.12	0.05	0.6	0.13	0.05	0.7	0.14	0.05	0.8	0.05	0.05									
211014	8	1	1	0.5	0.09	slow	0.6	0.12	0.085	0.7	0.12	0.217	0.8	0.06	slow	0.9	0.03	slow																		
211014	8	1	2	0.4	0.01	slow	0.6	0.1	slow	0.8	0.14	slow	1	0.18	slow	1.2	0.19	slow	1.4	0.19	slow	1.6	0.18	slow	1.8	0.15	slow	2	0.05	slow	2.2	0.04	slow	2.4	0.01	slow
211014	8	2	1	0.35	0.01	slow	0.45	0.02	slow	0.55	0.01	slow	0.65	0.1	slow	0.75	0.1	slow	0.85	0.11	slow	0.95	0.1	slow	1.05	0.1	slow	1.15	0.09	slow	1.25	0.04	slow	1.35	0.01	slow
211014	8	2	2	0.2	0.1	slow	0.3	0.06	slow	0.4	0.05	slow	0.5	0.1	slow	0.6	0.09	slow	0.7	0.1	slow	0.8	0.11	0.15	0.9	0.11	slow	1	0.1	slow	1.3	0.1	slow	1.6	0.1	slow
211014	8	2	3	0.35	0.1	slow	0.45	0.09	slow	0.55	0.09	slow	0.65	0.09	slow	0.75	0.08	slow	0.85	0.06	slow	0.95	0.01	slow												

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
200818	8	3	1	0.1	0.16	N/A	0.2	0.18	N/A	0.3	0.17	N/A	0.4	0.18	N/A	0.5	0.15	N/A	0.6	0.15	N/A	0.7	0.13	N/A											
200818	8	3	2	0.1	0.16	0.05	0.2	0.18	0.05	0.3	0.16	0.05	0.4	0.13	0.05	0.5	0.11	0.05	0.6	0.09	0.05	0.7	0.07	0.05	0.8	0.06	0.05								
200818	8	4	1	0	0.13	N/A	0.1	0.16	N/A	0.2	0.14	N/A	0.3	0.14	N/A	0.4	0.17	N/A	0.5	0.22	N/A														
200818	8	4	2	0.1	0.29	N/A	0.2	0.24	N/A	0.3	0.28	N/A	0.4	0.25	N/A	0.5	0.25	N/A	0.6	0.27	N/A	0.7	0.27	N/A	0.8	0.27	N/A	0.9	0.17	N/A	1	0.34	N/A		
200818	8	5	1	0.5	0.05	0.05	0.6	0.04	0.05	0.7	0.08	0.05	0.8	0.04	0.05	0.9	0.09	0.05	1	0.04	0.05														
200818	9	1	1	0.1	0.23	0.05	0.2	0.35	0.05	0.3	0.31	0.05	0.4	0.26	0.05	0.5	0.16	0.05	0.6	0.32	0.05	0.7	0.18	0.05	0.8	0.28	0.05	0.9	0.25	0.05	1	0.33	0.05		
200818	9	1	2	0.1	0.37	0.05	0.2	0.39	0.05	0.3	0.25	0.05	0.4	0.35	0.05	0.5	0.41	0.05	0.6	0.45	0.05	0.7	0.46	0.05	0.8	0.47	0.05	0.9	0.16	0.05					
200818	9	1	3	0.12	0.58	0.05	0.24	0.53	0.05	0.36	0.49	0.05	0.48	0.46	0.05	0.6	0.46	0.05	0.72	0.47	0.05	0.84	0.44	0.05	0.96	0.27	0.05	1.08	0.37	0.05	1.2	0.28	0.05		
200818	9	1	4	0.1	0.14	0.05	0.2	0.13	0.05	0.3	0.26	0.05	0.4	0.24	0.05	0.5	0.2	0.05	0.6	0.17	0.05	0.7	0.23	0.05	0.8	0.12	0.05								
200818	9	1	5	0.1	0.08	0.05	0.2	0.07	0.05	0.3	0.12	0.05	0.4	0.15	0.05	0.5	0.07	0.05	0.6	0.04	0.05	0.7	0.07	0.055	0.8	0.13	0.05								
200818	9	1	6	0.15	0.01	0.05	0.2	0.02	0.05	0.25	0.02	0.05	0.3	0.01	0.05	0.4	-0.04	N/A	0.45	-0.04	N/A	0.5	0.02	0.05	0.55	0.03	0.05	0.6	0.01	0.05					
200818	9	2	1	0.1	0.14	N/A	0.2	0.17	N/A	0.3	0.08	N/A	0.4	0.07	N/A	0.5	0.18	N/A	0.6	0.15	N/A	0.7	0.2	N/A	0.8	0.16	N/A								
200818	9	3	1	0.3	0.1	0.05	0.4	0.09	0.05	0.5	0.12	0.05	0.6	0.15	0.05	0.7	0.14	0.05	0.8	0.14	0.05	0.9	0.17	0.05	1	0.14	0.05	1.1	0.14	0.05	1.2	0.16	0.05		
200818	9	3	2	0	0.1	0.05	0.1	0.12	0.05	0.2	0.11	0.05	0.3	0.11	0.05	0.4	0.1	0.05	0.5	0.12	0.05	0.6	0.09	0.05											
200818	9	3	3	0.05	0.04	0.05	0.1	0.04	0.05	0.15	0.03	0.05	0.2	0.03	0.05																				
200818	9	3	4	0.1	0.07	0.05	0.2	0.08	0.05	0.3	0.07	0.05	0.4	0.06	0.05	0.5	0.02	0.05	0.6	0.05	0.05	0.7	0.06	0.05	0.8	0.05	0.05	0.9	0.04	0.05	1	0.05	0.05		
200818	9	3	5	0.25	0.23	0.05	0.5	0.26	0.05	0.75	0.24	0.05	1	0.18	0.05	1.25	0.22	0.05	1.5	0.14	0.05	1.75	0.15	0.05	2	0.26	0.05	2.25	0.35	0.05					
200818	9	3	6	0.1	0.03	0.05	0.2	0.04	0.05	0.3	0.02	0.05	0.4	0.05	0.05	0.5	0.05	0.05	0.6	0.09	0.05	0.7	0.07	0.05	0.8	0.08	0.05	0.9	0.03	0.05	1	0.01	0.05		
200818	9	3	7	0.1	0.03	0.05	0.2	0.12	0.05	0.3	0.09	0.05	0.4	0.06	0.05	0.5	0.08	0.05	0.6	-0.03	N/A	0.7	0.03	0.05	0.8	0.07	0.05	0.9	0.07	0.05	1	0.02	0.05		
200818	9	4	1	0.15	0.2	N/A	0.3	0.35	N/A	0.45	0.1	N/A	0.6	0.05	N/A	0.75	0.3	N/A	0.9	0.37	N/A	1.05	0.33	N/A	1.2	0.14	N/A	1.35	0.17	N/A	1.5	0	N/A		
200818	9	4	2	0.1	0.04	0.05	0.2	0.01	0.05	0.3	0.04	0.05	0.4	0.04	0.05	0.5	0.03	0.05	0.6	0.05	0.05	0.7	0.04	0.05	0.8	0.04	0.05	0.9	0.02	0.05	1	0.04	0.05		
06-Jul-21	WC2	1	1	0.4	0.11	slow	0.5	0.11	slow	0.6	0.13	slow	0.7	0.08	slow	0.8	0.07	slow	0.9	0.1	slow	1	0.14	slow	1.1	0.13	slow	1.2	0.06	slow					
06-Jul-21	WC2	1	2	0.3	0.03	slow	0.4	0.05	slow	0.5	0.1	slow	0.6	0.08	slow	0.7	0.06	slow	0.8	0.05	slow	0.9	0.02	slow	1	0.04	slow								
06-Jul-21	WC2	1	3	0.25	0.2	slow	0.35	0.14	slow	0.45	0.07	slow	0.55	0.09	slow	0.65	0.13	slow																	
06-Jul-21	WC2	1	4	0.35	0.03	slow	0.45	-0.01	no water	0.55	0.06	slow	0.65	0.03	slow	0.75	0.02	slow	0.85	0.02	slow														
06-Jul-21	WC45	1	1	0.3	0.09	slow	0.4	0.05	slow	0.5	0.07	slow	0.6	0.08	slow	0.7	0.1	slow	0.8	0.15	slow	0.9	0.17	slow	1	0.17	slow	1.1	0.08	slow	1.2	0.13	slow	1.3	0.03	slow
06-Jul-21	WC45	1	2	0.45	0.09	slow	0.55	0.11	slow	0.65	0.02	slow	0.75	0.15	slow	0.85	0.12	slow																	
06-Jul-21	WC45	1	3	0.5	0.04	slow	0.6	0.1	slow	0.7	0.1	slow	0.8	0.07	slow	0.9	0.04	slow																	
06-Jul-21	WC45	1	4	0.25	0.23	slow	0.4	0.15	slow	0.55	0.13	slow	0.7	0.23	slow	0.85	0.18	slow	1	0.18	slow	1.15	0.16	slow	1.3	0.14	slow	1.45	0.11	slow	1.6	0.08	slow	1.75	0.08	slow
06-Jul-21	WC45	2	1	0.3	0.06	slow	0.4	0.07	slow	0.5	0.06	slow	0.6	0.08	slow	0.7	0.08	slow	0.8	0.1	slow	0.9	0.07	slow											
06-Jul-21	WC45	3	1	0.2	0	slow	0.3	0.2	slow	0.4	0.19	slow	0.5	0.14	slow	0.6	0.24	slow																	
06-Jul-21	WC45	3	2	0.3	0.08	slow	0.45	0.14	slow	0.6	0.14	slow	0.75	0.09	slow	0.9	0.1	slow	1.05	0.1	slow	1.2	0.08	slow	1.35	0.04	slow	1.5	0.02	slow	1.65	0.08	slow	1.8	0.01	slow
06-Jul-21	WC45	3	3	0.3	0.15	slow	0.4	0.12	slow	0.5	0.18	slow	0.6	0.06	slow	0.7	0.1	slow	0.8	0.15	slow	0.9	0.17	slow	1	0.11	slow	1.1	0.1	slow	1.2	0.06	slow	1.3	0.11	slow
06-Jul-21	WC45	3	4	0.4	0.04	slow	0.5	0.35	slow	0.6	-0.03	slow	0.7	0.16	slow	0.8	0.15	slow	0.9	0.13	slow	1	0.1	slow	1.1	0.3	slow	1.2	0.01	slow	1.3	-0.05	slow		
06-Jul-21	WC45	3	5	0.35	0.35	slow	0.45	0.4	slow	0.55	0.36	slow	0.65	0.43	slow																			

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
06-Jul-21	WC45	3	6	0.4	0.03	slow	0.55	0.1	slow	0.7	0.14	slow	0.85	0.18	slow	1	0.25	slow	1.15	0.15	slow	1.3	0.16	slow	1.45	0.18	slow	1.6	0.12	slow	1.75	0.11	slow			
06-Jul-21	WC45	3	7	0.4	0.23	slow	0.5	0.36	slow	0.6	0.4	slow	0.7	0.39	slow	0.8	0.31	slow	0.9	0.36	slow	1	0.22	slow	1.1	0.16	slow	1.2	0.11	slow	1.4	0.08	slow	1.6	0.09	slow
06-Jul-21	WC45	4	1	0.25	0.04	slow	0.35	0.08	slow	0.45	0.05	slow	0.55	0.09	slow	0.65	0.04	slow	0.75	0.11	slow	0.85	0.02	slow												
07-Jul-21	WC39	1	1	0.5	0.01	shallow	0.6	0.04	vegetation	0.7	0.07	vegetation	0.8	0.05	shallow																				
07-Jul-21	WC50	1	1	0.35	0.19	slow	0.45	0.15	slow	0.55	0.11	slow	0.65	0.13	slow																				
07-Jul-21	WC50	1	2	0.25	0.05	slow	0.45	0.15	slow	0.65	0.15	slow	0.85	0.19	slow	1.05	0.18	slow	1.25	0.15	slow	1.45	0.03	slow	1.65	0.22	slow	1.85	0.16	slow	2	0.17	slow			
07-Jul-21	WC50	2	1	0.25	0.18	slow	0.35	0.18	slow	0.45	0.18	slow	0.55	0.19	slow	0.65	0.2																		
07-Jul-21	WC50	3	1	0.4	0.06	slow	0.5	0.06	slow	0.6	0.06	slow	0.7	0.05	slow	0.8	0.08	slow	0.9	0.08	slow	1	0.1	slow	1.1	0.1	slow	1.2	0.1	slow	1.3	0.08	slow			
07-Jul-21	WC50	3	2	0.3	0.01	slow	0.35	0.01	slow	0.45	0.08	slow	0.55	0.06	slow	0.65	0.08	slow	0.75	-0.03	slow	0.85	0.02	slow												
07-Jul-21	WC50	3	3	0.3	0.06	slow	0.4	0.1	slow	0.5	-0.09	slow	0.6	0.08	slow	0.7	0.09	slow	0.8	0.11	slow	0.9	-0.02	slow	1	0.1	slow	1.1	0.14	slow	1.2	0.17	slow	1.3	0.02	slow
07-Jul-21	WC14	1	1	0.3	0.25	slow	0.45	0.2	slow	0.6	0.1	slow	0.75	0.09	slow	0.9	0.08	slow	1.05	0.08	slow	1.2	0.05	slow	1.35	0.22	slow	1.5	0.21	slow	1.65	0.2	slow	1.9	0.18	slow
07-Jul-21	WC14	1	2	0.4	0.02	slow	0.65	0.4	slow	0.9	0.47	slow	1.15	0.44	slow	1.4	0.49	slow	1.65	0.49	slow	1.9	0.46	slow	2.15	0.34	slow	2.4	0.36	slow	2.65	0.4	slow	2.9	0.23	slow
07-Jul-21	WC14	1	3	0.35	0.03	shallow	0.65	0.04	shallow	0.95	0.1	0.205	1.25	0.11	backflow	1.55	0.13	0.283	1.85	0.09	0.171	2.15	-0.13	no water	2.45	0.05	vegetation	2.75	0.11	0.197	3.05	0.06	backflow	3.15	0.07	backflow
07-Jul-21	WC14	1	4	0.25	0.18	slow	0.4	0.2	slow	0.55	0.17	slow	0.7	0.18	0.185	0.85	0.14	0.18	1	0.22	0.09	1.15	0.21	slow	1.3	0.2	slow	1.45	0.16	slow	1.6	0.14	slow	1.8	0.17	slow
07-Jul-21	WC14	1	5	0.25	0.09	slow	0.4	0.14	slow	0.55	0.14	slow	0.7	0.17	slow	0.85	0.2	slow	1	0.2	slow	1.15	0.11	slow	1.3	0.22	slow	1.45	0.23	slow	1.6	0.22	slow	1.85	0.14	slow
07-Jul-21	WC14	2	1	0.25	0.3	slow	0.4	-0.02	No water	0.55	-0.01	No water	0.7	0.25	slow	0.85	0.21	slow	1	-0.14	no water	1.15	-0.1	no water	1.3	0.01	slow	1.45	0.34	slow	1.6	0.23	slow	1.7	0.23	slow
07-Jul-21	WC14	3	1	0.2	0.15	slow	0.35	0.2	slow	0.5	0.23	slow	0.65	0.2	slow	0.8	0.24	slow	0.95	0.19	slow	1.1	0.23	slow	1.25	0.19	slow	1.4	0.2	slow	1.55	0.18	slow	1.65	0.14	slow
07-Jul-21	WC14	3	2	0.2	0.37	slow	0.3	0.39	slow	0.4	0.39	slow	0.5	0.32	slow	0.6	0.33	slow	0.7	0.39	slow	0.8	0.35	slow	0.9	0.4	slow	1	0.37	slow	1.1	0.36	slow	1.3	0.19	slow
08-Jul-21	WC14	3	3																																	
08-Jul-21	WC14	3	4																																	
08-Jul-21	WC14	3	5	0.25	0.06	stagnant	0.5	0.33	stagnant	0.75	0.33	stagnant	1	0.31	stagnant	1.25	0.39	stagnant	1.5	0.41	stagnant	1.75	0.4	stagnant	2	0.4	stagnant	2.25	0.39	stagnant	2.5	0.14	stagnant	2.7	0.05	stagnant
08-Jul-21	WC14	3	6	0.3	0.04	slow	0.55	0.31	slow	0.8	0.3	slow	1.05	0.29	slow	1.3	0.34	slow	1.55	0.33	slow	1.8	0.32	slow	2.05	0.29	slow	2.3	0.26	slow	2.55	0.23	slow			
08-Jul-21	WC14	3	7	0.25	0.17	backflow	0.45	0.18	0.247	0.65	0.06	shallow	0.85	0.07	shallow	1.05	0.01	shallow	1.25	0.1	. 321	1.45	-0.01	no water	1.65	0.07	backflow	1.85	0.05	shallow	2.05	0.01	shallow			
08-Jul-21	WC14	4	1	0.25	0.15	backflow	0.5	0.18	backflow	0.75	0.17	vegetation	1	0.15	0.492	1.25	0.18	0.478	1.5	0.17	0.576	1.75	0.05	shallow	2	0.19	vegetation	2.25	0.24	backflow	2.5	0.3	backflow	2.75	0.23	
08-Jul-21	WC14	5	1																																	
08-Jul-21	WC14	5	2	0.25	0.15	slow	0.45	0.38	slow	0.65	0.39	slow	0.85	0.38	slow	1.05	0.37	slow	1.25	0.36	slow	1.45	0.34	slow	1.65	0.34	slow	1.85	0.37	slow	1.95	0.18	slow			
08-Jul-21	WC14	6	1	0.25	0.04	shallow	0.45	0.07	backflow	0.65	0.06	shallow	0.85	0.11	0.324	1.05	0.04	0.475	1.25	0.1	0.52	1.45	0.09	0.529	1.65	0.11	backflow	1.85	0.17	vegetation	2.05	0.09	backflow			
08-Jul-21	WC14	7	1	0.3	0.11	slow	0.45	0.05	slow	0.6	0.03	slow	0.75	0.17	slow	0.9	0.06	slow	1.05	0.19	slow	1.2	0.21	slow	1.35	0.25	slow	1.5	0.24	slow	1.65	0.18	slow	1.85	0.01	shallow
08-Jul-21	WC14	7	2	0.3	0.08	backflow	0.5	0.08	backflow	0.7	0.14	0.186	0.9	0.07	shallow	1.1	0.09	0.283	1.3	0.05	shallow	1.5	0.14	0.299	1.7	0.21	0.427	1.9	0.01	shallow						
08-Jul-21	WC14	7	3	0.45	0.06	slow	0.7	0.06	slow	0.95	0.31	slow	1.2	0.2	slow	1.45	0.14	slow	1.7	0.24	slow	1.95	0.23	slow	2.2	0.2	slow	2.45	0.2	slow	2.7	0.11	slow			

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
08-Jul-21	WC14	7	4	0.35	0.19	backflow	0.7	-0.2	no water	1.05	0.23	0.139	1.4	0.02	shallow	1.6	-0.11	no water	2.1	0.1	0.869	2.45	0.09	backflow	2.8	0.18	backflow	3.15	0.1	backflow	3.5	0.04	shallow	3.65	0.16	backflow
08-Jul-21	WC14	7	5	0.75	0.25	slow	0.9	0.28	slow	1.05	0.22	0.196	1.2	0.3	0.274	1.35	0.32	0.254	1.5	0.27	slow	1.65	0.25	slow	1.8	0.21	slow	1.95	0.06	slow						
13-Jul-21	WC81	1	1	0.2	0.06	No flow	0.35	0.08	No flow	0.5	0.09	No flow	0.65	0.09	No flow	0.8	-0.09	No flow	0.95	0.11	No flow	1.1	0.02	No flow	1.25	0.08	No flow	1.4	0.02	No flow	1.5	0.02	No flow			
13-Jul-21	WC81	1	2	0.3	0.57	No flow	0.4	0.44	No flow	0.5	0.48	No flow	0.6	0.51	No flow	0.7	0.4	No flow	0.8	0.44	No flow	0.9	0.52	No flow											
13-Jul-21	WC81	1	3	0.25	0.06	No flow	0.35	0.09	No flow	0.45	0.08	No flow	0.55	0.09	No flow	0.65	0.13	No flow	0.75	0.11	No flow														
13-Jul-21	WC47	1	1	0.25	0.08	No flow	0.35	0.05	No flow	0.45	0.05	No flow	0.55	0.05	No flow	0.65	0.1	No flow	0.75	0.04	No flow	0.85	0.05	No flow											
13-Jul-21	WC62	1	1	0.3	0.42	No flow	0.4	0.44	No flow	0.5	0.37	No flow	0.6	0.48	No flow	0.7	0.45	No flow	0.8	0.46	No flow														
13-Jul-21	WC62	1	2	0.2	0.16	No flow	0.3	0.16	No flow	0.4	0.16	No flow																							
13-Jul-21	WC62	1	3	0.3	0.13	No flow	0.4	0.13	No flow	0.5	0.12	No flow	0.6	0.05	No flow	0.7	0.09	No flow	0.8	0.08	No flow														
13-Jul-21	WC58	1	1	0.2	0.16	No flow	0.3	0.17	No flow	0.4	0.22	No flow	0.5	0.2	No flow	0.6	0.21	No flow	0.7	0.2	No flow	0.8	0.21	No flow											
13-Jul-21	WC58	1	2	0.3	0.09	No flow	0.4	0.1	No flow	0.5	0.09	No flow	0.6	0.06	No flow	0.7	0.09	No flow																	
13-Jul-21	WC13	1	1	0.25	0.1	No flow	0.35	0.1	No flow	0.45	0.07	No flow	0.55	0.14	No flow	0.65	0.09	No flow	0.75	0.09	No flow														
13-Jul-21	WC13	1	2	0.25	0.06	No flow	0.35	0.07	No flow	0.45	0.08	No flow	0.55	0.08	No flow	0.65	0.09	No flow	0.75	0.11	No flow	0.85	0.1	No flow	0.95	0.12	No flow	1.05	0.14	No flow	1.15	0.06	No flow	1.25	0.06	No flow
13-Jul-21	WC43	1	1	0.25	0.13	To slow	0.35	0.07	To slow	0.45	0.06	To slow	0.55	0.07	To slow																				
14-Jul-21	WC43	1	2	0.3	0	To slow	0.4	0.06	To slow	0.5	0.11	To slow	0.6	0.03	To slow	0.7	0.13	To slow	0.8	0.05	To slow	0.9	0.05	To slow											
14-Jul-21	WC43	1	3	0.2	0.05	To slow	0.3	0.09	To slow	0.4	0.08	To slow	0.5	0.09	To slow	0.6	0.07	To slow	0.7	0.04	To slow	0.8	0.05	To slow											
14-Jul-21	WC43	1	4	0.2	0.19	To slow	0.3	0.2	To slow	0.4	0.19	To slow	0.5	0.17	To slow	0.6	0.09	To slow	0.7	0.07	To slow	0.8	0.07	To slow											
14-Jul-21	WC43	1	5	0.25	0.18	To slow	0.35	0.26	To slow	0.45	0.17	To slow	0.55	0.11	To slow	0.65	0.1	To slow	0.75	0.08	To slow	0.85	0.05	To slow	0.95	0.09	To slow	1.05	0.07	To slow	1.25	-0.1	No water	1.35	0.1	To slow
14-Jul-21	WC43	1	6	0.3	0.12	To slow	0.4	0.14	To slow	0.5	0.12	To slow	0.6	0.18	To slow	0.7	0.21	To slow																	
14-Jul-21	WC43	1	7	0.25	0.13	To slow	0.4	0.12	To slow	0.55	0.15	To slow	0.7	0.23	To slow	0.85	0.18	To slow	1	0.2	To slow	1.15	0.19	To slow	1.3	0.06	To slow	1.45	0.04	To slow					
14-Jul-21	WC43	1	8	0.25	0.1	To slow	0.5	0.04	To slow	0.75	0.2	To slow	1	0.11	To slow	1.25	0.2	To slow	1.5	0.23	To slow	1.75	0.03	To slow											
14-Jul-21	WC43	1	9	0.25	0.01	To slow	0.35	0.05	To slow	0.45	0.05	To slow	0.55	0.17	To slow	0.65	0.12	To slow	0.75	0.08	To slow	0.85	0.06	To slow	0.95	0.11	To slow	1.05	0.1	To slow					
14-Jul-21	WC43	1	10	0.2	0.38	To slow	0.3	0.35	To slow	0.4	0.35	To slow	0.5	0.24	To slow	0.6	0.31	To slow	0.7	0.31	To slow	0.8	0.33	To slow	0.9	0.33	To slow	1	0.32	To slow					
14-Jul-21	WC43	1	11	0.2	0.07	To slow	0.3	0.08	To slow	0.4	0.13	To slow	0.5	0.1	To slow	0.6	0.07	To slow	0.7	0.1	To slow	0.8	0.1	To slow	0.9	0.03	To slow								
14-Jul-21	WC57	1	1	0.3	0.17	To slow	0.4	0.17	To slow	0.5	0.16	To slow	0.6	0.16	To slow	0.7	0.17	To slow	0.8	0.1	To slow	0.9	0.5	To slow	1	0.6	To slow	1.1	0.9	To slow	1.2	0.13	to slow	1.3	0.07	To slow
14-Jul-21	WC57	1	2	0.3	0.02	To slow	0.4	0.04	To slow	0.5	0.02	To slow	0.6	0.03	To slow	0.7	0.02	To slow	0.8	0.02	To slow	0.9	0.03	To slow	1	0.01	To slow								
14-Jul-21	WC57	1	3	0.4	0.05	To slow	0.5	0.05	To slow	0.6	0.24	To slow	0.7	0.22	To slow	0.8	0.16	To slow	0.9	0.17	To slow	1	0.01	To slow											
14-Jul-21	WC57	1	4	0.25	0.14	To slow	0.35	0.15	To slow	0.45	0.14	To slow	0.55	0.06	To slow	0.65	0.03	To slow	0.75	0.05	To slow	0.85	0.09	To slow	0.95	0.08	To slow	1.05	0.08	To slow	1.15	0.09	to slow	1.35	0.02	To slow
14-Jul-21	WC57	1	5	0.3	0.08	To slow	0.4	0.07	To slow	0.5	0.09	To slow	0.6	0.07	To slow	0.7	0.1	To slow	0.8	0.05	To slow	0.9	0.07	To slow											
14-Jul-21	WC57	1	6	0.3	0.02	To slow	0.4	0.07	To slow	0.5	0.04	To slow	0.6	0.1	To slow	0.7	0.06	To slow	0.8	0.07	To slow	0.9	0.01	To slow											
14-Jul-21	WC57	1	7	0.5	0.19	To slow	0.6	0.02	To slow	0.7	0.013	To slow	0.8	0.2	To slow	0.9	0.2	To slow	1	0.2	To slow	1.1	0.22	To slow	1.2	0.25	To slow								

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																																		
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
15-Jul-21	WC59	1	1	0.35	0.01	To slow	0.45	-0.02	To slow	0.55	0.05	To slow	0.65	0.06	To slow	0.75	0.02	To slow	0.85	0.01	To slow																		
15-Jul-21	WC59	1	2	0.25	0.05	To slow	0.35	0.13	To slow	0.45	0.15	To slow	0.55	0.13	To slow	0.65	0.14	To slow	0.75	0.11	To slow	0.85	0.1	To slow	0.95	0.08	To slow	1.05	0.05	To slow								
15-Jul-21	WC63	1	1	0.2	0.1	To slow	0.3	0.07	To slow	0.4	0.05	To slow	0.5	0.05	To slow	0.6	0.04	To slow																				
15-Jul-21	WC63	1	2	0.25	0.08	To slow	0.35	0.05	To slow																													
15-Jul-21	WC61	1	1	0.25	0.06	To slow	0.35	0.07	To slow	0.45	0.05	To slow	0.55	0.08	To slow	0.65	0.05	To slow																				
15-Jul-21	WC61	1	2	0.25	0.01	To slow	0.35	0.08	To slow	0.45	0.17	To slow	0.55	0.08	To slow	0.65	0.14	To slow	0.85	0.15	To slow	0.95	0.15	To slow	1.05	0.1	To slow										
15-Jul-21	WC65	1	1	0.25	0.18	To slow	0.35	0.17	To slow	0.45	0.15	To slow	0.55	0.15	To slow	0.65	0.16	To slow																				
14-Jul-21	WC11	1	1	0.4	0.04	To slow	0.5	0.1	To slow	0.6	0.13	To slow	0.7	0.12	To slow	0.8	0.22	To slow	0.9	0.24	To slow																		
14-Jul-21	WC11	1	2	0.3	0.06	To slow	0.4	0.07	To slow	0.05	0.1	To slow	0.06	0.09	To slow	0.7	0.03	To slow	0.8	0.03	To slow	0.9	0.01	To slow	1	0.01	To slow										
14-Jul-21	WC11	1	3	0.6	0.06	To slow	0.8	0.16	To slow	1	0.18	To slow	1.2	0.19	To slow	1.4	0.25	To slow	1.6	0.25	To slow		0.2	To slow														
14-Jul-21	WC11	1	4	0.3	0.07	To slow	0.5	0.07	To slow	0.7	0.27	To slow	0.9	0.06	To slow	1.1	0.1	To slow	1.3	0.14	To slow	1.5	0.04	To slow														
14-Jul-21	WC11	1	5	0.4	0.02	To slow	0.5	0.02	To slow	0.6	0.02	To slow	0.7	0.02	To slow	0.8	0.04	To slow	0.9	0.02	To slow	1	0.01	To slow														
14-Jul-21	WC11	1	6	0.3	0.09	To slow	0.4	0.38	To slow	0.5	0.25	To slow	0.6	0.19	To slow	0.7	0.04	To slow	0.8	0.04	To slow																
14-Jul-21	WC11	1	7	0.2	0.1	To slow	0.3	0	To slow	0.4	0.09	To slow	0.5	0.1	To slow	0.6	0.11	To slow																				
14-Jul-21	WC11	1	8	0.3	0.09	To slow	0.4	0.14	To slow	0.5	0.12	To slow																										
14-Jul-21	WC11	1	9	0.3	0.05	To slow	0.4	0.04	To slow	0.5	0.08	To slow	0.6	0.07	To slow	0.7	0.08	To slow																				
14-Jul-21	WC11	1	10	0.3	0.33	To slow	0.4	0.35	To slow	0.5	0.37	To slow	0.6	0.35	To slow																						
14-Jul-21	WC11	1	11	0.3	0.16	To slow	0.4	0.08	To slow	0.5	0.04	To slow	0.6	0.03	To slow	0.7	0.08	To slow	0.8	0.13	To slow	0.9	0.14	To slow														
14-Jul-21	WC11	1	12	0.4	0.04	To slow	0.5	0.05	To slow																													
14-Jul-21	WC11	1	13	0.4	0.08	To slow	0.5	0.15	To slow	0.6	0.15	To slow	0.7	0.01	To slow	0.8	0.06	To slow	0.9	0.11	To slow	1	0.12	To slow														
14-Jul-21	WC11	1	14	0.4	0.01	To slow	0.6	0.08	To slow	0.8	0.04	To slow	1	0.06	To slow	1.2	0.04	To slow	1.4	-0.06	To slow	1.6	0.09	To slow	1.8	0.04	To slow										
14-Jul-21	WC11	1	15	0.3	0.08	To slow	0.4	0.1	To slow	0.5	0.04	To slow																										
14-Jul-21	WC11	2	1	0.3	0.02	To slow	0.4	0.02	To slow	0.5	0.01	To slow																										
14-Jul-21	WC11	3	1	0.5	0.1	To slow	0.6	0.15	To slow	0.7	0.16	To slow	0.8	0.12	To slow	0.9	0.21	To slow	1	0.11	To slow	1.2	0.15	To slow	1.3	0.15	To slow										
14-Jul-21	WC11	4	1	0.7	0.09	To slow	0.8	0.05	To slow	0.9	0.13	To slow	1	0.05	To slow	1.1	0.01	To slow																				
14-Jul-21	WC11	4	2	0.5	0.02	To slow	0.6	0.06	To slow	0.7	0.16	To slow	0.8	0.07	To slow	0.9	0.18	To slow	1	0.03	To slow																
14-Jul-21	WC11	5	1	0.4	0.01	To slow	0.5	0.12	To slow	0.6	0.07	To slow	0.7	0.01	To slow																						
14-Jul-21	WC11	5	2	0.5	0.05	To slow	0.6	0.04	To slow	0.7	0.06	To slow	0.8	0.02	To slow	0.9	0.05	To slow	1	0.01	To slow																
14-Jul-21	WC11	5	3	0.4	0	To slow	0.5	0.05	To slow	0.6	0.04	To slow	0.7	0.03	To slow	0.8	0.03	To slow	0.9	0.02	To slow	1	0.03	To slow														
14-Jul-21	WC11	5	4	0.5	0.04	To slow	0.6	0.03	To slow	0.7	0.09	To slow	0.8	0.09	To slow	0.9	0.07	To slow	1	0.04	To slow	1.1	0.04	To slow	1.2	0.07	To slow	1.3	0.03	To slow	1.4	0.05	To slow	1.5	0.05	To slow
15-Jul-21	WC10	1	1	0.3	0.12	To slow	0.4	0.11	To slow																													

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																														
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
15-Jul-21	WC10	1	2	0.3	0.06	To slow	0.4	0	To slow	0.5	0.05	To slow	0.6	0.04	To slow																					
15-Jul-21	WC10	1	3	0.3	0.14	To slow	0.4	0.06	To slow	0.5	0.04	To slow	0.6	0.07	To slow																					
15-Jul-21	WC10	1	4	0.5	0.03	To slow	0.6	0.07	To slow	0.5	0.08	To slow	0.6	0.03	To slow																					
15-Jul-21	WC10	1	5	0.4	0.04	To slow	0.5	0.05	To slow	0.6	0.05	To slow	0.7	0.05	To slow	0.8	0.04	To slow	0.9	0.07	To slow	1	0.07	To slow											
15-Jul-21	WC10	2	1	0.3	0.03	To slow	0.4	0.03	To slow	0.5	0.03	To slow	0.6	0.09	To slow	0.7	0.09	To slow	0.8	0.1	To slow	0.9	0.03	To slow											
07-Jul	WC69	1	1	0.2	0.36	To slow	0.3	0.32	To slow	0.4	0.31	To slow	0.5	0.29	To slow	0.6	0.27	To slow	0.8	0.27	To slow	1	0.27	To slow	1.2	0.33	To slow	1.4	0.4	To slow	1.6	0.34	To slow	1.8	0.34	To slow
07-Jul	WC69	1	2	0.3	0.01	To slow	0.4	0.01	To slow	0.5	0.03	To slow	0.6	0.03	To slow	0.7	0.04	To slow	0.8	0.1	To slow	0.9	0.1	To slow	1	0.1	To slow	1.2	0.03	To slow	1.4	0.04	To slow	1.6	0.08	To slow
07-Jul	WC69	1	3	0.35	0.41	To slow	0.45	0.02	To slow	0.55	0.47	To slow	0.65	0.43	To slow	0.75	0.43	To slow	0.85	0.4	To slow	0.95	0.4	To slow	1.1	0.36	To slow	1.3	0.31	To slow	1.5	0.41	To slow	1.7	0.22	To slow
07-Jul	WC69	1	4	0.4	0.1	To slow	0.5	-0.03	To slow	0.6	0.01	To slow	0.7	0.1	To slow	0.8	0.1	To slow	1	0.09	To slow	1.2	0.12	To slow	1.4	0.16	To slow	1.5	0.03	To slow						
07-Jul	WC69	1	5	0.3	0.11	To slow	0.4	0.24	To slow	0.5	0.22	To slow	0.6	0.27	To slow	0.7	0.39	To slow	0.8	0.4	To slow	0.9	0.25	To slow	1	0.09	To slow								
07-Jul	WC69	1	6	0.5	0.05	To slow	0.6	0.11	To slow	0.7	0.09	To slow	0.8	0.02	To slow	0.9	0.05	To slow	1	0.14	To slow	1.2	0.01	To slow	1.4	0.14	To slow	1.6	0.15	To slow	1.8	0.13	To slow	2	0.08	To slow
07-Jul	WC69	1	7	0.4	0.33	To slow	0.6	0.25	To slow	0.8	0.21	To slow	1	0.24	To slow	1.2	0.25	To slow	1.4	0.27	To slow	1.6	0.07	To slow	1.8	0.08	To slow	2	0.03	To slow						
07-Jul	WC69	2	1	0.4	0.05	To slow	0.5	0.08	To slow	0.6	0.1	To slow	0.7	0.1	To slow	0.8	0.15	To slow	1	0.14	To slow	1.2	0.11	To slow	1.4	0.12	To slow								
07-Jul	WC69	2	2	0.4	0.15	To slow	0.5	0.1	To slow	0.6	0.11	To slow	0.7	0.12	To slow	0.8.	0.13	To slow	1	0.12	To slow	1.2	0.13	To slow	1.4	0.13	To slow	1.6	0.06	To slow						
07-Jul	WC69	3	1	0.4	0.11	To slow	0.7	0.14	To slow	1	0.15	To slow	1.3	0.2	To slow	1.6	0.25	To slow	1.9	0.17	To slow	2.2	0.29	To slow	2.5	0.22	To slow	2.8	0.18	To slow	3.1	0.19	To slow	3.6	0.14	To slow
07-Jul	WC22	2	1	0.3	0.16	To slow	0.45	0.14	To slow	0.6	0.18	To slow	0.75	0.19	To slow	0.9	0.18	To slow	1.05	0.2	To slow	1.2	0.2	To slow	1.35	0.25	To slow	1.5	0.23	To slow						
07-Jul	WC22	2	2	0.5	0.49	To slow	0.6	0.38	To slow	0.7	0.46	To slow	0.8	0.29	To slow	0.9	0.46	To slow	1	0.33	To slow	1.1	0.48	To slow	1.2	0.53	To slow	1.3	0.51	To slow	1.5	0.43	To slow	1.7	0.34	To slow
07-Jul	WC22	2	3	0.5	0.05	To slow	0.7	0.06	To slow	0.9	0.15	To slow	1.1	0.15	To slow	1.3	0.05	To slow	1.5	0.05	To slow	1.7	0.1	To slow	2.1	0.7	To slow	2.3	0.22	To slow	2.5	0.15	To slow			
07-Jul	WC22	2	4	0.5	0.04	To slow	0.7	0.13	To slow	0.9	0.12	To slow	1.1	0.14	To slow	1.3	0.1	To slow	1.5	0.08	To slow	1.7	0.05	To slow	1.9	0.1	To slow	2.1	0.09	To slow	2.3	0.18	To slow	2.5	0.1	To slow
07-Jul	WC22	2	4	0.4	0.19	To slow	0.7	0.21	To slow	1	0.21	To slow	1.3	0.31	To slow	1.6	0.31	To slow	1.9	0.36	To slow	2.2	0.25	To slow	2.5	0.24	To slow	2.8	0.2	To slow	3.1	0.33	To slow	3.4	0.22	To slow
07-Jul	WC22	2	5	0.4	0.09	To slow	0.5	0.06	To slow	0.75	0.14	To slow	0.9	0.12	To slow	1.05	0.11	To slow	1.2	0.17	To slow	1.35	0.15	To slow	1.5	0.11	To slow	1.65	0.03	To slow						
07-Jul	WC22	2	5	0.4	0.16	To slow	0.8	0.02	To slow	1.2	0.11	To slow	1.6	0.18	To slow	2	0.15	To slow	2.4	0.18	To slow	2.8	0.05	To slow	3.2	0.14	To slow	3.4	0.08	To slow						
07-Jul	WC22	5	3	0.4	0.08	To slow	0.8	-0.05	To slow	1.2	-0.06	To slow	1.6	0.12	To slow	2	0.18	To slow	2.4	0.08	To slow														
07-Jul	WC22	5	4	0.4	0.05	To slow	0.8	0.12	To slow	1.2	0.13	To slow	1.6	0.14	To slow	2	0.08	To slow	2.4	0.11	To slow	2.8	0.01	To slow											
07-Jul	WC22	5	5	0.5	-0.04	To slow	0.9	0.14	To slow	1.3	0.14	To slow	1.7	0.06	To slow	2.1	0.05	To slow	2.5	0.19	To slow	2.9	0.04	To slow	3.3	0.15	To slow	4.1	0.01	To slow	4.5	0.01	To slow	4.9	0.02	To slow
07-Jul	WC22	5	6	0.3	0.02	To slow	0.7	0.1	To slow	1.1	0.1	To slow	1.4	0.15	To slow	1.7	0.09	To slow	2.1	0.1	To slow	2.5	0.11	To slow	2.9	0.04	To slow	3.3	-0.1	To slow	3.9	0.03	To slow			
07-Jul	WC22	5	7	0.75	0.03	To slow	1.05	0.17	To slow	1.35	0.11	To slow	1.65	0.21	To slow	1.95	0.18	To slow	2.25	0.16	To slow	2.55	0.03	To slow											
07-Jul	WC22	5	8	0.5	0.03	To slow	0.9	-0.1	To slow	1.3	0.02	To slow	1.7	0.03	To slow	2.2	0.04	To slow	2.6	0.15	To slow														
07-Jul	WC22	5	9	0.3	0.15	To slow	0.8	0.22	To slow	1.3	0.25	To slow	1.8	0.18	To slow	2.3	0.24	To slow	2.8	0.22	To slow	3.35	0.14	To slow	3.6	0.14	To slow								
07-Jul	WC22	6	1	0.3	0.04	To slow	0.6	0.12	To slow	0.9	0.21	To slow	1.2	0.23	To slow	1.5	0.27	To slow	2.1	0.21	To slow	2.4	0.16	To slow	2.7	0.14	To slow	3	0.11	To slow						
07-Jul	WC22	7	1	0.7	0.02	To slow	0.08	0.01	To slow	0.09	0.04	To slow	1	0.11	To slow	1.1	0.15	To slow	1.2	0.12	To slow	1.3	0.12	To slow	1.4	0.03	To slow	1.5	0.05	To slow	1.8	0.05	To slow	1.9	0.06	To slow

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																																
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
08-Jul	WC15	1	1	0.4	0.01	To slow	0.5	0.4	To slow	0.6	0.01	To slow	0.7	0.11	To slow	0.8	0.14	To slow	0.9	0.02	To slow	1	0.01	To slow	1.2	0.01	To slow									
08-Jul	WC15	1	2	0.6	0.34	To slow	0.7	0.35	To slow	0.8	0.35	To slow	0.9	0.35	To slow	1	0.38	To slow	1.1	0.35	To slow	1.2	0.35	To slow	1.3	0.34	To slow	1.4	0.16	To slow						
08-Jul	WC15	1	3	0.3	0.29	To slow	0.4	0.18	To slow	0.5	0.16	To slow																								
08-Jul	WC15	1	4	0.3	0.05	To slow	0.4	0.05	To slow	0.5	0.05	To slow																								
08-Jul	WC15	1	5	0.6	0.38	To slow	0.7	0.38	To slow	0.8	0.38	To slow	0.9	0.38	To slow	1	0.41	To slow	1.1	0.39	To slow	1.2	0.4	To slow	1.3	0.4	To slow	1.4	0.38	To slow	1.5	0.41	To slow	1.6	0.31	To slow
08-Jul	WC15	1	6	0.3	0.15	To slow	0.45	0.01	To slow	0.6	0.25	To slow	0.75	0.17	To slow	0.9	0.18	To slow	1.05	0.13	To slow	1.25	0.14	To slow	1.45	0.16	To slow	1.65	0.16	To slow	1.85	0.08	To slow	1.9		To slow
08-Jul	WC15	1	7	0.4	0.05	To slow	0.6	0.15	To slow	0.8	-0.05	To slow	1	0.04	To slow	1.2	0.05	To slow	1.4	0.05	To slow	1.6	0.05	To slow	1.8	-0.05	To slow	2	0.01	To slow						
08-Jul	WC15	1	8	0.3	0.03	To slow	0.4	0.11	To slow	0.5	0.13	To slow	0.6	0.15	To slow	0.7	0.18	To slow	0.8	0.25	To slow	0.9	0.17	To slow	1	0.11	To slow									
08-Jul	WC15	1	9	0.4	0.2	To slow	0.5	0.24	To slow	0.6	0.25	To slow	0.7	0.13	To slow	0.8	0.31	To slow	0.9	-0.2	To slow	1	-0.2	To slow	1.1	-0.2	To slow									
08-Jul	WC15	1	10	0.3	0.02	To slow	0.4	0.02	To slow	0.5	0.02	To slow	0.6	0.02	To slow	0.7	0.02	To slow	0.8	0.03	To slow	0.9	0.05	To slow	1	0.03	To slow	1.1	0.01	To slow						
08-Jul	WC15	1	11	0.3	0.05	To slow	0.4	0.02	To slow																												
08-Jul	WC15	2	1	0.3		To slow	0.4	0.02	To slow	0.5	0.03	To slow	0.6	0.02	To slow	0.7	0.02	To slow																		
09-Jul	WC15	3	1	0.9	0.02	To slow	1	0.14	To slow	1.1	0.15	To slow	1.2	0.34	To slow	1.3	0.25	To slow	1.4	0.25	To slow	1.5	0.05	To slow	1.6	0.06	To slow	1.7	0.43	To slow	1.8	0.14	To slow	1.9	0.19	To slow
09-Jul	WC15	3	2	0.5	0.2	To slow	0.7	0.13	To slow	0.9	0.09	To slow	1.1	0.18	To slow	1.3	0.28	To slow	1.5	0.26	To slow	1.7	0.22	To slow												
09-Jul	WC15	4	1	0.7	0.01	To slow	0.8	-0.08	To slow	0.9	-0.08	To slow	1	0.02	To slow	1.1	0.06	To slow	1.2	0.03	To slow															
09-Jul	WC15	5	1	0.6	0.02	To slow	0.8	0.02	To slow	1	0.21	To slow	1.2	0.12	To slow	1.4	0.24	To slow	1.6	0.22	To slow	1.8	0.25	To slow	2	0.3	To slow	2.2	0.25	To slow						
09-Jul	WC15	6	1	0.4	0.01	To slow	0.6	0.03	To slow	0.8	0.04	To slow	1	0.03	To slow	1.2	0.02	To slow	1.4	0.06	To slow	1.6	0.04	To slow	1.8	0.01	To slow									
09-Jul	WC15	6	2	0.4	0.02	To slow	0.55	0.06	To slow	0.7	0.07	To slow	0.85	0.1	To slow	1	0.11	To slow	1.15	0.12	To slow	1.3	0.09	To slow	1.45	0.02	To slow									
09-Jul	WC15	7	1	0.6	0.02	To slow	0.8	0.06	To slow	1	0.1	To slow	1.2	0.06	To slow	1.4	0.13	To slow	1.6	0.08	To slow	1.8	0.1	To slow	2	0.01	to slow									
13-Jul	WC15	8	1	0.3	0.01	To slow	0.4	-0.02	To slow	0.5	-0.05	To slow	0.6	-0.02	To slow	0.7	0.04	To slow	0.8	-0.02	To slow	0.9	0.01	To slow	1	-0.04	To slow									
13-Jul	WC15	8	2	0.5	0.1	To slow	0.6	0.07	To slow	0.7	0.07	To slow	0.8	0.09	To slow	0.9	0.09	To slow	1	0.12	To slow	1.1	0.08	To slow												
13-Jul	WC15	9	1	0.5	0.13	To slow	0.7	0.18	To slow	0.9	0.22	To slow	1.1	0.17	To slow	1.3	0.17	To slow	1.5	0.2	To slow	1.7	0.23	To slow	1.9	0.23	To slow	2.1	0.23	To slow	2.5	0.19	To slow	2.7	0.18	To slow
13-Jul	WC15	9	1	0.3	0.13	To slow	0.4	0.15	To slow	0.5	0.1	To slow	0.6	0.05	To slow	0.7	0.09	To slow	0.8	0.1	To slow	0.9	0.15	To slow	1	0.1	To slow	1.1	0.06	To slow						
13-Jul	WC12	2	1	0.7	0.01	To slow	0.6	0.04	To slow	0.7	0.28	To slow																								
13-Jul	WC12	3	1	0.3	0.04	To slow	0.4	0.06	To slow	0.5	0.07	To slow	0.6	0.1	To slow	0.7	0.08	To slow	0.8	0.09	To slow	0.9	0.09	To slow	1	0.09	To slow	1.2	0.15	To slow	1.4	0.08	To slow	1.5	0.08	To slow
13-Jul	WC12	3	2	0.3	0.04	To slow	0.4	0.1	To slow	0.5	0.1	To slow	0.6	0.1	To slow	0.7	0.1	To slow	0.8	0.14	To slow	0.9	0.1	To slow	1	0.1	To slow									
13-Jul	WC12	3	3	0.3	0.08	To slow	0.4	0.02	To slow	0.5	0.03	To slow																								
13-Jul	WC12	3	4	0.3	0.02	To slow	0.4	0.08	To slow	0.5	0.18	To slow	0.6	0.1	To slow																					
13-Jul	WC12	3	5	0.3	0.08	To slow	0.4	0.06	To slow																											
13-Jul	WC12	3	6	0.5	0.01	To slow	0.75	0.13	To slow	1	0.24	To slow	1.25	0.02	To slow	1.5	0	To slow	1.75	0.1	To slow	2	0	To slow	2.25	0	To slow	2.5	0.01	To slow						
13-Jul	WC12	3	7	0.5	0.06	To slow	0.75	0.09	To slow	1	0.06	To slow	1.25	0.1	To slow	1.5	0.17	To slow	1.75	0.12	To slow	2	0.16	To slow	2.25	0.17	To slow	2.5	0.05	To slow						

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																																		
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
2021-07-20	51	1	1	0.05	0.09	Stagnant	0.15	0.13	Stagnant	0.25	0.15	Stagnant	0.35	0.15	Stagnant	0.45	0.13	Stagnant	0.55	0.1	Stagnant	0.65	0.11	Stagnant	0.75	0.08	Stagnant	0.85	0.04	Stagnant								
2021-07-20	51	1	2	0.55	0.13	Stagnant	0.75	0.17	Stagnant	0.95	0.17	Stagnant	1.15	0.17	Stagnant	1.35	0.11	Stagnant	1.55	0.16	Stagnant	1.75	0.15	Stagnant	1.85	0.07	Stagnant	1.95	0.02	Stagnant								
2021-07-20	51	1	3	0.15	0.31	<.05	0.35	0.18	<.05	0.55	0.23	<.05	0.75	0.14	<.05	0.95	0.35	<.05	1.15	0.32	<.05	1.35	0.31	<.05	1.55	0.3	<.05	1.75	0.28	<.05	1.85	0.31	<.05					
2021-07-20	51	1	4	0.05	0.14	<.05	0.25	0.13	<.05	0.45	0.19	<.05	0.55	0.09	<.05	0.75	0.17	<.05	0.95	0.35	<.05	1.15	0.04	<.05	1.35	0.25	<.05	1.55	0.11	<.05	1.85	0.11	<.05	2.1	0.05	<.05		
2021-07-20	51	1	5	0.1	0.02	too shallow	0.2	0.14	too mossy	0.3	0.13	too mossy	0.4	0.12	too mossy	0.5	0.14	too mossy	0.6	0.15	0.53	0.7	0.22	too mossy	0.8	0.2	too mossy	0.9	0.21	too mossy	1	0.19	too mossy					
2021-07-20	19	1	1	0.45	0.05	Stagnant	0.55	0.06	Stagnant	0.65	0.11	Stagnant	0.75	0.09	Stagnant	0.85	0.13	Stagnant	0.95	0.07	Stagnant	1.05	0.08	Stagnant	1.1	0.06	Stagnant											
2021-07-20	20	1	1	0.25	0.07	Stagnant	0.35	0.03	Stagnant	0.45	0.02	Stagnant	0.55	-0.08	Stagnant	0.65	0.01	Stagnant	0.75	0.05	Stagnant	0.85	0.16	Stagnant	0.9	0.18	Stagnant											
2021-07-20	20	1	2	0.2	0.2	<.05	0.3	0.1	<.05	0.4	0.1	<.05	0.5	0.14	<.05	0.6	0.11	<.05	0.7	0.14	<.05	0.75	0.08	<.05														
2021-07-20	20	1	3	0.1	0.15	Stagnant	0.2	0.12	Stagnant	0.3	0.15	Stagnant	0.4	0.16	Stagnant	0.5	0.1	Stagnant	0.6	0.08	Stagnant	0.7	0.11	Stagnant														
2021-07-20	20	1	4	0.05	0	<.05	0.15	0.03	<.05	0.25	0.04	<.05	0.35	0.04	<.05	0.45	0.06	<.05	0.55	0.05	<.05	0.65	0.05	<.05	0.75	0.05	<.05	0.85	0.05	<.05	0.95	0.05	<.05	1.1	0	<.05		
2021-07-20	20	1	5	0.05	0.02	Stagnant	0.15	0.03	Stagnant	0.25	0.04	Stagnant	0.35	0.1	Stagnant	0.45	0.37	Stagnant	0.55	0.37	Stagnant	0.65	0.42	Stagnant	0.75	0.38	Stagnant	0.85	0.3	Stagnant	1	0.2	Stagnant	1.2	0.1	Stagnant		
2021-07-20	20	1	6	0.1	0.39	Stagnant	0.2	0.15	Stagnant	0.3	0.12	Stagnant	0.4	0.12	Stagnant	0.5	0.2	Stagnant	0.55	0.15	Stagnant																	
2021-07-20	20	1	7	0.1	0.41	Stagnant	0.2	0.46	Stagnant	0.3	0.43	Stagnant	0.4	0.44	Stagnant	0.5	0.45	Stagnant	0.6	0.4	Stagnant	0.8	0.38	Stagnant	1	0.4	Stagnant	1.1	0.43	Stagnant	1.2	0.34	Stagnant	1.3	0.03	Stagnant		
2021-07-20	20	1	8	0.05	0.48	Stagnant	0.25	0.5	Stagnant	0.45	0.41	Stagnant	0.65	0.43	Stagnant	0.85	0.49	Stagnant	1.05	0.5	Stagnant	1.25	0.54	Stagnant	1.45	0.5	Stagnant	1.65	0.46	Stagnant	1.85	0.35	Stagnant	2.1	0.29	Stagnant		
2021-07-20	20	1	9	0.1	0.16	Stagnant	0.4	0.4	Stagnant	0.7	0.53	Stagnant	1	0.47	Stagnant	1.3	0.7	Stagnant	1.6	0.8	Stagnant	1.9	0.67	Stagnant	2.2	0.71	Stagnant	2.5	0.67	Stagnant	2.8	0.64	Stagnant	3.15	0.6	Stagnant		
2021-07-21	20	1	10	0.05	0.03	Stagnant	0.55	0.56	Stagnant	1.05	0.7	Stagnant	1.55	0.58	Stagnant	2.05	0.81	Stagnant	2.55	0.8	Stagnant	3.05	0.75	Stagnant	3.55	0.73	Stagnant	4.05	0.59	Stagnant	4.55	0.6	Stagnant	5.1	0.6	Stagnant		
2021-07-21	20	1	11	0.15	0.31	Stagnant	0.25	0.34	Stagnant	0.35	0.45	Stagnant	0.45	0.42	Stagnant	0.55	0.4	Stagnant	0.65	0.46	Stagnant	0.75	0.28	Stagnant														
2021-07-21	20	2	1	0.15	0.04	<.05	0.45	0.07	<.05	0.75	0.14	<.05	1.05	0.09	<.05	1.35	0.07	<.05	1.65	0.14	<.05	1.95	0.23	<.05	2.25	0.2	<.05	2.55	0.34	<.05	2.85	0.25	<.05	3.15	0.3	<.05		
2021-07-21	20	2	2	0.6	0.08	<.05	0.75	0.12	<.05	0.9	-0.07	Boulder	1.05	-0.12	Boulder	1.2	0.07	0.37	1.35	0.15	0.61	1.5	0.02	too shallow	1.65	0.02	too shallow	1.8	0.05	0.57	1.95	0.05	0.5	2.1	0.1	too shallow		
2021-07-21	23	1	1	0.1	0.06	Stagnant	0.2	0.08	Stagnant	0.3	0.04	Stagnant	0.5	0	Stagnant	0.6	0	Stagnant	0.7	0	Stagnant	0.8	0	Stagnant	0.9	0.02	Stagnant	1	0	Stagnant	1.1	0.03	Stagnant	1.2	0	Stagnant		
2021-07-21	23	1	2	0.15	0.09	Stagnant	0.25	0.11	Stagnant	0.35	0.13	Stagnant	0.45	0.14	Stagnant	0.55	0.14	Stagnant	0.65	0.13	Stagnant	0.75	0.13	Stagnant	0.85	0.09	Stagnant	0.95	0.08	Stagnant	1.05	0.05	Stagnant	1.1	0.01	Stagnant		
2021-07-21	49	1	1	0.1	0.04	Stagnant	0.2	0.03	Stagnant	0.3	-0.1	Stagnant	0.4	-0.1	Stagnant	0.5	-0.08	Stagnant	0.6	0.02	Stagnant	0.7	0.03	Stagnant	0.8	0.02	Stagnant	0.9	0	Stagnant	1	0.06	Stagnant	1.2	0.01	Stagnant		
2021-07-21	49	1	2	0.4	0.01	too shallow	0.5	0.02	too shallow	0.6	0.01	too shallow	0.65	0.05	too shallow																								
2021-07-21	49	1	3	0.05	0.17	Stagnant	0.15	0.14	Stagnant	0.25	0.17	Stagnant	0.35	0.05	Stagnant	0.45	0.12	Stagnant	0.6	0.01	Stagnant																	
2021-07-21	49	1	4	0.4	0.02	Stagnant	0.5	0.12	Stagnant	0.6	0.09	Stagnant	0.7	0.17	Stagnant	0.85	0.17	Stagnant																				
2021-07-22	49	1	5	0.05	0.23	Stagnant	0.15	0.22	Stagnant	0.25	0.2	Stagnant	0.35	0.23	Stagnant	0.45	0.18	Stagnant	0.55	0.18	Stagnant	0.65	0.18	Stagnant	0.75	0.22	Stagnant	0.85	0.13	Stagnant	0.95	0.17	Stagnant					
2021-07-22	49	1	6	0.1	0.04	Stagnant	0.25	0.14	Stagnant	0.4	0.16	Stagnant	0.55	0.15	Stagnant	0.7	0.1	Stagnant	0.85	0.11	Stagnant	1	0.14	Stagnant	1.15	0.05	Stagnant	1.3	-0.09	Stagnant	1.4	0.29	Stagnant					
2021-07-22	49	1	7	0.05	0.03	Stagnant	0.15	0.08	Stagnant	0.25	0.06	Stagnant	0.35	0.03	Stagnant	0.5	0.03	Stagnant																				
2021-07-22	49	1	8	0.05	0.05	<.05	0.15	0.04	<.05	0.25	0.01	<.05	0.35	-0.02	<.05	0.45	0.08	<.05	0.55	0.03	<.05	0.65	0.09	<.05														
2021-07-22	49	1	9	0.1	0.04	<.05	0.2	0.03	<.05	0.3	-0.05	<.05	0.4	0.02	<.05	0.5	0.04	<.05	0.6	0.02	<.05	0.7	-0.02	<.05	0.8	0.03	<.05	0.9	-0.02	<.05	1.05	0.02	<.05					

Survey Date	WC #	Reach #	Transect #	Depths and Velocities - left to right bank Ds = distance in m, D = depth in m, V = velocity in m/s																																		
				Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V	Ds	D	V
2021-07-22	49	1	10	0.15	0.34	Stagnant	0.25	0.25	Stagnant	0.35	0.28	Stagnant	0.45	0.31	Stagnant	0.55	0.35	Stagnant	0.65	0.3	Stagnant																		
2021-07-22	49	1	11	0.2	0.01	too shallow	0.3	0.02	too shallow	0.4	0.01	too shallow	0.5	0.01	too shallow																								
2021-07-22	49	1	12	0.05	0.12	Stagnant	0.15	0.08	Stagnant	0.25	0.1	Stagnant	0.35	0.1	Stagnant	0.45	0.1	Stagnant	0.55	0.1	Stagnant	0.65	0.1	Stagnant	0.75	0.06	Stagnant												
2021-07-22	55	1	1	0.05	0.04	Stagnant	0.15	0.03	Stagnant	0.25	0.06	Stagnant	0.35	0.2	Stagnant																								
2021-07-22	55	1	2	0.35	0.05	<.05	0.45	0.09	<.05	0.6	0.08	<.05																										
2021-07-22	55	1	3	0.05	0.02	<.05	0.15	0.05	<.05	0.25	0.03	<.05	0.35	0.01	<.05	0.45	0.06	<.05	0.55	0.06	<.05	0.65	0.06	<.05	0.75	0.07	<.05	0.85	0.13	<.05	0.95	9	<.05					

Table 6. Detailed Fish Habitat – Lakes - Part 1

Detailed Fish Habitat Assessment			
Date	18-Oct-21	19-Oct-21	November 17-18
Assessors	KF & ZS	KF & ZS	KF, LP
Lacustrine Name	**Rocky Lake**	**Gold Brook Lake**	Gold Brook Open Water
Weather (C, cloud %, precipitation)	Sunny	Sunny	0, 5mm of rain/snow
Photos (Transects, Barriers, Other Features)	Yes	Yes	Yes
Characteristics			
General Bank Stability	Good	Good	Good-Poor
Shore Cover	100-90%	100-90%	29-1%
Surface Conditions	Calm	Calm-Wavy	Rippled
Secchi Disc Depth (m)	1.48 *	0.91 *	N/A
Shoreline Substrate			
% Bedrock	0	0	0
% Boulder (>25cm)	70	75	5
% Rubble (14-25cm)	10	10	0
% Cobble (3-13cm)	5	5	0
%Gravel (0.2-3cm	0	3	0
% Sand (0.06-2mm)	0	2	0
% Muck/Detritus	0	5	95
%Clay/Mud	15	0	0
Substrate Embeddeness (%)	20	40	20
Underwater Substrate			
% Bedrock	0	0	0
% Boulder (>25cm)	40	60	15
% Rubble (14-25cm)	5	10	5
% Cobble (3-13cm)	5	5	0
%Gravel (0.2-3cm	0	7	0
% Sand (0.06-2mm)	0	3	0
% Muck/Detritus	50	15	60
%Clay/Mud	0	0	20

Detailed Fish Habitat Assessment			
Cover			
% Large Woody debris	1	1	1
% Boulders	15	20	2
% Overhanging Vegetation (<1m from surface)	1	1	5
% Emergent Vegetation	1	1	15
% Submergent Vegetation	25	2	50
Total % Cover	43	25	73
Banks and Riparian Area			
Left Bank			
% Tress	40	40	30
% Shrubs	60	50	40
% Grass	10	25	50
% Bare	5	10	0
% Eroding	5	10	0
% Shade	80	75	60
Right Bank			
% Tress	40	40	30
% Shrubs	60	50	40
% Grass	10	25	50
% Bare	5	10	0
% Eroding	5	10	0
% Shade	90	75	60
Dominant Riparian Veg. (Check one)			
Grass			
Shrub			
Coniferous Forest		Yes	
Decididuous Forest			
Mixed-wood Forest	Yes		
Wetland		~25% surrounding	Yes
None			
Notes			
General notes on lake	*lost sight of secchi disc because of veg and muck on bottom	* Average of 12 depths throughout lake	Could wade across for 9 transects. Rest of the way it was either to deep or substrate made it unsafe to wade across. Wind/current to strong for a canoe. Water level was HIGH and most of "shore" was a flooded wetland that is accessible to fish at time of assessment but not necessarily when levels are lower.

Table 7. Detailed Habitat Assessment – Lakes – Part 2

Location	Transect	Measurement			Depth (m)	Substrate	Vegetation	Water Quality							Comments
			Easting	Northing				Temp (℃)	pH	CON (µS/cm)	SPC (µS/cm)	TDS (mg/L)	DO (%)	DO (mg/L)	
Rocky Lake	1	1	608452	5007167	0.65	muck and boulder	none								
	1	2	608493	5007199	1.95	n/a	bladderwort at bottom	16.1	4.62	230	278.4	181.35	123.7	11.65	
	1	3	608536	5007238	1.53	n/a	bladderwort at bottom								
	1	4	608596	5007242	0.72	muck	bladderwort at bottom								
	2	1	608491	5007306	1.01	muck	bladderwort at bottom								
	2	2	608464	5007293	0.95	muck	bladderwort at bottom	15.9	4.75	235.4	282.4	169.75	104.5	10.36	
	2	3	608424	5007259	0.77	boulders somemuck	bladderwort at bottom								
	3	1	608383	5007274	0.97	boulders somemuck	bladderwort at bottom								
	3	2	608399	5007305	1.51	boulders somemuck	bladderwort at bottom	15.6	4.69	241.7	279.1	180.4	103.3	10.18	
	3	3	608411	5007350	0.51	boulders and muck	bladderwort at bottom								
	4	1	608369	5007348	1.41	boulders and muck	bladderwort at bottom								
	4	2	608361	6007329	1.62	n/a	bladderwort at bottom	15.6	4.7	240.6	273.8	179.35	100.5	9.96	
	4	3	608333	5007287	1.56	n/a	bladderwort at bottom								
	5	1	608279	5007291	0.7	boulders and muck	bladderwort at bottom								
	5	2	608279	5007312	1.33	boulders somemuck	bladderwort at bottom	13.4	4.68	214.8	276.4	179.4	114.7	11.67	
	5	3	608275	5007340	0.61	boulder some rubble	none								
	6	1	608234	5007338	0.74	boulders and muck	bladderwort at bottom								
	6	2	608228	5007323	1.25	boulders and muck	bladderwort at bottom	12.7	4.79	212	277.7	180.7	97.8	10.15	
	6	3	609223	5007307	0.61	boulders somemuck	bladderwort at bottom								
Gold Brook Lake	1	1	606558	5007690	1.64	some muck	some grass								
	1	2	606625	5007808	1.9	n/a	none observed	13.3	4.69	260	321.8	208.85	93.2	9.52	0.83 secchi deptb
	1	3	606731	5007914	1.39	boulders somemuck	none observed								
	2	1	606836	5007942	0.82	boulder some gravel	none observed								
	2	2	606764	5007821	1.56	boulders somemuck	none observed	14	4.45	284	389.2	234.55	100.5	10.14	1.02secchi depth
	2	3	606625	5007619	0.72	boulders somemuck	none observed								
	3	1	606572	5007467	0.67	boulders somemuck	none observed								
	3	2	606920	5007706	2.75	n/a	none observed	14.2	4.44	320.7	407.8	270.5	106.3	10.57	1.01 secchi depth
	3	3	607088	5007975	1.51	n/a	none observed								
	4	1	607190	5007910	0.84	boulder some gravel	none observed								
	4	2	606976	5007665	2.85	n/a	none observed	14.1	4.56	297.8	393.1	285.75	105.8	10.87	0.75 secchi depth
	4	3	606685	5007333	1.01	boulders somemuck	some grass								
	5	1	606762	5007222	0.73	boulders somemuck	some grass								
	5	2	607120	5007540	2.55	n/a	none observed	14.3	4.44	331.9	417.3	272.05	104.1	10.42	.88 secchi
	5	3	607298	5007741	0.65	boulder and rubble	none observed								
	6	1	607334	5007602	1.17	boulder and rubble	none observed								
	6	2	607112	5007461	2.55	n/a	none observed	14.2	4.41	330.88	389.6	276.9	106.3	10.66	.85 seechhii
	6	3	606754	5007078	0.52	boulders somemuck	none observed								
	7	1	606776	5006950	0.85	boulders somemuck	none observed								
	7	2	607048	5007220	3.05	n/a	none observed	14.2	4.49	312.8	400.5	261.75	106.5	10.64	1.00 secchi
	7	3	607310	5007435	1.14	boulder some rubble	none observed								
	8	1	607111	5007157	1.25	boulder some rubble	none observed								
	8	2	606951	5007042	2.95	n/a	none observed	14.2	4.46	329.5	415.8	269.75	108.5	10.76	0.94 secchi

Location	Transect	Measurement			Depth (m)	Substrate	Vegetation	Water Quality							Comments
			Easting	Northing				Temp (℃)	pH	CON (µS/cm)	SPC (µS/cm)	TDS (mg/L)	DO (%)	DO (mg/L)	
	8	3	606770	5006822	1.34	boulders somemuck	none observed								
	9	1	606856	5006767	1.01	boulders somemuck	none observed								
	9	2	606997	5006837	3.35	n/a	none observed	14.4	4.48	330.8	415.1	269.75	110.6	10.69	0.86 secchi
	9	3	607088	5006962	0.95	boulders somemuck	some grass								
	10	1	607162	5006847	1.22	boulder and rubble	none observed								
	10	2	607051	5006774	3.09	n/a	none observed	14.3	4.65	319	401.7	260.55	109.6	10.59	0.91 secchi
	10	3	606942	5006674	1.19	boulder some rubble	none observed								
	11	1	606971	5006577	0.94	boulders somemuck	some grass								
	11	2	607071	5006613	1.83	n/a	none observed	14.5	4.61	329.4	410.9	267.15	101	10.03	1.06 secchi
	11	3	607141	5006671	0.87	rubble and cobble	none observed								
	12	1	607120	5006580	0.9	rubble anr muck	grass								
	12	2	607063	5006520	2.08	n/a	none observed	14.3	4.52	330.5	416.9	269.75	105.9	10.61	0.80 secchi
	12	3	607030	5006507	1.09	bo, rub, cob	none observed								
	13	1	607023	5006401	1.13	gravel, cob,muck	equistem								
	13	2	607046	5006399	0.65	sand, gravel, muck	none observed	14.8	4.63	335.3	416.6	271.05	111.8	11	to sballow for secchi
	13	3	607086	5006397	0.81	sand and muck	lots of grass								
Gold Brook Open Water	12	T1	607464	5004982	0.35	M/D		6.5	4.53	25.6	39.6	26	107.9	13.3	Taken 1m from shore

Table 8. Open Water Habitat Assessment – Gold Brook.

	Transects (measurements start at righ bank and occur approximately ever 1 m)																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Waypoint	607441, 5005036	607464, 5004963	607506, 5004920	607529, 5004848	607557, 5004774	607591, 5004701	607659, 5004639	607712, 5004569	607716, 5004477	607730, 5004405	607777, 5004363	607833, 5004356	607882, 5004336	607928, 5004305	607955, 5004294	608004, 5004269	608043, 5004225	608066, 5004196	608101, 5004140	608125, 5004096	608147, 5004074	608180, 5004040
Approx Width (m)	40	86	96	92	80	152	155	127	60	69	95	123	145	68	105	80	59	52	55	62	60	58
Substrate	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck, grass, and some boulders	muck, grass, and some boulders	muck, grass, and some boulders	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass	muck and grass and boulder	muck and grass	muck and grass	muck and grass	muck and grass
General Comments	No flow. Depth restricted wading across	No flow. Depth restricted wading across	No flow was able to wade across.	No flow was able to wade across.	No flow. Muck substrate stopped us 10m from left bank	No flow. Restricted wading across	No flow was able to wade across.	No flow was able to wade across.	No flow. Depth restricted wading across	3/4 predicted to be 30-40cm deep and 1/4 1m+	Water depth estimated between 30cm-1m+	Water depth estimated between 15cm-1m+	Water depth estimated between 10cm-1m+. 25m of flooded marsh on R side	Water depth estimated between 10cm-1m+. 25m of flooded marsh on L side	Water depth estimated between 40cm-1m+. ~50m of flooded WL on L side	Water depth estimated between 40cm-1m+. ~40m on L side flooded marsh	Water depth estimated between 20cm-1m+. 3m of flooded WL on Rside and 5m on L side	Water depth estimated between 40cm-1m+.	Water depth estimated between 20cm-1m+	Water depth estimated between 20cm-1m+	depth estimated between 10cm-1m+.	Water depth estimated between 20cm-1m+. 5m of flooded WL on each side
Depths (in cm)																						
#1	3	2	6	9	9	12	14	9	Started 10m from R bank	*Transect depths estimated – Could not leave bank on foot as depth and substrate posed safety hazard.												

	Transects (measurements start at righ bank and occur approximately ever 1 m)																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
#2	14	5	3	11	17	25	23	22	46													
#3	16	0	3	19	15	28	16	21	54													
#4	20	2	6	11	14	27	14	20	56													
#5	44	3	4	11	13	27	17	30	53													
#6	51	4	4	10	12	25	13	31	58													
#7	67	3	4	10	14	22	10	30	46													
#8	64	3	5	10	14	20	17	27	58													
#9	67	3	5	9	15	20	18	28	48													
#10	STOPPED	0	4	8	16	20	20	30	40													
#11		3	5	8	14	19	20	29	39													
#12		2	5	8	16	17	19	28	36													
#13		3	5	9	17	17	25	29	39													
#14		6	4	10	17	18	31	30	40													
#15		7	4	11	16	20	25	28	35													
#16		3	4	9	15	20	22	30	35													
#17		2	4	9	13	21	27	30	33													
#18		3	5	9	13	19	23	25	39													
#19		1	6	10	14	13	22	35	35													
#20		0	5	9	14	17	22	32	37													
#21		0	6	9	13	15	21	31	37													
#22		0	4	9	13	15	21	32	47													
#23		0	3	10	16	16	28	34	39													
#24		0	0	9	13	17	32	27	47													
#25		3	0	10	13	18	25	29	42													
#26		4	1	9	12	14	16	30	44													
#27		7	0	10	14	17	19	27	47													
#28		4	0	9	13	17	22	28	50													
#29		9	0	8	12	16	21	29	80													
#30		9	0	8	14	17	21	30	STOPPED													
#31		9	0	9	9	17	24	29														
#32		19	0	8	11	17	25	30														
#33		22	1	8	10	17	24	30														
#34		13	7	8	10	16	25	30														
#35		20	8	8	8	13	25	29														
#36		25	7	9	11	14	45	26														
#37		34	10	9	11	14	34	27														
#38		45	11	8	13	14	25	34														
#39		57	11	8	6	16	20	32														
#40		57	13	9	8	16	19	32														
#41		67	14	8	12	15	17	30														
#42		83	14	9	14	16	17	30														
#43		106	16	9	19	15	17	30														

	Transects (measurements start at righ bank and occur approximately ever 1 m)																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
#44		STOPPED	23	8	20	14	13	30														
#45			22	9	11	14	17	30														
#46			23	10	11	14	14	30														
#47			30	11	11	13	14	30														
#48			35	11	18	11	14	29														
#49			40	11	20	11	17	26														
#50			35	17	22	11	20	26														
#51			34	14	24	8	14	28														
#52			40	14	22	11	17	26														
#53			38	21	20	13	16	28														
#54			34	29	24	10	14	25														
#55			33	20	24	9	16	23														
#56			30	18	27	10	18	24														
#57			32	20	28	10	16	21														
#58			32	20	31	8	13	22														
#59			30	18	32	7	14	20														
#60			33	18	39	8	16	19														
#61			34	20	25	8	16	19														
#62			32	23	23	10	16	21														
#63			30	23	27	10	13	25														
#64			32	22	55	13	16	23														
#65			34	24	STOPPED	11	14	21														
#66			26	25		9	13	23														
#67			17	27		10	16	22														
#68			17	28		8	15	25														
#69			16	25		9	15	25														
#70			14	28		9	18	30														
#71			16	27		10	16	30														
#72			22	30		12	11	28														
#73			32	42		10	22	24														
#74			37	43		10	19	5														
#75			45	36		11	14	10														
#76			50	47		11	9	18														
#77			20	55		24	16	11														
#78			14	75		21	19	END														
#79			17	90		20	30															
#80			20	END		22	34															
#81			18			14	49															
#82			18			13	65															
#83			22			6	70															
#84			22			6	80															
#85			10			7	END															

	Transects (measurements start at righ bank and occur approximately ever 1 m)																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
#86			10			6																
#87			14			11																
#88			10			19																
#89			5			27																
#90			END			35																
#91						38																
#92						30																
#93						46																
#94						45																
#95						38																
#96						43																
#97						25																
#98						63																
#99						50																
#100						STOPPED																

Table 9. Gold Brook Lake Transect Temperature Profiles

Transect	Measurement	Depth 0m		Depth 0.5m		Depth 1.0m		Depth 1.5m		Depth 2.0m		Depth 2.5m		Depth 3.0m	
		Temp	DO (mg/L)	Temp	DO (mg/L)	Temp	DO (mg/L)	Temp	DO (mg/L)	Temp	DO (mg/L)	Temp	DO (mg/L)	Temp	DO (mg/L)
1	3	16	11.57	16.1	11.03	14.9	10.32								
2	2	15.9	10.36	15.9	10.08	15.3	10.42								
3	2	15.6	10.18	15.6	10.21	14.8	10.36	14.7	10.34						
4	2	15.6	9.93	15.6	10.1	15	10.33	14.4	10.23						
5	2	13.4	11.01	13.2	10.93	13	10.78								
6	2	12.7	10.23	12.7	10.19	12.5	10.22								
1	2	13.3	9.68	13.3	10.02	13.3	10.16	12.7	9.93						
2	2	14	1.012	13.9	10.32	13.9	10.29	13.6	10.16						
3	2	14.1	10.32	14.1	10.34	14	10.31	13.4	10.26	13.4	10.23	13.4	10.24		
4	2	14	10.47	14	10.35	13.9	10.23	13.5	10.35	13.4	10.34	13.3	10.29		
5	2	14.3	10.3	14.3	10.33	14.3	10.24	13.6	10.23	13.5	10.13				
6	2	14.3	10.52	14.2	10.49	14.3	10.38	13.7	10.31	13.5	10.24				
7	2	14.2	10.2	14.2	10.19	14.2	10.15	14.2	10.25	13.4	10.2	13.3	9.98	13.4	10.24
8	2	14.2	10.45	14.2	10.32	14.1	10.12	13.6	9.95						
9	2	14.4	10.59	14.4	10.55	14.3	10.42	14.2	10.32	13.4	10.21	13.3	10.42	13.3	10.05
10	2	14.4	10.35	14.5	10.45	14.4	10.22	13.6	10.17	13.5	10.29	13.4	10.37	13.4	10.12
11	2	14.5	10.03	14.5	9.65	14.3	9.77	14	9.8						

Table 10. Individual fish data

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 22, 2020	WC1	Electrofishing	American eel	-	110	2.1
June 22, 2020	WC1	Electrofishing	brook trout	94	100	10.15
June 22, 2020	WC1	Electrofishing	American eel	-	200	14
June 22, 2020	WC1	Electrofishing	American eel	-	180	9.66
June 22, 2020	WC1	Electrofishing	brook trout	29	30	0.5
June 22, 2020	WC1	Electrofishing	brook trout	78	81	5.65
June 22, 2020	WC1	Electrofishing	brook trout	30	31	0.31
June 22, 2020	WC1	Electrofishing	American eel	-	100	-
June 22, 2020	WC1	Electrofishing	American eel	-	240	28.79
June 22, 2020	WC1	Electrofishing	American eel	-	170	9.05
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	71	5.27
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	60	2.2
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	68	2.49
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	210	18.27
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	76	4.45
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	195	16.2
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	67	3.63
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	260	34.33
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	190	14.94
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	132	3.3
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	240	25.27
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	300	56.1
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	185	7.22
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	170	8.16
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	220	13.77
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	250	29.81
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	245	24.2
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	42	0.92
June 25, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	59	1.9
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	150	6.11
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	195	8.34
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	150	2.5
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	240	23.5
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	220	16.25
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	185	9.22
June 25, 2020	Settling Pond Outlet	Electrofishing	American eel	-	190	8.76
June 27, 2020	Gold Brook A	Electrofishing	banded killifish	-	84	5.46
June 27, 2020	Gold Brook A	Electrofishing	brook trout	28	28	0.35
June 27, 2020	Gold Brook A	Electrofishing	brook trout	100	105	12.69
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	42.86
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	68	2.73
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	240	23.16
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	180	8.76

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	120	2.6
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	206	10.9
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	280	22.02
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	130	3.18
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	250	26.01
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	180	6.35
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	180	8.78
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	110	2.21
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	170	6.79
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	190	10.24
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	160	7.01
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	250	20.56
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	270	29.66
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	260	33.34
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	280	30.98
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	42.6
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	135	3.15
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	140	3.66
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	135	3.46
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	210	14.65
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	200	13.63
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	110	1.96
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	280	32.83
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	280	30.93
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	230	19
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	180	7.14
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	220	14.73
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	50.06
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	155	4.65
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	180	7.16
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	190	12.2
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	280	36.15
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	190	11.14
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	250	25.02
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	220	16.19
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	46.29
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	150	5.64
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	200	12.46
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	120	1.65
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	290	32.95
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	30.72
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	170	7.32
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	210	15.82

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	300	37.26
June 27, 2020	Gold Brook A	Electrofishing	American eel	-	160	7.24
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	150	-
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	150	-
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	100	-
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	200	-
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	300	-
July 27, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	45	0.85
July 27, 2020	Settling Pond Outlet	Electrofishing	banded killifish	-	50	1.54
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	210	14.49
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	310	43.29
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	150	0
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	170	9.32
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	290	25.6
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	190	13.32
July 27, 2020	Settling Pond Outlet	Electrofishing	American eel	-	180	9.59
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	190	5.89
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	170	6.38
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	220	24.6
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	130	2.47
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	180	7.3
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	280	23.7
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	210	15.21
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	200	12.92
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	150	5.59
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	170	7.88
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	280	41.13
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	140	5.58
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	180	9.38
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	140	3.2
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	130	3.81
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	250	21.1
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	220	17.5
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	150	-
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	150	3.94
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	180	10.5
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	200	15.28
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	230	17.35
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	280	-
July 28, 2020	Gold Brook A	Electrofishing	American eel	-	130	-
July 30, 2020	WC9 Reach A	Electrofishing	American eel	-	340	68.86
August 1, 2020	WC1	Electrofishing	brook trout	141	150	34.18
August 1, 2020	WC1	Electrofishing	brook trout	152	161	46.24

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 1, 2020	WC1	Electrofishing	brook trout	109	130	15.78
August 1, 2020	WC1	Electrofishing	brook trout	187	191	70.94
August 1, 2020	WC1	Electrofishing	brook trout	124	131	23.56
August 1, 2020	WC1	Electrofishing	brook trout	125	132	26.05
August 1, 2020	WC1	Electrofishing	American eel	-	190	11.98
August 1, 2020	WC1	Electrofishing	brook trout	84	89	9.13
August 1, 2020	WC1	Electrofishing	brook trout	101	117	10.65
August 1, 2020	WC1	Electrofishing	brook trout	94	100	10.65
August 1, 2020	WC1	Electrofishing	brook trout	51	56	-
August 1, 2020	WC1	Electrofishing	brook trout	59	64	1.25
August 1, 2020	WC1	Electrofishing	brook trout	54	57	1.26
August 1, 2020	WC1	Electrofishing	American eel	-	170	9.2
August 1, 2020	WC1	Electrofishing	American eel	-	190	9.83
August 1, 2020	WC1	Electrofishing	American eel	-	130	3.35
August 19, 2020	WC8	Electrofishing	American eel	-	177	7.76
August 19, 2020	WC9 Reach B	Electrofishing	American eel	-	270	32.84
August 19, 2020	WC9 Reach B	Electrofishing	American eel	-	190	12.36
August 19, 2020	WC9 Reach B	Electrofishing	brook trout	47	51	1.34
August 20, 2020	WC1	Electrofishing	brook trout	150	160	39.03
August 20, 2020	WC1	Electrofishing	American eel	-	200	14.44
August 20, 2020	WC1	Electrofishing	brook trout	50	55	3.54
August 20, 2020	WC1	Electrofishing	brook trout	9.5	10	10.88
August 20, 2020	WC1	Electrofishing	American eel	-	220	17.31
August 20, 2020	WC1	Electrofishing	American eel	-	150	5.1
August 20, 2020	WC1	Electrofishing	brook trout	125	138	22.94
August 20, 2020	WC1	Electrofishing	American eel	-	230	22.09
August 20, 2020	WC1	Electrofishing	brook trout	180	190	66.3
August 20, 2020	WC1	Electrofishing	brook trout	53	68	2.96
August 20, 2020	WC1	Electrofishing	brook trout	123	130	23
August 20, 2020	WC1	Electrofishing	brook trout	140	150	38.79
August 20, 2020	WC1	Electrofishing	brook trout	94	100	9.83
August 22, 2020	Settling Pond Outlet	Electrofishing	American eel	-	310	38.48
August 22, 2020	Settling Pond Outlet	Electrofishing	American eel	-	240	15.65
August 22, 2020	Settling Pond Outlet	Electrofishing	American eel	-	130	2.02
August 23, 2020	Gold Brook A	Electrofishing	brook trout	128	136	22.96
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	28	0.14
August 23, 2020	Gold Brook A	Electrofishing	brook trout	128	137	20.68
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	32	0.11
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	78	3.19
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	300	43.03
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	50	0.84
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	62	2.38
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	200	11.5

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 23, 2020	Gold Brook A	Electrofishing	brook trout	124	133	20.54
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	30	0.2
August 23, 2020	Gold Brook A	Electrofishing	brook trout	114	122	15.16
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	53	1.62
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	120	1.74
August 23, 2020	Gold Brook A	Electrofishing	yellow perch	87	92	8.02
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	240	28.8
August 23, 2020	Gold Brook A	Electrofishing	banded killifish	-	88	1.58
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	170	7.41
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	180	8.67
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	790	9.23
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	180	4.35
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	170	7.66
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	120	3.44
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	110	2.75
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	150	5.64
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	280	34.42
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	210	13.81
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	230	17.74
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	200	10.85
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	240	20.8
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	310	33.44
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	170	5.36
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	200	9.64
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	240	14.39
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	160	5.87
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	330	53.88
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	130	4.67
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	280	30.95
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	260	25.25
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	200	11.82
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	160	5.68
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	180	37.7
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	300	27.18
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	280	12.85
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	220	11.12
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	200	26.46
August 23, 2020	Gold Brook A	Electrofishing	American eel	-	270	-
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	140	8.3
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	160	23.1
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	270	37
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	330	43.75
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	120	

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	220	11.57
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	240	13.03
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	130	12.16
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	50	3.3
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	110	5.3
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	280	30.27
June 21, 2021	Gold Brook B	Electrofishing	yellow perch	104	105	10.77
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	130	8.62
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	340	51.67
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	170	13.42
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	250	18.39
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	190	16.71
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	310	43.77
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	290	46.48
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	270	22.76
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	200	17
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	190	21.6
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	170	13.13
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	210	17.02
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	230	15.01
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	100	5.4
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	200	12.29
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	200	13.92
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	350	39.86
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	170	18.04
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	300	27.83
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	130	12.4
June 21, 2021	Gold Brook B	Electrofishing	American eel	-	400	49.07
June 22, 2021	Rocky Lake 2	Eel Pot	golden shiner	129	140	20.45
June 22, 2021	Rocky Lake 2	Eel Pot	American eel	-	60	307.95
June 22, 2021	Rocky Lake 2	Eel Pot	American eel	-	65	385.74
June 22, 2021	Rocky Lake 2	Eel Pot	golden shiner	-	119	10.36
June 22, 2021	Rocky Lake 2	Eel Pot	golden shiner	124	133	18.67
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	92	99	6.28
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	73	78	2.85
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	94	102	7.58
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	96	106	8.4
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	97	8.12
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	93	4.31
June 23, 2021	Rocky Lake 1	Minnow Trap	American eel	-	350	115.9
June 23, 2021	Rocky Lake 1	Minnow Trap	American eel	-	200	74.72
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	96	8.59
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	70	86	3.48

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	87	97	6.12
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	75	3.75
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	50	4.95
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	89	4.25
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	87	7.38
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	72	79	2.17
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	84	88	3.56
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	70	75	5.74
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	5.1
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	81	88	4.33
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	2.57
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	94	102	9.68
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	2.45
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	84	95	5.6
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	88	96	5.89
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	67	71	1.31
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	76	83	4.15
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	94	7.86
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	84	97	7.23
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	69	76	2.86
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	70	76	3.69
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	2.6
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	71	78	2.42
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	76	84	2.94
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	78	85	4.05
June 23, 2021	Rocky Lake 1	Minnow Trap	golden shiner	89	95	5.22
June 23, 2021	GBL South	Seine Net	yellow perch	87	94	12.26
June 23, 2021	GBL South	Seine Net	yellow perch	95	98	8.66
June 23, 2021	GBL South	Seine Net	banded killifish	-	90	1.89
June 23, 2021	GBL South	Seine Net	banded killifish	-	81	3.7
June 23, 2021	GBL South	Seine Net	banded killifish	-	45	1.2
June 23, 2021	GBL South	Seine Net	banded killifish	-	94	10.05
June 23, 2021	GBL South	Seine Net	yellow perch	71	75	21.8
June 23, 2021	GBL South	Seine Net	yellow perch	95	100	8.16
June 23, 2021	GBL South	Seine Net	banded killifish		84	2.19
June 23, 2021	GBL South	Seine Net	yellow perch	85	88	4.31
June 23, 2021	GBL South	Seine Net	yellow perch	72	77	3.91
June 23, 2021	GBL South	Seine Net	banded killifish		82	3.86
June 23, 2021	GBL South	Seine Net	yellow perch	53	54	1.06
June 23, 2021	GBL South	Seine Net	yellow perch	87	91	8.26
June 23, 2021	GBL South	Seine Net	yellow perch	100	105	14.9
June 23, 2021	GBL South	Seine Net	yellow perch	108	113	15.58
June 23, 2021	GBL South	Seine Net	yellow perch	94	98	13.78

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 23, 2021	GBL South	Seine Net	yellow perch	94	99	16.26
June 23, 2021	GBL South	Seine Net	yellow perch	90	94	8.61
June 23, 2021	GBL South	Seine Net	yellow perch	89	97	8.07
June 23, 2021	GBL South	Seine Net	yellow perch	112	115	34.22
June 23, 2021	GBL South	Seine Net	yellow perch	77	80	6.78
June 23, 2021	GBL South	Seine Net	yellow perch	93	101	12.34
June 23, 2021	GBL South	Seine Net	yellow perch	83	87	9.7
June 23, 2021	GBL South	Seine Net	yellow perch	86	91	11.29
June 23, 2021	GBL South	Seine Net	yellow perch	87	92	12.68
June 23, 2021	GBL South	Eel Pot	yellow perch	104	104	12.88
June 23, 2021	GBL South	Eel Pot	yellow perch	125	131	23.67
June 23, 2021	GBL South	Eel Pot	yellow perch	143	147	33.11
June 23, 2021	GBL South	Eel Pot	yellow perch	111	115	24.09
June 23, 2021	GBL South	Eel Pot	yellow perch	112	116	24.77
June 23, 2021	GBL South	Eel Pot	yellow perch	126	131	25.3
June 23, 2021	GBL South	Eel Pot	yellow perch	125	128	9.54
June 23, 2021	GBL South	Eel Pot	yellow perch	118	122	15.44
June 23, 2021	GBL South	Eel Pot	yellow perch	105	110	14.11
June 23, 2021	GBL South	Eel Pot	yellow perch	130	136	22.6
June 23, 2021	GBL South	Eel Pot	yellow perch	107	116	13.6
June 23, 2021	GBL South	Eel Pot	yellow perch		95	16.55
June 23, 2021	GBL South	Eel Pot	yellow perch	115	120	13.52
June 23, 2021	GBL South	Eel Pot	yellow perch		600	
June 23, 2021	GBL South	Minnow Trap	yellow perch	88	92	6.56
June 23, 2021	GBL South	Minnow Trap	yellow perch	98	101	10.52
June 23, 2021	GBL South	Minnow Trap	yellow perch	84	87	7.92
June 23, 2021	GBL South	Minnow Trap	yellow perch	87	92	9.8
June 23, 2021	GBL South	Minnow Trap	golden shiner	109	117	15.9
June 23, 2021	GBL South	Minnow Trap	yellow perch	90	95	9.48
June 23, 2021	GBL South	Minnow Trap	banded killifish	-	89	8.96
June 23, 2021	GBL South	Minnow Trap	banded killifish	-	67	5.6
June 23, 2021	WC14	Eel Pot	brook trout	14	14.5	45.44
June 23, 2021	WC14	Eel Pot	brook trout	-	15	-
June 23, 2021	WC14	Minnow Trap	brook trout	10.5	10.8	8.75
June 23, 2021	WC14	Minnow Trap	brook trout	6.3	6.5	1.68
June 24, 2021	GBL East	Fyke Net	golden shiner	120	132	13.12
June 24, 2021	GBL East	Fyke Net	golden shiner	118	128	6.79
June 24, 2021	GBL East	Fyke Net	golden shiner	124	136	8.03
June 24, 2021	GBL West	Fyke Net	golden shiner	114	125	13.56
June 24, 2021	GBL West	Fyke Net	yellow perch	105	113	15.49
June 24, 2021	GBL West	Fyke Net	American eel	-	500	-
June 24, 2021	GBL West	Fyke Net	golden shiner	-	-	-
June 24, 2021	GBL North	Fyke Net	yellow perch	123	129	15.15

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 24, 2021	GBL North	Fyke Net	yellow perch	157	145	28.73
June 24, 2021	GBL North	Fyke Net	golden shiner	119	130	17.81
June 24, 2021	GBL North	Fyke Net	yellow perch	120	125	14.35
June 24, 2021	GBL North	Fyke Net	yellow perch	119	125	14.36
June 24, 2021	GBL North	Fyke Net	banded killifish	221	260	134.44
June 24, 2021	GBL North	Fyke Net	golden shiner	780	870	10.17
June 24, 2021	GBL North	Fyke Net	banded killifish	295	315	250.18
June 24, 2021	GBL North	Minnow Trap	yellow perch	78	80	1.62
June 24, 2021	GBL North	Minnow Trap	yellow perch	81	85	4.38
June 24, 2021	GBL North	Minnow Trap	yellow perch	74	76	2.5
June 24, 2021	GBL North	Minnow Trap	yellow perch	85	90	5.45
June 24, 2021	GBL North	Minnow Trap	yellow perch	72	75	4.93
June 24, 2021	GBL North	Minnow Trap	yellow perch	85	88	6.67
June 24, 2021	GBL North	Minnow Trap	yellow perch	75	76	6.59
June 24, 2021	GBL North	Minnow Trap	yellow perch	79	84	5.3
June 24, 2021	GBL North	Minnow Trap	yellow perch	86	89	6.8
June 24, 2021	GBL North	Minnow Trap	yellow perch	80	85	6.25
June 24, 2021	GBL North	Minnow Trap	yellow perch	96	100	10.25
June 24, 2021	GBL North	Minnow Trap	yellow perch	97	103	10.2
June 24, 2021	GBL North	Minnow Trap	yellow perch	95	98	6.91
June 24, 2021	GBL North	Minnow Trap	yellow perch	83	85	6.9
June 24, 2021	GBL North	Minnow Trap	yellow perch	75	78	6.19
June 24, 2021	GBL North	Minnow Trap	yellow perch	95	100	9.8
June 24, 2021	GBL North	Minnow Trap	yellow perch	78	81	4.65
June 24, 2021	GBL North	Minnow Trap	yellow perch	82	86	6.07
June 24, 2021	GBL North	Minnow Trap	yellow perch	77	80	7.38
June 24, 2021	GBL North	Minnow Trap	yellow perch	91	95	10.72
June 24, 2021	GBL North	Minnow Trap	yellow perch	104	100	9.2
June 24, 2021	GBL North	Minnow Trap	yellow perch	79	82	4.53
June 24, 2021	GBL North	Minnow Trap	yellow perch	74	76	3.34
June 24, 2021	GBL North	Minnow Trap	yellow perch	79	83	4.7
June 24, 2021	GBL North	Minnow Trap	yellow perch	83	89	4.13
June 24, 2021	GBL North	Minnow Trap	yellow perch	74	76	3.6
June 24, 2021	GBL North	Minnow Trap	yellow perch	78	80	3.8
June 24, 2021	GBL North	Minnow Trap	yellow perch	94	99	6.07
June 24, 2021	GBL North	Minnow Trap	yellow perch	101	106	9.56
June 24, 2021	GBL North	Minnow Trap	yellow perch	85	87	5.27
June 24, 2021	GBL North	Minnow Trap	yellow perch	91	96	7.72
June 24, 2021	GBL North	Minnow Trap	yellow perch	97	10	8.27
June 24, 2021	GBL North	Minnow Trap	yellow perch	77	80	4.4
June 24, 2021	GBL North	Minnow Trap	yellow perch	86	88	4.23
June 24, 2021	GBL North	Minnow Trap	yellow perch	90	95	6.46
June 24, 2021	GBL North	Minnow Trap	yellow perch	79	82	4.9

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 24, 2021	GBL North	Minnow Trap	yellow perch	86	89	5.68
June 24, 2021	GBL North	Minnow Trap	yellow perch	96	103	9.21
June 24, 2021	GBL North	Minnow Trap	yellow perch	95	99	8.65
June 24, 2021	GBL North	Eel Pot	yellow perch	115	119	14.01
June 24, 2021	GBL North	Eel Pot	yellow perch	166	172	47.61
June 24, 2021	GBL North	Eel Pot	yellow perch	115	122	17.57
June 24, 2021	GBL North	Eel Pot	yellow perch	115	120	17.98
June 24, 2021	GBL North	Eel Pot	yellow perch	110	125	19.05
June 24, 2021	GBL North	Eel Pot	yellow perch	139	145	29.83
June 24, 2021	GBL North	Eel Pot	yellow perch	129	135	20.61
June 24, 2021	GBL North	Eel Pot	yellow perch	111	116	16.34
June 24, 2021	GBL North	Eel Pot	yellow perch	114	118	14.78
June 24, 2021	GBL North	Eel Pot	yellow perch	117	111	16.25
June 24, 2021	GBL North	Eel Pot	yellow perch	109	113	11.21
June 24, 2021	WC20	Electrofishing	American eel	-	120	7.62
June 24, 2021	WC20	Electrofishing	brook trout	150	157	30.39
June 24, 2021	WC20	Electrofishing	brook trout	154	160	43.93
June 24, 2021	WC20	Electrofishing	American eel	-	100	3.58
June 24, 2021	WC20	Electrofishing	American eel	-	220	15.09
June 24, 2021	WC20	Electrofishing	brook trout	178	182	60.69
June 24, 2021	WC20	Electrofishing	American eel		250	45.39
June 24, 2021	WC20	Electrofishing	American eel	-	190	42.8
June 24, 2021	WC20	Electrofishing	American eel	-	300	37.18
June 24, 2021	WC20	Electrofishing	brook trout	134	140	27.64
June 24, 2021	WC20	Electrofishing	brook trout	244	265	178.74
June 25, 2021	WC23/20	Minnow Trap	yellow perch	87	82	6.56
June 25, 2021	WC23/20	Minnow Trap	yellow perch	102	105	8.54
June 25, 2021	WC23/20	Minnow Trap	yellow perch	87	91	4.48
June 25, 2021	WC23/20	Minnow Trap	yellow perch	96	100	7.25
June 25, 2021	WC23/20	Minnow Trap	yellow perch	82	85	3.11
June 25, 2021	WC23/20	Minnow Trap	yellow perch	80	95	6.37
June 25, 2021	WC23/20	Minnow Trap	yellow perch	85	90	5.29
June 25, 2021	WC23/20	Minnow Trap	yellow perch	74	83	5.65
June 25, 2021	WC23/20	Minnow Trap	yellow perch	92	96	6.89
June 25, 2021	WC23/20	Minnow Trap	yellow perch	97	100	7.11
June 25, 2021	WC23/20	Minnow Trap	yellow perch	121	126	16.13
June 25, 2021	WC23/20	Minnow Trap	yellow perch	103	111	9.42
June 25, 2021	WC23/20	Minnow Trap	yellow perch	87	91	5.6
June 25, 2021	WC23/20	Minnow Trap	yellow perch	73	75	4.12
June 25, 2021	WC23/20	Minnow Trap	yellow perch	84	87	6.9
June 25, 2021	WC23/20	Minnow Trap	yellow perch	94	97	9.3
June 25, 2021	WC23/20	Minnow Trap	yellow perch	82	86	6.31
June 25, 2021	WC23/20	Minnow Trap	yellow perch	86	92	8.14

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 25, 2021	WC23/20	Minnow Trap	yellow perch	91	95	10.23
June 25, 2021	WC23/20	Minnow Trap	yellow perch	95	100	16.85
June 25, 2021	WC23/20	Minnow Trap	yellow perch	98	102	13.68
June 25, 2021	WC23/20	Minnow Trap	yellow perch	101	105	14.55
June 25, 2021	WC23/20	Minnow Trap	yellow perch	95	99	5.12
June 25, 2021	WC23/20	Minnow Trap	yellow perch	93	95	12.17
June 25, 2021	WC23/20	Minnow Trap	yellow perch	101	104	8.52
June 25, 2021	WC23/20	Minnow Trap	yellow perch	99	104	8.3
June 25, 2021	WC23/20	Minnow Trap	yellow perch	101	104	9.6
June 25, 2021	WC23/20	Minnow Trap	yellow perch	110	114	13.02
June 25, 2021	WC23/20	Minnow Trap	yellow perch	107	111	10.44
June 25, 2021	WC23/20	Minnow Trap	yellow perch	103	108	11.79
June 25, 2021	WC23/20	Minnow Trap	yellow perch	85	88	8.29
June 25, 2021	WC23/20	Minnow Trap	yellow perch	97	94	9.29
June 25, 2021	WC23/20	Minnow Trap	yellow perch	92	88	7.65
June 25, 2021	WC23/20	Minnow Trap	yellow perch	32	66	6.8
June 25, 2021	WC23/20	Minnow Trap	yellow perch	101	105	10.8
June 25, 2021	WC23/20	Minnow Trap	yellow perch	108	112	12.88
June 25, 2021	WC23/20	Minnow Trap	yellow perch	95	98	7.9
June 25, 2021	WC23/20	Minnow Trap	yellow perch	97	100	7.21
June 25, 2021	WC23/20	Minnow Trap	yellow perch	73	75	2.15
June 25, 2021	WC23/20	Minnow Trap	yellow perch	113	117	13.22
June 25, 2021	WC23/20	Minnow Trap	yellow perch	87	91	4.3
June 25, 2021	WC23/20	Minnow Trap	yellow perch	83	85	3.65
June 25, 2021	WC23/20	Minnow Trap	yellow perch	83	87	4.82
June 25, 2021	WC23/20	Minnow Trap	yellow perch	75	80	5.82
June 25, 2021	WC23/20	Minnow Trap	yellow perch	99	102	12.43
June 25, 2021	WC23/20	Minnow Trap	yellow perch	90	94	10.2
June 25, 2021	WC23/20	Minnow Trap	yellow perch	111	115	12.32
June 25, 2021	WC23/20	Minnow Trap	yellow perch	94	98	10.42
June 25, 2021	WC23/20	Minnow Trap	yellow perch	90	95	3.48
June 25, 2021	WC23/20	Minnow Trap	yellow perch	84	86	4.19
June 25, 2021	WC23/20	Minnow Trap	yellow perch	80	84	2.55
June 25, 2021	WC23/20	Minnow Trap	yellow perch	91	95	5.44
June 25, 2021	WC23/20	Minnow Trap	yellow perch	108	112	14.28
June 25, 2021	WC23/20	Minnow Trap	yellow perch	92	95	6.85
June 25, 2021	WC23/20	Minnow Trap	yellow perch	85	89	6.45
June 25, 2021	WC23/20	Minnow Trap	yellow perch	83	90	11.75
June 25, 2021	WC23/20	Minnow Trap	yellow perch	83	85	4.21
June 25, 2021	WC23/20	Minnow Trap	yellow perch	109	113	12.57
June 25, 2021	WC23/20	Minnow Trap	yellow perch	87	91	4.11
June 25, 2021	WC23/20	Minnow Trap	yellow perch	111	115	9.67
June 25, 2021	WC23/20	Minnow Trap	yellow perch	9.9	103	8.11

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 25, 2021	WC23/20	Minnow Trap	yellow perch	100	105	11.28
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	70	72	7.9
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	157	165	38.03
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	180	185	65.08
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	126	130	23.43
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	170	8.66
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	80	4.13
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	150	11.13
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	110	4.66
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	200	12.68
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	100	7.63
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	200	10.13
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	143	150	32.23
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	62	63	1.4
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	150	8.89
June 25, 2021	WC22 Reach B	Electrofishing	brook trout	63	65	1.58
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	20	12.3
June 25, 2021	WC22 Reach B	Electrofishing	American eel	-	30	58.66
June 26, 2021	Gold Brook A	Electrofishing	brook trout	-	72	11.28
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	16.9
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	16.12
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	36.36
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	45.74
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	100	2.74
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	100	4.9
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	10.41
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	250	14.47
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	3.66
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	250	12.69
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	5.56
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	220	17.83
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	250	23.84
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	30.24
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	9.01
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	39.01
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	250	21.17
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	22.59
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	10.63
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	10.44
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	13.88
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	40.62
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	14.12
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	36.42

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	45.75
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	9.42
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	10.3
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	9.57
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	100	2.3
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	41.26
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	12.67
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	80	5.46
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	350	57.34
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	350	46.23
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	16.13
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	7.99
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	9.27
June 26, 2021	Gold Brook A	Electrofishing	American eel	-	190	16.36
June 26, 2021	WC14	Electrofishing	brook trout	53	55	0.73
June 26, 2021	WC14	Electrofishing	brook trout	176	182	43.61
June 26, 2021	WC14	Electrofishing	brook trout	137	144	22.63
June 26, 2021	WC14	Electrofishing	brook trout	46	47	1.09
June 26, 2021	WC14	Electrofishing	brook trout	55	56	1.22
June 26, 2021	WC14	Electrofishing	brook trout	64	66	1.97
June 26, 2021	WC14	Electrofishing	brook trout	61	63	1.76
June 26, 2021	WC14	Electrofishing	brook trout	63	64	1.45
June 26, 2021	WC14	Electrofishing	brook trout	50	60	1.61
June 26, 2021	WC14	Electrofishing	brook trout	51	52	0.88
June 26, 2021	WC14	Electrofishing	brook trout	52	53	0.71
June 26, 2021	WC14	Electrofishing	brook trout	59	60	1.76
June 26, 2021	WC14	Electrofishing	brook trout	54	55	1.09
June 26, 2021	WC14	Electrofishing	brook trout	64	66	2.57
June 26, 2021	WC14	Electrofishing	brook trout	58	60	0.92
June 26, 2021	WC14	Electrofishing	brook trout	55	56	1.39
June 26, 2021	WC14	Electrofishing	brook trout	59	62	1.46
June 26, 2021	WC14	Electrofishing	brook trout	52	54	0.42
June 26, 2021	WC14	Electrofishing	brook trout	63	65	2.01
June 26, 2021	WC14	Electrofishing	brook trout	140	145	30.18
June 26, 2021	WC14	Electrofishing	brook trout	59	61	1.76
June 26, 2021	WC14	Electrofishing	brook trout	56	59	1
June 26, 2021	WC14	Electrofishing	brook trout	54	55	0.6
June 26, 2021	WC14	Electrofishing	brook trout	70	71	2.7
June 26, 2021	WC14	Electrofishing	brook trout	60	62	2.03
June 26, 2021	WC14	Electrofishing	brook trout	72	75	3.53
June 26, 2021	WC14	Electrofishing	brook trout	59	60	0.64
June 26, 2021	WC14	Electrofishing	brook trout	70	72	2.53
June 26, 2021	WC14	Electrofishing	brook trout	123	125	16.99

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 26, 2021	WC14	Electrofishing	brook trout	122	126	16.77
June 26, 2021	WC14	Electrofishing	brook trout	117	120	14.25
June 26, 2021	WC14	Electrofishing	brook trout	128	132	15.33
June 26, 2021	WC14	Electrofishing	American eel	-	100	2.26
June 26, 2021	WC14	Electrofishing	brook trout	127	132	16.45
June 26, 2021	WC14	Electrofishing	brook trout	52	53	2.44
June 26, 2021	WC14	Electrofishing	brook trout	55	56	1.04
June 26, 2021	WC14	Electrofishing	brook trout	51	53	1.13
June 26, 2021	WC14	Electrofishing	brook trout	54	56	1.31
June 26, 2021	WC14	Electrofishing	brook trout	116	121	15.02
June 26, 2021	WC14	Electrofishing	brook trout	55	57	1.28
June 26, 2021	WC14	Electrofishing	brook trout	52	54	1.34
June 26, 2021	WC14	Electrofishing	brook trout	59	62	2.17
June 26, 2021	WC14	Electrofishing	brook trout	64	65	1.06
June 26, 2021	WC14	Electrofishing	brook trout	54	55	0.86
June 26, 2021	WC14	Electrofishing	brook trout	55	56	1.9
June 26, 2021	WC14	Electrofishing	brook trout	66	68	2.34
June 26, 2021	WC14	Electrofishing	brook trout	60	61	1.83
June 26, 2021	WC14	Electrofishing	brook trout	55	57	1.46
June 26, 2021	WC14	Electrofishing	brook trout	48	49	0.82
June 26, 2021	WC14	Electrofishing	brook trout	134	140	19.88
June 26, 2021	WC14	Electrofishing	brook trout	51	53	0.75
June 26, 2021	WC14	Electrofishing	brook trout	64	66	1.28
June 26, 2021	WC14	Electrofishing	American eel	-	250	21.33
June 26, 2021	WC14	Electrofishing	brook trout	63	65	3.97
June 26, 2021	WC14	Electrofishing	American eel	-	100	1.1
June 26, 2021	WC14	Electrofishing	American eel	-	150	6.46
June 26, 2021	WC14	Electrofishing	American eel	-	350	68.87
June 26, 2021	WC14	Electrofishing	brook trout	67	69	3.22
June 26, 2021	WC14	Electrofishing	brook trout	50	52	1.12
June 26, 2021	WC14	Electrofishing	brook trout	58	60	2.2
June 26, 2021	WC14	Electrofishing	brook trout	53	54	2.13
June 26, 2021	WC14	Electrofishing	brook trout	119	123	16.35
June 26, 2021	WC14	Electrofishing	brook trout	120	125	17.02
June 26, 2021	WC14	Electrofishing	brook trout	52	53	0.95
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	128	136	18.31
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	105	109	11.2
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	156	160	17.5
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	71	74	3.49
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	63	65	1.97
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	103	106	9.16
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	84	86	5.5
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	109	114	12.05

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	127	131	16.28
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	188	199	17.01
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	112	116	11.57
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	115	118	12.61
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	126	131	20.02
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	109	115	12.88
June 27, 2021	WC43 Reach B	Electrofishing	American eel	-	250	17.57
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	58	60	1.63
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	93	96	7.86
June 27, 2021	WC43 Reach B	Electrofishing	brook trout	175	181	56.93
June 27, 2021	WC22 Reach A	Electrofishing	brook trout	61	62	4.02
June 27, 2021	WC22 Reach A	Electrofishing	American eel	-	300	23.78
June 27, 2021	WC22 Reach A	Electrofishing	American eel	-	150	6.94
June 27, 2021	WC22 Reach A	Electrofishing	American eel	-	200	15.05
June 27, 2021	WC22 Reach A	Electrofishing	American eel	-	250	27.79
June 28, 2021	WC43 Reach A	Electrofishing	brook trout	169	173	47.28
June 28, 2021	WC43 Reach A	Electrofishing	brook trout	166	171	50.56
June 28, 2021	WC43 Reach A	Electrofishing	brook trout	148	154	37.67
June 28, 2021	WC43 Reach A	Electrofishing	brook trout	103	106	9.93
June 28, 2021	WC43 Reach A	Electrofishing	brook trout	100	105	5.32
July 19, 2021	WC22 Reach A	Electrofishing	American eel	-	210	21.73
July 19, 2021	WC22 Reach A	Electrofishing	American eel	-	230	47
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	100	110	12.73
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	52	57	2.16
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	52	58	2.26
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	69	75	4.6
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	125	136	19.58
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	49	1.32
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	48	1.55
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	92	8.12
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	88	100	9.8
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	70	81	4.6
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	96	6.8
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	77	83	6.16
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	92	7.8
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	89	107	8.72
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	98	104	8.55
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	50	1.4
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	63	65	3.03
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	3.98
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	92	6.76
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	90	100	8.76
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	92	4.35

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	95	105	12.19
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	40	45	7.5
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	90	109	8
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	95	102	10.46
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	90	105	6.17
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	93	5.23
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	76	2.6
July 20, 2021	Rocky Lake 1	Minnow Trap	American eel	-	350	85
July 20, 2021	Rocky Lake 1	Minnow Trap	American eel	-	400	159
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	50	3.91
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	69	72	3.92
July 20, 2021	Rocky Lake 1	Minnow Trap	American eel	-	375	124
July 20, 2021	Rocky Lake 1	Minnow Trap	American eel	-	300	-
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	110	115	15.64
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	60	2.25
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	50	0.81
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	55	1.73
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	67	2.58
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	55	1.7
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	90	7.27
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	68	2.26
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	50	1.33
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	57	1.54
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	55	0.81
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	58	1.75
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	85	4.92
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	50	1.41
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	55	1.56
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	70	2.56
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	50	1.26
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	87	5.61
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	86	6.35
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	75	4.07
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	89	97	6.13
July 20, 2021	Rocky Lake 1	Minnow Trap	American eel		300	78.8
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	62	2.87
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	55	1.4
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	107	115	15.15
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	49	52	1.36
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	50	0.76
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	57	62	2.45
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	56	62	2.45
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	75	3.48

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	56	60	2.33
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	79	87	6.29
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	60	1.91
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	46	51	1.35
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	75	82	6.05
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	54	59	2.27
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	94	7.75
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	43	48	1.14
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	48	52	1.14
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	55	1.53
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	50	1.53
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	70	3.84
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	44	48	1.54
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	65	2.33
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	52	1.71
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	49	1.22
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	87	6.98
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	56	1.62
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	42	47	1.1
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	45	49	1.34
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	40	45	1.56
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	52	1.24
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	68	3.11
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	57	62	2.6
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	40	45	1.02
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	75	83	5.81
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	59	66	2.68
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	44	48	1.24
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	77	84	6.57
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	51	1.28
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	44	48	1.08
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	47	53	1.59
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	77	85	5.62
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	56	62	2.32
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	60	67	3.05
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	61	2.64
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	72	4.03
July 20, 2021	Rocky Lake 1	Minnow Trap	golden shiner	75	82	5.37
July 20, 2021	Rocky Lake 2	Eel Pot	golden shiner	60	70	3.1
July 20, 2021	Rocky Lake 2	Eel Pot	golden shiner	92	100	12.04
July 20, 2021	Rocky Lake 2	Eel Pot	golden shiner	85	94	9.12
July 20, 2021	Rocky Lake 2	Eel Pot	golden shiner	95	105	12.74
July 20, 2021	Rocky Lake 2	Eel Pot	golden shiner	100	105	12.23

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 20, 2021	Rocky Lake 2	Eel Pot	American eel	-	500	330
July 20, 2021	GBL South	Seine Net	banded killifish	-	80	6.17
July 20, 2021	GBL South	Seine Net	yellow perch	75	80	7.94
July 20, 2021	GBL South	Seine Net	yellow perch	80	85	6.2
July 20, 2021	GBL South	Seine Net	banded killifish	-	73	3.8
July 20, 2021	GBL South	Seine Net	yellow perch	85	90	6.86
July 20, 2021	GBL South	Seine Net	yellow perch	85	90	8.12
July 20, 2021	GBL South	Seine Net	banded killifish	-	80	4.46
July 20, 2021	GBL South	Seine Net	banded killifish	-	75	4.37
July 20, 2021	GBL South	Seine Net	yellow perch	75	77	4.28
July 20, 2021	GBL South	Seine Net	yellow perch	77	80	5.35
July 20, 2021	GBL South	Seine Net	banded killifish	-	70	3.4
July 20, 2021	GBL South	Seine Net	yellow perch	85	90	7.09
July 20, 2021	GBL South	Seine Net	yellow perch	70	75	4.3
July 20, 2021	GBL South	Seine Net	yellow perch	87	90	9.94
July 20, 2021	GBL South	Seine Net	yellow perch	67	70	3.11
July 20, 2021	GBL South	Seine Net	banded killifish	-	78	3.58
July 20, 2021	GBL South	Seine Net	yellow perch	65	67	2.64
July 21, 2021	WC14	Eel Pot	brook trout	-	120	18.71
July 21, 2021	WC14	Electrofishing	brook trout	56	58	1.57
July 21, 2021	WC14	Electrofishing	brook trout	31	64	2.61
July 21, 2021	WC14	Electrofishing	brook trout	43	46	1.54
July 21, 2021	WC14	Electrofishing	American eel	-	250	39.72
July 21, 2021	WC14	Electrofishing	brook trout	60	65	2.66
July 21, 2021	WC14	Electrofishing	brook trout	54	56	2.01
July 21, 2021	WC14	Electrofishing	brook trout	54	55	1.09
July 21, 2021	WC14	Electrofishing	brook trout	59	61	2.85
July 21, 2021	GBL South	Minnow Trap	yellow perch	95	98	9.16
July 21, 2021	GBL South	Minnow Trap	yellow perch	86	88	7.07
July 21, 2021	GBL South	Minnow Trap	yellow perch	85	89	7.46
July 21, 2021	GBL South	Minnow Trap	yellow perch	102	106	10.73
July 21, 2021	GBL South	Minnow Trap	yellow perch	84	87	7.86
July 21, 2021	GBL South	Minnow Trap	yellow perch	85	87	6.22
July 21, 2021	GBL South	Minnow Trap	yellow perch	75	81	5.78
July 21, 2021	GBL South	Minnow Trap	yellow perch	77	80	5.19
July 21, 2021	GBL South	Minnow Trap	yellow perch	78	81	4.86
July 21, 2021	GBL South	Minnow Trap	yellow perch	80	85	9.86
July 21, 2021	GBL South	Minnow Trap	banded killifish	-	56	2.16
July 21, 2021	GBL South	Minnow Trap	yellow perch	84	85	8.15
July 21, 2021	GBL South	Minnow Trap	yellow perch	66	69	4.22
July 21, 2021	GBL South	Minnow Trap	yellow perch	75	79	5.67
July 21, 2021	GBL South	Minnow Trap	yellow perch	89	92	7.68

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 21, 2021	GBL South	Minnow Trap	yellow perch	86	90	7.36
July 21, 2021	GBL South	Minnow Trap	yellow perch	87	92	9.32
July 21, 2021	GBL South	Minnow Trap	yellow perch	77	80	6.32
July 21, 2021	GBL South	Minnow Trap	yellow perch	86	90	7.5
July 21, 2021	GBL South	Minnow Trap	yellow perch	81	85	6.38
July 21, 2021	GBL South	Minnow Trap	banded killifish	-	60	1.51
July 21, 2021	GBL South	Minnow Trap	banded killifish	-	52	2.14
July 21, 2021	GBL South	Minnow Trap	banded killifish	-	54	2.18
July 21, 2021	GBL South	Minnow Trap	banded killifish	-	64	3.38
July 21, 2021	GBL South	Eel Pot	yellow perch	-	79	8.38
July 21, 2021	GBL South	Eel Pot	yellow perch	-	93	47.6
July 21, 2021	GBL South	Eel Pot	American eel	-	600	290
July 21, 2021	GBL South	Eel Pot	American eel	-	400	230
July 21, 2021	GBL South	Eel Pot	American eel	-	400	140
July 21, 2021	GBL South	Eel Pot	yellow perch	80	84	6.2
July 21, 2021	GBL South	Eel Pot	yellow perch	85	89	6.85
July 21, 2021	GBL South	Eel Pot	yellow perch	79	82	5.65
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	63	65	3.38
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	142	150	36.35
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	127	133	27.97
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	145	155	42.7
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	230	34.5
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	60	73	3.18
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	148	150	40.85
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	50	51	1.4
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	200	21.68
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	310	67.73
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	60	1.8
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	60	1.14
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	150	12.51
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	90	3.85
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	80	1.39
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	178	185	63.24
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	149	152	46.78
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	135	140	22.85
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	115	120	19.37
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	100	4.83
July 22, 2021	WC22 Reach B	Electrofishing	American eel	-	130	9.87
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	44	45	1.65
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	147	150	35.65
July 22, 2021	WC22 Reach B	Electrofishing	brook trout	135	145	34.5
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	190	14.22
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	140	3.34

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	130	3.72
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	120	1.9
July 23, 2021	Gold Brook B	Electrofishing	yellow perch	111	115	19.79
July 23, 2021	Gold Brook B	Electrofishing	brook trout	115	123	20.84
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	220	20.64
July 23, 2021	Gold Brook B	Electrofishing	yellow perch	72	76	5.67
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	160	12.68
July 23, 2021	Gold Brook B	Electrofishing	brook trout	60	64	2.55
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	100	-
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	170	10.36
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	190	14.56
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	100	1.64
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	90	0.74
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	130	4.21
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	260	25.54
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	270	27.71
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	220	18.21
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	230	18.64
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	310	48.76
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	190	7.14
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	170	7.89
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	210	16.31
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	260	2.54
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	300	48.1
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	190	10.47
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	120	3.89
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	300	52.72
July 23, 2021	Gold Brook B	Electrofishing	American eel	-	280	33.16
July 23, 2021	Gold Brook A	Electrofishing	brook trout	132	140	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	220	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	150	-
July 23, 2021	Gold Brook A	Electrofishing	yellow perch	72	77	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	120	-
July 23, 2021	Gold Brook A	Electrofishing	banded killifish	-	65	-
July 23, 2021	Gold Brook A	Electrofishing	banded killifish	-	72	-
July 23, 2021	Gold Brook A	Electrofishing	banded killifish	-	74	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	260	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	140	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	220	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	250	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	340	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	180	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	310	-

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	250	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	270	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	250	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	320	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	290	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	110	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	120	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	140	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	250	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	300	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	210	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	300	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	150	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	280	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	260	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	160	-
July 23, 2021	Gold Brook A	Electrofishing	American eel	-	200	-
July 24, 2021	WC23/20	Minnow Trap	yellow perch	86	91	3.81
July 24, 2021	WC23/20	Minnow Trap	yellow perch	93	97	10.76
July 24, 2021	WC23/20	Minnow Trap	yellow perch	75	81	8
July 24, 2021	WC23/20	Minnow Trap	yellow perch	72	76	5.5
July 24, 2021	WC23/20	Minnow Trap	yellow perch	85	90	8.26
July 24, 2021	WC23/20	Minnow Trap	yellow perch	92	97	9.31
July 24, 2021	WC23/20	Minnow Trap	yellow perch	102	108	14.56
July 24, 2021	WC23/20	Minnow Trap	yellow perch	93	95	9.83
July 24, 2021	WC23/20	Minnow Trap	American eel	-	35	140
July 24, 2021	WC23/20	Minnow Trap	yellow perch	82	86	7.15
July 24, 2021	WC23/20	Minnow Trap	yellow perch	89	93	7.71
July 24, 2021	WC23/20	Minnow Trap	banded killifish	-	55	1.85
July 24, 2021	WC23/20	Minnow Trap	yellow perch	65	69	2.6
July 24, 2021	WC23/20	Minnow Trap	yellow perch	83	87	7.48
July 24, 2021	WC23/20	Minnow Trap	yellow perch	65	70	3.41
July 24, 2021	WC23/20	Minnow Trap	yellow perch	77	83	5.63
July 24, 2021	WC23/20	Minnow Trap	yellow perch	92	99	10.41
July 24, 2021	WC23/20	Minnow Trap	yellow perch	74	78	5.58
July 24, 2021	WC23/20	Minnow Trap	yellow perch	75	80	5.56
July 24, 2021	WC23/20	Minnow Trap	yellow perch	92	97	9.63
July 24, 2021	WC23/20	Minnow Trap	yellow perch	64	68	3.73
July 24, 2021	WC23/20	Minnow Trap	yellow perch	65	69	4.61
July 24, 2021	WC23/20	Minnow Trap	yellow perch	70	74	4.42
July 24, 2021	WC23/20	Minnow Trap	yellow perch	69	73	4.6
July 24, 2021	WC23/20	Minnow Trap	yellow perch	92	97	10
July 24, 2021	WC23/20	Minnow Trap	yellow perch	83	89	7.35

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 24, 2021	WC23/20	Minnow Trap	yellow perch	73	77	5.91
July 24, 2021	WC23/20	Minnow Trap	yellow perch	85	90	7.6
July 24, 2021	WC23/20	Minnow Trap	yellow perch	65	70	3.73
July 24, 2021	WC23/20	Minnow Trap	yellow perch	75	80	5.83
July 24, 2021	WC23/20	Minnow Trap	yellow perch	73	77	3.82
July 24, 2021	GBL West	Eel Pot	yellow perch	103	106	10.75
July 24, 2021	GBL West	Eel Pot	yellow perch	80	82	5.87
July 24, 2021	GBL West	Eel Pot	yellow perch	87	89	8.03
July 24, 2021	GBL West	Eel Pot	yellow perch	102	105	13.16
July 24, 2021	GBL West	Eel Pot	yellow perch	86	91	7.75
July 24, 2021	GBL West	Eel Pot	yellow perch	91	95	8.26
July 24, 2021	GBL West	Eel Pot	yellow perch	89	92	8.91
July 24, 2021	GBL West	Eel Pot	yellow perch	74	75	4.72
July 24, 2021	GBL West	Eel Pot	yellow perch	79	83	5.24
July 24, 2021	GBL West	Eel Pot	yellow perch	80	83	6.42
July 24, 2021	GBL West	Eel Pot	yellow perch	94	97	9.84
July 24, 2021	GBL West	Eel Pot	yellow perch	85	88	5.15
July 24, 2021	GBL West	Eel Pot	yellow perch	75	80	4.88
July 24, 2021	GBL West	Eel Pot	yellow perch	84	85	6.03
July 24, 2021	GBL West	Eel Pot	yellow perch	93	99	8.88
July 24, 2021	GBL West	Eel Pot	yellow perch	100	105	12.45
July 24, 2021	GBL West	Eel Pot	yellow perch	72	75	4.83
July 24, 2021	GBL West	Eel Pot	yellow perch	75	80	6.54
July 24, 2021	GBL West	Eel Pot	yellow perch	73	76	6.02
July 24, 2021	GBL West	Eel Pot	yellow perch	87	90	8.38
July 24, 2021	GBL West	Eel Pot	yellow perch	75	80	5.22
July 24, 2021	GBL West	Eel Pot	yellow perch	82	87	7.47
July 24, 2021	GBL West	Eel Pot	yellow perch	72	77	5.57
July 24, 2021	GBL West	Eel Pot	yellow perch	83	89	6.57
July 24, 2021	GBL West	Eel Pot	yellow perch	70	74	4.56
July 24, 2021	GBL West	Eel Pot	yellow perch	109	116	16.42
July 24, 2021	GBL West	Eel Pot	yellow perch	71	76	5.48
July 24, 2021	GBL West	Eel Pot	yellow perch	110	116	11.99
July 24, 2021	GBL West	Eel Pot	yellow perch	105	110	14.55
July 24, 2021	GBL West	Eel Pot	yellow perch	97	100	11.21
July 24, 2021	GBL West	Eel Pot	yellow perch	79	84	6.66
July 24, 2021	GBL West	Eel Pot	yellow perch	77	82	6.19
July 24, 2021	GBL West	Eel Pot	yellow perch	88	85	5.96
July 24, 2021	GBL West	Eel Pot	yellow perch	84	87	7.23
July 24, 2021	GBL West	Eel Pot	yellow perch	82	87	6.95
July 24, 2021	GBL West	Eel Pot	yellow perch	90	95	8.26
July 24, 2021	GBL West	Eel Pot	yellow perch	80	85	7.13
July 24, 2021	GBL West	Eel Pot	yellow perch	92	96	9.05

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 24, 2021	GBL West	Eel Pot	yellow perch	77	81	7.06
July 24, 2021	GBL West	Eel Pot	yellow perch	78	83	6.32
July 24, 2021	GBL West	Eel Pot	yellow perch	92	97	9.56
July 24, 2021	GBL West	Eel Pot	yellow perch	110	117	16.19
July 24, 2021	GBL West	Eel Pot	yellow perch	86	92	8.62
July 24, 2021	GBL West	Eel Pot	yellow perch	90	95	8.07
July 24, 2021	GBL West	Eel Pot	yellow perch	76	82	5.51
July 24, 2021	GBL West	Eel Pot	yellow perch	75	79	5.5
July 24, 2021	GBL West	Eel Pot	yellow perch	75	79	5.05
July 24, 2021	GBL West	Eel Pot	yellow perch	81	86	6.6
July 24, 2021	GBL West	Eel Pot	yellow perch	85	90	8.25
July 24, 2021	GBL West	Eel Pot	American eel	-	400	162.23
July 24, 2021	GBL West	Eel Pot	American eel	-	370	116.52
July 24, 2021	GBL West	Fyke Net	yellow perch	101	106	12.36
July 24, 2021	GBL West	Fyke Net	golden shiner	100	112	14.93
July 24, 2021	GBL North	Fyke Net	golden shiner	115	120	24.61
July 24, 2021	GBL North	Fyke Net	golden shiner	115	120	22.14
July 24, 2021	GBL North	Fyke Net	golden shiner	100	115	14
July 24, 2021	GBL North	Eel Pot	yellow perch	97	100	11.81
July 24, 2021	GBL North	Eel Pot	yellow perch	115	118	18.3
July 24, 2021	GBL North	Eel Pot	yellow perch	95	100	11.57
July 24, 2021	GBL North	Eel Pot	yellow perch	105	110	13.14
July 24, 2021	GBL North	Eel Pot	yellow perch	95	100	11.5
July 24, 2021	GBL North	Eel Pot	yellow perch	125	127	23.81
July 24, 2021	GBL North	Eel Pot	yellow perch	100	105	13.79
July 24, 2021	GBL North	Eel Pot	yellow perch	110	115	17.02
July 24, 2021	GBL North	Eel Pot	yellow perch	97	100	12.2
July 24, 2021	GBL North	Eel Pot	yellow perch	103	105	14.58
July 24, 2021	GBL North	Eel Pot	yellow perch	107	110	13.65
July 24, 2021	GBL North	Eel Pot	American eel	-	320	83.82
July 24, 2021	GBL North	Minnow Trap	yellow perch	77	82	6.02
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	78	4.87
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	77	5.62
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	78	5.02
July 24, 2021	GBL North	Minnow Trap	yellow perch	80	85	7.1
July 24, 2021	GBL North	Minnow Trap	yellow perch	77	80	6.75
July 24, 2021	GBL North	Minnow Trap	yellow perch	71	74	6.69
July 24, 2021	GBL North	Minnow Trap	yellow perch	67	70	4.48
July 24, 2021	GBL North	Minnow Trap	golden shiner	100	110	11.52
July 24, 2021	GBL North	Minnow Trap	yellow perch	85	87	10.52
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	78	4.98
July 24, 2021	GBL North	Minnow Trap	yellow perch	67	70	3.89
July 24, 2021	GBL North	Minnow Trap	yellow perch	77	80	4.67

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 24, 2021	GBL North	Minnow Trap	yellow perch	86	90	8.47
July 24, 2021	GBL North	Minnow Trap	yellow perch	65	70	3.33
July 24, 2021	GBL North	Minnow Trap	yellow perch	70	72	3.77
July 24, 2021	GBL North	Minnow Trap	yellow perch	80	84	5.65
July 24, 2021	GBL North	Minnow Trap	yellow perch	85	87	7.55
July 24, 2021	GBL North	Minnow Trap	yellow perch	70	73	4.09
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	80	6.05
July 24, 2021	GBL North	Minnow Trap	yellow perch	83	86	6.79
July 24, 2021	GBL North	Minnow Trap	yellow perch	76	78	3.76
July 24, 2021	GBL North	Minnow Trap	yellow perch	70	71	3.91
July 24, 2021	GBL North	Minnow Trap	yellow perch	73	75	5.19
July 24, 2021	GBL North	Minnow Trap	yellow perch	67	69	3.51
July 24, 2021	GBL North	Minnow Trap	yellow perch	77	80	5.47
July 24, 2021	GBL North	Minnow Trap	yellow perch	85	88	7.63
July 24, 2021	GBL North	Minnow Trap	yellow perch	85	88	7.48
July 24, 2021	GBL North	Minnow Trap	yellow perch	70	75	4.81
July 24, 2021	GBL North	Minnow Trap	yellow perch	75	77	4.13
July 24, 2021	GBL North	Minnow Trap	yellow perch	70	73	4.26
July 24, 2021	GBL North	Minnow Trap	yellow perch	80	84	5.66
July 24, 2021	GBL North	Minnow Trap	yellow perch	83	85	6.62
July 24, 2021	GBL North	Minnow Trap	yellow perch	105	108	12.85
July 24, 2021	GBL North	Minnow Trap	yellow perch	77	79	4.98
July 24, 2021	WC20	Electrofishing	brook trout	215	220	125.39
July 24, 2021	WC20	Electrofishing	brook trout	147	150	41.31
July 24, 2021	WC20	Electrofishing	brook trout	145	153	46.55
July 24, 2021	WC20	Electrofishing	American eel	-	300	69.54
July 24, 2021	WC20	Electrofishing	American eel	-	250	41.87
July 24, 2021	WC20	Electrofishing	American eel	-	200	18.3
July 24, 2021	WC20	Electrofishing	American eel	-	220	25.4
July 24, 2021	WC20	Electrofishing	American eel	-	260	39.12
July 24, 2021	WC20	Electrofishing	brook trout	150	165	36.77
July 24, 2021	WC20	Electrofishing	American eel	-	230	52.96
July 24, 2021	WC20	Electrofishing	American eel	-	150	11.61
July 24, 2021	WC20	Electrofishing	American eel	-	190	17.1
July 24, 2021	WC20	Electrofishing	American eel	-	140	10.27
July 24, 2021	WC20	Electrofishing	American eel	-	170	15.18
July 24, 2021	WC20	Electrofishing	American eel	-	120	8.21
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	50	53	1.43
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	70	71	3.81
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	115	117	17.5
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	102	105	13.22
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	100	103	11.65
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	95	100	12.01

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	120	125	19.28
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	58	60	2.44
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	123	125	21.99
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	68	72	3.43
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	64	66	3.9
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	65	67	2.78
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	57	1.96
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	67	69	3.46
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	56	1.93
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	57	2.18
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	57	1.94
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	45	47	1.09
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	60	64	3
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	65	69	3.02
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	52	53	1.64
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	63	65	3.09
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	57	60	2.54
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	64	65	3.45
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	165	167	55.33
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	110	115	15.08
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	114	116	17
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	58	2.87
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	58	3.73
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	68	71	3.9
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	59	65	2.67
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	66	68	2.51
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	48	50	1.15
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	41	42	1.56
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	100	105	9.15
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	60	3.2
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	110	115	15.43
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	50	52	1.67
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	95	100	10.97
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	50	51	1.05
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	60	62	2.15
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	58	60	1.66
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	64	65	3.25
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	114	116	17.88
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	59	2.27
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	63	65	3.43
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	105	108	12.51
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	100	105	10.86
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	115	119	18.32

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	80	85	6.98
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	60	62	2.21
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	50	52	1.62
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	54	56	1.53
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	54	56	1.53
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	57	60	2.25
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	52	53	1.46
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	115	120	18.53
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	95	100	11.23
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	40	42	0.74
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	53	55	2.43
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	63	66	3.81
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	115	120	21.17
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	55	58	1.72
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	40	43	1.18
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	52	55	2.16
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	44	47	1.36
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	40	44	0.73
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	94	98	11.75
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	112	127	17.35
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	53	55	2.41
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	52	55	1.71
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	65	68	3.1
July 25, 2021	WC43 Reach B	Electrofishing	brook trout	50	52	1.29
July 26, 2021	Gold Brook A	Electrofishing	brook trout	128	136	25.21
July 26, 2021	Gold Brook A	Electrofishing	banded killifish	-	60	1.69
July 26, 2021	Gold Brook A	Electrofishing	brook trout	167	177	54.52
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	32	48.98
July 26, 2021	Gold Brook A	Electrofishing	yellow perch	73	77	5.42
July 26, 2021	Gold Brook A	Electrofishing	yellow perch	101	110	15.3
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	260	29.83
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	190	14.9
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	100	1.65
July 26, 2021	Gold Brook A	Electrofishing	banded killifish	-	55	2.84
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	300	49.98
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	290	43.97
July 26, 2021	Gold Brook A	Electrofishing	yellow perch	75	80	5.5
July 26, 2021	Gold Brook A	Electrofishing	banded killifish	-	70	4.62
July 26, 2021	Gold Brook A	Electrofishing	banded killifish	-	54	2.45
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	120	5.01
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	15.82
July 26, 2021	Gold Brook A	Electrofishing	banded killifish	-	50	1.3
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	140	4.45

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	80	1.69
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	270	28.21
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	320	60.9
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	220	16.22
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	230	20.66
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	220	12.28
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	160	6.24
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	5.75
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	160	7.37
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	150	5.74
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	90	2
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	190	10.24
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	170	5.66
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	200	13.24
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	140	4.45
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	210	10.41
July 26, 2021	Gold Brook A	Electrofishing	American eel	-	230	19.98
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	123	126	23.22
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	170	174	55.29
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	102	106	13.25
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	52	54	1.83
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	106	112	13.75
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	162	166	49.63
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	125	128	24.14
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	123	126	21.38
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	133	137	28.66
July 26, 2021	WC43 Reach A	Electrofishing	brook trout	88	92	9.48
July 28, 2021	WC27	Electrofishing	American eel	-	13	3.47
July 28, 2021	WC28	Electrofishing	American eel	-	27	34.92
July 28, 2021	WC28	Electrofishing	American eel	-	20	22.54
July 28, 2021	WC28	Electrofishing	American eel	-	17	10.37
July 28, 2021	WC42	Electrofishing	American eel	-	11	5.29
July 29, 2021	WC49 Reach B	Electrofishing	brook trout	150	170	45.67
July 29, 2021	WC49 Reach B	Electrofishing	brook trout	140	150	38.35
August 23, 2021	WC14	Electrofishing	brook trout	110	120	10
August 23, 2021	WC14	Electrofishing	brook trout	69	70	6
August 23, 2021	WC14	Electrofishing	brook trout	71	74	7.87
August 23, 2021	WC14	Electrofishing	brook trout	90	93	11.86
August 23, 2021	WC14	Electrofishing	brook trout	169	173	44.53
August 23, 2021	WC14	Electrofishing	brook trout	177	180	59.78
August 23, 2021	WC14	Electrofishing	brook trout	118	123	25.61
August 23, 2021	WC14	Electrofishing	brook trout	127	130	29.53
August 23, 2021	WC14	Electrofishing	brook trout	90	94	11.7

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 23, 2021	WC14	Electrofishing	brook trout	119	124	23.54
August 23, 2021	WC14	Electrofishing	brook trout	210	224	110.36
August 23, 2021	WC14	Electrofishing	brook trout	65	68	7.61
August 23, 2021	WC14	Electrofishing	American eel	-	350	112.33
August 23, 2021	WC14	Electrofishing	American eel	-	250	55.51
August 23, 2021	WC14	Electrofishing	brook trout	49	50	1.48
August 23, 2021	WC14	Electrofishing	brook trout	180	190	62.84
August 23, 2021	WC14	Electrofishing	brook trout	135	140	35.02
August 23, 2021	WC14	Electrofishing	brook trout	116	120	20.87
August 23, 2021	WC14	Electrofishing	brook trout	62	64	4.71
August 23, 2021	WC14	Electrofishing	brook trout	63	65	3.2
August 23, 2021	WC14	Electrofishing	brook trout	54	55	2.8
August 23, 2021	WC14	Electrofishing	American eel	-	320	104.12
August 23, 2021	WC14	Electrofishing	American eel	-	250	35.35
August 23, 2021	WC14	Electrofishing	brook trout	68	71	11.98
August 23, 2021	WC14	Electrofishing	brook trout	48	49	1.08
August 23, 2021	WC14	Electrofishing	brook trout	125	130	21.38
August 23, 2021	WC14	Electrofishing	brook trout	123	129	21.76
August 23, 2021	WC14	Electrofishing	brook trout	110	115	15.88
August 23, 2021	WC14	Electrofishing	brook trout	130	134	24.8
August 23, 2021	WC14	Electrofishing	brook trout	64	65	3.1
August 23, 2021	WC14	Electrofishing	brook trout	52	53	1.5
August 23, 2021	WC14	Electrofishing	brook trout	56	58	1.18
August 23, 2021	WC14	Electrofishing	brook trout	54	55	2.12
August 23, 2021	WC14	Electrofishing	brook trout	50	51	1.08
August 23, 2021	WC14	Electrofishing	brook trout	116	120	16.48
August 23, 2021	WC14	Electrofishing	brook trout	135	141	39.48
August 23, 2021	WC14	Electrofishing	brook trout	52	55	1.56
August 23, 2021	WC14	Electrofishing	brook trout	45	46	1.08
August 23, 2021	WC14	Electrofishing	brook trout	58	60	1.63
August 23, 2021	WC22 Reach A	Electrofishing	American eel	-	250	8.3
August 23, 2021	WC22 Reach A	Electrofishing	American eel	-	280	14.12
August 23, 2021	WC22 Reach A	Electrofishing	American eel	-	340	75
August 23, 2021	WC22 Reach A	Electrofishing	American eel	-	180	8
August 23, 2021	WC22 Reach A	Electrofishing	brook trout	-	50	-
August 24, 2021	GBL East	Fyke Net	yellow perch	112	119	14.87
August 24, 2021	GBL East	Fyke Net	golden shiner	100	110	18.33
August 24, 2021	GBL North	Fyke Net	golden shiner	145	149	39.22
August 24, 2021	GBL North	Fyke Net	brook trout	245	250	178.06
August 24, 2021	GBL North	Fyke Net	brook trout	206	212	94.46
August 24, 2021	GBL North	Minnow Trap	yellow perch	49	50	0.77
August 24, 2021	GBL North	Minnow Trap	yellow perch	43	45	0.82
August 24, 2021	GBL North	Minnow Trap	yellow perch	48	50	0.62

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 24, 2021	GBL North	Minnow Trap	yellow perch	44	46	0.77
August 24, 2021	GBL North	Minnow Trap	yellow perch	50	52	1.66
August 24, 2021	GBL North	Minnow Trap	yellow perch	50	53	2.03
August 24, 2021	GBL North	Minnow Trap	yellow perch	51	53	2.01
August 24, 2021	GBL North	Minnow Trap	yellow perch	52	53	1.78
August 24, 2021	GBL North	Minnow Trap	banded killifish	-	62	1.37
August 24, 2021	GBL North	Minnow Trap	yellow perch	59	60	1.36
August 24, 2021	GBL North	Minnow Trap	yellow perch	50	52	2.07
August 24, 2021	GBL North	Minnow Trap	yellow perch	49	52	1.6
August 24, 2021	GBL North	Minnow Trap	yellow perch	40	50	1.43
August 24, 2021	GBL North	Eel Pot	yellow perch	100	105	13.28
August 24, 2021	GBL North	Eel Pot	yellow perch	105	108	13.22
August 24, 2021	GBL South	Seine Net	blacknose shiner	22	23	
August 24, 2021	GBL South	Seine Net	banded killifish	-	63	2.33
August 24, 2021	GBL South	Seine Net	blacknose shiner	27	28	-
August 24, 2021	GBL South	Seine Net	banded killifish		30	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	25	26	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	28	30	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	32	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	-	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	29	30	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	28	29	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	26	27	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	25	27	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	28	29	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	27	28	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	27	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	27	28	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	21	22	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	28	29	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	29	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	29	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	27	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	21	22	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	31	32	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	29	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	29	30	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	27	28	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	32	34	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	20	21	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	60	1.98
August 24, 2021	GBL South	Seine Net	blacknose shiner	26	27	-

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 24, 2021	GBL South	Seine Net	blacknose shiner	20	21	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	64	2.08
August 24, 2021	GBL South	Seine Net	banded killifish	-	27	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	30	31	-
August 24, 2021	GBL South	Seine Net	yellow perch	72	74	2.88
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	29	30	-
August 24, 2021	GBL South	Seine Net	banded killifish		56	1.67
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	56	1.38
August 24, 2021	GBL South	Seine Net	banded killifish	-	27	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	27	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	19	20	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	29	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	60	1.16
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	24	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	21	-
August 24, 2021	GBL South	Seine Net	yellow perch	44	46	1.01
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	blacknose shiner	21	22	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	28	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	yellow perch	50	52	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	25	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	26	-
August 24, 2021	GBL South	Seine Net	banded killifish	-	30	-
August 24, 2021	GBL South	Seine Net	yellow perch	41	43	0.95
August 24, 2021	GBL South	Seine Net	yellow perch	39	42	0.76
August 24, 2021	GBL South	Seine Net	banded killifish	-	29	-
August 25, 2021	GBL South	Minnow Trap	banded killifish	-	64	1.18
August 25, 2021	GBL South	Minnow Trap	yellow perch	83	86	7.18

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 25, 2021	GBL South	Minnow Trap	yellow perch	102	109	11.18
August 25, 2021	GBL South	Minnow Trap	yellow perch	73	75	4.83
August 25, 2021	GBL South	Minnow Trap	yellow perch	85	88	5.78
August 25, 2021	GBL South	Minnow Trap	yellow perch	103	110	12.26
August 25, 2021	GBL South	Minnow Trap	yellow perch	83	90	7.88
August 25, 2021	GBL South	Minnow Trap	yellow perch	84	88	8.63
August 25, 2021	GBL South	Minnow Trap	yellow perch	46	50	0.96
August 25, 2021	GBL South	Minnow Trap	yellow perch	80	84	8.11
August 25, 2021	GBL South	Minnow Trap	yellow perch	75	80	6.69
August 25, 2021	GBL South	Minnow Trap	yellow perch	79	85	6.66
August 25, 2021	GBL South	Minnow Trap	yellow perch	50	52	0.73
August 25, 2021	GBL South	Minnow Trap	banded killifish	-	66	1.65
August 25, 2021	GBL South	Minnow Trap	yellow perch	79	83	3.66
August 25, 2021	GBL South	Minnow Trap	yellow perch	45	46	0.58
August 25, 2021	GBL South	Minnow Trap	yellow perch	44	4	0.43
August 25, 2021	GBL South	Minnow Trap	yellow perch	53	54	1.39
August 25, 2021	GBL South	Minnow Trap	yellow perch	96	100	8.04
August 25, 2021	GBL South	Minnow Trap	yellow perch	48	52	0.82
August 25, 2021	GBL South	Minnow Trap	yellow perch	44	45	0.44
August 25, 2021	GBL South	Eel Pot	yellow perch	80	95	7.48
August 25, 2021	GBL South	Eel Pot	yellow perch	77	80	5.32
August 25, 2021	GBL South	Eel Pot	yellow perch	83	85	6.01
August 25, 2021	GBL South	Eel Pot	yellow perch	73	75	4.54
August 25, 2021	GBL South	Eel Pot	yellow perch	80	86	8.11
August 25, 2021	GBL South	Eel Pot	yellow perch	81	86	6.96
August 25, 2021	GBL South	Eel Pot	yellow perch	103	104	10.83
August 25, 2021	GBL South	Eel Pot	yellow perch	80	85	6.89
August 25, 2021	GBL South	Eel Pot	yellow perch	85	89	7.76
August 25, 2021	GBL South	Eel Pot	yellow perch	75	82	7.29
August 25, 2021	GBL South	Eel Pot	American eel	-	500	220
August 25, 2021	GBL South	Eel Pot	American eel	-	700	280
August 25, 2021	GBL South	Eel Pot	American eel	-	600	300
August 25, 2021	GBL South	Eel Pot	yellow perch	95	100	8.1
August 25, 2021	GBL South	Eel Pot	yellow perch	115	119	12.88
August 25, 2021	GBL South	Eel Pot	yellow perch	125	-	14.05
August 25, 2021	GBL South	Eel Pot	yellow perch	88	92	7.02
August 25, 2021	GBL South	Eel Pot	yellow perch	132	138	28.12
August 25, 2021	GBL South	Eel Pot	yellow perch	71	76	4.22
August 25, 2021	GBL South	Eel Pot	American eel	-	350	58
August 25, 2021	GBL South	Eel Pot	American eel	-	400	140
August 25, 2021	GBL South	Eel Pot	yellow perch	85	88	5.62
August 25, 2021	GBL South	Eel Pot	yellow perch	74	76	5.05
August 25, 2021	Rocky Lake 1	Fyke Net	golden shiner	115	120	20.77

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	62	2.06
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	85	90	4.67
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	75	3.13
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	80	89	7.87
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	79	85	5.77
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	76	84	6.18
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	3.98
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	52	2.78
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	51	56	1.87
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	57	64	3.7
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	-	35	2.1
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	50	56	1.4
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	60	1.88
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	52	57	1.66
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	63	69	2.54
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	52	56	2.01
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	55	61	1.36
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	48	52	1.35
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	54	58	1.38
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	66	72	3.37
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	72	79	3.84
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	54	60	1.83
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	66	75	2.51
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	54	60	1.18
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	49	52	1.36
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	68	75	3.38
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	53	55	1.18
August 25, 2021	Rocky Lake 1	Minnow Trap	golden shiner	65	71	2.63
August 25, 2021	Rocky Lake 1	Minnow Trap	American eel	-	400	160
August 25, 2021	Rocky Lake 2	Eel Pot	American eel	-	350	120
August 25, 2021	Rocky Lake 2	Eel Pot	American eel	-	450	240
August 25, 2021	Rocky Lake 2	Eel Pot	American eel	-	600	440
August 25, 2021	Rocky Lake 2	Eel Pot	American eel	-	350	120
August 25, 2021	Rocky Lake 2	Eel Pot	American eel	-	500	240
August 25, 2021	Rocky Lake 2	Eel Pot	golden shiner	120	130	28.9
August 25, 2021	Rocky Lake 2	Eel Pot	golden shiner	125	131	28.11
August 26, 2021	WC23/20	Minnow Trap	yellow perch	94	95	9.2
August 26, 2021	WC23/20	Minnow Trap	yellow perch	46	49	0.64
August 26, 2021	WC23/20	Minnow Trap	yellow perch	95	102	7.16
August 26, 2021	WC23/20	Minnow Trap	yellow perch	90	94	9
August 26, 2021	WC23/20	Minnow Trap	yellow perch	95	100	9.8
August 26, 2021	WC23/20	Minnow Trap	yellow perch	99	104	10.02
August 26, 2021	WC23/20	Minnow Trap	yellow perch	99	106	10.91

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 26, 2021	WC23/20	Minnow Trap	yellow perch	72	75	3.94
August 26, 2021	WC23/20	Minnow Trap	yellow perch	52	55	0.69
August 26, 2021	WC23/20	Minnow Trap	yellow perch	72	79	0.88
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	0.81
August 26, 2021	WC23/20	Minnow Trap	yellow perch	76	81	5.04
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	53	0.59
August 26, 2021	WC23/20	Minnow Trap	yellow perch	68	71	1.18
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	52	0.61
August 26, 2021	WC23/20	Minnow Trap	yellow perch	76	80	7.3
August 26, 2021	WC23/20	Minnow Trap	yellow perch	119	123	21.08
August 26, 2021	WC23/20	Minnow Trap	yellow perch	86	89	9
August 26, 2021	WC23/20	Minnow Trap	yellow perch	122	128	25.61
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	49	0.74
August 26, 2021	WC23/20	Minnow Trap	yellow perch	49	51	0.75
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	0.8
August 26, 2021	WC23/20	Minnow Trap	yellow perch	85	90	6.28
August 26, 2021	WC23/20	Minnow Trap	yellow perch	46	49	0.85
August 26, 2021	WC23/20	Minnow Trap	yellow perch	70	72	4.04
August 26, 2021	WC23/20	Minnow Trap	yellow perch	101	106	11.9
August 26, 2021	WC23/20	Minnow Trap	yellow perch	78	81	5.4
August 26, 2021	WC23/20	Minnow Trap	yellow perch	100	103	11.37
August 26, 2021	WC23/20	Minnow Trap	yellow perch	68	72	5.24
August 26, 2021	WC23/20	Minnow Trap	yellow perch	83	96	7.74
August 26, 2021	WC23/20	Minnow Trap	yellow perch	110	115	16.15
August 26, 2021	WC23/20	Minnow Trap	yellow perch	80	85	6
August 26, 2021	WC23/20	Minnow Trap	yellow perch	70	74	5.04
August 26, 2021	WC23/20	Minnow Trap	yellow perch	99	104	11.69
August 26, 2021	WC23/20	Minnow Trap	yellow perch	88	92	7.14
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	51	1.54
August 26, 2021	WC23/20	Minnow Trap	yellow perch	80	75	3.94
August 26, 2021	WC23/20	Minnow Trap	yellow perch	71	2	5.93
August 26, 2021	WC23/20	Minnow Trap	yellow perch	80	82	5.9
August 26, 2021	WC23/20	Minnow Trap	yellow perch	69	71	3.77
August 26, 2021	WC23/20	Minnow Trap	yellow perch	47	49	0.43
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	52	1
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	51	0.81
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	0.86
August 26, 2021	WC23/20	Minnow Trap	yellow perch	44	46	0.65
August 26, 2021	WC23/20	Minnow Trap	yellow perch	120	123	22.06
August 26, 2021	WC23/20	Minnow Trap	yellow perch	46	49	0.45
August 26, 2021	WC23/20	Minnow Trap	yellow perch	98	100	8.68
August 26, 2021	WC23/20	Minnow Trap	yellow perch	76	81	5.65
August 26, 2021	WC23/20	Minnow Trap	yellow perch	85	92	981

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 26, 2021	WC23/20	Minnow Trap	yellow perch	85	90	7.13
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	52	1.14
August 26, 2021	WC23/20	Minnow Trap	yellow perch	75	80	5.07
August 26, 2021	WC23/20	Minnow Trap	yellow perch	94	98	9.08
August 26, 2021	WC23/20	Minnow Trap	yellow perch	73	80	6.77
August 26, 2021	WC23/20	Minnow Trap	yellow perch	78	80	5.78
August 26, 2021	WC23/20	Minnow Trap	yellow perch	54	56	2.08
August 26, 2021	WC23/20	Minnow Trap	yellow perch	95	102	9.94
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	51	0.37
August 26, 2021	WC23/20	Minnow Trap	yellow perch	70	73	4.36
August 26, 2021	WC23/20	Minnow Trap	yellow perch	109	113	14.32
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	52	1.9
August 26, 2021	WC23/20	Minnow Trap	yellow perch	82	86	5.63
August 26, 2021	WC23/20	Minnow Trap	yellow perch	89	94	4.37
August 26, 2021	WC23/20	Minnow Trap	banded killifish	-	86	4.89
August 26, 2021	WC23/20	Minnow Trap	yellow perch	49	51	1.14
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	1.22
August 26, 2021	WC23/20	Minnow Trap	yellow perch	49	51	2.06
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	1.97
August 26, 2021	WC23/20	Minnow Trap	yellow perch	52	54	1.15
August 26, 2021	WC23/20	Minnow Trap	yellow perch	50	51	1.21
August 26, 2021	WC23/20	Minnow Trap	yellow perch	76	81	2.24
August 26, 2021	WC23/20	Minnow Trap	yellow perch	77	83	3.37
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	49	0.54
August 26, 2021	WC23/20	Minnow Trap	yellow perch	49	50	0.98
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	50	0.93
August 26, 2021	WC23/20	Minnow Trap	yellow perch	48	51	0.58
August 26, 2021	WC23/20	Minnow Trap	yellow perch	94	95	11.26
August 26, 2021	WC23/20	Minnow Trap	yellow perch	90	93	7.42
August 26, 2021	WC23/20	Minnow Trap	yellow perch	70	73	4.05
August 26, 2021	WC23/20	Minnow Trap	yellow perch	89	93	8.82
August 26, 2021	WC23/20	Minnow Trap	yellow perch	103	109	11.36
August 26, 2021	WC23/20	Minnow Trap	yellow perch	108	111	12.85
August 26, 2021	WC23/20	Minnow Trap	yellow perch	95	100	8
August 26, 2021	WC23/20	Minnow Trap	yellow perch	80	85	4.86
August 26, 2021	WC23/20	Minnow Trap	yellow perch	85	90	8.3
August 26, 2021	WC23/20	Minnow Trap	yellow perch	79	85	7.14
August 26, 2021	WC23/20	Minnow Trap	yellow perch	95	100	9.39
August 26, 2021	WC23/20	Minnow Trap	banded killifish	-	90	7.38
August 26, 2021	WC23/20	Minnow Trap	yellow perch	75	80	4.25
August 26, 2021	WC23/20	Minnow Trap	yellow perch	98	102	7.44
August 26, 2021	WC23/20	Minnow Trap	yellow perch	91	97	7.36
August 26, 2021	WC23/20	Minnow Trap	yellow perch	52	55	1.18

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 26, 2021	GBL West	Eel Pot	American eel	-	450	150
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	63	65	2.5
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	74	76	5.64
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	149	155	37
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	115	120	18.91
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	133	135	28.06
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	62	65	4.21
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	151	156	44.41
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	200	27.26
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	260	55.07
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	200	18.26
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	180	18.18
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	135	140	31.2
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	135	139	28.8
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	170	20.7
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	90	2.68
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	138	144	26.62
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	170	175	58.36
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	119	125	24.39
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	70	75	5.74
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	86	79	6.94
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	300	48.5
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	70	1.27
August 26, 2021	WC22 Reach B	Electrofishing	brook trout	55	56	2.2
August 26, 2021	WC22 Reach B	Electrofishing	American eel	-	280	34.87
August 27, 2021	WC20	Electrofishing	brook trout	144	149	38.67
August 27, 2021	WC20	Electrofishing	brook trout	162	166	78.41
August 27, 2021	WC20	Electrofishing	brook trout	131	136	22.08
August 27, 2021	WC20	Electrofishing	brook trout	165	171	50.32
August 27, 2021	WC20	Electrofishing	American eel	-	260	40.94
August 27, 2021	WC20	Electrofishing	American eel	-	260	42.39
August 27, 2021	WC20	Electrofishing	brook trout	81	83	5.77
August 27, 2021	WC20	Electrofishing	American eel	-	200	22.8
August 27, 2021	WC20	Electrofishing	American eel	-	190	6.5
August 27, 2021	WC20	Electrofishing	brook trout	79	83	5
August 27, 2021	WC20	Electrofishing	American eel	-	300	78
August 27, 2021	WC20	Electrofishing	American eel	-	80	0.7
August 27, 2021	WC20	Electrofishing	American eel	-	220	4.8
August 27, 2021	WC20	Electrofishing	American eel	-	150	7.51
August 27, 2021	WC20	Electrofishing	American eel	-	260	46.41
August 27, 2021	WC20	Electrofishing	American eel	-	150	7.01
August 27, 2021	WC20	Electrofishing	American eel	-	180	10.84
August 27, 2021	GBL North	Eel Pot	yellow perch	various	various	various

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	123	125	16.29
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	59	62	1.01
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	60	63	2.4
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	111	116	9.6
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	72	3.63
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	91	95	7.33
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	122	130	18.6
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	122	131	18.86
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	122	130	18.55
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	108	114	13.26
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	76	80	4.72
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	119	124	13.57
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	66	69	3.45
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	91	94	7.72
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	96	104	8.92
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	105	110	13.31
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	71	75	4.33
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	56	59	0.87
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	66	70	2.89
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	74	76	3.58
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	71	73	3.19
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	75	80	4.19
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	60	62	1.71
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	76	79	3.88
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	62	64	1.81
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	54	56	1.4
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	66	69	2.66
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	69	72	2.32
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	74	76	6.12
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	55	57	1.3
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	60	62	1.36
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	82	85	4.37
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	62	66	2.25
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	73	2.23
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	63	67	1.62
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	65	66	2.2
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	69	73	4.08
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	74	3.23
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	52	55	0.9
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	172	176	54.49
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	55	56	0.89
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	49	50	0.81
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	73	1.31

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	74	76	2.21
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	65	68	1.83
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	62	64	2.29
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	69	72	2.8
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	46	47	0.55
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	59	62	1.34
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	63	66	2.77
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	58	62	1.35
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	54	55	1.76
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	61	64	2.05
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	56	59	1.93
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	65	67	2.07
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	60	62	1.19
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	74	77	3.9
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	73	78	3.72
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	64	66	2.74
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	74	3.02
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	70	72	2.87
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	63	65	1.93
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	64	66	2.18
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	57	60	1.53
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	68	70	3.71
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	65	67	1.17
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	66	71	2.14
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	66	69	2.37
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	62	65	2.14
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	61	64	1.43
August 28, 2021	WC43 Reach B	Electrofishing	brook trout	68	72	3.08
August 28, 2021	WC14	Minnow Trap	brook trout	153	156	36.26
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	75	2.96
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	70	-
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	30	55.89
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	62	2.08
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	80	3.43
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	150	7.14
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	66	2.83
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	60	2.24
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	76	2.43
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	70	1.41
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	80	3.5
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	280	43.01
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	68	2.22
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	100	0.81

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	220	18.11
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	110	0.73
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	230	21.64
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	64	1.42
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	200	12.37
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	150	3.44
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	60	0.91
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	145	4.67
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	140	6.43
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	90	1.99
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	80	1.37
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	120	5.64
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	260	26.24
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	200	11.64
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	140	2.18
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	110	1.28
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	150	10.09
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	250	32.66
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	150	3.93
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	330	69.21
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	56	0.65
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	30	-
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	200	11.41
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	250	23.44
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	250	28.35
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	270	37.46
August 29, 2021	Gold Brook A	Electrofishing	American eel	-	260	25.09
August 29, 2021	Gold Brook A	Electrofishing	banded killifish	-	26	-
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	87	90	8.2
August 29, 2021	Gold Brook B	Electrofishing	brook trout	146	154	27.41
August 29, 2021	Gold Brook B	Electrofishing	brook trout	141	159	27.77
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	87	91	5.08
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	94	97	8.14
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	70	2.51
August 29, 2021	Gold Brook B	Electrofishing	golden shiner	114	124	14.7
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	74	77	2.81
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	86	91	7.44
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	27	-
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	31	-
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	32	-
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	37	-
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	270	26.2
August 29, 2021	Gold Brook B	Electrofishing	brook trout	184	194	60.1

Survey Date	Site	Capture Method	Common name	Fork length (mm)	Total length (mm)	Weight (g)
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	96	100	-
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	120	2.93
August 29, 2021	Gold Brook B	Electrofishing	yellow perch	99	103	9.23
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	280	35.7
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	220	2.1
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	100	1.49
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	200	11.55
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	210	12.89
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	300	55.35
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	180	13.11
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	180	6.95
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	275	38.12
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	250	22.5
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	200	24.2
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	300	58.73
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	220	20.63
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	220	16.02
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	275	32.81
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	240	31.81
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	280	41.56
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	180	7.64
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	200	13004
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	195	10.82
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	270	31.26
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	230	27.89
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	220	14.63
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	250	31.68
August 29, 2021	Gold Brook B	Electrofishing	American eel	-	260	36.68
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	36	-
August 29, 2021	Gold Brook B	Electrofishing	banded killifish	-	37	-
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	145	155	37.41
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	147	156	41.32
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	46	48	0.98
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	96	0	8.49
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	160	170	46.12
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	100	103	10.78
August 30, 2021	WC43 Reach A	Electrofishing	brook trout	87	91	7.22
August 30, 2021	GBL North	Eel Pot	brook trout	-	-	-
August 30, 2021	GBL North	Eel Pot	yellow perch	-	-	-
August 30, 2021	GBL North	Eel Pot	3 American eel	various	various	various
August 30, 2021	GBL South	Eel Pot	6 American eel	various	various	various
August 30, 2021	GBL South	Eel Pot	12 yellow perch	various	various	various

APPENDIX E: OTHER CONSULTANT REPORTS

BENTHIC INVERTEBRATE SPECIES COMPOSITION IN FRESHWATER EKMAN GRAB SAMPLES— GOLD BROOK LAKE

Lab Number: L2021-81

NOVEMBER 2021

Report to:

McCallum Environmental Ltd., Bedford, Nova Scotia

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BENTHIC INVERTEBRATE SPECIES COMPOSITION IN
FRESHWATER EKMAN GRAB SAMPLES—GOLD BROOK LAKE
for
McCallum Environmental Ltd., Bedford, Nova Scotia

NOVEMBER 2021

INTRODUCTION

McCallum Environmental Ltd. personnel collected freshwater benthic invertebrate samples from three sample stations on October 20, 2021. Samples were preserved in 70% Isopropyl alcohol; and subsequently shipped to Envirosphere Consultants Limited, Windsor, Nova Scotia, for sorting, identification and enumeration of benthic invertebrates. Samples were received on October 22, 2021. The results of the analysis are presented in this report.

METHODS

SIEVING OF WHOLE SEDIMENTS

Aquatic benthic invertebrate samples from the lake bottom were collected using an Ekman Grab (15.25 x 15.25 cm). The sediment samples were provided preserved (70% Isopropyl alcohol) in large Ziploc bags. Prior to sorting, samples were rinsed on an 0.5 mm sieve to remove preservative. All samples were processed in their entirety.

SORTING AND IDENTIFICATION

Samples were examined at 6 - 6.4x magnification on a stereomicroscope, with a final brief check at 16x and all organisms were removed. Removal efficiency for lab personnel is checked by resorting 10% of samples to ensure a sorting efficiency of 90% or better (see Attachment 1). Organisms were subsequently stored in labeled vials in 70% Isopropyl alcohol.

Organisms were identified to an appropriate taxonomic level, typically to genus, using conventional literature for the groups involved (see Attachment 2). Organisms were identified by Heather Levy (B.Sc. Hons.) of Envirosphere Consultants Ltd. Abundance of each taxonomic group and number of taxonomic groups (taxa richness) were estimated from the data.

RESULTS AND DISCUSSION

Sample descriptions for samples, as received, are presented in Table 1. Identifications, abundance and taxon richness are presented in Table 2. Abundance is expressed on a per metre squared basis and taxon richness per sample.

Samples from Gold Brook Lake sites contained freshwater animals with major organism groups represented, primarily Diptera (midge fly larvae (Chironomidae)). Minor numbers of other groups occurred such as Ephemeroptera (mayfly larvae), Trichoptera (caddisfly larvae), Lepidoptera (aquatic moth and butterfly larvae), Megaloptera (alderfly larvae), other Diptera (Ceratopogonidae and Chaoboridae), the amphipod *Hyalella azteca*, Mollusca (gastropod *Ferrissia*), and oligochaetes (aquatic worms). Communities

had a low to low/moderate diversity of organisms (3 – 11 taxa per sample); and low to high abundances (301 – 7,568 individuals per metre squared) (Table 2).

Limiting Conditions

The quality of the results presented in this report are dependent both on our analysis, and on the quality of samples as provided to Envirosphere Consultants Limited by the client. The analyses are based on practices normally accepted in the analysis of marine and freshwater benthic invertebrate samples, and with suitable controls for quality assurance. No other warranty is made.

Table 1. Characteristics of samples, McCallum Environmental Ltd., Gold Brook Lake, October 20, 2021.	
Site 1	Silt.
Site 2	Silt.
Site 3	Silt with organic debris (Plant, bark and woody debris).
Grain size classes: cobble = 6.4 cm and larger; pebble/ gravel = 4 mm to 6.4 cm; sand = 0.063 mm to 2 mm; silt = 0.004 mm to 0.063 mm; clay = <0.004 mm.	

Table 2. Abundance of benthic organisms in sediments from Gold Brook Lake, October 20, 2021.

				Abundance number/m²		
Date Sampled				October 20, 2021		
				Gold Brook Lake		
Phylum & Class	Order	Family	*Genus & Species*	Site 1	Site 2	Site 3
Arthropoda Insecta						
	Diptera					
		Ceratopogonidae	unidentified	43	0	516
		Chaoboridae	*Chaoborus*	0	129	0
		Chironomidae*	unidentified	559	86	5074
	Ephemeroptera					
		Caenidae	*Caenis*	0	0	129
		Leptophlebiidae	unidentified	0	0	215
	Trichoptera					
		Leptoceridae	unidentified	0	0	86
		Polycentropodidae	*Phylocentropus*	43	86	86
	Lepidoptera					
		Crambidae	*Eoparagyractis*	0	0	43
	Megaloptera					
		Sialidae	*Sialis*	0	0	43
Arthropoda Crustacea						
	Amphipoda					
		Hyalellidae	*Hyalella azteca*	0	0	1118
Mollusca Gastropoda						
	Basommatophora					
		Ancylidae	*Ferrissia* (limpet)	0	0	43
Annelida Clitellata						
	Aquatic Worms (Oligochaeta)					
		Unidentified		0	0	215
SUMMARY						
Abundance #/m²				645	301	7568
Taxa Richness (#/sample)				3	3	11
Biomass (grams/m²)				0.262	0.929	3.99
Excluded and Non-aquatic Taxa (not included in analyses).						
Cladocera				0	0	258
*Larvae and pupae stages are combined.						

ATTACHMENT 1 – SORTING EFFICIENCY

Envirosphere CONSULTANTS LIMITED

Sorting Efficiency Report

Client Name/Address: McCallum Environmental - Goldboro -

Sample Information: L2021-81 Gold Brook Lake

Sorted by: S. Timpa
Checked by: S. Timpa
Approved by: H. Levy

Date: Nov. 23'21
Date Checked: Nov 25'21
Date: Nov 29'21

SAMPLE NUMBER	STATED NUMBER OF ORGANISMS (A)	NUMBER OF ADDITIONAL ORGANISMS FOUND (B)	SORTING EFFICIENCY (%) (A/(A+B)) X 100	SORTED BY (Initials)
1. Site 1	15	1	94%	ST
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Comments:

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ATTACHMENT 2 – TAXONOMIC LITERATURE

Clarke, A.H. 1981. The Freshwater Molluscs of Canada. National Museums of Canada, Ottawa.

Johannsen, O.A. 1978. Aquatic Diptera. Eggs, Larvae, and Pupae of Aquatic Flies. Entomological Reprint Specialists, Los Angeles, CA.

Mackie, G.L. undated. Corbiculaceae of North America. Unpublished Key, G.L. Mackie, Dept of Zoology, University of Guelph, Guelph, ON N1G 2W1.

McAlpine, J.F., B.V. Peterson, G.E. Shewell, H.J. Teskey, J.R. Vockeroth and D.M. Wood. 1981. Manual of Neactic Diptera. Volume 1. Monograph No. 27, Research Branch, Agriculture Canada, Ottawa.

Merritt, R.W., K.W. Cummins and M.B. Berg (eds). 2008. An Introduction to the Aquatic Insects of North America. 4th Edition, Kendall/Hunt Publishing Company, Dubuque, Iowa.

Pecharsky, B.L., P.R. Fraissinet, M.A. Penton, and D.J. Conklin, Jr. 1990. Freshwater Macroinvertebrates of Northeastern North America. Comstock Publishing Associates.

Saether, O.A. 1972. Chaoboridae. Pages 257-280, In Volume 26, Das Zooplankten der Binengerwasser.

Usinger, R.L. ed. 1963. Aquatic Insects of California. University of California Press, Berkeley, CA.

Wiggins, G.B. 1977. Larvae of the North American Caddisfly Genera (Trichoptera). U of Toronto Press, Toronto.

BENTHIC INVERTEBRATE SPECIES COMPOSITION IN FRESHWATER SURBER SAMPLES— GOLDBORO GOLD MINE

Lab Number: L2021-80

NOVEMBER 2021

Report to:

McCallum Environmental Ltd., Bedford, Nova Scotia

Prepared by:

Envirosphere Consultants Limited
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BENTHIC INVERTEBRATE SPECIES COMPOSITION IN
FRESHWATER SURBER SAMPLES—GOLDBORO GOLD MINE
for
McCallum Environmental Ltd., Bedford, Nova Scotia

NOVEMBER 2021

INTRODUCTION

McCallum Environmental Ltd. personnel collected freshwater benthic invertebrate samples from nine sample stations on October 14, 2021. Samples were preserved in 70% Isopropyl alcohol; and subsequently shipped to Envirosphere Consultants Limited, Windsor, Nova Scotia, for sorting, identification and enumeration of benthic invertebrates. Samples were received on October 22, 2021. The results of the analysis are presented in this report.

METHODS

SIEVING OF WHOLE SEDIMENTS

Aquatic benthic invertebrate samples from the streambed were collected using a Surber sampler (30.5 x 30.5 cm). The sediment samples were provided preserved (70% Isopropyl alcohol) in large Ziploc bags. Prior to sorting, samples were rinsed on an 0.5 mm sieve to remove preservative. All samples were processed in their entirety.

SORTING AND IDENTIFICATION

Samples were examined at 6 - 6.4x magnification on a stereomicroscope, with a final brief check at 16x and all organisms were removed. Removal efficiency for lab personnel is checked by resorting 10% of samples to ensure a sorting efficiency of 90% or better (see Attachment 1). Organisms were subsequently stored in labeled vials in 70% Isopropyl alcohol.

Organisms were identified to an appropriate taxonomic level, typically to genus, using conventional literature for the groups involved (see Attachment 2). Organisms were identified by Heather Levy (B.Sc. Hons.) of Envirosphere Consultants Ltd. Abundance of each taxonomic group and number of taxonomic groups (taxa richness) were estimated from the data.

RESULTS AND DISCUSSION

Sample descriptions for samples, as received, are presented in Table 1. Identifications, abundance and taxon richness are presented in Table 2. Abundance is expressed on a per metre squared basis and taxon richness per sample.

Samples from sampling sites contained freshwater animals with major organism groups represented, primarily Diptera (midge fly larvae (Chironomidae)), Trichoptera (caddisfly larvae), and Coleoptera (aquatic beetles). Minor numbers of other groups occurred such as Ephemeroptera (mayfly larvae), Plecoptera (stonefly larvae), Hemiptera (aphididae), Odonata (damselfly larvae), Hydrachnidia (water mites), other Diptera (Empididae, Simuliidae and Tipulidae), the amphipod *Hyalella azteca*, Oligochaetes (aquatic

worms), and Mollusca (bivalves Pisidiidae; gastropod *Ferrissia*). Communities had a low to high diversity of organisms (12 – 26 taxa per sample); and low to high abundances (770 – 12,463 individuals per metre squared) (Table 2).

Limiting Conditions

The quality of the results presented in this report are dependent both on our analysis, and on the quality of samples as provided to Envirosphere Consultants Limited by the client. The analyses are based on practices normally accepted in the analysis of marine and freshwater benthic invertebrate samples, and with suitable controls for quality assurance. No other warranty is made.

Table 1. Characteristics of samples, McCallum Environmental Ltd., Goldboro Gold Mine, October 14, 2021.	
Site 1A	Organic matter (plant and woody debris).
Site 1B	Organic matter (plant and woody debris).
Site 1C	Organic matter (plant and woody debris).
Site 2A	Organic matter (plant and woody debris) and ferrocrete bits.
Site 2B	Organic matter (plant debris) and ferrocrete bits.
Site 2C	Organic matter (plant and woody debris), coal and ferrocrete bits.
Site 3A	Organic matter (plant and woody debris) and ferrocrete bits.
Site 3B	Organic matter (plant and woody debris) and ferrocrete bits.
Site 3C	Silt and organic matter (plant and wood debris) and ferrocrete bits.
Grain size classes: cobble = 6.4 cm and larger; pebble/ gravel = 4 mm to 6.4 cm; sand = 0.063 mm to 2 mm; silt = 0.004 mm to 0.063 mm; clay = <0.004 mm.	

Table 2. Abundance of benthic organisms in sediments from Goldboro Gold Mine, October 14, 2021.

				Abundance number/m²								
Date Sampled				October 14, 2021								
Phylum & Class	Order	Family	*Genus & Species*	1A	1B	1C	2A	2B	2C	3A	3B	3C
Arthropoda Insecta												
	Diptera											
		Chironomidae*	unidentified	1221	880	4763	550	198	198	143	99	55
		Empididae*	*Hemerodromia*	0	0	22	110	0	77	132	33	55
			Neoplasta	22	55	132	0	0	0	0	0	0
		Simuliidae*	unidentified	11	11	11	1221	132	286	0	0	0
		Tipulidae	*Tipula*	11	0	33	0	0	0	0	0	0
	Ephemeroptera											
		Baetidae	*Baetis*	0	0	0	0	0	11	11	0	0
		Ephemerellidae	*Eurylophella*	0	0	0	0	0	11	0	0	0
		Heptageniidae	*Maccaffertium*	0	22	55	330	77	253	22	33	11
			unidentified	0	66	121	473	0	374	33	22	0
		Leptophlebiidae	*Leptophlebia*	0	0	0	0	33	0	11	44	0
			unidentified	77	132	176	77	165	22	66	418	33
	Plecoptera											
	Unidentified (juveniles)			242	462	649	165	0	88	33	22	11
	Trichoptera											
		Hydropsychidae	*Diplectrona*	154	297	1364	0	0	0	0	0	0
			Cheumatopsyche	0	0	0	682	11	682	0	0	0
			Hydropsyche	0	0	0	1925	66	330	88	33	44
		Hydroptilidae	*Hydroptila*	66	44	473	66	11	77	473	440	231
			Ochrotrichia	0	0	0	198	110	176	264	220	198
			Oxyethira	22	22	33	0	0	0	22	143	22
			Palaeagapetus	143	143	352	0	0	0	0	0	0
		Lepidostomatidae	*Lepidostoma*	11	88	110	0	0	0	0	0	0
		Leptoceridae	*Mystacides*	0	0	0	0	0	0	0	55	0
			Oecetis	0	0	0	121	0	66	44	110	11
			unidentified	0	0	0	11	0	0	0	0	0
		Odontoceridae	*Psilotreta*	0	0	11	0	0	0	0	0	0
		Philopotamidae	*Chimarra*	0	0	0	88	11	44	11	0	0
		Polycentropodidae	*Polycentropus*	11	33	22	0	0	0	0	11	11
			Nyctiohylax	0	0	0	0	0	0	11	11	0
		Rhyacophilidae	*Rhyacophila*	33	33	88	44	0	44	110	22	88
		Unidentified	species A	0	44	0	0	0	0	0	0	0
			species B	0	44	11	33	0	0	0	0	0
	Coleoptera											
		Elmidae	*Promoresia*	1265	1463	3179	198	11	253	11	0	0
			Promoresia (adult)	341	275	638	44	0	0	0	0	0
			Stenelmis	0	0	0	143	0	99	0	0	0
			Stenelmis (adult)	0	0	0	11	11	11	0	0	0
		Staphylinidae	Adult	0	0	0	0	0	0	11	0	0
	Hemiptera											
		Aphididae	unidentified	11	0	0	0	0	0	0	0	0
		Corixidae	unidentified	0	0	0	0	0	0	0	11	0
	Odonata											
		Coenagrionidae	*Argia*	0	0	0	0	0	0	0	22	0
			Enallagma?	0	0	0	22	0	0	0	0	0
Insecta egg				11	0	0	0	0	0	0	0	0
Arthropoda Arachnida												
	Trombidiformes											
		Hydrachnidae	sp A	11	22	33	0	0	0	0	0	0
			sp B	22	44	121	0	0	0	0	0	0
			sp C	22	11	33	0	0	0	0	0	0
			sp D	11	0	11	0	0	0	0	0	0
			sp E	0	11	0	0	0	0	0	0	0
			sp F	0	0	11	0	0	0	0	0	0
			sp G	0	0	11	0	0	0	0	0	0
			sp H	0	0	0	11	0	0	0	0	0

Table 2. Abundance of benthic organisms in sediments from Goldboro Gold Mine, October 14, 2021.

				Abundance number/m²								
Date Sampled				October 14, 2021								
Phylum & Class	Order	Family	*Genus & Species*	1A	1B	1C	2A	2B	2C	3A	3B	3C
			sp I	0	0	0	0	0	0	0	11	0
			sp J	0	0	0	0	0	0	0	11	0
Arthropoda Crustacea												
	Amphipoda											
		Hyalellidae	*Hyalella azteca*	0	0	0	11	0	11	0	0	0
Mollusca Bivalvia												
	Veneroida											
		Pisidiidae		0	0	0	0	0	55	0	22	0
Mollusca Gastropoda												
	Basommatophora											
		Ancylidae	*Ferrissia* (limpet)	0	0	0	0	0	0	0	11	0
Annelida Clitellata												
	Aquatic Worms (Oligochaeta)											
		unidentified		0	0	0	33	11	0	11	0	0
SUMMARY												
Abundance (#/m²)				3718	4202	12463	6567	847	3168	1507	1804	770
Taxa Richness (#/sample)				21	22	26	24	13	21	19	22	12
Biomass (grams/m²)				2.46	3.12	14.3	16.2	1.01	7.38	1.03	1.74	0.552
Excluded and Non-aquatic Taxa (not included in analyses).												
Arachnid				0	0	11	0	0	0	0	0	0
Cladocera				0	0	0	0	11	0	0	0	0
Copepoda				0	0	0	0	11	0	0	0	0
Diptera (winged)				0	0	0	11	0	0	0	0	0
*Larvae and pupae stages are combined.												

ATTACHMENT 1 – SORTING EFFICIENCY

Envirosphere CONSULTANTS LIMITED

Sorting Efficiency Report

Client Name/Address: McCallum Environments / Goldboro Gold Mine

Sample Information: L2021 - 80

Sorted by: S. Timpa
Checked by: S Timpa
Approved by: H. Levy

Date: Nov 19 '21
Date Checked: Nov. 29 '21
Date: Nov. 29, 21

SAMPLE NUMBER	STATED NUMBER OF ORGANISMS (A)	NUMBER OF ADDITIONAL ORGANISMS FOUND (B)	SORTING EFFICIENCY (%) (A/(A+B)) X 100	SORTED BY (Initials)
1. Site 3A	137	9	93.8%	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Comments:

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ATTACHMENT 2 – TAXONOMIC LITERATURE

Clarke, A.H. 1981. The Freshwater Molluscs of Canada. National Museums of Canada, Ottawa.

Johannsen, O.A. 1978. Aquatic Diptera. Eggs, Larvae, and Pupae of Aquatic Flies. Entomological Reprint Specialists, Los Angeles, CA.

Mackie, G.L. undated. Corbiculaceae of North America. Unpublished Key, G.L. Mackie, Dept of Zoology, University of Guelph, Guelph, ON N1G 2W1.

McAlpine, J.F., B.V. Peterson, G.E. Shewell, H.J. Teskey, J.R. Vockeroth and D.M. Wood. 1981. Manual of Neactic Diptera. Volume 1. Monograph No. 27, Research Branch, Agriculture Canada, Ottawa.

Merritt, R.W., K.W. Cummins and M.B. Berg (eds). 2008. An Introduction to the Aquatic Insects of North America. 4th Edition, Kendall/Hunt Publishing Company, Dubuque, Iowa.

Pecharsky, B.L., P.R. Fraissinet, M.A. Penton, and D.J. Conklin, Jr. 1990. Freshwater Macroinvertebrates of Northeastern North America. Comstock Publishing Associates.

Saether, O.A. 1972. Chaoboridae. Pages 257-280, In Volume 26, Das Zooplankten der Binengerwasser.

Usinger, R.L. ed. 1963. Aquatic Insects of California. University of California Press, Berkeley, CA.

Wiggins, G.B. 1977. Larvae of the North American Caddisfly Genera (Trichoptera). U of Toronto Press, Toronto.

TERRANE
GEOSCIENCE INC.

100 – 5435 Portland Place
Halifax, NS, B3K 2Z8
terranegeoscience.com

November 15, 2021

Ms. Deidre Puddister, M.Sc.
Environment and Compliance Manager
Anaconda Mining
Cabot Place 100 New Gower Street, Suite 790,
St John's, NL
A1C 6K3

Dear Ms. Puddister,

Re: Thermal and Orthoimage UAV Survey, Gold Brook Lake and Gold Brook Stream at the Goldboro Project, Nova Scotia.

1.0 INTRODUCTION

This report describes results of a UAV (Unmanned Aerial Vehicle) thermal and orthoimage survey performed by Terrane Geoscience Inc. (Terrane) at the Goldboro Project, owned by Anaconda Mining Inc (Anaconda) and located in Goldboro, Nova Scotia.

Terrane completed this work with the support of Applied Geomatics Research Group (AGRG) - Nova Scotia Community College (NSCC). AGRG supplied the thermal camera and processed the thermal and orthoimagery. The purpose of the UAV thermal and orthoimage survey was to capture temperature variations in the waters of Gold Brook Lake and Gold Brook Stream to identify potential cold-water sources

Two areas of interest (AOI) were flown, Gold Brook Lake and Gold Brook Steam (Figure 1).

Anaconda had requested the project be completed before August 31, 2021 to ensure thermal data capture before water temperatures decrease leading into the fall. For optimal thermal data capture the client requested the survey be competed in low-light or overcast conditions.

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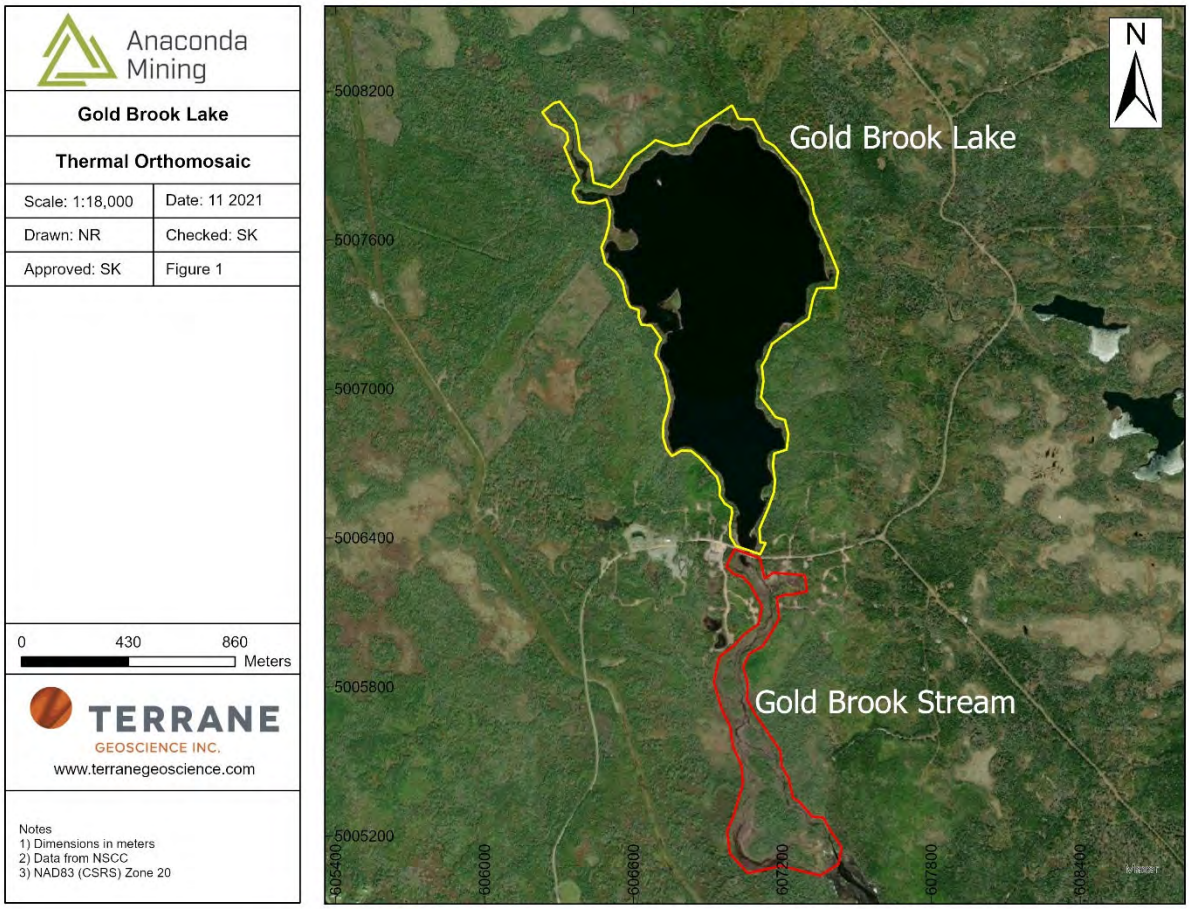

Figure 1 – Gold Brook Lake AOI in yellow and Gold Brook Stream AOI in red.

2.0 UAV THERMAL AND ORTHOIMAGE SURVEY

The UAV survey was flown using a DJI Matrice™ 210RTK drone equipped with a dual payload consisting of a FLIR™ DUO PRO R Dual Sensor thermal camera with 4K color camera and Zenmuse™ X5S still photo image camera. Only the thermal and 4K color camera imagery was processed from the FLIR™ DUO PRO Camera.

All flights were completed between the dates of August 28 and August 31, 2021. Weather delays due to high winds and rain on August 28, 29 and 30 prohibited the completion of the project with consistent light levels and ambient temperatures. To complete the project by August 31, 2021 some flights were flown in variable light conditions including full sunlight.

In total, twenty flights were flown over Gold Brook Lake between August 29 and 31. Four flights were flown over Gold Brook Stream on August 28; however, improvements in light levels and wind conditions on August 31, 2021 the stream was re-flown. The four flights flown on August 31 were used in processing the final data.

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Flight lines for Gold Brook Lake and Gold Brook Stream were flown in a northeast-southwest orientation at an altitude of approximately 85 m above ground which resulted in a final data set with a ground sampling distance of 0.02 m. No ground control points were deployed for the project areas all processing relied on the accuracy of the drone GPS geotagged images.

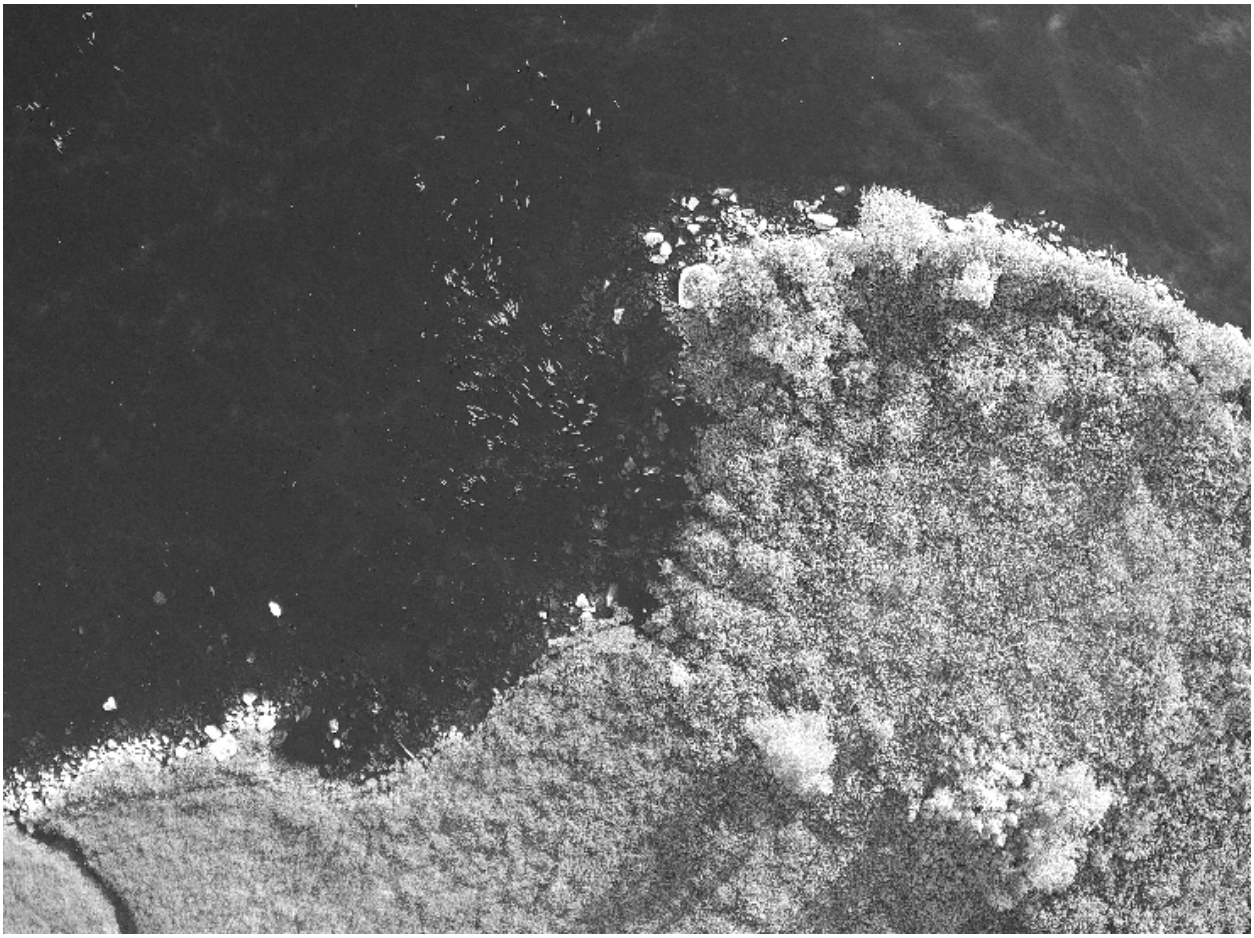

Figure 2 – Example thermal image of the Gold Brook Lake AOI, bright tones denote warmer areas.

3.0 PROCESSING AND RESULTS

Photogrammetric processing was conducted using Agisoft Metashape™. Image processing worked well in Gold Brook Stream where there were many distinct features that could be used as tie-points to align overlapping images (Figure 2). Note that differences in ambient temperatures can be seen between flights (Figure 3), but this did not prevent the detection of anomalies in water temperature throughout the stream network and several sources of cold water were detected (Figure 4; Figure 5).

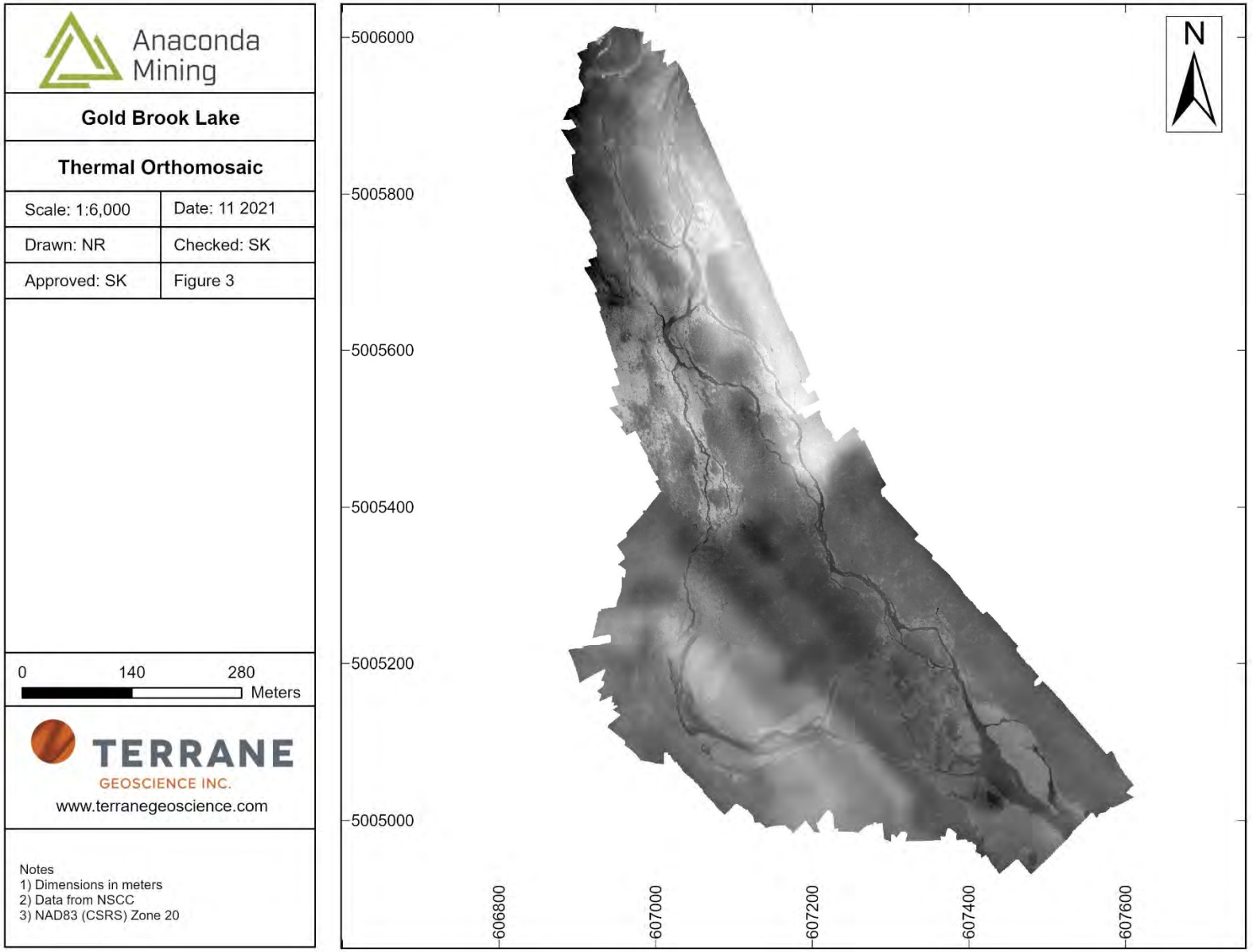

Figure 3 – Thermal coverage of Gold Brook Stream AOI.

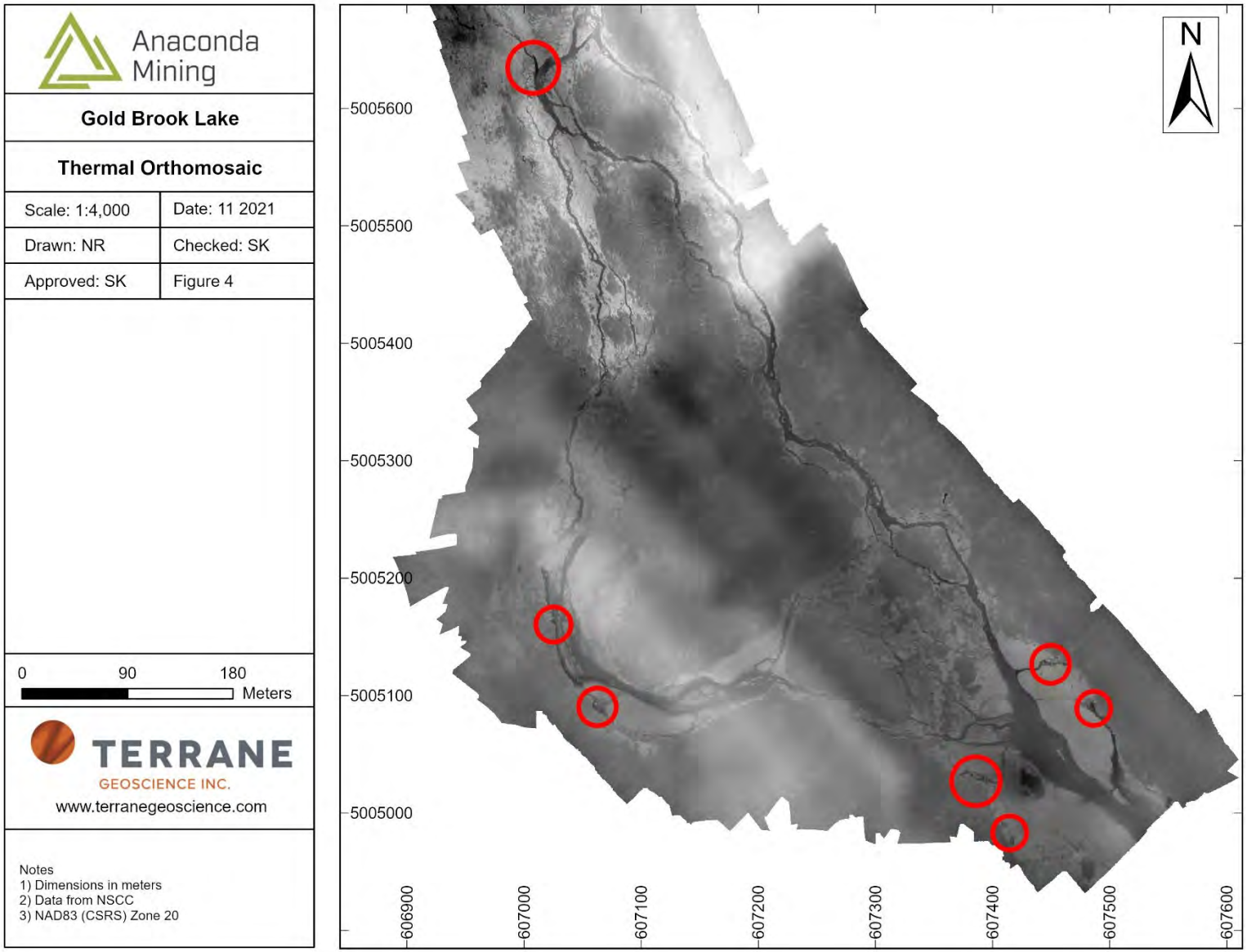

Figure 4 – Sources of cold water identified in the Gold Brook stream network to the south of the lake.

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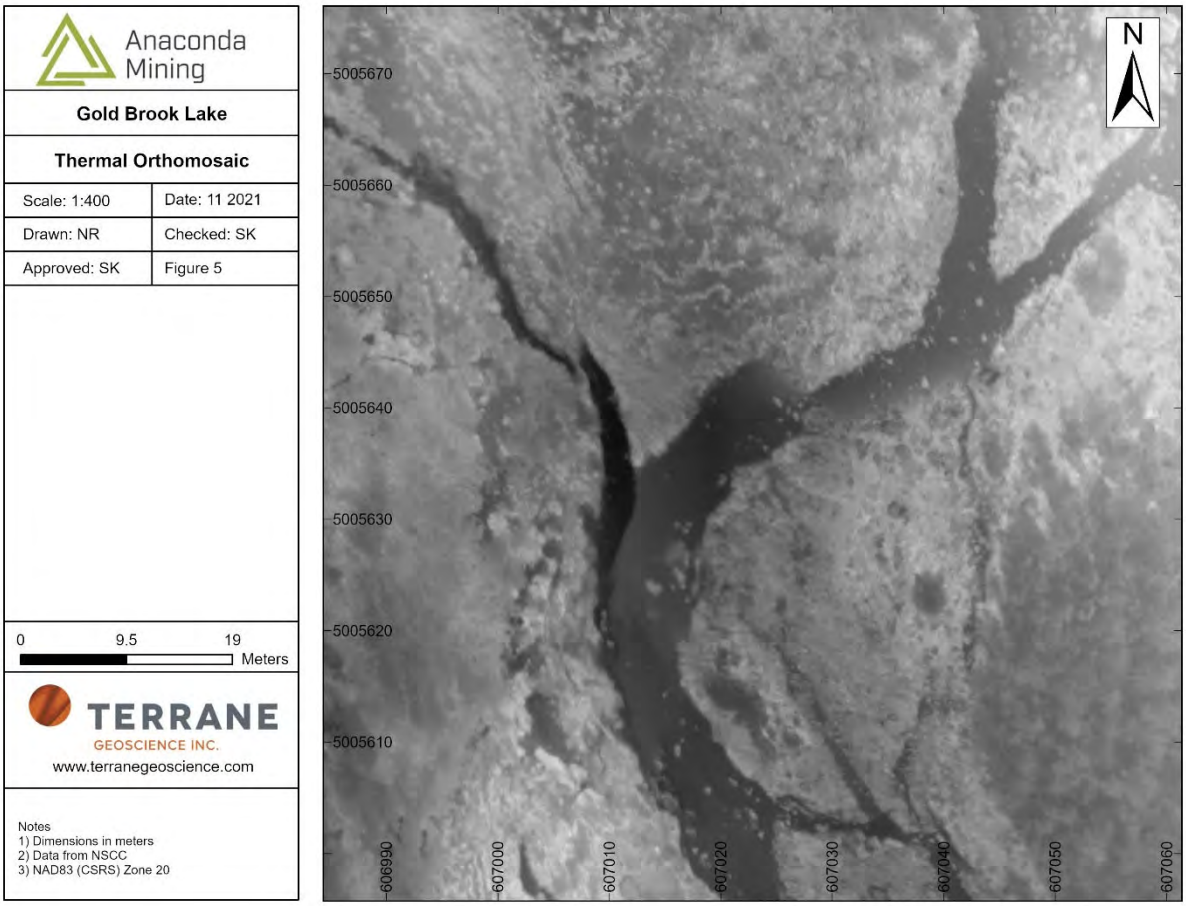

Figure 5 – Single thermal frame highlighting the confluence of cold water entering the stream network from the northwest branch. This image corresponds with the most northern circle in Figure 4.

Image triangulation is not possible in areas with indistinct features, such as open water. For this reason, only the coastal portions of Gold Brook Lake AOI were triangulated accurately, and the remaining imagery was projected onto a surface elevation model using the camera's exterior orientation measured by the GPS and IMU in a less accurate process of direct georeferencing. The final image mosaic contained several positioning artifacts and pronounced differences in ambient temperatures between days and flights (Figure 6). Despite these shortcomings the imagery was still suitable for analysis of water temperature anomalies. A detailed examination of coastal and open water areas was done and yielded no sources of cold-water intrusion. Lake surface temperatures became homogeneous at the first northern confluence of the feeding stream (Figure 7). Individual frames were provided along with the mosaic images in order to facilitate further investigation if required.

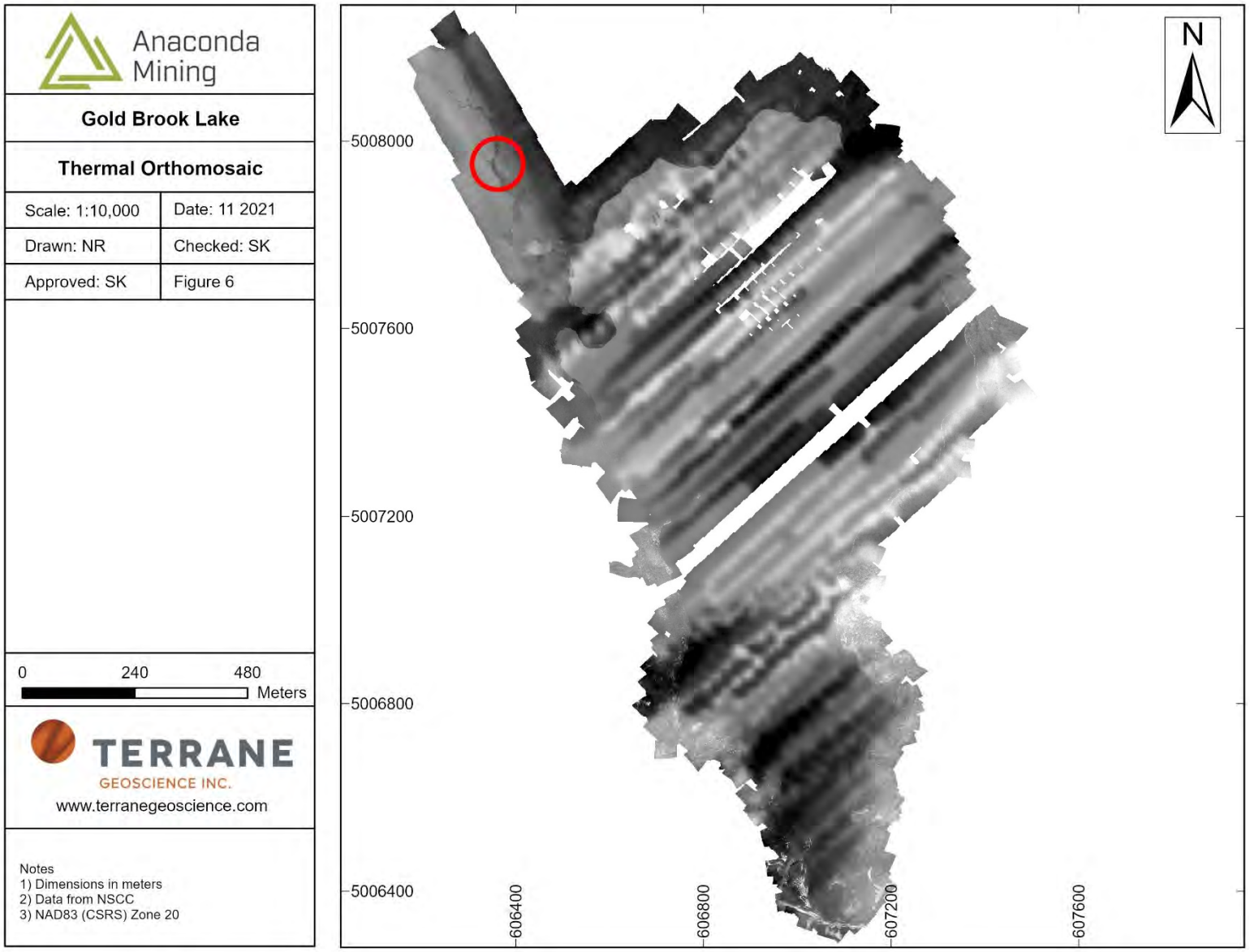

Figure 6 – Thermal imagery of the Gold Brook Lake AOI highlighting issues with georeferencing and between flight temperature differences.

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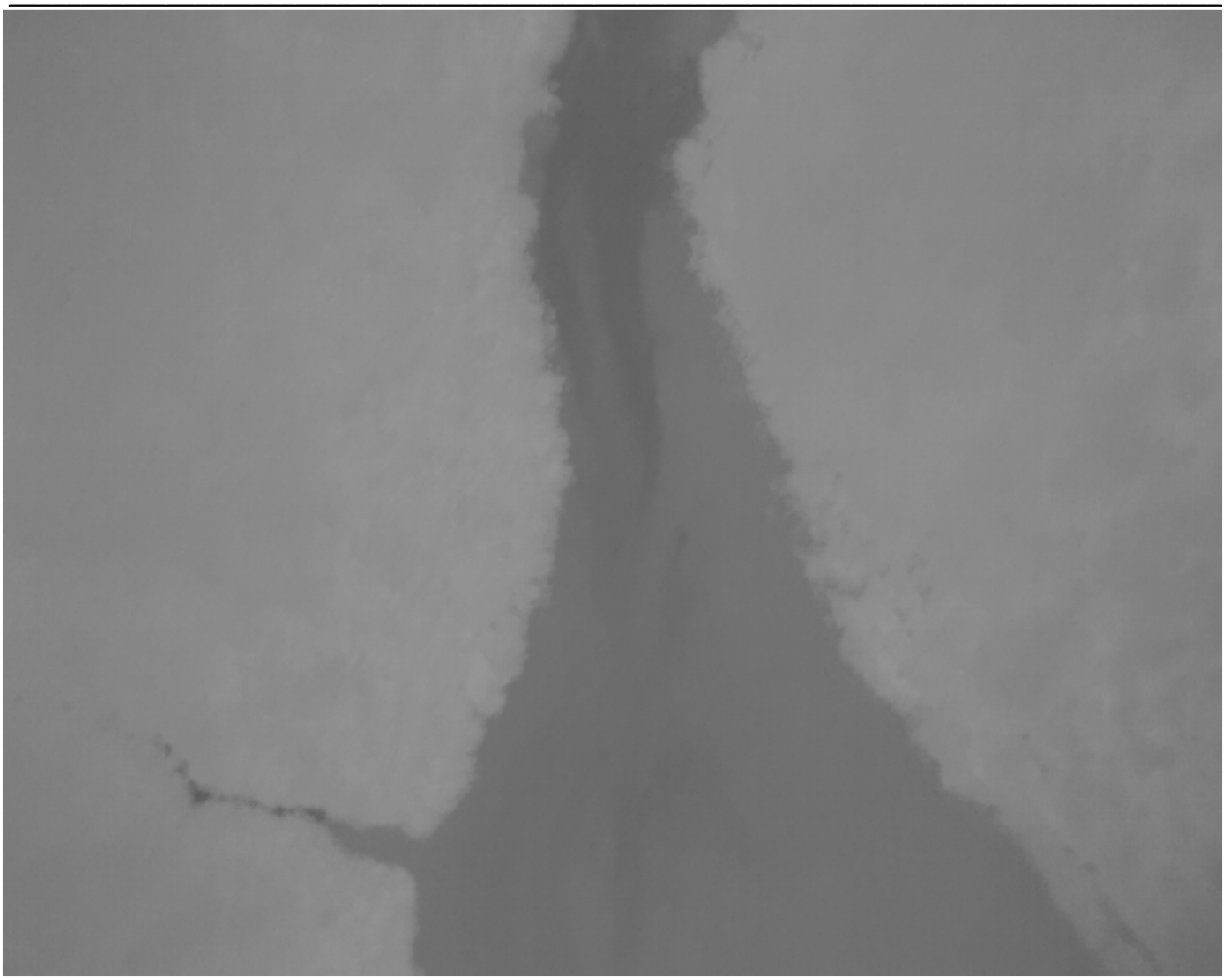

Figure 7 – Single frame demonstrating the difference in water temperature in at the stream confluence highlighted in Figure 6.

4.0 DELIVERABLES

The project deliverables included:

- Raw thermal imagery for Gold Brook Lake and Gold Brook Stream
- Orthoimagery for Gold Brook Stream and Gold Brook Lake
- Mosaic of thermal imagery for Gold Brook Stream

The data was processed in UTM20 NAD83CSRS V7.

TERRANE
GEOSCIENCE INC.

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5.0 CLOSURE

Please contact us with any questions, comments or concerns. We thank you for the opportunity to participate in this project and look forward to working with Anaconda in the future.

Yours sincerely,

Terrane Geoscience Inc

Prepared by:

Carl Hovey, B.Sc.
Senior Field Specialist

and

Nathan Crowell, M.Sc.
Research Specialist
Applied Geomatics Research Group, NSCC

Review by:

Stefan Kruse, Ph.D., P.Geo.

Table 1. eDNA Sample Collection Data. 13 October 2021. Goldboro Nova Scotia.

Sample ID	Easting	Northing	Time	Observers	Precip	Air Temp	Reach Desc.	Dominant Substrate	Subdominant Substrate	Embeddedness	Gradient	Channel Stability	Riparian Cover	Riparian Width (m)	Light Penetration	Comments	
Site 1A	606989	5008543	14:02	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	2	Stable	Moderate	forest (not measured)	Low	Tea stained water	Moderate-high flow
Site 1B	606989	5008543	14:01	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	2	Stable	Moderate	forest (not measured)	Low	Tea stained water	Moderate-high flow
Site 1C	606989	5008543	14:00	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	2	Stable	Moderate	forest (not measured)	Low	Tea stained water	Moderate-high flow
Site 2A	607091	5006285	15:37	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 2B	607091	5006285	15:36	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 2C	607091	5006285	15:39	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 3A	607383	5005217	14:58	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 3B	607383	5005217	15:00	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 3C	607383	5005217	14:59	OB & KF	~5mm within 24 hrs	16	Riffle	Boulder	Rubble	Medium	4	Stable	Low	forest/wetland (not measured)	High	Tea stained water	Moderate flow
Site 4A	610956	5011907	12:40	OB & KF	~5mm within 24 hrs	16	Run	Gravel	Cobble	Low	1	Stable	Moderate	forest (not measured)	Medium	Clear water	Moderate flow
Site 4B	610956	5011907	12:41	OB & KF	~5mm within 24 hrs	16	Run	Gravel	Cobble	Low	1	Stable	Moderate	forest (not measured)	Medium	Clear water	Moderate flow
Site 4C	610956	5011907	12:42	OB & KF	~5mm within 24 hrs	16	Run	Gravel	Cobble	Low	1	Stable	Moderate	forest (not measured)	Medium	Clear water	Moderate flow
SetPond	607383	5005217	15:46	OB & KF	~5mm within 24 hrs	16	Pool	Muck	None	N/A	<1	Stable	Low	forest (not measured)	High	Tea stained water	No flow
SetPond	607383	5005217	15:45	OB & KF	~5mm within 24 hrs	16	Pool	Muck	None	N/A	<1	Stable	Low	forest (not measured)	High	Tea stained water	No flow
SetPond	607383	5005217	15:47	OB & KF	~5mm within 24 hrs	16	Pool	Muck	None	N/A	<1	Stable	Low	forest (not measured)	High	Tea stained water	No flow

Table 2. eDNA Sample Filtration Data. 13 October 2021. Goldboro, Nova Scotia.

Location name	Filter Date	Filter start time	Filter end time	Filtering time	Sample Volume (ml)	Sample Contents	Preservation Method	Filtered by	Comments
Site 1A	13-Oct-21	18:02	18:10	0:08	925	Inlet to GBL	Silica	OB & KF	Upstream of culvert - tea stained water
Site 1B	13-Oct-21	18:18	18:27	0:09	950	Inlet to GBL	Silica	OB & KF	Upstream of culvert - tea stained water
Site 1C	13-Oct-21	18:33	18:41	0:08	925	Inlet to GBL	Silica	OB & KF	Upstream of culvert - tea stained water
Site 2A	13-Oct-21	18:48	19:02	0:14	575	GBL outlet	Silica	OB & KF	Tea stained water
Site 2B	13-Oct-21	19:08	19:22	0:14	550	GBL outlet	Silica	OB & KF	Tea stained water
Site 2C	13-Oct-21	19:30	19:49	0:19	550	GBL outlet	Silica	OB & KF	Tea stained water
Site 3A	13-Oct-21	19:54	20:08	0:14	600	GBL outlet end of SA	Silica	OB & KF	Tea stained water
Site 3B	13-Oct-21	20:10	20:28	0:18	575	GBL outlet end of SA	Silica	OB & KF	Tea stained water
Site 3C	13-Oct-21	20:31	20:54	0:23	550	GBL outlet end of SA	Silica	OB & KF	Tea stained water
Site 4A	13-Oct-21	20:57	21:09	0:12	650	Ocean Lake System	Silica	OB & KF	Clear water
Site 4B	13-Oct-21	21:12	21:27	0:15	650	Ocean Lake System	Silica	OB & KF	Clear water
Site 4C	13-Oct-21	21:30	21:45	0:15	650	Ocean Lake System	Silica	OB & KF	Clear water
Deinozed control	13-Oct-21	17:35	17:42	0:07	1000 mL	Field Blank	Silica	OB & KF	Brand: Equate
SetPond	13-Oct-21	21:46	22:10	0:24	250	Settling pond	Silica	OB & KF	Tea stained water
SetPond	13-Oct-21	22:11	22:36	0:25	300	Settling pond	Silica	OB & KF	Tea stained water
SetPond	13-Oct-21	22:38	23:01	0:23	250	Settling pond	Silica	OB & KF	Tea stained water
Deionized Control	13-Oct-21	17:49	17:59	0:10	1000 mL	Field Blank	Silica	OB & KF	Brand: Equate

Table 3. eDNA Sample YSI Data. 13 October 2021. Goldboro, Nova Scotia.

Site ID	Date	Time	Zone	Easting	Northing	Temperature	Dissolved Oxygen	Conductivity	Salinity	pH	Comments
Site 1	13-Oct-21	14:04:00	20	606989	5008543	12.2	108.30%	332.8	0.21	3.92	Conductivity and DO seem to be off
Site 2	13-Oct-21	15:39:00	20	607091	5006285	15.1	107.80%	329.3	0.2	4.39	Conductivity and DO seem to be off
Site 3	13-Oct-21	15:01:00	20	607383	5005217	16.5	112.70%	274.6	0.16	4.58	Conductivity and DO seem to be off
Site 4	13-Oct-21	12:44:00	20	610956	5011907	14	122.80%	226.7	0.14	4.36	Conductivity and DO seem to be off
SetPond	13-Oct-21	15:49:00	20	606954	5005953	14.2	88.10%	407.9	0.25	5.29	Conductivity and DO seem to be off

DALHOUSIE UNIVERSITY

March 17, 2022

Attention: Melanie MacDonald, MREM
McCallum Environmental Ltd.
2 Bluewater Road, Suite 115
Halifax, NS
Canada B4B 1G7

Environmental DNA Analysis
Job ID: 19-337

Summary

Environmental DNA (eDNA) samples from four sites were examined for Atlantic Salmon (*Salmo salar*) presence with quantitative polymerase chain reaction (qPCR) using a species-specific hydrolysis probe assay targeting the Atlantic Salmon mitochondrial cytochrome oxidase 1 (CO1) gene. Atlantic Salmon was detected at Site 4 but not detected at Sites 1, 2 or 3.

Methods

Samples

Thirteen silica bead preserved Cellulose nitrate filters (12 samples and one field blank) were provided by McCallum Environmental to the Marine Gene Probe Lab (MGPL) at Dalhousie University, Halifax, Canada (Table 1) on January 6, 2022. Samples were cross-referenced against the accompanying chain of custody (COC) document upon receipt. Samples were stored at -20°C until extraction.

Environmental DNA (eDNA) was extracted from filters using a Phenol : Chloroform : Isoamyl alcohol protocol on January 7, 2022. A negative control was included to monitor for laboratory contamination during the extraction process. Extracted eDNAs were stored at -20 °C until processing.

Extractions were conducted in a dedicated clean room to prevent contamination. Regular decontamination of the room with 3% sodium hypochlorite was performed.

Dr. Paul Bentzen, PhD, Professor
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902.494.1105 | FAX: 902.494.3736 | paul.bentzen@dal.ca | DAL.CA

Table 1. Filters for eDNA analysis at the Marine Gene Probe Laboratory, Dalhousie University.

Sample ID	Date sampled	Date filtered and preserved	Filter material	Filter diameter (in)	Filter pore size (µm)	Preservation method	Assay Required
SITE 1A	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 1B	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 1C	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 2A	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 2B	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 2C	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 3A	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 3B	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 3C	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 4A	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 4B	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
SITE 4C	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon
FIELD BLANK 1	10/13/2021	10/13/2021	Cellulose nitrate	1	45	Silica	Atlantic Salmon

qPCR assays

Following extraction of eDNA from filters, hydrolysis probe assays were performed in 10 µl volumes in a Roche LightCycler 480 II qPCR machine. Each reaction included 5 µl PrimeTime Gene Expression Master Mix (IDT, Coralville, Iowa), 0.6 µl 10 µM primers, 0.15 µl 10 µM probe, 1.0 µl eDNA and 3.25 µl ddH_2O. The proprietary primers and probe were designed in-house using IDT's Primer Quest tool (https://www.idtdna.com/pages/tools/primerquest). The probe is double-quenched (both Zen and Iowa Black quench a FAM fluorophore) for maximum sensitivity. Each eDNA extraction was run in three replicates. Cycling conditions were 95 °C 3 min, 50x (95 °C 15 s, 60 °C 1 min) with fluorescence acquisition following each extension step. Negative (water) and positive (genomic Atlantic Salmon DNA) controls were run in triplicate with each assay. For quality assurance, all samples were analyzed a second time using ten-fold diluted eDNA to eliminate the possibility of a PCR inhibitor interfering with PCR amplification.

The hydrolysis probe assay is used to determine presence of Atlantic Salmon in the eDNA sample. When DNA is amplified during PCR, the fluorescence of the reaction increases. The PCR cycle at which fluorescence exceeds background is reported as the crossing threshold (Ct). Any assay with a positive Ct value is defined as positive for Atlantic Salmon presence.

Assays which measured no change in fluorescence (have no Ct value) are considered negative for Atlantic Salmon.

Results

Initial PCRs did not detect Atlantic Salmon in sites 1-3 (Table 2). All Site 4 samples were positive for Atlantic Salmon. To rule-out false-negatives, eDNAs were diluted ten-fold in PCR grade water and re-PCRed. Dilution may improve results if PCR-inhibiting compounds were co-purified with the eDNA during the extraction process. This second assay confirmed the previous results with crossing-threshold (Ct) values ranging from 33 – 35 indicating presence of Atlantic Salmon at Site 4. All positive controls were positive for Atlantic Salmon, and all negative controls were blank.

Table 2. Detection of Atlantic Salmon CO1 gene in eDNA samples using a double-quenched qPCR hydrolysis probe. Detections shown as number of positives over number of PCR replicates performed. Crossing threshold (Ct) value shown for positive detections. Samples tested March 4th, 2022, were diluted 10x. Lab positive was Atlantic Salmon genomic DNA from Miramichi River, New Brunswick.

Sample_ID	Detections	Treatment (2022.02.28)	Ct	Detections	Treatment (2022.03.04)	Ct
SITE 1A	0/3	not diluted		0/3	diluted	
SITE 1B	0/3	not diluted		0/3	diluted	
SITE 1C	0/3	not diluted		0/3	diluted	
SITE 2A	0/3	not diluted		0/3	diluted	
SITE 2B	0/3	not diluted		0/3	diluted	
SITE 2C	0/3	not diluted		0/3	diluted	
SITE 3A	0/3	not diluted		0/3	diluted	
SITE 3B	0/3	not diluted		0/3	diluted	
SITE 3C	0/3	not diluted		0/3	diluted	
SITE 4A	3/3	not diluted	49-53	2/3	diluted	35-36
SITE 4B	3/3	not diluted	49-55	1/3	diluted	35.5
SITE 4C	3/3	not diluted	36-40	1/3	diluted	35
Field Blank	0/3			0/3		
SITE 4A	N/A			0/3	not diluted	
SITE 4B	N/A			2/3	not diluted	40-45
SITE 4C	N/A			3/3	not diluted	45
Lab-POS	22/24		17-23	3/3		22
Lab-Neg-Water	0/3			0/3		

Dr. Paul Bentzen
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Attention: **Melanie MacDonald**
McCallum Environmental Ltd
2 Bluewater Road, Suite 115
Halifax, NS
Canada B4B 1G7

Client Project #: **20-366**
Site Location: **Goldboro Gold Mine**
C.O.C. #: **20211028**
Quote #: **N/A**
PO#: **N/A**

Report Date: **2021/11/02**
Report #: **ME20211102**
Version: **1**

ENVIRONMENTAL DNA - CERTIFICATE OF ANALYSIS

BV JOB #: **E20211028**
Received: **2021/10/28, 11:05 AM**

Sample Type: Cellulose Nitrate (CN) filter, preserved in silica
Samples Received: 4

Analyses (eDNA Isolation - Species)	Test Requested	Test Performed	Date eDNA Extracted	Date Analyzed IntegritE-DNA™	Date Analyzed Target Species	Laboratory Method	Analytical Method (qPCR Primer/Probe set)
eDNA Isolation and IntegritE-DNA™	4	4	2021/10/28	2021/10/29	N/A	GUE SOP-00056	ePlant5
General Fish assay (eFish)	4	4	N/A	N/A	2021/10/29	GUE SOP-00056	eFish1

Remarks:

Bureau Veritas Laboratories (Animal DNA Department, DNA Services) is accredited to ISO17025:2017 for eDNA testing.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by industry professionals using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas Laboratories in writing). All data has met quality control and method performance criteria unless otherwise noted.

Bureau Veritas Laboratories' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas Laboratories has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas Laboratories unless otherwise agreed in writing. Bureau Veritas Laboratories is not responsible for the accuracy or any data impacts that result from the information provided by the customer or their agent.

Results relate to supplied samples tested. This Certificate should not be reproduced except in full, without the written approval of the laboratory.

eDNA tests are used to confirm presence of eDNA in samples for the targeted species / species groups.

Collected eDNA samples will contain eDNA at various stages of degradation, being subject to environmental forces that breakdown DNA, including microbial activity, ultraviolet radiation, heat, hydrolysis, and enzymatic activity. eDNA is first evaluated for eDNA quality and presence of qPCR assay inhibitors using the IntegritE-DNA™ assay before testing for target species or genera to confirm that the eDNA is of sufficient quality for testing and to identify and address qPCR inhibition (if present) to avoid false negatives.

SAMPLE RETENTION: Samples and DNA extracts generated from the samples will be retained by Bureau Veritas Laboratories for a period of 90 days after which time they will be discarded unless prearrangement has been made by client with Bureau Veritas Laboratories for longer storage.

Attention: **Melanie MacDonald**
McCallum Environmental Ltd
2 Bluewater Road, Suite 115
Halifax, NS
Canada B4B 1G7

Client Project #: **20-366**
Site Location: **Goldboro Gold Mine**
C.O.C. #: **20211028**
Quote #: **N/A**
PO#: **N/A**

Report Date: **2021/11/02**
Report #: **ME20211102**
Version: **1**

ENVIRONMENTAL DNA - CERTIFICATE OF ANALYSIS

BV JOB #: **E20211028**
Received: **2021/10/28, 11:05 AM**

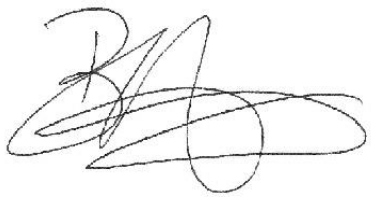
Methodology for Sample Analysis

Samples received to the laboratory are entered into the Laboratory Information Management System (LIMS) upon receipt. Samples were inspected and assessed for amount of silica beads, silica bead saturation level, coin envelope condition and number of coin envelopes in each bag. Samples were stored in freezer until processing in the laboratory. Sample analysis is completed within 10 or 15 business days (as indicated by the client on the COC) following receipt of samples by the testing laboratory.

eDNA isolation is completed using the DNeasy Blood & Tissue Kit™ (QIAGEN). A negative control is included as a blank filter sample with each batch of eDNA isolation to monitor for potential laboratory contamination during the eDNA isolation process.

Following eDNA isolation (150µL) from a quarter of filter, the IntegritE-DNA™ assay[1] is used to avoid the potential of a false negative (Type II error) during target species or genera testing. The IntegritE-DNA™ assay evaluates the integrity of eDNA for suitability for qPCR and for presence of qPCR inhibitors which may reduce the effectiveness of the qPCR assay for target species or genera. This assay evaluates the quality of eDNA to assess whether it is amplifiable using a qPCR assay that targets the chloroplast genome derived from plants/algae that are ubiquitously found in fresh water systems. Four technical replicates per eDNA sample, four technical replicates of negative control (Ultrapure water), and two technical replicates of positive control are used for the IntegritE-DNA™ assay. The cut-off Ct (qPCR cycle threshold) value for the IntegritE-DNA™ assay is 27 due to inhibition. If the IntegritE-DNA™ assay produces a positive detection frequency of ≥ 2 of the 4 technical replicates, this indicates that the eDNA for the target taxa is likely to be of sufficient quality to be detected (if present) with the target assay. If the IntegritE-DNA™ assay produces a positive detection frequency < 2 of the 4 technical replicates (eDNA is degraded or qPCR inhibitors are present), then sample cleanup is completed using the OneStep PCR Inhibitor Removal Kit™ (ZYMO Research) to remove potential qPCR assay inhibitors from the isolated eDNA. Subsequent to inhibitor removal, the IntegritE-DNA™ assay is repeated to re-assess whether the eDNA is of sufficient quality for qPCR. If a sample fails at the IntegritE-DNA™ assay (Ct Value over 30) for the second time the client will be informed that the quality of the sample is insufficient for the qPCR assay. eDNA indicator (IntegritE-DNA™) in the sample suggests that degradation has taken place and therefore the target species assay may be ineffective. Once a sample passes the IntegritE-DNA™ assay, then the target species or genera assay is performed. Eight technical replicates per eDNA sample, eight technical replicates of the negative control (Ultrapure water), and two technical replicates of positive control (total DNA or synthetic DNA) are used for the target species or genera assay to assess the detection or non-detection of DNA of the target species or genera. The cut-off Ct value for target species assay is 50.

[1] Hobbs J, Round JM, Allison MJ, Helbing CC (2019) Expansion of the known distribution of the coastal tailed frog, *Ascaphus truei* , in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849.



BECKY HENDERSON
Senior Customer Service Representative, Bureau Veritas Laboratories, DNA Services
Email: Becky.Henderson@bvlabs.com
Phone #: (519) 836 2400 Ext. 7067714

Please direct all questions regarding this Certificate of Analysis to your Customer Service Representative above.
==========
For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages: 2

BV JOB #: E20211028
Report Date: 2021/11/02
Report #: ME20211102

Client Name: McCallum Environmental Ltd
Client Project #: 20-366
Site Location: Goldboro Gold Mine
Sampler Initials: KF

RESULTS - General Fish assay (eFish)

Client Sample ID	BV Case ID	Sampling Date	Preservation Type	COC Number	IntegritE-DNA™ Positive detection (Ct≤27)[1]	QC Batch	Cleanup required	IntegritE-DNA™ Positive detection (Ct≤30)[1] after cleanup	QC Batch	Analytical Method (qPCR Primer/Probe set)	Target Species eDNA Positive detection (Ct≤50)[2]	QC Batch
SetPond A	ME20210061	2021/10/13	Silica	20211028	0/4[3]	211029Q3	Yes[3]	4/4	211029Q4	eFish1[5]	8/8	211029Q5
SetPond B	ME20210062	2021/10/13	Silica	20211028	0/4[3]	211029Q3	Yes[3]	4/4	211029Q4	eFish1	8/8	211029Q5
SetPond C	ME20210063	2021/10/13	Silica	20211028	0/4[3]	211029Q3	Yes[3]	4/4	211029Q4	eFish1	8/8	211029Q5
Field Blank 2	ME20210064	2021/10/13	Silica	20211028	0/4[4]	211029Q3	No	N/A	N/A	eFish1	0/8	211029Q5

[1] **IntegritE-DNA™ Assay:** Four technical replicates were assayed for each eDNA sample. The cut-off Ct value for IntegritE-DNA™ assay was 27 and 30 after clean-up. Results are reported as the number of positive detections (n) out of a total of 4 technical replicates, n/4.

[2] **Target Species Assay:** Eight technical replicates were assayed per eDNA sample. The cut-off Ct value for target species assay was 50. Results are reported as the number of positive detections (n) out of a total of 8 technical replicates, n/8.

[3] The IntegritE-DNA™ assay failed, and cleanup is required.

[4] The IntegritE-DNA™ assay failed, and cleanup is not required for the field blank sample. The eFish1 assay was tested to confirm no Fish DNA contamination.

[5] eFish1: qPCR primer/probe assay to assess the presence of Fish species eDNA (confirmed to detect several fish including 18 species; **Sockeye Salmon** (*Oncorhynchus nerka*), **Pink Salmon** (*Oncorhynchus gorbuscha*), **Chum Salmon** (*Oncorhynchus keta*), **Arctic Grayling** (*Thymallus arcticus*), **Cutthroat Trout** (*Oncorhynchus clarkii*), **Rainbow Trout** (*Oncorhynchus mykiss*), **Chinook Salmon** (*Oncorhynchus tshawytscha*), **Coho Salmon** (*Oncorhynchus kisutch*), **Atlantic Salmon** (*Salmo salar*), **Dolly Varden** (*Salvelinus malma*), **Round Whitefish** (*Prosopium cylindraceum*), **Slimy Sculpin** (*Cottus cognatus*), **American Eel** (*Anguilla rostrata*), **Northern Pike** (*Esox lucius*), **Smallmouth Bass** (*Micropterus dolomieu*), **Largemouth Bass** (*Micropterus salmoides*), **Bull Trout** (*Salvelinus confluentus*), **Eulachon** (*Thaleichthys pacificus*)). This assay was designed to non-specifically detect the presence of any fish species. eFish may detect DNA from species not listed in the eFish Technical Bulletin. It is important to note that in keeping the eDNA assay design broad to detect the presence of any fish species it has been demonstrated to also detect presence of some amphibian species.

GENERAL COMMENTS

* eDNA is extracted (150 µL) from a quarter of filter, and 2 µL is used as a template for each technical replicate.
* Based on recent experimentation we have observed that the eFish1 assay may detect some amphibian species. Please see the **Fish Species Assay Validation Information** for details.
* Brook trout (*Salvelinus fontinalis*) and Yellow perch (*Perca flavescens*) genomic DNA can be detected by eFish1 assay. Fin tissue samples were submitted to BV lab (Guelph) by Melanie MacDonald.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

			eDNA Isolation Negative Control[1]		qPCR Positive Controls[2]		qPCR Negative Controls[3]	
QC Batch	Parameter	Date	Detection at: Ct 30 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail	Detection at: Ct 30 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail	Detection at: Ct 30 (IntegritE-DNA™) Ct 50 (other assays)	Pass/Fail
211029Q3	IntegritE-DNA	2021/10/29	0 of 4 technical replicates	Pass	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211029Q4	IntegritE-DNA	2021/10/29	eDNA Isolation Negative Control is assessed using IntegritE-DNA only once for each extraction batch.	N/A	2 of 2 technical replicates	Pass	0 of 4 technical replicates	Pass
211029Q5	eFish1	2021/10/29		N/A	2 of 2 technical replicates	Pass	0 of 8 technical replicates	Pass

[1] **eDNA Isolation Negative Control:** Blank filters were included for each batch of eDNA extraction to monitor for laboratory contamination during eDNA isolation. eDNA Isolation Negative Control is assessed using IntegritE-DNA™ only. QC results show no eDNA was isolated from the negative control, therefore there was no indication of sample contamination during handling. Acceptance criteria: 0 of 4 technical replicates

[2] **qPCR Positive Controls:** Two technical replicates of isolated eDNA from freshwater sample were used as positive controls for IntegritE-DNA™. Two technical replicates of total DNA or synthetic DNA from the target species were used as positive controls for eDNA assays. Results show that 100% of the technical replicates amplified the positive control eDNA as expected, therefore an observation of negative result in eDNA samples is not related to the qPCR performance. Acceptance criteria: 2 of 2 technical replicates

[3] **qPCR Negative Controls (Ultrapure water):** Four technical replicates for IntegritE-DNA™ and eight technical replicates for target species or genera were used to monitor for laboratory contamination. Results show that 0% of the technical replicates in the negative controls had amplified eDNA, indicating no contamination was detected. Acceptance criteria: 0 of 4 technical replicates for IntegritE-DNA™, and 0 of 8 technical replicates for other assays.

BV JOB #: E20211028
Report Date: 2021/11/02
Report #: ME20211102

Client Name: McCallum Environmental Ltd
Client Project #: 20-366
Site Location: Goldboro Gold Mine
Sampler Initials: KF

LABORATORY RESULTS VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Reporter: ALI MIRABZADEH, M.Sc.
Scientific Specialist, Bureau Veritas Laboratories, DNA Services

==========

Reviewer: HEATHER ALLEN, M.Sc.
Supervisor, Bureau Veritas Laboratories, DNA Services

==========

Fish Species Assay Validation Information

eDNA assay Validation

All eDNA assays are validated through a rigorous multi-step evaluation protocol that includes tests of DNA target specificity and amplification sensitivity. All eDNA tests available at Bureau Veritas Laboratories have been validated for performance using interlaboratory verification.

General eDNA Assay Information

Target Species: Various Fish Species
Species Code: te-Fish
eDNA qPCR Tool: eFish1
eDNA qPCR Format: TaqMan
Gene Target: MT-RNR1
Published in: 5

eDNA Assay Sensitivity Test using gBlocks™ synthetic DNA

LOD **0.9** 95% CI **0.7-1.5** Copies LOQ **3.4** 95% CI **2.5-5.6** Copies
LOB **0** hits/8

Binomial-Poisson model for 8 technical replicates
Determined using eLowQuant R code[4].

eDNA Assay Specificity Test Information

Each qPCR reaction in the specificity assay contained 10 picograms of voucher target gDNA (n=25 technical replicates)

Species	Common Name (Species)	Detection	Specimens	Sample Sources/Locations
am-LICA	North American bullfrog (*Lithobates (Rana) catesbeiana*)	No	1	British Columbia
ma-HOSA	Human (*Homo Sapiens*)	No	1	Netherlands
te-ANRO	American Eel (*Anguilla rostrata*)	Yes	1	Prince Edward Island
te-COCO	Slimy Sculpin (*Cottus cognatus*)	Yes	1	Yukon
te-ESLU	Northern Pike (*Esox lucius*)	Yes	1	British Columbia
te-GAAC	Three-spined stickleback (*Gasterosteus aculeatus*)	Yes	2	British Columbia
te-MIDO	Smallmouth Bass (*Micropterus dolomieu*)	Yes*	1	British Columbia
te-MISA	Largemouth Bass (*Micropterus salmoides*)	Yes	1	British Columbia
te-ONCL	Cutthroat Trout (*Oncorhynchus clarkii*)	Yes	2	Alberta and British Columbia
te-ONGO	Pink Salmon (*Oncorhynchus gorbuscha*)	Yes	1	British Columbia
te-ONKE	Chum Salmon (*Oncorhynchus keta*)	Yes	1	British Columbia
te-ONKI	Coho Salmon (*Oncorhynchus kisutch*)	Yes	1	British Columbia
te-ONMY	Rainbow Trout (*Oncorhynchus mykiss*)	Yes	1	Alberta and British Columbia
te-ONNE	Sockeye Salmon (*Oncorhynchus nerka*)	Yes	1	British Columbia
te-ONTS	Chinook Salmon (*Oncorhynchus tshawytscha*)	Yes	1	British Columbia
te-PRCY	Round Whitefish (*Prosopium cylindraceum*)	Yes	1	Alberta
te-SACO	Bull Trout (*Salvelinus confluentus*)	Yes	1	British Columbia
te-SAMA	Dolly Varden (*Salvelinus malma*)	Yes	1	British Columbia
te-SASA	Atlantic Salmon (*Salmo salar*)	Yes	1	Nova Scotia
te-THAR	Arctic grayling (*Thymallus arcticus*)	Yes	1	Alberta
te-THPA	Eulachon (*Thaleichthys pacificus*)	Yes*	1	British Columbia

Each qPCR reaction in the specificity assay contained 10 picograms of voucher target gDNA (n=2 technical replicates)

Species	Common Name (Species)	Detection	Specimens	Sample Sources/Locations
am-AMMA	Long toed salamander (*Ambystoma macrodactylum*)	Yes**	1	British Columbia
am-AMMV	Eastern tiger salamander (*Ambystoma mavortium*)	No	1	British Columbia
am-AMTI	Barred tiger salamander (*Ambystoma tigrinum*)	No	1	British Columbia
am-ANBO	Western toad (*Anaxyrus (Bufo) boreas*)	No	1	British Columbia
am-ANVA	Wandering salamander (*Aneides vagrans*)	No	1	British Columbia
am-ASMO	Rocky Mountain tailed frog (*Ascaphus montanus*)	Yes**	1	British Columbia
am-ASTR	Pacific (coastal) tailed frog (*Ascaphus truei*)	Yes**	1	British Columbia
am-ENES	Monterey ensatina (*Ensatina eschscholtzii*)	No	1	British Columbia
am-LICL	Green frog (*Lithobates (Rana) clamitans*)	No	1	British Columbia
am-LIPI	Northern leopard frog (*Lithobates (Rana) pipiens*)	No	1	Alberta
am-LISY	Wood frog (*Lithobates (Rana) sylvaticus*)	No	1	British Columbia
am-PSMA	Boreal chorus frog (*Pseudacris maculata*)	No	1	British Columbia
am-RAAU	Northern red-legged frog (*Rana aurora*)	No	1	British Columbia
am-RACA	Cascades frog (*Rana cascadae*)	No	1	British Columbia
am-RALU	Columbia spotted frog (*Rana luteiventris*)	No	1	British Columbia
am-RAPR	Oregon spotted frog (*Rana pretiosa*)	No	1	British Columbia
am-SPIN	Great basin spadefoot toad (*Spea (Scaphiopus) intermontana*)	Yes**	1	British Columbia
am-TAGR	Rough-skinned newt (*Taricha granulosa*)	No	1	British Columbia
am-XELA	African clawed frog (*Xenopus laevis*)	No	1	South Africa
ma-SOBE	Pacific water/marsh shrew (*Sorex bendirii*)	No	1	British Columbia
ma-SOTR	Trowbridge's shrew (*Sorex trowbridgii*)	No	1	British Columbia
mo-COFL	Asian clam (*Corbicula fluminea*)	No	1	Ontario
mo-DRBU	Quagga mussels (*Dreissena bugensis*)	No	1	Ontario
mo-DRPO	Zebra mussels (*Dreissena polymorpha*)	No	1	Ontario

*This tool weakly detects Smallmouth Bass and Eulachon DNA
**This tool may detect Long-toed Salamander, Rocky Mountain Tailed Frog, Coastal Tailed Frog, and Great Basin Spadefoot DNA if present

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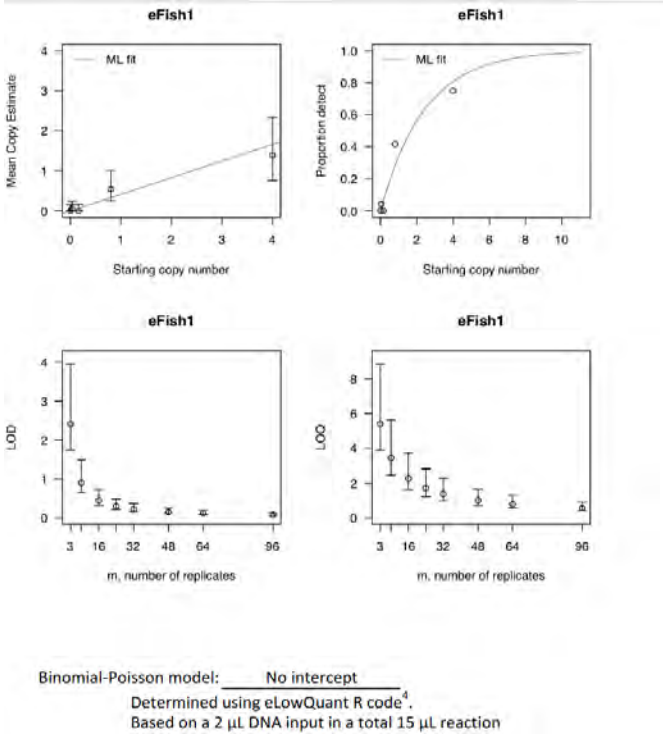
BV JOB #: E20211028
Report Date: 2021/11/02
Report #: ME20211102

Client Name: McCallum Environmental Ltd
Client Project #: 20-366
Site Location: Goldboro Gold Mine
Sampler Initials: KF

eDNA Assay Sensitivity Test Details using gBlocks™ synthetic DNA



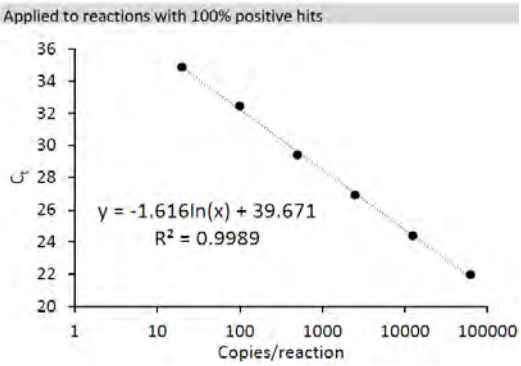
Binomial-Poisson model: No intercept
Determined using eLowQuant R code[4].
Based on a 2 µL DNA input in a total 15 µL reaction

From 8 Technical Replicates

# Detects	# Copies	SE
0	0	0
1	0.07	0.07
2	0.15	0.11
3	0.24	0.15
4	0.36	0.2
5	0.51	0.26
6	0.72	0.35
7	1.08	0.53

Determined using eLowQuant R code[4].

Applied to reactions with 100% positive hits



Field Sample Validation

Sample Type	Known presence	# Samples	Detected	Location
Water	Y	3	Y	Nebraska, United States of America
Water	Y	80	Y	British Columbia
Water	Y	36	Y	Alberta

References

1. Hobbs, J, Adams, IT, Round, JM, Goldberg, CS, Allison, MJ, Bergman, LC, Mirabzadeh, A, Allen, H, Helbing, CC (2020) Revising the range of Rocky Mountain tailed frog, Ascaphus montanus , in British Columbia, Canada, using environmental DNA methods. Environmental DNA. 2020; 2: 350-361. https://doi.org/10.1002/edn3.82
2. Hobbs, J, Round, JM, Allison, MJ, Helbing, CC (2019) Expansion of the known distribution of the coastal tailed frog, Ascaphus truei , in British Columbia, Canada, using robust eDNA detection methods. PLOS ONE 14(3): e0213849. https://doi.org/10.1371/journal.pone.0213849
3. Langlois, VS, Allison, MJ, Bergman, LC, To, TA, and Helbing, CC (2020) The need for robust qPCR-based eDNA detection assays in environmental monitoring and risk assessments. Environmental DNA, 3: 519-527. doi: 10.1002/edn3.164
4. Lesperance, M, Allison, MJ, Bergman, LC, Hocking, MD, and Helbing, CC (2021) A statistical model for calibration and computation of detection and quantification limits for low copy number environmental DNA samples. Environmental DNA, 00: 1-12. doi: 10.1002/edn3.220
5. Klymus, KE, Merkes, CM, Allison, MJ, Goldberg, CS, Helbing, CC, Hunter, ME, Jackson, CA, Lance, RF, Mangan, AM, Monroe, EM, Piaggio, AJ, Stokdyk, JP, Wilson, CC, and Richter, CA (2020) Reporting the limits of detection and quantification for environmental DNA assays Environmental DNA, 2(3), 271–282 doi: 10.1002/edn3.29

Abbreviations

95% CI	95% Confidence interval
eDNA	Environmental DNA
gDNA	Total genomic DNA extracted from voucher specimen
LOB	Limit of blank
LOD	Limit of detection
LOQ	Limit of quantification
MT-RNR1	Mitochondrially Encoded 12S RNA
NTC	qPCR no template control
qPCR	Quantitative real-time polymerase chain reaction
SE	Standard error

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BV JOB #: E20211028
Report Date: 2021/11/02
Report #: ME20211102

Client Name: McCallum Environmental Ltd
Client Project #: 20-366
Site Location: Goldboro Gold Mine
Sampler Initials: KF

Bureau Laboratories
GUE FCD-00441/7
CHAIN OF CUSTODY RECORD

From Canada, send to:
Bureau Veritas Laboratories, DNA Services
335 Laird Rd #2
Guelph, ON N1G 4P7
eDNA@bvlabs.com

From USA, send to:
Bureau Veritas Laboratories
240 Portage Rd
Po Box 670, PMB 19
Lewiston NY 149092-1604

ENVIRONMENTAL DNA (eDNA) CHAIN OF CUSTODY RECORD

Page 1 of 1

COC# 20211028

«An incomplete or incorrect form may lead to delays in testing»

1 Invoice Information (Required)		2 Report Information (if differs from invoice)		3 Project Information (where applicable)		4 Turnaround Time (TAT) (Required)	
Company Name:	McCallum Environmental Ltd	Company Name:	McCallum Environmental Ltd.	Quotation #:		Regular TAT (Most analyses)	
Contact Name:	Olena Kharytonova	Contact Name:	Melanie MacDonald	P.O. #:		☑ 10 business days (Sample # ≤ 50)	
Address:	2 Bluewater Road, Suite 115 Halifax, NS, B4B 1G7	Address:	Same	Project #:	20-366	☐ 15 business days (Sample # > 50)	
Phone:	782-233-1717 Fax:	Phone:	(902) 817-2444 Fax:	Site Location:	Goldboro Gold Mine	From date received	
Email:	olena@mccallumenvironmental.com	Email:	melanie@mccallumenvironmental.com	Sampled By:	Katrina Ferrari	PLEASE REQUEST RUSH FROM CUSTOMER SERVICE	
				Note: Samples are labelled as Site 5, Please use SetPond (replicates A B and C) as the sample ID instead.		Rush TAT (Surcharges will be applied)	
						☐ 5 business days (Sample # ≤ 50)	
						☐ 10 business days (Sample # > 50)	
						From date received	

eDNA ANALYSIS

5 IMPORTANT INFORMATION

- Water samples should be kept cool and filtered as soon as possible (within 24 hours of collection).
- Cellulose Nitrate (CN) filter is recommended to use for eDNA test because of higher eDNA recovery.
- Preserve filter in self-indicating silica beads (2-4 mm diameter) or molecular grade ethanol (95 to 100%) immediately following sample filtration.

6 CLIENT SPECIAL INSTRUCTIONS

1 We have submitted a gDNA sample for Brook Trout - Salvelinus fontinalis - please complete eFish after verifying that it detects S. fontinalis. Contact Melanie MacDonald for more info if required (920-617-2444). Sample collection and filtration data submitted via e-mail to Aron Weir.

Number	7 Sample Identification	8 Date Sampled (YYYY/MM/DD)	9 Date Filtered and Preserved (YYYY/MM/DD)	10 Filter Material	11 Filter Size (Diameter)	12 Filter Pore Size (µm)	13 Preservation Method (Ethanol / Silica)	14 Assays Requested[1]	15 Comments
1	SetPond A	2021-10-13	2021-10-13	CN	as provided by BV	45	Silica	eFish	Settling Pond
2	SetPond B	2021-10-13	2021-10-13	CN	as provided by BV	45	Silica	eFish	Settling Pond
3	SetPond C	2021-10-13	2021-10-13	CN	as provided by BV	42	Silica	eFish	Settling Pond
4	Field Blank 2	2021-10-13	2021-10-13	CN	as provided by BV	45	Silica	eFish	Field Blank 2
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

16 RELINQUISHED BY: (Signature/Print)	17 DATE: (YYYY/MM/DD)	18 TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	CASE RANGE
Katrina Ferrari	2021-10-27	11:30	SN-AM Mich Zealeth	2021/10/28	11:05am	For Lab Use Only

[1] **Available Assays at Bureau Veritas Laboratories: AMMV**[2] (Western tiger salamander), **ANBO** (Western toad), **ASMO** (Rocky mountain tailed frog), **eFish**[3] (General fish assay), **LICA** (North American bullfrog), **ONCL** (Cutthroat trout), **ONKI** (Coho salmon), **ONMY** (Rainbow trout - Steelhead trout), **ONNE** (Sockeye Salmon), **ONTS** (Chinook salmon), **RAAU** (Northern red-legged frog), **RAPR** (Oregon spotted frog), **SOBE** (Pacific water shrew), **THAR** (Arctic grayling), **ASTR** (Pacific (Coastal) tailed frog), **MISA** (Largemouth Bass) and **ESLU** (Northern Pike)

[2] **AMMV** assay also detects *Ambystoma tigrinum* (AMTI) Tiger Salamander.

[3] **eFish** assay can detect DNA from 12 fish species (Sockeye salmon, Pink salmon, Chum salmon, Arctic grayling, Cutthroat trout, Rainbow trout, Chinook salmon, Coho salmon, Atlantic Salmon, Dolly Varden, Round Whitefish and Slimy Sculpin). This assay is designed to be non-specific. It may detect eDNA from other fish species in addition or instead of the specific species listed here, which the assay has been validated for.

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas Laboratories' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at http://www.bvlabs.com/terms-and-conditions and https://www.bvlabs.com/fr/conditions-generales

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fin clip from a yellow Perch for verification with eFish

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APPENDIX F:
BASELINE FISH AND FISH HABITAT: 2017-2019 TECHNICAL REPORT

Baseline Fish and Fish Habitat
2017-2019 Technical Report

Goldboro Gold Project
Location: Goldboro, Nova Scotia
Prepared for: Anaconda Mining
99 Wyse Road, Suite 1100 - 1106
Dartmouth, Nova Scotia, Canada
B3A 4S5

Report Prepared by:

McCallum Environmental Ltd.

McCallum Environmental Ltd.
2 Bluewater Road, Suite 115
Bedford, Nova Scotia
B4B 1G7

Date: June 2020

Executive Summary

Anaconda Mining Inc. is proposing to develop the Goldboro Gold Mine Project in Goldboro, Guysborough County, Nova Scotia. This Baseline Fish and Fish Habitat Technical Report was prepared as background information in support of registering a provincial Environmental Assessment Registration Document with Nova Scotia Environment.

Fish and fish habitat surveys have been completed with the key objectives of facilitating avoidance of fish habitat where practicable, understanding the potential project interactions with fish and fish habitat, and to facilitate regulatory approvals for impacts to fish and fish habitat wherever necessary. This was achieved by completing a review of background desktop resources in combination with field studies to identify potential environmental constraints and sensitivities. This report outlines the methods and results of initial baseline fish and fish habitat characterization conducted by GEMTEC and MEL biologists at waterbodies, wetlands, and linear watercourses identified as being potentially fish bearing throughout the Study Area through 2017-2019.

The baseline fish and fish habitat programs outlined in this report were completed to support a general understanding of fish species and relative abundance within the Study Area. The field programs included fish habitat surveys within field-delineated watercourses, waterbodies, and wetlands, and fish collection through electrofishing and trapping. Water quality measurements were recorded in-situ during fish and fish habitat surveys.

Temperatures recorded in aquatic features in June during baseline surveys ranged from 7.5^{0}C to 25.1 ^{0}C. Overall, the aquatic features within the Study Area are characterized by moderately acidic conditions, with all but one pH level recorded within the SA falling below recommended CCME guidelines for freshwater habitat (CCME, 1999). Most DO levels recorded within Study Area largely fell within the CCME ranges suitable for both cold and warm water fishes (CCME, 1999).

Electrofishing and trapping surveys confirmed the presence of five fish species in the Study Area that would be expected within the secondary watershed: American eel, banded killifish, brook trout, golden shiner, and yellow perch. American eel and brook trout were most frequently captured within linear watercourses, while yellow perch was most abundant in Gold Brook Lake. While not identified within the through dedicated fishing surveys, blacknose shiner and ninespine stickleback are expected to be present within the Study Area based on fish studies conducted for the Goldboro LNG project (AMEC, 2006).

Fish habitat characterizations were conducted for each linear watercourse, waterbody, and wetland within the Study Area. Fish habitat has been confirmed or presumed present within all 17 linear watercourses and three waterbodies identified within the Study Area. Four wetlands within the Study Area are accessible to fish.

Table of Contents

List of Tables

List of Acronyms

ACCDC	Atlantic Canadian Conservation Data Centre
CCME	Canadian Council of Ministers of the Environment
CM	Centimeter
CM/S	centimeter per second
CON	Conductivity
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
DO	Dissolved oxygen
EARD	Environmental Assessment Registration Document
FWAL	Protection of Aquatic Life for Freshwater Guidelines
GPS	Global Positioning System
HA	Hectares
HADD	Harmful Alteration, Disruption, or Destruction
KM	Kilometer
KM^2	Square kilometer
M	Meter
M/S	Meter per second
M^2	Square meter
MEL	McCallum Environmental Ltd.
NS	Nova Scotia
NSDFA	Nova Scotia Department of Fisheries and Aquaculture
NSE	Nova Scotia Environment
NSESA	Nova Scotia Endangered Species Act
NSTDB	Nova Scotia Topographic Database
SA	Study Area
SAR	Species at Risk
SARA	Species at Risk Act
SOCI	Species of Conservation Interest
WC	Watercourse
WL	Wetland
YOY	Young of year

List of Scientific Names

American eel	*Anguilla rostrata*
Atlantic salmon	*Salmo salar*
banded killifish	*Fundulus diaphanus*
blacknose shiner	*Notropis heterolepis*
brook trout	*Salvelinus fontinalis*
brown bullhead	*Ameiurus nebulosus*
golden shiner	*Notemigonus crysoleucas*
ninespine stickleback	*Pungitius pungitius*
white sucker	*Catostomus commersonii*
yellow perch	*Perca flavescens*

1.0 INTRODUCTION

The Goldboro Gold Mine Project ("The Project") put forward by Anaconda Mining Inc. (Anaconda) proposes to develop a mine and ore processing facility at the Project Site, in Goldboro, Guysborough County, Nova Scotia. The Project is comprised of the West Goldbrook, Boston-Richardson, and East Goldbrook mineralized gold systems.

In support of registering a provincial Environmental Assessment Registration Document (EARD) with Nova Scotia Environment (NSE), McCallum Environmental Ltd (MEL) has been retained to complete fish and fish habitat surveys. Fish and fish habitat surveys have been completed with the key objectives of facilitating avoidance of fish habitat where practicable, understanding the potential project interactions with fish and fish habitat, and to facilitate regulatory approvals for impacts to fish and fish habitat wherever necessary. This was achieved by completing a review of background desktop resources in combination with field studies to identify potential environmental constraints and sensitivities. This report outlines the methods and results of baseline desktop and field evaluations completed from 2017-2019.

1.1 Regulatory Context

Throughout this report, fish habitat is described in the context of watercourses and wetlands. The NS *Environment Act* (2006) defines a watercourse as:

(i) the bed and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and,

(ii) all groundwater.

In addition to the above-mentioned definition and in accordance with the Guide to Altering Watercourses (NSE, 2015), the watercourse parameters listed in this documented were used to aid in determining the presence of a watercourse. This guide indicates that at least two of the following characteristics were needed to be present in order for a water feature to be determined a watercourse:

- Presence of mineral soil channel;
- Sand, gravel and/or cobbles evident in a continuous pattern over a continuous length with no vegetation;
- Indication of water flowing in a path sufficient to erode a channel/pathway;
- Presence of pools, riffles and/or rapids; and
- Presence of aquatic animals and plants.

The *Fisheries Act* (1985) defines fish as "(a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals;", and fish habitat as "waters frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas". Preferred habitat varies amongst fish species. Each species can be found in a range of habitat types throughout the year and throughout different life stages. The *Fisheries Act* also states that "no person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat" (Section 35(1)).

The scoping and assessment of the various baseline fish and fish habitat programs presented in this report were completed to support a general understanding of fish species and relative abundance within the Study Area under the previous version of the *Fisheries Act* (up to August 27, 2019).

Under the current *Fisheries Act*, activities which result in the harmful alteration, disruption or destruction (HADD) of fish habitat are prohibited. Permission may be granted to HADD of fish habitat under Section 35(2) of the *Act.* In anticipation of potential HADD of fish habitat as a result of the Project, a comprehensive fish and fish habitat program was conducted in 2020, the results of which are presented in a separate, updated technical report (MEL, 2021).

In Nova Scotia, Wetlands are protected under the *Environment Act* and the Wetland Conservation Policy. The *Environment Act* defines a wetland as:

> *Land referred to as a marsh, swamp, fen, or bog that either periodically or permanently has water table at, near, or above the land surface or that is saturated with water, and sustains aquatic processes as indicated by the presence of poorly drained soils, hydrophytic vegetation, and biological activities adapted to wet conditions.*

1.2 Study Area

The Study Area (SA) for the proposed Goldboro Gold Project is located in Goldboro, Guysborough County (Figure 1, Appendix A). The Project is located at Gold Brook Lake and Gold Brook, approximately 2.5 km northeast of Goldboro on the Atlantic coastline (Figure 1, Appendix A). Since the completion of the 2017-2019 baseline field programs, the SA for the Project has been expanded as infrastructure layouts are currently being revised. A new, expanded SA based on the potential locations of Project components is presented in an updated technical report (MEL, 2021). All aquatic features discussed in this report are considered relevant to the micro-siting of infrastructure and to the discussion of direct and indirect impacts as a result of the Project.

The SA is located on approximately 295 ha of both crown and private property. The Project is centered at coordinates 5007200 mN, 606900 mE (UTM Zone 20 NAD83). In general, the SA is primarily disturbed by historical and current mining activities and timber harvesting. Soils are generally nutrient poor and acidic, supporting softwood stand types such as Spruce and Balsam Fir. Herbaceous layers are often dominated by ericaceous shrubs and bryophytes such as Schreber's moss, representing nutrient poor soils. Areas located in the southern portion of the Study Area and in close proximity to Gold Brook generally consist of mature undisturbed conifer dominant stands.

The SA is found within the New Harbour/Salmon primary watershed (1EQ), and the secondary shoreline direct watershed (1EQ-SD31, herein referred to as the "Gold Brook secondary watershed")(Figure 1, Appendix A). The topography gently slopes towards Gold Brook Lake, and, as the lake empties into the Gold Brook river system, the landscape flattens further into a low-relief valley. Elevation within the SA ranges from 42-91 meters above sea level. The surficial geology of the site is made up of stony till plain originating from a glacial till deposits (Stea, et al., 1992). The SA is underlain by Goldenville Formation bedrock geology (Keppie, 2000).

The Goldboro area was an active and productive mining area from 1893 to 1910. Between 1912 and 1981, intermittent work was conducted on the property, with modern exploration beginning in 1981. Four locations are known to have been used for tailings disposal during historic mining operations, none of

which were contained. Tailings migrated from the streams and wetlands where they were deposited into the downstream receiving environment (Gold Brook) and are likely to present a continuing threat to fisheries resources. Other areas that may be subject to continued effects from past activities include the old mill sites and unidentified waste rock and ore storage sites.

2.0 DESKTOP REVIEW

2.1 Methods

A desktop review for potential fish habitat in surface water features within and in proximity to the SA was completed using the Nova Scotia Topographic Database (Water Features), the NSE Wetlands database, the provincial flow accumulation database, the Nova Scotia Wet Areas Mapping (WAM) database, and all baseline data collected by GEMTEC. A Priority Species List was used to identify priority fish species which may occur in the SA. Information on historic and current fish presence within the SA and surrounding aquatic habitats was collected from the following sources:

- ACCDC Report (Appendix C)
- NSL&F Significant Species and Habitats database
- Fisheries and Oceans Stock Status Reports
- Description of Selected Lake Characteristics and Occurrences of Fish Species in 781 Nova Scotia Lakes (Alexander et al., 1986)
- Freshwater Fish Species Distribution Records (NSDFA, 2019)
- NSDFA Lake Inventory Maps
- Studies completed for the original EA Registration Document (2018)
- Studies conducted for other developments near the Project Area (i.e., Goldboro LNG)

Further to the desktop review of fish habitat and species likely to be found within the SA, MEL completed a literature review of fish species behavior and ecology, to support the conclusions presented in this report. Behavior is primarily based on swimming capabilities and seasonal movement patterns for each species or species assemblage (i.e., forage fish).

In addition to the resources listed above, data to support regional hydrometeorology was obtained by review of Environment and Climate Change Canada (ECCC) real-time hydrometric data graph for St. Mary's River at Stillwater (01EO001).

2.2 Results

2.2.1 *Fish species*

The headwaters of Gold Brook Lake originate from two systems: Oak Hill Lake, located to the north, and the Rocky Lakes, located east of Gold Brook Lake. NS topographic mapping reveals four main tributaries that drain into Gold Brook Lake, which include the outflow watercourses from Oak Hill and Rocky Lakes. Gold Brook Lake discharges to Gold Brook at Gold Brook Road, which then flows in a southeasterly direction to Seal Harbour Lake, and from there through East Brook and West Brook to the Atlantic Ocean at Warringtons Cove. No bathymetry, lake chemistry, or fish species occurrence data was available in public databases for these aquatic features of interest.

A desktop evaluation for potential fish species present within the SA revealed two priority species, Atlantic salmon (Southern Uplands Population) and brook trout, documented within 5 km of the SA by

the ACCDC report. Beyond those identified within 5 km as listed above, priority species identified as having an elevated potential to be located within the SA, based on habitat preferences and broad geographic range, include American eel and pearl dace.

Atlantic salmon are divided into unique populations based on genetic distinction and range. The Southern Uplands Population of Atlantic Salmon has been assessed as endangered by COSEWIC (2010) and is considered imperiled provincially by the ACCDC (ranked S1); this population is not currently protected under SARA or NSESA.

Atlantic salmon are an anadromous species with adults migrating from the ocean to spawn in freshwater rivers, generally in the same river where they were born. Salmon rivers or streams are generally large, clear, and cool, with riverbeds composed of gravel, cobble and boulder substrates (DFO, 2009). The waterbodies and watercourses within the Gold Brook secondary watershed (1EQ-SD31) have not been identified to presently or historically support Southern Upland Atlantic salmon (ASF, 2019), nor are there any documented catches within these systems.

A review of fish collection records from studies conducted in 2004 and 2005 for the Goldboro LNG Project (AMEC, 2006) revealed the following species as having been documented within Gold Brook Lake, its associated tributaries, and Gold Brook:

- yellow perch
- brook trout
- American eel
- blacknose shiner
- banded killifish
- ninespine stickleback

The species known or expected to be present within the SA are described below. The biology and habitat preferences for golden shiner has also been described based on its confirmed presence within the SA through MEL fish collection efforts. To support the understanding of limitations to fish distribution, swimming capabilities are described herein as well. Swimming capabilities of fish is dependent upon abiotic factors such as water depth, flow rate, water temperature, height and length of barriers, and biotic factors such as fish species, length, and life history stage. Swimming capabilities herein will be focused on non-forage fish species of yellow perch, American eel and brook trout, as specific detailed studies of forage fish swimming abilities are limited in availability and specificity.

Yellow Perch

Yellow perch are a schooling, shallow water fish that can adapt to a wide variety of warm or cool habitats. Most yellow perch do not appear to migrate, but some do in patterns which tend to be short and local (Brown et al., 2009). Adults and juveniles are found in large lakes, small ponds, or gentle rivers but are most abundant in clear, highly vegetated lakes (1-10 m depth) that have muck, sand, or gravel bottoms (Brown et al., 2009). They prefer summer temperatures of 21-24°C.

Spawning occurs in the spring, with adults moving to lake shallows or low velocity areas of rivers with moderate vegetation. Within 2 months of emergence, young of year (YOY) perch move to open water (Krieger, Terrell & Nelson, 1983).

Yellow perch are considered provincially secure by the ACCDC (S5). Yellow perch have been documented as a dominant species within Gold Brook Lake and are likely to populate all open water bodies contiguous with Gold Brook Lake, and slow-flowing rivers (e.g. Gold Brook) within the SA.

Generally speaking, of the species listed above, yellow perch are weak swimmers. Yellow perch swimming speed is relatively low, and their performance is strongest when water temperatures are in the range of 20-25˚C (Brown et al., 2009). Meixler et al. (2009) found that neither yellow nor white perch could navigate the smallest barrier they faced (0.3m in height).

Brook Trout

Brook trout are known to inhabit a wide range of cool, freshwater environments, from small headwater streams to large lakes. Water temperature is a critical factor influencing brook trout distribution and production. Though typically not anadromous, brook trout require free passage along streams to move between areas of use, including spawning grounds, overwintering areas, and summer rearing areas.

In Nova Scotia, mature brook trout migrate to spawn in lakes or streams in the fall of the year. Brook trout spawning sites are usually near groundwater upwelling or spring seeps and within a lake or stream with gravel substrate (NSDFA, 2005). Optimal spawning conditions for brook trout include clean substrate 3-8 mm in size in shallow water with limited fines (<5%), and velocities of 25-75 cm/s (Raleigh, 1982).

YOY brook trout require cold water, stable, low velocities and an abundance of in-stream cover. Optimal temperature for juvenile growth is 10-16℃, while cover in the form rubble, vegetation, undercut banks, and woody debris should account for a minimum of 15% of total stream area (Raleigh, 1982). In winter, brook trout aggregate in pools beneath silt-free rocky substrate and close to point sources of groundwater discharge (Raleigh, 1982; Cunjak and Power, 1986). Adult fish use both pools and riffles, with more than 25% in-stream cover being optimal (Raleigh, 1982). Brook trout respond negatively to flashy or hydrologically dynamic systems, and require stable flow for all life stages (Raleigh, 1982).

Brook trout are considered provincially vulnerable by the ACCDC (S3), but have not been assessed by COSEWIC nor are they currently listed under SARA or NSESA. Brook trout are known to be present within the Gold Brook Lake system, with fish captured up to 33 cm in size. Brook trout are relatively strong swimmers, capable of navigating barriers from 4.7-7.7 times their body length. Kondratieff and Myrick (2006) found that in a controlled environment mimicking waterfall conditions with water temperatures at 11˚C, the highest obstacle jumped by 8.6-34 cm brook trout was 73.5 cm, provided plunge pool depth was at least 40 cm. According to Kondratieff and Myrick (2006) “shallow pools severely limited jumping ability, brook trout only being able to jump a maximum of 33.5 cm from a 10-cm pool”.

American Eel

Suitable habitat for eel is varied. As a catadromous species, eel spend the majority of their lives in freshwater, moving to the Sargasso Sea to spawn. Once hatched, American eel larvae drift back to the coast, undergoing several phases of metamorphosis. By the time they reach freshwater, young glass eel have developed pigment and are referred to as elvers (Scott and Crossman, 1973). In freshwater, elvers develop into yellow eels - immature adults and at which point sexual differentiation occurs. As growth

proceeds, yellow eel metamorphose into silver eel, or mature adults that are now physiologically prepared to return to the sea to spawn (COSEWIC, 2012).

American eel are frequently found in watercourses that offer structural complexity and shade in the form of coarse woody debris, rocks, in-stream vegetation for daytime cover, and an available food source of forage fish, invertebrates, molluscs and vegetation. Migrating elvers are bottom dwellers and spend most of their time burrowed or hidden, including directly into soft bottom sediments (Tomie, 2011). In freshwater, yellow eel continue their migration upstream into rivers, streams, and muddy or silt bottomed lakes (Scott and Crossman, 1978). Like elvers, yellow eel are primarily nocturnal, spending most of the day under cover or buried in soft substrates. These soft substrates are particularly important for overwintering, where the eel hibernate by burying themselves into the bottoms of lakes and rivers (Smith and Saunders, 1995; Scott and Scott, 1998). Trautman (1981) also reported that eel partially or completely bury themselves in mud, sand and gravel during the day, emerging at dusk to begin feeding.

American eel have been assessed as threatened by COSEWIC (2012) and are considered provincially imperiled by the ACCDC (S2). American eel are not currently protected under SARA or NSESA. American eel, particularly immature yellow eels, are capable of climbing vertical surfaces, provided they are rough and wet (GOMC, 2007). It has been documented that American eel are not restricted to contiguous watercourses as they possess the ability to traverse over land in wet, low lying grass habitats (MacGregor et al., 2011). Eel can, therefore, navigate across systems which do not even meet the regulatory definition of a watercourse.

Blacknose Shiner

The blacknose shiner prefers clear, vegetated bays and quiet streams, with shallow water and sand or gravel bottoms (Scott and Crossman, 1973). Spawning is thought to occur in spring and summer, though blacknose shiner spawning has been largely undocumented.

Blacknose shiner are considered provincially apparently secure by the ACCDC (S4). Blacknose shiners are likely to populate all open water bodies contiguous with Gold Brook Lake, and slow-flowing streams (e.g. Gold Brook) within the SA.

Golden Shiner

Golden shiner are habitat generalists, primarily found schooling in well vegetated lakes with extensive shallows (Scott and Crossman, 1973). The species can tolerate a wide range of oxygen concentrations and temperatures (Murdy et al., 1997).

Spawning takes place from June to August, when temperatures reach 20°C, during which adhesive eggs are scattered over the substrate, attaching to filamentous algae or other aquatic vegetation (Scott and Crossman, 1973).

Golden shiner are considered provincially apparently secure by the ACCDC (S4). Golden shiner are likely to populate all open water bodies contiguous with Gold Brook Lake, and slow-flowing streams (e.g. Gold Brook) within the SA.

Banded Killifish

Banded killifish are a freshwater habitat generalist found within the quiet waters of lakes, ponds, and sluggish streams, tolerating a broad temperature, salinity, and DO range (COSEWIC, 2014). Adults tend to school in shallow water characterized by sand, gravel, or muddy substrate, with submerged aquatic plants (Scott and Crossman, 1973). Banded killifish are generally not considered strong swimmers, and high velocities are thought to limit the species' movement within a watershed (DFO, 2011). Seasonal movement by the species has not been documented, and it is not considered migratory (COSEWIC, 2014).

Banded killifish spawning has been seldom documented; however, it is thought that aquatic vegetation within quiet shallows is a key component in spawning habitat as an attachment point for externally fertilized eggs (Richardson, 1939).

Banded killifish are considered provincially secure by the ACCDC (S5). They are likely to populate all open water bodies contiguous with Gold Brook Lake, and slow-flowing streams (e.g. Gold Brook) within the SA.

Ninespine Stickleback

Ninespine stickleback are found in both brackish waters and the shallow areas of freshwater lakes and ponds. In rivers and streams, they are generally found in sluggish, cool pools where there is plenty of aquatic vegetation.

Spawning takes place over the summer in fresh water, during which the male constructs a nest off the substrate by binding plant fragments together (Scott and Crossman, 1973). Spawning habitat is primarily characterized by shallow depths, low velocity, dense aquatic vegetation, and mud and silt substrates (McPhail and Lindsey, 1970; Scott and Scott, 1988)

Ninespine stickleback are considered provincially secure by the ACCDC (S5). They are likely to populate all open water bodies contiguous with Gold Brook Lake, and slow-flowing streams (e.g. Gold Brook) within the SA.

2.2.2 *Fish Tissue Analysis*

A literature review was conducted to determine the baseline concentration of mercury in fish tissue from historic mining activity in Seal Harbour. The purpose of this study was to determine the baseline concentrations to support evaluation of potential impacts of the project. Appropriate literature used in this review was recommended by Michael Parsons (Research Scientist, Environmental Geochemistry Natural Resources Canada) via an email correspondence on December 14, 2018.

Surveys on mercury in fish tissue in Seal Harbour Lake and associated tributaries were completed by Dr. Vince P. Palace, Jason LeBlanc, and others who have agreed to allow MEL to use this data. Data provided by Jason LeBlanc, who completed surveys on mercury in fish tissue in Seal Harbour Lake, the lake environment downstream of the SA, was reviewed to determine the baseline concentration of mercury in fish tissue from historic mining activity in near the SA. All samples were collected and analyzed in 2006. Laboratory results from this sampling program are summarized in Table 2.

Table 2-1. Mercury (Hg) Concentrations in Fish Collected from Seal Harbour Lake (LeBlanc and Halfyard, 2010)

Species	Sample Type	Length (cm)	Weight (g)	Hg (mg/kg)*	Length Group	Average Hg/Species & Length Group
golden shiner	whole	10.1	10	0.47	<25	0.53
	whole composite	11.2	13	**0.58**		
white sucker	whole	24	144	0.26	<25	0.26
	whole	29.2	262	0.23	>25	0.28
	whole composite	33.2	386	0.33		
yellow perch	whole composite	9.1	8	**0.53**	<20	0.61
	whole composite	10.7	12	**0.56**		
	whole composite	13.6	27	**0.5**		
	whole	16.2	50	**0.86**		
	fillet composite	21.1	116	0.43	>20	1.30
	fillet	23.6	162	**1.52**		
	whole	23.6	162	**0.9**		
	fillet	25.7	208	**1.67**		
	whole	25.7	208	**1.18**		
	fillet	26.7	244	**1.94**		
	whole	26.7	244	**1.47**		

* Bolded values indicate Hg concentrations above Health Canada consumption guidelines (0.5 mg/kg; Health Canada, 2007).

In aquatic environments, the bioavailable form of mercury known as methyl-mercury (MeHg) is the predominant form of mercury found in fish (Health Canada, 2007). This form of mercury remains in the body of exposed organisms, bioaccumulating as it binds to proteins, which leads to higher mercury levels in older fish (CCME, 2003). With MeHg accumulated through diet, this also leads to biomagnification within the food chain, with predators (piscivorous fish) higher in the food chain having elevated levels of MeHg compared to animals in lower trophic levels (e.g., aquatic invertebrates, forage fish). The Health Canada fish consumption guideline for human consumption for mercury is 0.5 mg/kg (Health Canada, 2007).

Ten of the eleven yellow perch sampled from Seal Harbour Lake (fillet and whole body) had concentrations of total mercury that exceeded the Health Canada fish consumption guideline for human consumption of 0.5 mg/kg. In addition, the average mercury concentration in yellow perch longer than 20 cm was considerably higher (1.30 mg/kg) than those measuring under 20 cm (0.61 mg/kg). This trend corresponds to the bioaccumulation of methylmercury in larger, older fish.

The three white sucker sampled from Seal Harbour Lake did not exceed the Health Canada fish consumption guideline for human consumption. Of all species sampled by Leblanc and Halfyard (2010), white sucker (n=37) along with another omnivorous species, brown bullhead (n=23), exhibited the lowest levels of mercury contamination across all 19 sampled waterbodies in Nova Scotia (mean Hg concentration of 0.23 mg/kg for both species). Tissue analysis on two golden shiner from Seal Harbour Lake resulted in one sample below the Health Canada fish consumption guideline (0.47 mg/kg), and one above (0.58 mg/kg). In the study conducted by LeBlanc and Halfyard (2010), no inferences to mercury concentrations were made in this species due to the very limited sample size.

2.2.3 *Regional Hydrometeorology*

The ECCC St. Mary's River at Stillwater hydrological monitoring station was selected as the most representative regional station for hydrology at the Project, based on proximity and record length (Table 3).

Table 2-2: Average Monthly Discharge (ECCC, 2020)

Description	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Recorded Discharge	m^3/s	50.3	40.8	56.3	88.8	54	24.2	14.7	14.8	17.7	34.6	58	60	42.9
Unit Discharge	L/s/ km^2	37.3	30.2	41.8	65.8	40.1	17.9	10.9	11	13.2	25.8	43.2	44.3	31.8
Runoff[1]	mm	100	73	112	170	107	46	29	29	34	69	111	119	1,002

[1]Runoff calculated using watershed area of 1,350 km^2.

Records from this regional hydrological station indicate that the lowest flows occur during the summer months, which coincide with less precipitation and higher potential evapotranspiration. Regional high flows occur in the late fall through early winter (November and December) and again in the spring (March-April). These data were used to identify seasonal high flows to determine fish passage and develop fish collection protocols for high flow events.

3.0 FIELD EVALUATION

3.1 Methods

Fish and fish habitat field evaluations have been completed in three key stages throughout the continued planning phases of the Project.

1. Baseline data collection for wetlands, watercourses, fish, and fish habitat were completed in 2017 by GEMTEC.
2. A detailed evaluation of the Beaver Pond (WL18) and its outlet watercourse was completed in 2018 by GEMTEC.
3. Further baseline data collection and confirmation of GEMTEC results was completed by MEL in 2018 and 2019.

Field delineated wetlands and watercourses within the SA are shown on Figure 2 (Appendix A)

3.1.1 *2017 GEMTEC Surveys*

3.1.1.1 Physical Habitat Assessment

Delineation and physical descriptions of wetlands and watercourses commenced in 2017 by GEMTEC. Full details related to aquatic habitat assessment methods performed in 2017, including sampling locations, is provided in the 2017 GEMTEC Ecological Baseline Study (Appendix D).

A GEMTEC biologist determined if any encountered aquatic features (flowing or ponded waterbodies) within the SA contained fish habitat and/or had the potential to be fish-bearing. Fish habitat was determined by traversing the waterbody to determine the presence (or seasonal possibility) of:

- Sufficient water depths to accommodate fish;
- Adequate water quality (via field measurements of temperature, dissolved oxygen, conductivity, and pH);
- Nutrient inputs for feeding (i.e., overhanging vegetation, surface water influx, woody debris, etc.); and/or
- Passage from Gold Brook Lake, Gold Brook or any other known fish bearing waterbodies (i.e., vegetation in the stream, deadfall, beaver berm, etc.).

Gold Brook represents a prominent fish habitat within the SA, with potential effects related to changes in water quality and/or quality. As such, a more detailed stream survey was completed along Gold Brook in 2017. Watercourse characterization included the following:

- Visual observation of bank stability, bank erosion and riparian vegetation;
- Visual assessment of the substrate size and embeddedness;
- Measurement of flow; and
- Water width (wetted and bankfull), depth and quality determination (via field measurements of temperature, dissolved oxygen, conductivity, and pH).

The above physical habitat characteristics were assessed along Gold Brook at multiple discrete sample points. The sample points were conducted at 100 m intervals downstream of the culvert outlet at Goldbrook Road (Point 1). In instances where the channel braided, a sample point was collected at each braid along a horizontal transect line and sub-labelled (i.e., Point 7A, Point 7B, Point 7C).

A total of 22 sampling points were recorded at 12 - 100 m intervals along Gold Brook. Survey sampling points are presented on Figure 2 (Appendix A). Temperature, conductivity, dissolved oxygen, and pH were measured at the 22 sites in Gold Brook using a calibrated YSI-556 multi-meter.

3.1.1.2 Fish Collection

The results of the fish habitat characterization exercise were used to guide the scope and methods used in fish collection surveys, based on physical parameters of each watercourse, and fish species expected to inhabit them. Fish collection surveys did not involve quantifying fish populations, or removal of fish from the SA. Furthermore, the surveys did not include obtaining specimen samples for laboratory analysis or ID confirmation. Details related to fish survey methods is provided in the 2017 GEMTEC Ecological Baseline Study (Appendix D).

On June 5th, 2017, electrofishing was conducted by GEMTEC biologists along the length of Gold Brook within the SA. Electrofishing surveys completed by GEMTEC were carried out using an LR-24 Smith-Root backpack electrofisher, powered by a 24-volt battery. Any captured fish were species identified and measured prior to being released unharmed into the same waterbody from which they were recovered. Specific methods related to electrofisher settings, reach setup (open vs. closed), reach extents, or level of electrofishing effort were not provided. Therefore, no direct comparison can be made between GEMTEC and MEL results, based on unknown methodological variables.

3.1.2 *2018 GEMTEC Surveys*

3.1.2.1 Physical Habitat Assessment

In 2018 an aquatic assessment at the Beaver Pond (WL18) and associated outlet (WC8) to Gold Lake was completed by GEMTEC. The SA was visited by a team of GEMTEC biologists between June 5 and June 8, 2018. Full details related to fish habitat assessment of the Beaver Pond and outlet is provided in the appended 2018 GEMTEC report titled "Initial Fish Habitat Assessment of Beaver Pond and its Outflow" (2018 GEMTEC Report; Appendix D).

The field investigation included an assessment of Beaver Pond, its Outflow, and other surface water features (e.g. inflows) with potential of influencing Beaver Pond or its Outflow. The site-specific habitat assessment program was developed by referencing the standard methods outlined in the following reports:

- The Nova Scotia Fish Habitat Assessment Protocol: A Field Methods Manual for the Assessment of Freshwater Fish Habitat;
- Fisheries and Oceans Canada, Standard Methods Guide for the Classification / Quantification of Lacustrine Habitat in Newfoundland and Labrador; and
- DNR / DFO – New Brunswick Stream Habitat Inventory.

The aforementioned documents were used as guidelines to refine a habitat assessment program to the site-specific conditions and the scope of work relative to the proposed mine development.

Flow was measured in the Outflow using a FlowTracker, a portable flow meter. The water flow was measured three times and averaged. Flow measurements were not conducted in Beaver Pond as it is a slow moving, minimally flowing waterbody.

Temperature, dissolved oxygen, conductivity, and pH were measured at six water quality sampling sites throughout the central and eastern portions of the Beaver Pond on June 6, 2018. The sampling sites were selected in various areas of Beaver Pond accessible by boat (i.e., in absence of downed woody debris, snags and sufficient water depth) or accessible from the bank. Nine water quality sites were measured along the Beaver Pond outflow to Gold Brook Lake labelled the Stream Assessment Locations (SA1, SA2, SA3, SA4, SA5, SA6, SA7, SA8, and SA9) are presented on Figure 2 (Appendix A). Using a calibrated YSI-556 multi-meter, water quality readings were taken in the water column at an approximate depth of 10 cm.

3.1.2.2 Fish Collection

From June 5-8, 2018, GEMTEC deployed two minnow traps and a fyke net within the Beaver Pond. The two minnow traps were deployed inside the Beaver Pond for 3 consecutive days and pulled on the fourth day. The two minnow traps were moved to alternate locations within the Beaver Pond after the first two days of fish collection. Minnow traps were baited and checked daily. A fyke net was deployed in the northern portion of the Beaver Pond for three consecutive days and pulled on the fourth day. The fyke net was checked for fish daily. Locations of these traps can be seen in Figure 3 of the 2018 GEMTEC Report (Appendix D), and Figure 2 (Appendix A).

On June 7, 2018, electrofishing was conducted by GEMTEC at the nine stream assessment locations along the outflow of the Beaver Pond (WC8) using a Smith-Root LR-24 Backpack Electrofisher. One pass was made at each of the nine stream assessment locations with the electrofisher. Electrofishing was also conducted along the banks of Beaver Pond; however, the size of the waterbody limited the

effectiveness of the backpack electrofisher. The nine stream assessment locations are shown on Figure 3 of the 2018 GEMTEC Report (Appendix D), and Figure 2 (Appendix A). Any captured fish were species identified and measured prior to being released back into the same waterbody from which they were recovered.

Specific methods related to electrofisher settings, reach setup (open vs. closed), reach extents, or level of electrofishing effort were not provided. Therefore, no direct comparison can be made between GEMTEC and MEL results, based on unknown methodological variables.

3.1.3 *2018-2019 MEL Surveys*

3.1.3.1 Physical Habitat Assessment

Beginning in 2018, the potential for each previously delineated drainage feature, watercourse, and wetland to support fish was re-evaluated across the SA. MEL completed additional watercourse identification and surveys within the SA including confirmation of conditions within WC1-12 and the Beaver Pond. Preliminary "spot-checks" were conducted from November 5 – 12, 2018 to confirm watercourses present and physical habitat conditions in the northwestern portion of the SA (all associated with the Beaver Pond) using criteria the described in Section 1.1 for the identification of regulated watercourses.

Preliminary watercourse and wetland identification and delineation were completed in the eastern portion of the SA from April 1-2, 2019, when on-site conditions were representative of seasonal high flow in accordance with regional hydrometric data (Section 2.2.3). During this time, an upstream portion of WC9 and WC10-13 were delineated, and the outlet of the Beaver Pond (WC8) was revisited. Follow-up fish habitat surveys and fish collection took place on June 3- 6, 2019. Watercourse and wetland identification and delineation were completed in the northeast portion of the SA, WC14-16, and Gold Brook Lake on August 12-13, 2019 (Figure 2, Appendix A).

Preliminary watercourse reaches were determined based on the similarity of physical characteristics. To support fish habitat assessment, linear watercourses were divided into reaches as required based on homogenous sections of the watercourse. The methods to complete habitat characterization were adopted from the Standard Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador (Sooley et al., 1998) and the Adopt-a-Stream manual (NSLC, 2017). Fish habitat potential was determined at each location during field identification/evaluation and collection of physical characteristics of each watercourse/wetland.

Throughout baseline watercourse mapping and fish habitat surveys, an assessment of potential fish passage obstacles was completed. When a potential obstacle was encountered, biologists recorded the type of obstacle, height and length of the obstacle, depth of water, along with an estimate of slope where relevant. The contiguity and spatial relationships of discontinuous pools are described, with the intent of understanding a fish's ability to move and/or jump from one step-pool or isolated pool to another. When discontinuous pools, subterranean flow, or a general lack of surficial flow were observed, biologists walked and characterized the most obvious/highest potential for fish use flow path based on topography and hydrology indicators.

Hydrology indicators are used to identify evidence of flow if an initial assessment occurs during a period of low flow. Some examples of hydrology indicators used include water marks on trees, sediment deposits, drift deposits, algal mats, sparsely vegetated concave surface, water-stained leaves, surface soil cracks, drainage patterns, or moss trim lines. Vegetation communities can provide indication of flow (or absence thereof) as well. The presence of some species provides evidence of flowing water, even if the water level has subsided. These include, but are not limited to, species such as bur-reed (*Sparganium* spp.), royal fern (*Osmunda regalis*), and certain species within the genera *Glyceria, Juncus*, and *Carex*, to name a few. Guidance on vegetation species habits was provided by the Wetland Indicator Plant List (Reed, 1988). Vegetative growth patterns, including growth and species composition of mosses, can provide evidence of water level fluctuations as well.

If a potential barrier is anthropogenic in nature (i.e., improperly installed culverts (hung culvert)), the type of culvert is noted, along with any issues associated with installation that could be remediated to improve passage. The temporal nature of the obstacle is noted as well, recognizing that natural and anthropogenic barriers can change with time (i.e., logjams or beaver dams) or remediation (i.e., culvert installation), while others limit passage seasonally (i.e., ephemeral or intermittent streams), and others are permanent barriers (i.e., some waterfalls). Where a barrier was identified but the temporal nature of it was uncertain or if it was dependent on flow regime, multiple site assessments were conducted to confirm passability of a barrier. Except in extreme circumstances, logjams and beaver dams are not considered barriers to fish passage.

Gold Brook Lake was assessed via visual observation of its banks and submerged edges. A visual assessment was conducted of substrate size and lake edge depth profile, primarily in areas where wetland boundaries converged on the lakeshore. Bathymetric surveys, water and sediment quality surveys, and description of the substrate at depth were not completed by MEL.

Wetlands were assessed for their potential to provide and support fish habitat. Wetlands were originally delineated by GEMTEC in 2017, during which they delineated wetland boundaries, identified wetland characteristics, and assessed the functionality of wetlands within the SA. In 2019, MEL biologists completed additional field surveys to the northeast of previous survey areas. All wetland delineations and functional assessments were completed using accepted standards as described by the Army Corps of Engineers in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (United States Army Corps of Engineers, 2011). During assessments, physical characteristics of open water and/or watercourses within wetlands were noted; this included flow rates, substrate, and in-stream vegetation. Connection to other watercourses and/or lakes was also investigated when open water was identified within wetlands. Open water and watercourses, when present, were determined to be either entrenched or not entrenched within wetlands depending on the conditions of the bed and banks (i.e., were there banks that clearly defined fish access, or could fish leave the channelized portions and enter the wetland, for example, into a flooded fen).

The characterization of fish habitat within watercourses, waterbodies and wetlands within the SA consider all fish species confirmed or potentially present within each aquatic features. Physical characteristics such as water depths, velocities, substrate and flow rates, and features that provide in-stream cover inform the habitat provided for each life stage for the suite of species known or expected within the Study Area. However, this approach to fish habitat characterization is based on physical characteristics of the streams averaged over watercourse reaches, which as defined during the 2018-2019 surveys is a relatively coarse

scale. As such, this method of determining habitat describing habitat quality should be considered as more qualitative than quantitative. Freshwater habitat preferences for fish species were established through a literature review. Habitat requirements for each species confirmed or potentially present within the SA are provided in Section 2.2.1.

3.1.3.2 Fish Collection

Results of physical habitat descriptions completed by GEMTEC and MEL from 2017 through 2019 were reviewed, in conjunction with the projects' infrastructure layout to identify locations and methods for fish collection surveys conducted by MEL in 2019 and 2020. Guidance on site selection and methods selection was provided by "A Review of fish sampling methods commonly used in Canadian freshwater habitats" by Portt, Coker, Ming and Randall (2006). The objective of fish collection within the SA was to identify presence of fish, to understand species assemblage, and determine relative abundance.

Given that the objective of this fish sampling program is to identify the diversity of species present within the SA, multiple gear types were selected to maximize the efficiency in fish collection and to target a wide range of species expected within the SA based on the desktop review. Three key methods were selected using the following considerations and applications:

- Electrofishing is the preferred method for fish collection within the SA. This method provides fewer limitations than other gear types, provided it can be conducted safely and effectively. A backpack electrofisher was selected for fish collection in wadeable streams with appropriate conductivity and flow rates. Ideally electrofishing reaches will be free of safety or navigation hazards such as abundance woody debris, deep pools, unstable substrate, or high flow. When done properly, electrofishing targets all species and sizes of fish.
- Fyke nets have been selected for use in streams ranging from 5-10 m wide, typically less than 1.5 m depth, in flowing systems with adequate depth to submerge the funnel (typically at least 20 cm is required). Fyke nets are also deployed in shallow lentic environments where water is too deep or wide to be safely or effectively electrofished. Fyke nets tend to target larger fish, while juveniles and forage fish may escape through the mesh.
- Eel pots and minnow traps are passive fish collection methods which allow fish into an opening in a rigid metal trap. The mesh size is typically quite small, around 1 cm, with opening sizes ranging from approximately 3 cm on the minnow trap to 10 cm on the eel pot. These sample methods target small and medium sized fishes and can be deployed wherever water depth allows the opening to be submerged (typically at least 15cm). Eel pots target slightly larger fish which may be excluded from the minnow trap; however as a larger trap (approximately 5 feet long), it is typically deployed in larger, deeper water bodies, whereas minnow traps are selected to sample small watercourses where other methods cannot be used.

It is important to recognize that the most effective fish sampling program will employ multiple fish collection methods, to be identified based on physical characteristics of the sample area, fish expected to be present, and the objective of the fish collection program. Furthermore, the application of techniques is restricted seasonally as well. Electrofishing, for example, cannot be completed when water temperatures exceed 22 °C, and permission is typically not granted to electrofish between October 1 and May 31 (special permission may be granted to use passive trapping methods during this time on a case-by-case basis). While electrofishing may be recognized as the most effective gear type, there are particular timeframes and environmental conditions which restrict the ability to use that method. Gill nets were not selected as a sample method to avoid unnecessary death of fish.

3.1.3.2.1 *2019 MEL Electrofishing Surveys*

The 2019 MEL electrofishing surveys were conducted in selected linear watercourses. Electrofishing was conducted within open reaches (i.e., without the use of barrier nets) using a Halltech HT-2000 backpack electrofisher powered by a 24-volt battery. Water quality parameters were measured in-situ using a calibrated YSI Professional Plus Multi-Probe at the time of the assessment. Parameters recorded include dissolved oxygen, water temperature, pH, conductivity, and total dissolved solids.

The certified electrofishing crew leader waded upstream to eliminate the effects of turbidity caused by bottom sediment, while a second crew member walked alongside the operator to net any stunned fish using a D-frame landing net (1/8" mesh). Team members moved from a downstream location to an upstream location, completing the survey after a single pass unless additional passes were deemed necessary based on capture efficiency and visibility. In the handbook titled Salmonid Field Protocols Handbook: Techniques for Assessing Status and Trends in Salmon and Trout Populations, Temple and Pearsons describe the use of single-pass electrofishing without barrier nets and provide a summary of academic reports supporting this method (Johnson et al., 2007). All captured fish were identified to species, measured, and then released back into the watercourse.

For the 2019 MEL surveys, the Electrofishing Site Form (NB Aquatic Resources Data Warehouse, NB Department of Natural Resources and Energy, NB Wildlife Council, 2002, updated 2006) was completed to identify and describe the physical and chemical characteristics of the reach to be sampled. This site description helped the electrofishing crew determine the appropriate settings on the electrofishing unit based on physical parameters of the watercourse, conductivity, and species expected to be present. Survey effort (in electrofishing seconds) was also recorded on the Electrofishing Site Form.

Fisheries and Oceans Canada's Interim Policy for the Use of Backpack Electrofishing Units (2003) was reviewed and followed by all members of the electrofishing crew. This document provides a detailed list of standard equipment, safety, training, and emergency response procedure requirements for electrofishing. Each electrofishing crew consisted of two individuals, one of which (the crew lead) was a qualified person as defined under the DFO Interim Electrofishing Policy. The crew lead is responsible for operating the backpack electrofisher according to their training and the Policy, and for communicating safety policies and electrofishing procedures to the second crew member.

Details of the 2019 electrofishing surveys (MEL) are presented in Table 3-1, and shown on Figure 2 (Appendix A). Sampling reaches were selected based on potential fish presence, accessibility, habitat representation within the watercourse, and safety of personnel.

Table 3-1: MEL 2019 Electrofishing Details

Location	Survey Date	Reach Coordinates (UTM, NAD38)				Survey Effort (s)
		Upstream		Downstream		
		Easting	Northing	Easting	Northing	
WC1 R1	June 3, 2019	606693	5006197	606749	5006072	1041
WC1 R2	June 3, 2019	606757	5006054	606827	5005867	1239

Location	Survey Date	Reach Coordinates (UTM, NAD38)				Survey Effort (s)
		Upstream		Downstream		
		Easting	Northing	Easting	Northing	
WC3 R1	June 3, 2019	606476	5006157	606529	5006053	392
WC3 R2	June 4, 2019	606650	5005940	606911	5005793	1178
WC4	June 5, 2019	606320	5006538	606388	5006531	388
WC7	June 5, 2019	606371	5006592	606404	5006530	201
WC11 R1	June 4, 2019	607779	5006060	607706	5006069	371
WC11 R2	June 5, 2019	607604	5005989	607551	5005861	717
WC14	August 15, 2019	608105	5007357	608016	5007335	484
WC9 R1 & 2	September 30, 2019	607712	5006656	607491	5007040	306

3.1.3.2.2 *2019 MEL Trapping Surveys*

Details of the MEL 2019 trapping results are presented in Table 3-2. Trapping locations were selected based on potential fish presence, habitat representation within the aquatic feature of interest, and safety of personnel. Additionally, trapping was conducted to specifically assess the accessibility of WC9 to fish during seasonal high flow (November – December 2019). High flow trapping rationale and methodology are discussed below in Section 3.1.3.2.3. Fish trap locations are presented in Figure 2 (Appendix A).

Table 3-2: MEL 2019 Fish Trap Details

Trap Set Date	Location	Trap Type	Survey Effort
3 June 2019	WC1	Minnow trap	22 hrs 55 mins
		Minnow trap	22 hrs 55 mins
		Minnow trap	22 hrs 55 mins
3 June 2019	WC 2/3	Minnow trap	17 hrs 54 mins
		Minnow trap	18 hrs 17 mins
		Minnow trap	18 hrs 17 mins
		Eel pot	18 hrs 14 mins
4 June 2019	Beaver Pond	Minnow Trap	20 hrs 45 mins
		Minnow Trap	20 hrs 40 mins
		Minnow Trap	20 hrs 35 mins
		Eel Pot	20 hrs 50 mins
		Fyke Net	20 hrs 40 mins
		Fyke Net	20 hrs 23 mins
4 June 2019	WC11	Minnow trap	17 hrs 17 mins
		Minnow trap	17 hrs 16 mins
		Minnow trap	17 hrs 16 mins
		Eel pot	17 hrs 13 m

Trap Set Date	Location	Trap Type	Survey Effort
5 June 2019	WC9 R1	Minnow trap	17 hrs 27 mins
		Minnow trap	17hrs 24 mins
		Minnow trap	17 hrs 24 mins
		Eel Pot	17 hrs 1 min
14 August 2019	WC14	Minnow trap	17 hrs 20 mins
		Minnow trap	17 hrs 18 mins
		Minnow trap	17 hrs 16 mins
		Eel pot	17 hrs 13 mins
14 August 2019	Gold Brook Lake	Minnow Trap	18 hrs 00 mins
		Minnow Trap	18 hrs 07 mins
		Minnow Trap	17 hrs 37 mins
		Eel Pot	17 hrs 37 mins
		Fyke Net	17 hrs 35 mins
18 September 2019	WC9 R1	Minnow trap	22 hrs, 57 mins
		Minnow trap	22 hrs 52 mins
		Minnow trap	22 hrs, 46 mins
14 November 2019	WC9 R2	Minnow trap	23 hrs, 1 min
		Minnow trap	22 hrs, 54 mins
		Minnow trap	22 hrs, 50 mins
		Minnow trap	22 hrs, 48 mins
	WC9 R1	Minnow trap	22 hrs, 8 mins
		Minnow trap	22 hrs, 6 mins
		Minnow trap	22 hrs 35 mins
		Minnow trap	22 hrs 40 mins
		Minnow trap	22 hrs 45 mins
28 November 2019	WC9 R2	Minnow trap	18 hrs 49 mins
		Minnow trap	18 hrs 48 mins
		Minnow trap	18 hrs 21 mins
		Minnow trap	18 hrs 48 mins
	WC9 R1	Minnow trap	18 hrs 35 mins
		Minnow trap	18 hrs 33 mins
		Minnow trap	18 hrs 48 mins
		Minnow trap	18 hrs 43 mins
		Minnow trap	18 hrs, 39 mins
		Minnow trap	18 hrs 36 mins
9 December 2019	WC9 R2	Minnow trap	21 hrs 46 mins
		Minnow trap	21 hrs 41 mins
		Minnow trap	21 hrs 41 mins
		Minnow trap	21 hrs 37 mins
	WC9 R1	Minnow trap	21 hrs 42 mins

Trap Set Date	Location	Trap Type	Survey Effort
		Minnow trap	21 hrs 41 mins
		Minnow trap	21 hrs 29 mins
		Minnow trap	21 hrs 29 mins
		Minnow trap	21 hrs 28 mins
		Minnow trap	21 hrs 27 mins
18 December 2019	WC9 R2	Minnow trap	23 hrs 17 mins
		Minnow trap	23 hrs 15 mins
		Minnow trap	23 hrs 13 mins
		Minnow trap	23 hrs 10 mins
	WC9 R1	Minnow trap	23 hrs 9 mins
		Minnow trap	23 hrs 6 mins
		Minnow trap	22 hrs 11 mins
		Minnow trap	22 hrs 25 mins
		Minnow trap	22 hrs 22 mins
		Minnow trap	22 hrs 21 mins

3.1.3.2.3 *2019 MEL High Flow Assessments*

3.1.3.2.3.1 Rationale and Regulatory Consultation

During baseline data collection completed in the summer of 2019, a potential barrier to fish passage was identified in WC9 within the proposed footprint of the TMF perimeter berm. WC9 is a first order stream which commences in open fen habitat within wetland 25 (WL25). Near the outlet of WL25, WC9 flows north/northwest through a subterranean section (to be described in further detail below), then into wetland 12 (WL12) before ultimately flowing west into Gold Brook Lake (see Figure 1 for a location overview and Figure 2 for WC9 location, Appendix A).

A meeting with DFO, MEL, GHD and Anaconda Mining was held on September 18, 2019, in which a discussion occurred to confirm the path forward for additional surveys through the fall of 2019. Key components for further evaluation included:

- Seasonal high flow habitat evaluation of the subterranean barrier observed on WC9 to determine potential for fish passage; and,
- Fish collection in WC9 upstream and downstream of the barrier.

A request for an extended fish collection license was submitted to DFO and approved on 17 October 2019 (Licence #357626). This license allowed MEL to complete fish collection via trapping (i.e. minnow traps, fyke nets, and eel pots) at the Goldboro Gold Mine Project from the date of issuance until 31 December 2019. A sampling protocol which outlines survey effort and methods was developed and reviewed in a meeting with DFO on 18 November 2019. Results of the November and December surveys were summarized and presented to DFO on 14 January 2020.

3.1.3.2.3.2 Barrier Assessment and Fish Collection

A subterranean reach was identified within WC9 during initial watercourse identification. It is defined by a lack of surface flow, where a defined watercourse dissipates from its defined channel into below-ground flow. Subterranean reaches lack any surface flow or evidence of a flow path. The subterranean reach was assessed during each round of fish collection surveys, to describe the permanence and condition of that reach as a barrier to fish passage. This was completed using the results of the desktop and field evaluation for fish, to understand what factors would present navigational challenges for those species. Timing of the surveys were determined based on seasonal high flow. Through the review of the hydrometerology data it was determined that fish collection and barrier assessment would be completed on four occasions through November and December 2019, and on two additional occasions in April 2020 (discussed in the updated technical report; MEL, 2021).

The entire length of the subterranean barrier was walked, following the most obvious flow path based on topography. Wherever discontinuous flow was observed, a waypoint was recorded along with records of the size and depth of the plunge pool on the downstream section, and the horizontal and vertical distance between that plunge pool and the nearest upstream pool. In cases where high velocity flow was observed, drop height was recorded and velocity was estimated. The goal of this assessment is to identify the distance a fish would have to travel, and the depth of water available from which to jump from one pool to the next. All signs of hydrology were recorded, using guidance from the NSE watercourse determination, and wetland hydrology indicators. Records of precipitation during the past 24 hours and past 7 days were documented as well, to facilitate discussion of fish passage during both seasonal high flow with and without storm events.

During each high flow assessment, minnow traps were deployed upstream and downstream of the subterranean reach. Baited minnow traps were deployed, left overnight, and collected the following day to increase trap set time and increase the efficiency and likelihood of catching fish.

3.2 Results

The following sections describe the results from fish habitat assessments and supporting fish capture surveys within the watercourses, waterbodies, and associated wetland habitat within the SA. Based on the physical characteristics of watercourses, waterbodies, and wetlands, and on the results of electrofishing and fish collection surveys, the types of fish habitat present within the SA and the fish species they support have been described. Data collected by both GEMTEC and MEL has been presented together to provide a fullest scope possible of fish habitat conditions within the SA.

3.2.1 *Fish Collection*

Fish surveys conducted by GEMTEC in Gold Brook resulted in a total of 19 fish, comprised of three different species: American eel, banded killifish, and brook trout (2017). American eel was the most caught species in Gold Brook, accounting for 79% of the total catch.

In 2018, GEMTEC completed fish surveys in the Beaver Pond and WC8. This resulted in a total of nine fish, comprised of three different species: American eel, brook trout, and yellow perch. However, fish were not marked or tagged when captured over the 72-hour fish survey; therefore, it is unknown whether an individual fish was captured multiple times during the survey.

During fish surveys conducted in 2019 by MEL within the SA, five different species of fish were identified through electrofishing and trapping surveys. American eel was the most commonly caught species, representing 50% of the total catch for all fishing efforts. Yellow perch was the second most represented species, accounting for 34.4% of the catch. Brook trout was less frequently represented but was more widespread throughout the SA, being captured at 5 of the 7 sampling sites with confirmed fish presence. Banded killifish and golden shiner capture were limited to a few individuals. General habitat requirements for American eel, yellow perch, banded killifish, brook trout, and golden shiner are presented in Section 2.2.1. Photos of species captured during the 2019 fish surveys are provided in Appendix B. While not identified within the through dedicated fishing surveys, blacknose shiner and ninespine stickleback are expected to be present within the SA based on fish studies conducted for the Goldboro LNG project (AMEC, 2006).

Brook trout, the only salmonid species caught through fish surveys, was confirmed within Gold Brook Lake, Gold Brook, the Beaver Pond, WC1, and WC14. Habitat assessments in Section 6.3.3.1 describe potential habitat within the SA for spawning, rearing, feeding, and overwintering for trout.

A summary of fishing results from 2017-2019 is shown in Table 3-6. Relative abundance for MEL electrofishing and trapping surveys has been expressed through Catch Per Unit Effort (CPUE) calculated as the number of fish captured per 300 seconds of electrofishing effort and total catch per wetted trap hour. Electrofishing efforts have been combined for watercourses with multiple electrofishing reaches (i.e., WC1, WC3).

Table 3-3. Fishing Results for Watercourses and Waterbodies within the Study Area (2017-2019)

Location	Consultant	Common Name	# of Fish Caught	Average Total Length (cm)	Fishing Method	CPUE
Gold Brook	GEMTEC	banded killifish	1	4	Electrofishing	-
		American eel	15	20.3	Electrofishing	-
		brook trout	3	15	Electrofishing	-
Gold Brook Lake	MEL	yellow perch	10	8.25	Minnow Trap	0.186
		banded killifish	1	7.3	Minnow Trap	0.019
		yellow perch	10	10.8	Fyke	0.569
Beaver Pond	GEMTEC	American eel	5	40.6	Fyke Net	-
		brook trout	2	33	Fyke Net	-
Beaver Pond Outflow (WC 8)	GEMTEC	American eel	1	15	Electrofishing	-
		yellow perch	1	8	Electrofishing	-
WC1	MEL	American eel	4	25.2	Electrofishing	0.526
		brook trout	2	13.8	Electrofishing	0.263
WC3	MEL	American eel	1	28.8	Electrofishing	0.191
WC14	MEL	brook trout	5	7.16	Electrofishing	1.860
		golden shiner	3	5.43	Minnow Trap	0.058
		brook trout	1	14.8	Minnow Trap	0.019
		brook trout	1	17.9	Eel Pot	0.058
-- No fish caught in WC2, WC4, WC9, and WC11--						

Gold Brook Lake: Trapping conducted in 2019 by MEL biologists within the southern littoral zone resulted in the capture of 21 fish including yellow perch (n=20) and banded killifish (n=1). Brook trout, American eel, blacknose shiner, and ninespine stickleback are also expected to present in the lake, as these species have been reported by previous studies (AMEC, 2006).

Gold Brook: The fish survey conducted in Gold Brook by GEMTEC on June 5, 2017 resulted in the capture of 19 fish including American eel, banded killifish and brook trout. Visual observation of several schools of brook trout were also observed during the field investigation.

Beaver Pond: Fish surveys were originally performed by in the beaver pond (within WL18) by GEMTEC on June 5-8, 2018. A total of 7 fish (5 American eel and 2 brook trout) were caught via fyke nets, with no fish being caught via minnow traps nor electrofishing. However, captured fish were not marked or tagged; therefore, it is unknown whether an individual fish was captured multiple times during the 2018 program. Follow-up fish surveys performed by MEL in 2019 resulted in no fish capture.

Beaver Pond Outflow (WC8): Electrofishing was conducted by GEMTEC at the nine stream assessment locations along WC8 on June 7, 2018. One American eel and one yellow perch were captured in WC8 using a backpack electrofisher. The American eel was captured at sampling location SA4, located approximately 50 m upstream of where WC8 disperses into WL20. The yellow perch was captured at SA9, where the outlet of WC8 empties into to Gold Brook Lake.

Watercourses 1 and 3: MEL completed fish surveys on unnamed watercourses 1 and 3 from June 3 – 4, 2019. A total of 7 fish (5 American eel, 2 brook trout) were caught in WC1 and WC3 through electrofishing efforts.

Watercourse 14: MEL completed fish surveys on a tributary to Gold Brook Lake (WC14) from August 14 – 15, 2019. This tributary serves as the surface was connection between the headwater Rocky Lakes and Gold Brook Lake. A total of 10 fish were caught in WC14 comprising brook trout (n=7) and golden shiner (n=3).

Fish surveys were also completed on WC2, WC4, WC9, and WC11. Notably, fish surveys within WC9 were conducted on seven separate occasions in 2019 (trapping June 5-6, trapping September 18-19, electrofishing September 30, high flow trapping completed November 14 and 28 2019, December 9 and 18 2019) to reflect watercourse conditions under various flow regimes (high and low flow). No fish were caught during any of these surveys. The total survey effort to date in WC9 is 1305 hours and 48 minutes of trapping effort and 306.2 seconds of electrofishing.

3.2.2 *Water Quality*

The results of water quality analysis sampling presented in Table 3-3 below. Results include data from 2017, 2018 and 2019.

Table 3-4: Water Quality Results

Site	Sampling Date	Temperature (ºC)	pH	DO (mg/L)	CON (µS/cm)
Gold Brook - 1	June 7, 2017	13.3	5.07	9.6	19.7
Gold Brook – 2	June 7, 2017	13.4	**4.93**	10.4	19.5

Site	Sampling Date	Temperature (ºC)	pH	DO (mg/L)	CON (µS/cm)
Gold Brook – 3	June 7, 2017	13.3	**4.95**	10.5	19.6
Gold Brook – 4	June 7, 2017	14.0	**4.96**	10.3	19.7
Gold Brook – 5	June 7, 2017	14.5	**4.97**	11.6	19.6
Gold Brook – 6	June 7, 2017	15.2	**4.98**	10.2	19.8
Gold Brook – 7A	June 7, 2017	15.6	5.03	10.4	10.3
Gold Brook – 7B	June 7, 2017	**17.0**	**4.81**	11.0	21.1
Gold Brook – 7C	June 7, 2017	**17.1**	**4.87**	10.2	21.2
Gold Brook – 8A	June 7, 2017	**20.7**	5.04	8.9	23.0
Gold Brook – 8B	June 7, 2017	**18.3**	**4.96**	10.3	21.7
Gold Brook – 8C	June 7, 2017	**18.3**	**4.95**	10.4	21.7
Gold Brook – 8D	June 7, 2017	**18.3**	**4.97**	9.8	21.7
Gold Brook – 9	June 7, 2017	**19.0**	**4.97**	10.1	22.1
Gold Brook – 10A	June 7, 2017	**20.0**	**4.98**	9.6	22.6
Gold Brook – 10B	June 7, 2017	**20.1**	**4.99**	7.9	22.7
Gold Brook – 11A	June 7, 2017	**20.5**	5.69	9.4	22.2
Gold Brook – 11B	June 7, 2017	**20.7**	5.22	9.2	22.3
Gold Brook – 11C	June 7, 2017	**20.7**	**4.99**	8.5	23.0
Gold Brook – 12A	June 7, 2017	**21.0**	5.66	8.6	22.5
Gold Brook – 12B	June 7, 2017	**21.2**	5.20	9.2	22.3
Gold Brook – 12C	June 7, 2017	**21.0**	5.01	8.3	23.3
Beaver Pond - WQ1	June 6, 2018	7.5	**4.6**	7.9	25.2
Beaver Pond - WQ2	June 6, 2018	8.1	**4.59**	7.7	24.3
Beaver Pond - WQ3	June 6, 2018	7.7	**4.51**	9.2	25.1
Beaver Pond - WQ4	June 6, 2018	7.5	**4.5**	9.7	24.5
Beaver Pond - WQ5	June 6, 2018	9.3	**4.63**	7.4	25.8
Beaver Pond - WQ6	June 6, 2018	10	**4.67**	6.8	25.4
WC8 - SA1	June 7, 2018	16.4	**4.55**	7.7	31.3
WC8 - SA2	June 7, 2018	16.2	**4.45**	7.9	31.1
WC8 - SA3	June 7, 2018	16	**4.46**	7.9	30.9
WC8 - SA4	June 7, 2018	15.9	**4.37**	7.8	30.7
WC8 - SA5	June 7, 2018	15.2	**4.49**	7.1	30.1
WC8 - SA6	June 7, 2018	11	**4.55**	7.3	27.9
WC8 - SA7	June 7, 2018	10.5	**4.46**	7.9	27.1
WC8 - SA8	June 7, 2018	12	**4.55**	6.7	28
WC8 - SA9	June 7, 2018	12.3	**4.45**	n/a	27.4
WC1 R1	June 3, 2019	10.5	6.62	10.35	62

Site	Sampling Date	Temperature (ºC)	pH	DO (mg/L)	CON (µS/cm)
WC1 R2	June 3, 2019	14.0	6.74	9.67	66
WC 2	June 3, 2019	9.9	**4.89**	9.37	26
WC 3	June 4, 2019	9.0	**4.96**	11.39	31
Beaver Pond	June 4, 2019	12.7	**4.50**	10.54	23
WC11 R1	June 4, 2019	11.3	**3.72**	8.94	25
WC11 R2	June 5, 2019	7.8	**4.23**	9.77	26
WC4	June 5, 2019	8.5	**4.12**	10.79	28
WC7	June 5, 2019	8.2	**4.01**	11.10	32
WC9	June 6, 2019	9.0	**4.36**	6.80	30
WC14	Aug. 14, 2019	15.7	5.64	6.19	33
Gold Brook Lake	Aug. 14, 2019	**25.1**	5.45	6.79	24

Notes: Values in bold indicate parameters recorded as below CCME guidelines for the protection of aquatic life, including: dissolved oxygen levels not suitable for any life stage of warm or cold water fish species (<5.5 mg/L) (1999), and pH levels below 5.0 (CCREM, 1987). Using a calibrated YSI-556 multi-meter, water quality readings were taken in the water column at an approximate depth of 10 cm. Temperature results identified as intermediate (16.5-18.9ºC) are indicated in bold, while temperatures identified as 'warm' (exceeding 19ºC) are indicated in bold and underline.

Water temperature affects the metabolic rates and biological activity of aquatic organisms, thus influencing the use of habitat by aquatic biota. There are no CCME guidelines related to temperature and aquatic biota. Temperature preferences of fish vary between species, as well as with size, age, and season.

Salmonids are cold-water fish species, meaning they require cold water to live and reproduce. The optimal temperature range for these species (growth of juvenile) is 10-20˚C (The Stream Steward n.d.) to 16-20˚C (DFO, 2012) (brook trout and Atlantic salmon, respectively). Other species documented within higher temperature ranges, like yellow perch (optimum temperature range of 21-24˚C; Brown et al., 2009) and American eel (tolerable temperature range of 4 to 25 ºC; Fuller et al., 2019).

Temperatures recorded in watercourses during electrofishing and fish collection in June 2017, 2018, and 2019 and August 2019 range from 7.5^{0}C (Beaver Pond) to 25.1 ^{0}C (Gold Brook Lake). Notably, temperatures were observed to increase from the upper transects of Gold Brook to the lower transects, ranging from 13.3^{0}C at Transect 1 to 21.2^{0}C at Transect 12B. Generally, the range of temperatures within watercourses is within the required ranges for the species expected to inhabit aquatic features within the SA; however, high summer temperatures likely limit habitat suitability for cold-water species in Gold Brook and Gold Brook Lake.

CCME FWALs establish that a range of pH from 6.5 to 9.0 is suitable within freshwater habitat, while the pH range which is not acutely lethal to fish is 5-9 (CCREM, 1987). Kalff (2002) indicates that the loss of fish populations is gradual and depends on fish species, but decline is evident when pH is <6.5. Kalff further states that a 10-20% species loss is apparent when pH <5.5. Water quality records indicate the presence of acidification in aquatic features through the SA. Of all the watercourses and waterbodies measured in SA, only one (WC1) had pH levels within CCME guidelines. Approximately 75% of all records measured below 5.0.

Brook trout tolerate acidic conditions particularly well, compared with other species. They have been known to survive at pH 3.5, though only in unusual circumstances. Realistically, the lower limits are around pH 4.8 (Soil & Water Conservation Society of Metro Halifax, 2016). American eels are also more tolerant of low pH, although densities and growth rates may be adversely affected by direct mortalities or declining abundance of prey as productivity declines at low pH (Jessop, 1995). Yellow perch are relatively tolerant of low pH, but reproductive success is reduced in lakes with pH < 5.5 (Krieger, Terrell, & Nelson, 1983).

The CCME FWALs establish a minimum recommended concentration of DO of 9.5 mg/L for early life stages of cold-water biota and 6.5 mg/L for other life stages. For warm-water biota, the CCME guidelines recommend 6.0 mg/L for early life stages, and 5.5 mg/L for all other life stages. Within the SA, DO levels recorded across watercourses and waterbodies ranged from 6.19 to 11.6 mg/L, with only one recording (6.19 mg/L, WC14) falling below the recommended guidelines for other life stages of cold-water fishes. DO levels recorded in the SA are considered suitable for fish species found or expected within the SA.

Conductivity, which is a measure of water's capacity to conduct an electrical current, is correlated to total dissolved solids as increases in the mineral and salt content of water will increase its capacity to carry a charge. Toxicity in fish can be achieved through large increases in salinity, changes in the ionic composition of the water and toxicity of individual ions. Environment Canada has established a freshwater conductivity target of 500 µS/cm (conductivity must not exceed target) as part of its Environmental Performance Water Quality Index (EC, 2011). Conductivity levels measured within the SA are considered acceptable for aquatic life (10.3-66.0 µS/cm).

3.2.3 *Fish Habitat Assessments*

The potential for each watercourse, waterbody, and wetland to support fish was evaluated across the SA. A total of 17 linear watercourses (including Gold Brook) and three waterbodies (Beaver Pond, Gold Brook Lake, and a historic settling pond) were identified within the SA. Twenty-nine (29) wetlands identified during field reconnaissance programs were also evaluated for fish habitat. Fish habitat potential was determined at each location during field identification/evaluations and the collection of physical characteristics of each aquatic feature, including follow-up evaluations during high flow (if deemed required based on potential obstacles to fish passage).

3.2.3.1 Watercourses and Waterbodies

The physical characteristics of each watercourse/watercourse reach and waterbody described during surveys conducted from 2017-2019 (GEMTEC and MEL surveys) are provided in Table 3-4 and Table 3-5. Photos of aquatic features assessed during 2018-2019 MEL surveys are provided in Appendix B. Photos taken during 2017-2018 GEMTEC surveys are provided in the 2017 GEMTEC Ecological Baseline Study and the 2018 GEMTEC Report (Appendix D). Watercourses and waterbodies within the SA are presented on Figure 2 (Appendix A).

Table 3-5. Physical Characteristics - Watercourses

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
1	P	M	2%	200	15	Ru=75 SB=15 Fines=10	Run=80 Riffle=12 Pool=8	M	10	40	40-50	40
2	I	M	2%	100	5	M/C=90 Co=5 SB=5	Run=50 Flat=50	M	10	5	90	90
3	P	M	2%	180	25	Ru=70 SB=20 M/C=10	Run=80 Riffle=10 Pool=10	M	20	40	60-70	70
4	I	M	4%	40	10	SB=40 Co=60	Run=80 Riffle=10 Sheet Flow=10	M	10	5	20	75
5	I	M	3%	40	15	M/C=70 SB=30	Run=70 Pool=30	M	25	5	40	80
6	I	M	4%	40	10	M/C=60 SB=20 LB=20	Run = 100	L	15	5	30	90
7	P	M	3%	40	10	M/C=30 Co=20 Gr=15 Sa=10 Ru=10 BE=10 SB=5	Run=75 Sheet Flow=15 Pool=5 Riffle=5	M	5	5	30	70
8	P	M	2%	79-442	15	Fines, Sa, Gr, Co, SB, LB	Riffle, Run, Flat, Cascade	L	10	30	40	70

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
9.1	I	L	0%	150	45	M/C=90 SB=10	Flat=100	M	15	15	30	30
9.2	I	L	3%	50	10	Co=40 Ru=20 M/C=20 Gr=10 Sa=10	Run=100	H	5	20	70	70
9.3	I	L	3%	85	10	M/C=70 Co = 30	Run=100	L	10	10	90	90
9.4	I	L	1%	120	10	M/C=50 Ru=25 SB=15 Gr=10	Run=90 Pool=10	L	0	15	85	85
10	P	M	2%	50	15	M/C=45 Co=25 Ru=20 Sa=10	Run=80 Pool=20	M	5	10	85	70
11	P	M	2%	250	25	SB=50 M/C=35 Ru=15	Run=75 Riffle=15 Pool=10	M	20	30	40	40
12	E	M	2%	50	10	M/C=85 Ru=15	Run=50 Flat=50	H	0	0	95	95
13	I	L	2%	60	30	M/C=100	Flat=100	L	40	5	50	90
14.1	P	L	1%	100	15	SB=60 M/C=25 Co=10 LB=5	Run=50 Flat=30 Riffle=10 Pool=10	M	5	40	85	85
14.2	P	L	1%	100-250	20	M/C=90 SB=10	Flat=100	L	20	5	5	5

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
14.3	P	L	3%	200	20	SB=50 Co=20 M/C=15 LB=10 Gr=5	Run=40 Pool=30 Riffle=15 Flat=15	M	5	35	90	90
15	P	L	4%	100	8	SB=60 Co=20 M/C=20	Run=75 Riffle=10 Flat=15	M	10	10	100	100
16	E	L	0%	50	10	SB=90 M/C=10	Flat=85 Run=15	M	20	20	90	90
GB1	P	M	N/A	3400	14	SB=60 LB=10 Ru=15 Gr=10 M/C=5	Riffle/ Run=100	L	N/A	N/A	N/A	0
GB2	P	M	N/A	350	24	Ru=30 LB=30 SB=20 Gr=15 M/C=5	Riffle/ Run=100	L	N/A	N/A	N/A	0
GB3	P	L	N/A	420	30	LB=40 M/C=40 SB=10 Ru=5 Gr=5	Riffle/ Run=5	L	N/A	N/A	N/A	2
GB4	P	L	N/A	1210	26	M/C=35 LB=20 SB=20 Ru=20	Riffle/ Run=30	M	N/A	N/A	N/A	0

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
						Gr=5						
GB5	P	M	N/A	1730	19	SB=50 M/C=25 LB=20 Ru=5	Riffle/ Run=10	L	N/A	N/A	N/A	0
GB6	P	M	N/A	2840	14	SB=40 M/C=35 LB=15 Ru=10	Riffle/ Run=5	L	N/A	N/A	N/A	0
GB7A	P	N/A	N/A	540	18	LB=30 SB=30 M/C=30 Ru=10	Riffle/ Run=5	L	N/A	N/A	N/A	0
GB7B	P	M	N/A	860	24	LB=50 SB=30 Ru=10 M/C=10	Riffle/ Run=50	L	N/A	N/A	N/A	0
GB7C	P	L	N/A	720	20	SB=60 LB=20 Ru=10 M/C=10	Riffle/ Run=10	L	N/A	N/A	N/A	0
GB8A	P	N/A	N/A	890	11	SB=60 M/C=25 LB=10 Ru=5	Riffle/ Run=0	L	N/A	N/A	N/A	0
GB8B	P	M	N/A	190	11	SB=60 M/C=25 LB=10 Ru=5	Riffle/ Run=100	L	N/A	N/A	N/A	40

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
GB8C	P	M	N/A	460	15	SB=80 LB=10 Ru=5 M/C=5	Riffle/ Run=100	L	N/A	N/A	N/A	5
GB8D	P	N/A	N/A	760	19	SB=75 LB=10 M/C=10 Ru=5	Riffle/ Run=100	L	N/A	N/A	N/A	0
G9	P	L	N/A	920	27	SB=75 M/C=15 LB=10	Riffle/ Run=5	L	N/A	N/A	N/A	0
G10A	P	M	N/A	1400	18	SB=70 M/C=15 LB=10 Ru=5	Riffle/ Run=5	L	N/A	N/A	N/A	0
G10B	P	L	N/A	1050	19	SB=80 M/C=15 LB=5	Riffle/ Run=50	L	N/A	N/A	N/A	0
GB11A	P	H	N/A	790	17	SB=50 M/C=25 LB=15 Ru=5 Gr=5	Riffle/ Run=10	L	N/A	N/A	N/A	0
GB11B	P	H	N/A	910	20	SB=40 LB=30 M/C=25 Ru=5	Riffle/ Run=10	L	N/A	N/A	N/A	0
GB11C	P	M	N/A	940	23	SB = 65 LB=25	Riffle/ Run=50	L	N/A	N/A	N/A	0

WC & Reach	Flow[1]	Velocity[2]	Gradient (%)	Bankfull Width (cm)	Average Depth (cm)	Substrate (%)[3]	Habitat Type (%)	Coarse Woody Debris[4]	In-stream Vegetation (%)[5]	In-stream Cover (%)[5]	Overhanging Vegetation (%)[5]	Stream Shade (%)
						Ru=5 M/C=5						
GB12A	P	H	N/A	1680	32	SB=60 M/C=25 LB=10 Ru=5	Riffle/ Run=30	M	N/A	N/A	N/A	0
GB12B	P	M	N/A	570	27	SB=60 M/C=20 LB=10 Ru=10	Riffle/ Run=70	L	N/A	N/A	N/A	50
GB12C	P	M	N/A	480	29	SB=50 LB=35 M/C=10 Ru=5	Riffle/ Run=20	L	N/A	N/A	N/A	0

[1]P: Perennial = Year-round streams. Water is supplied from smaller upstream waters or groundwater while runoff from rainfall or other precipitation is supplemental. I: Intermittent = Seasonal streams. Flow during certain times of the year, with runoff from rainfall or other precipitation supplementing flow. E: Ephemeral = Rain-dependent streams that flow only after precipitation. Runoff from rainfall is the primary source of water.
[2]L: Low velocity (<0.15m/s). M: Moderate velocity (0.15-0.3m/s). H: High velocity (>0.3m/s).
[3]Substrate classification from Sooley et al. (1998) - BE: Bedrock. LB: Large boulder. SB: Small boulder. Ru: Rubble. Co: Cobble. Pe: Pebble. Gr: Gravel. M/C: Mud/Clay.
[4]L: Low. M: Moderate. H: High.
[5]In-stream and overhanging vegetation cover was defined by vegetative strata on each bank by GEMTEC, rather than overall percentages. Full details are available in the GEMTEC 2018 report.

Table 3-6. Physical Characteristics - Waterbodies

Waterbody	Size (ha)	Depth (m)	Shoreline Characteristics	Littoral Zone Characteristics	Substrate
Beaver Pond	0.58 ha	0.17-0.48 (GEMTEC, 2018)	Historic mining and forestry trails run along the perimeter of the beaver pond. Shoreline vegetation is dominated by grasses, sphagnum mosses, and black spruce. Snags are abundant throughout. Wetland habitat surrounds the pond's fringe.	N/A	Organic muck characterized by woody debris and decaying vegetation. Boulders are sparse throughout.
Gold Brook Lake	78.97 ha	Up to 3 m (AMEC, 2006)	The shoreline of Gold Brook Lake is primarily undeveloped upland habitat, with the exception of Gold Brook Road which crosses the lake's outlet (Gold Brook) at the lake's southern extent. Shoreline vegetation is dominated by White and Black Spruce, Balsam Fir, and Speckled Alder, with Wild Raisin, Mountain Holly and Red Maple scattered throughout.	Emergent vegetation is concentrated in areas with wetland fringe, which compose approximately 10% of the shoreline. Documented emergent vegetation include water lobelia and common pipewort.	Shallow-water substrates dominated by boulder and cobble, with occasional small gravel beaches.
Historic Settling Pond	0.12 ha	Up to 2.5 m deep (visual observations only 2018/2019)	Two historical settling ponds used in 1980s for surface water discharge from mining activities. Located within the boundaries of WL1. Northerly pond non-vegetated. Southerly pond has naturalized into wetland habitat	N/A	Organic muck characterized by woody debris and decaying vegetation. Boulders are sparse throughout.

All delineated watercourses and waterbodies within the SA have been either confirmed or are presumed fisheries resources (see Figure 2). Fisheries resources are defined as those linear watercourses which provide viable fish habitat and are accessible to fish at any time of the year (or contain resident fish).

In anticipation of Fisheries Act authorizations (HADD), watercourses and waterbodies within the SA anticipated to be directly or indirectly impacted by Project development were reassessed during a 2020 fish and fish habitat field program, which included quantitative detailed habitat mapping and multiple rounds of electrofishing and trapping surveys. During detailed habitat assessments, the entire length of each watercourse predicted to be impacted was delineated into individual reaches defined by discrete homogeneous units (e.g., riffle, run, pool, flat, etc.), with key habitat features (gradient, substrate types, water depth, velocity ranges, etc.) measured within each reach. The results of the 2020 field program are presented in an updated technical report (MEL, 2021), and supersede the results for only those select aquatic features related to the Project presented herein. However, original baseline data for all watercourses (including those with expected impacts) have been presented in this report, as the data still considered to provide valuable baseline descriptions of aquatic features throughout the SA.

The capacity of each linear watercourse and waterbody within the SA to support fish has been assessed based on key fish habitat characteristics presented in Table 3-5 and Table 3-6. This determination has been supported by fish species confirmed within the watercourses through electrofishing and trapping surveys. Provisions of fish habitat by species and life stage within each linear watercourse and waterbody are presented in Table 3-9.

Table 3-7. Fish Habitat Provisions – Watercourses and Waterbodies

Species	Life Stage	Potential Habitat – Watercourses and Waterbodies
American eel	Juvenile	WC1, WC2*, WC3, WC4*, WC5*, WC6*, WC7*, WC8*, WC9*, WC10, WC11, WC12*, WC13*, WC14, WC15, WC16*, Gold Brook, Beaver Pond*, Gold Brook Lake, Historic Settling Pond
	Adult	WC1, WC3, WC5*, WC6*, WC7*, WC8*, WC9*, WC10, WC11, WC12*, WC13*, WC14, WC16*, Gold Brook, Beaver Pond*, Gold Brook Lake, Historic Settling Pond
banded killifish	Spawning	Gold Brook, Gold Brook Lake, Historic Settling Pond
	YOY	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Juvenile	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Adult	Gold Brook, Gold Brook Lake, Historic Settling Pond
brook trout	Spawning	Gold Brook, Gold Brook Lake
	YOY	Gold Brook, Gold Brook Lake
	Juvenile	WC1, WC3, WC4*, WC7*, WC8*, WC9*, WC11, WC14, WC15, Gold Brook, Gold Brook Lake
	Adult	WC1, WC3, WC5*, WC7*, WC8*, WC9*, WC10, WC11, WC14, Gold Brook, Beaver Pond*, Gold Brook Lake
golden shiner	Spawning	WC14, Gold Brook, Gold Brook Lake, Historic Settling Pond
	YOY	WC14, Gold Brook, Gold Brook Lake, Historic Settling Pond
	Juvenile	WC14, Gold Brook, Gold Brook Lake, Historic Settling Pond
	Adult	WC14, Gold Brook, Gold Brook Lake, Historic Settling Pond
blacknose	Spawning	Gold Brook, Gold Brook Lake, Historic Settling Pond

Species	Life Stage	Potential Habitat – Watercourses and Waterbodies
shiner	YOY	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Juvenile	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Adult	Gold Brook, Gold Brook Lake, Historic Settling Pond
ninespine stickleback	Spawning	Gold Brook, Gold Brook Lake, Historic Settling Pond
	YOY	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Juvenile	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Adult	Gold Brook, Gold Brook Lake, Historic Settling Pond
yellow perch	Spawning	Gold Brook, Gold Brook Lake, Historic Settling Pond
	YOY	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Juvenile	Gold Brook, Gold Brook Lake, Historic Settling Pond
	Adult	Gold Brook, Gold Brook Lake, Historic Settling Pond

* Fish habitat restricted by seasonality of stream and/or other limitations to fish access (i.e., obstacles to fish passage).

The following paragraphs describe fish habitat within each linear watercourse and waterbody identified in the SA and provide a qualitative assessment of the habitat present in relation to fish species confirmed or expected within each aquatic feature.

Most streams delineated within the SA are small, first and second order tributaries to Gold Brook Lake and Gold Brook. These watercourses typically originate from surface water collecting in headwater wetlands.

WC1 is a moderate velocity stream that originates in a northwestern lobe of WL1, flowing southeast and eventually draining into WC3. Four American eel (4 individuals) and two brook trout (2 individuals) were confirmed in WC1 during 2019 fish surveys. Larger, rocky substrate classes, a variety of cover types, and adequate water depths may provide suitable habitat for juvenile and adult brook trout and American eel. No suitable brook trout spawning substrate observed (clean gravel).

WC2 is an extremely discontinuous, intermittent, shallow channel which originates and flows southeast through WL21. No fish were identified in WC2 during dedicated fish surveys in 2019. The watercourse is dominated by muck substrate and may provide suitable habitat for juvenile American eel. American eel is the only species considered capable of navigating the discontinuous habitat. No other potential fish habitat was identified.

WC3 originates in WL23, flowing southeast under Goldbrook Road through WL1, eventually discharging into Gold Brook. Only one individual American eel was captured in WC3 during 2019 electrofishing efforts, though brook trout is also presumed present based on access from WC1. This predominantly moderate velocity stream contains larger, rocky substrate, cover types, and adequate depths which provide suitable habitat for juvenile and adult brook trout and American eel. No suitable brook trout spawning substrate observed. Near its confluence with Gold Brook (last 125 m of watercourse, approximately), the stream flattens and disperses through WL1. Habitat suitable for yellow perch and forage fish available at the very downstream extent of WC3 near its confluence with Gold Brook (last 125 m, approximately), as it sluggishly disperses into WL1. However, this area is more accurately described as flooded wetland

habitat - as such this habitat has not been considered in the overall fish habitat assessment of WC3. Fish habitat provided by wetlands is described in Section 3.2.3.2.

The Beaver Pond located in the northwest portion of the SA was confirmed fish habitat through 2018 electrofishing and trapping surveys, resulting in the capture of adult American eel and brook trout. The pond contains sufficient water depths to accommodate fish, adequate water quality, nutrient input for feeding, abundant aquatic vegetation, and woody debris. No suitable spawning habitat (clear, gravel substrates) or juvenile rearing habitat (variety of cover types with limited fines) for brook trout was identified in the pond. In addition, a natural obstacle along WC8 (forested swamp - WL20) restricts the upstream and downstream passage of fish from the pond to Gold Brook Lake, and vice-versa, at least for parts of the year. Limited fish access is supported by the exceptionally low number of fish captured during the 2018 fish surveys (Section 3.2.1). A full description of the barrier on the beaver pond outflow is provided in Section 6.3.3.2.2. This obstacle was determined to be potentially navigable by American eel, which are considered adept at climbing over vertical surfaces and wet, low-lying areas. In addition, it is possible that during extreme flows that of brook trout may be able to navigate through WL20 to the channelized sections of WC8. As weak swimmers, yellow perch and smaller forage fish species are considered incapable of navigating the obstacle.

Though passage through the system is restricted, the variety of substrate classes, cover, and habitat types throughout WC8 is considered to provide suitable habitat for juvenile and adult brook trout and American eel. No suitable brook trout spawning substrate was observed (clean gravel). Habitat suitable for yellow perch and forage fish is available at the very downstream extent of WC8 where the channel opens into Gold Brook Lake. However, this habitat is influenced by the bi-directional inputs of Gold Brook Lake into WL20 than the watercourse channel – as such this habitat has not been considered in the overall fish habitat assessment of WC8. As tributaries to the Beaver Pond, passage into Watercourses 4, 5, 6, and 7 is also limited, but may be accessed by resident American eel and brook trout identified within the Beaver Pond. Watercourses 4, 5, and 6 are intermittent streams that go dry during low-flow periods; as such, fish habitat provisions are further limited to seasons with adequate flow. No suitable spawning habitat for brook trout was identified within any of these watercourses. In WC4, larger, rocky substrate may support juvenile brook trout and American eel, but observed shallow channels depths and lack of deeper, residual pools are insufficient to support adult life stages of these two species. The muck and abundant in-stream vegetation observed in WC5 and WC6 may support juvenile and adult American eel, while the presence of some deeper, residual pools may provide suitable habitat for adult brook trout in WC5. The lack of in-stream cover and overall shallow channel depths limit habitat suitability for any life stage of brook trout in WC6. WC7 possesses a variety of substrate classes, moderate woody debris, and habitat types may provide suitable habitat for juvenile and adult brook trout and American eel.

WC9 is a first order, intermittent stream located in the northeastern corner of the SA. Fish passage through this system is restricted by seasonal dryness and also by the presence of two obstacles to fish passage. No fish were captured in WC9 through extensive fishing efforts in 2019. The first is a 20 m subterranean section located between reach 9.1 and 9.2. This barrier section was determined to be accessible to fish immediately following a major rain event during seasonal high flow conditions. However, the vertical and horizontal jump requirements between pools and the shallow sheet flow likely obstruct upstream passage for most fish, even during extreme high flow events. The second obstacle is a dry, 10 m long rock-filled berm which disconnects the mouth of WC9 and the wetted edge of the Gold Brook Lake during seasonal low-flow periods. Fish passage assessments are further described further in

Section 3.2.3.1.1.2. The upper reach of WC9 (9.1, above the subterranean section), characterized by sluggish flow, muck substrate, and in-stream vegetation, is likely accessible to American eel and may provide suitable habitat for juvenile and adults. Downstream of the subterranean section, the stream may additionally provide suitable juvenile and adult brook trout habitat in the form of unembedded rocky substrate and an abundance of woody debris, though relatively sparse through the watercourse and provided access from Gold Brook Lake. No suitable brook trout spawning habitat was observed.

WC10 is a first order perennial tributary to Gold Brook. No fish surveys were conducted in WC10, but fish access is provided from Gold Brook. This moderate velocity stream is dominated by muck, embedding a mix of rocky substrate. Muck combined with an abundance of woody debris may provide suitable habitat for juvenile and adult American eel, while deeper, residual pools may provide suitable habitat for adult brook trout. No suitable brook trout spawning substrate was observed.

WC11 is a perennial tributary to Gold Brook which originates outside of the SA. No fish were captured in WC11 during 2019 electrofishing efforts, but the watercourse is accessible to fish from Gold Brook. The observed moderate velocities, larger, rocky substrate, the presence of a variety of cover types, and adequate water depths may provide suitable habitat for juvenile and adult brook trout and American eel. No suitable brook trout spawning substrate was observed, nor was any suitable habitat identified for yellow perch or forage fish.

WC12 is an ephemeral, first order stream which originates in a northeastern lobe of WL1, flowing west to Gold Brook. Approximately 50% the watercourse channel is characterized as subterranean or dechannelized sheet flow (Figure 2, Appendix A), which is predominantly dry. The extremely discontinuous channel is considered accessible to juvenile and adult American eel only.

WC13 is a short, seasonal first order tributary to the southeastern shoreline of Gold Brook Lake. Just before the lake, the watercourse dechannelizes in addition to flowing underground, which presents a fish passage barrier for most species confirmed or potentially present in Gold Brook Lake. The low velocity stream is characterized by muck substrate and abundant in-stream vegetation, which may provide suitable habitat for juvenile and adult American eel.

WC14 is located in the northeast corner of the SA. The watercourse serves at the outlet of the two headwater Rocky Lakes located east of the SA. Within the SA, WC14 drains west through WL27 as a confined channel, receiving flows from two first order streams (WC15 and WC16). West of WL27, the watercourse flows through upland habitat then floods into WL28 at its confluence with Gold Brook Lake. Fish surveys conducted in 2019 confirmed the presence of brook trout (seven individuals) and golden shiner (three individuals). The watercourse was delineated into three reaches based on habitat homogeneity. The upper most reach (14.1) contains a variety of habitat types and abundant in-stream cover and is dominated by small boulder substrate. The middle reach (14.2) is a relatively stagnant, well vegetated section of stream influenced by a beaver dam at its downstream extent. The lower reach (14.3) contains very similar habitat to that identified in reach 14.1. The watercourse is considered to provide suitable habitat for juvenile and adult American eel (considered potentially present based on access from Gold Brook Lake) in the form of muck substrates and a variety of cover types. Juvenile and adult brook trout habitat is considered present in both the upper and lower reaches (adequate cover, habitat types and water depth), while the middle reach provides suitable habitat for all life stages of golden shiner. WC15 may support juvenile brook trout and American eel through the presence of larger, rocky substrate,

moderate woody debris and moderate in-stream cover, but lacks adequate water depths necessary to support adults of these species. It provides suitable habitat for juvenile and adult brook trout and American eel. WC16 is an ephemeral stream with a discontinuous channel. This watercourse is considered accessible only to juvenile and adult American eel.

The physical assessment of Gold Brook Lake was limited to visual observations from various shorelines, primarily in areas where wetland boundaries converged on the lakeshore. Trapping conducted in 2019 along the southern shoreline of the lake by confirmed the presence of yellow perch and banded killifish. Brook trout, American eel, blacknose shiner, and ninespine stickleback are also expected to present in the lake, as these species have been confirmed in tributaries to Gold Brook lake and reported by previous studies (AMEC, 2006). The shoreline is composed of a mix of rocky upland and vegetated wetland habitats. The lake is expected to support all life stages of species confirmed or expected to inhabit the lake, including potential brook trout spawning within areas of gravel-dominated lake shore.

Gold Brook, the sole outlet of Gold Brook Lake, is characterized by a complex variety of habitat types, including sluggish, well vegetated flats and higher velocity, rocky riffles and runs. Gold Brook is considered to support all life stages of species confirmed (American eel, brook trout, banded killifish) or potentially present (golden shiner, blacknose shiner, ninespine stickleback) based on access from Gold Brook Lake. However, some habitat provisions are relatively scarce. Brook trout spawning habitat, characterized by gravel substrate with limited fines and moderate-high velocities, was only identified in the upper reaches of Gold Brook (GB1 and GB2). Furthermore, the high proportion of fine substrates (M/C) identified at most transects between rocks and top of other substrates diminishes habitat suitability for YOY and juvenile brook trout.

Two historical settling ponds were identified in WL1 west of Gold Brook. These ponds were used during the 1980s for surface water discharge from mining activities. The northern pond is currently isolated by an old access trail, while the southern pond has naturalized into wetland habitat. The southern pond, which is characterized by muck substrate, woody debris, and abundant vegetation provides suitable habitat for juvenile and adult American eel, as well as all life stages of generalist fish species (yellow perch, banded killifish, golden shiner, blacknose shiner, and ninespine stickleback).

3.2.3.1.1 *Fish Passage Assessments*

3.2.3.1.1.1 Watercourse 8

WC8, which serves as the sole outlet from the beaver bond to Gold Brook Lake, was first assessed by GEMTEC biologists on June 7, 2018. Follow-up assessments were conducted by MEL biologists on April 2, 2019 during seasonal high flow conditions and June 5, 2019, during average flow conditions. After exiting the Beaver Pond, WC8 flows east for approximately 200 m in a linear, historically ditched channel, then disperses into a forested swamp (WL20).

The watercourse channel re-forms approximately 30 m north, still within WL20. The channel continues through Wetland 20, dispersing frequently into sheet flow through wetland habitat. A small side-channel, which forms from pockets of standing water, was found to drain into the main channel from the southeast of WL20. The watercourse channel then discharges into Gold Brook Lake. Overhanging vegetation was observed throughout the outflow and the most abundant substrate size was fines; however, all substrate sizes were recorded.

WC8 flows through a forested swamp as indicated on Figure 2. The wetland is located in a natural depression with a deep organic soil layer. The water table is present 30 cm below the ground surface. The wetland is vegetated primarily with cinnamon fern (*Osmunda cinnamomea*), three-seed sedge (*Carex trisperma*), black spruce (*Picea mariana*), and red maple (*Acer rubrum*). Sphagnum moss covers the ground's surface. Pockets of surface water were observed in the wetland; however, a defined channel was not observed. Flowing surface water was not observed in this segment of the wetland that would connect the pockets of water, nor was any evidence of past surficial flow observed (surface scouring, sediment deposits, drainage patterns, etc.) during the initial assessment conducted by GEMTEC on June 7, 2018 and the follow-up assessment by MEL on April 2, 2019 during seasonal high flow, the June 5, 2019 during average flow conditions, and the assessment on December 18, 2019 during seasonal high flow (though light snow cover at this time limited a full visual assessment).

During the initial assessment, one electrofishing pass was conducted at each of the nine stream assessment locations along WC8. Electrofishing was also conducted along the banks of the beaver pond. Trapping occurred in the beaver pond from June 5-8, 2018 (GEMTEC), and from June 4-5, 2019 (MEL).

One American eel and one yellow perch were captured in WC8 by GEMTEC using a backpack electrofisher. The American eel was captured at sampling location SA4, located approximately 50 m upstream of the 30 m wetland barrier. The yellow perch was captured at SA9, where the outlet of WC8 empties into to Gold Brook Lake. Fish survey locations completed by GEMTEC are shown in Figure 2 (Appendix A). Five American eel and two brook trout were captured in the beaver pond over the 72-hour fish survey using a fyke net. The American eels ranged in size from 33-centimetres to 47-centimetres and the brook trout were each 33-centimetres. Mark-recapture studies were not completed, so it is possible that the same individual was captured on successive days of fish surveys. No fish were captured in the minnow traps during the survey nor with the electrofishing backpack.

Based on these observations, this barrier section was determined to be navigable by American eel. In addition, it is possible that during extreme flows that increased plunge pool depth would allow passage of brook trout through WC8. However, the results of fish collection efforts indicate that access into the Beaver Pond (WL18) from Gold Brook Lake through WC8 is extremely limited.

3.2.3.1.1.2 Watercourse 9

WC9 has been assessed on multiple occasions, the details of which are provided in Table 3-7. The watercourse has been categorized into four watercourse reaches. WC9 forms inside WL25 (low shrub fen complex) and continues to flow north through WL12 (treed swamp). WC9 flows within these wetlands as a discrete, albeit sometimes braided or discontinuous, channel. Fish habitat within these systems is limited to the watercourse channel itself. Reaches 9.1 and 9.2 of WC9 were initially mapped on April 2, 2019, and further mapped and described on June 6, 2019. Reaches 9.3 and 9.4 were mapped and described on 12 August 2019. A subterranean barrier was observed between reaches 9.1 and 9.2 during the initial assessment. For simplicity, WC9 is divided into two sections: Section A describes the portion of the watercourse above the subterranean section (reach 9.1), while Section B describes the portion of the watercourse below the subterranean section (reaches 9.2, 9.3, 9.4 downstream to Gold Brook Lake).

Table 3-8. WC9 Assessments (June - December 2019)

WC Reach	Date Assessed	Seasonal Flow	Precipitation: 7 previous days	Observations
9.1	June 6, 2019	Average + Storm	90 mm (30 mm in past 24 hours, 50 mm on June 2)	Multiple subterranean barriers downstream of this reach.
9.2	June 6, 2019	Average + Storm	90 mm (30 mm in past 24 hours, 50 mm on June 2)	Multiple subterranean barriers. Areas within reach with sheet flow.
9.3	August 12, 2019	Low	6 mm	No flow observed. Channel entrenched in wetland.
9.4	August 12, 2019	Low	6 mm	No surficial connection to lake observed. Channel entrenched in wetland. No subterranean portions. Low to no flow rate.
9.1 to 9.4	November 14-15, 2019	High	60 mm (5 mm in past 24 hours, 40 mm on November 12)	Watercourse braids through multiple pathways, dispersing into surround swamp. 3 passage barriers identified that require fish to jump over moss/vegetate surfaces. No subterranean fish passage available. Moss covered pool sides.
9.1 to 9.2	November 29-30, 2019	High + Storm	82.3 mm (40.2 mm in past 24 hours)	Overland sheet flow connecting watercourse pockets. Many side channels/underground/wetland riparian areas covered in water.
9.1 to 9.2	December 9-10, 2019	High	10 mm	Barrier section was drier during this visit. No contiguous flow within barrier section. No side channels and floodplain was dry.
9.1 to 9.2	December 18-19, 2019	High	64.4 mm (2.2 mm in past 24 hours)	Frozen, snow covered ground. Some very shallow wetland surface sheet flow. Sheet flow appears to be flashy, not lasting long.

The upper reach (Section 9.1) is a first order stream commencing in WL25. It was observed to have stable banks and imperceptible flow in a channel with moderate amounts of coarse woody debris and vegetative cover, and a muck-dominated substrate. The banks are stable, and the depth in this area ranges from 20-60 cm. Reach 9.2 is classified as primarily run habitat with small areas of riffle. This reach is stable and well shaded with overhanging vegetation. The water was cool (9.0˚C), with relatively low pH and dissolved oxygen (4.36 and 6.80 mg/L, respectively). Aquatic invertebrates were observed throughout WC9 (i.e., caddisflies), which indicate that there is an available food source for insectivorous fishes, and that the physical parameters of WC9 could support fish, provided access into this system.

Downstream of reach 9.1, WC9 flows through a subterranean section for approximately 20 m. During wetland and watercourse delineation surveys completed on June 6, 2019 during average flow conditions, the 20 m subterranean section was identified as a section completely lacking flow, or evidence thereof. The entire reach was covered with moss and vegetation species such as *Dennstaedtia punctilobula, Oclemena acuminata* and *Cornus canadensis*, which typically grow in either wetland or upland habitats, but not typically in flowing or standing water. Boulders within this section are covered with mosses including *Sphagnum girgensohnii*, which is also typically found in wetland habitats, but not in standing or flowing water. No evidence of moss trim lines, water marks, scour lines, or discoloration on rocks indicating flow were observed during any assessments. Water was not observed or heard flowing between boulders during this initial assessment.

WC9 was reassessed on August 12, September 19, and September 30, 2019 (with a high flow event, Hurricane Dorian, occurring between the August and September visits). While the highest flow from hurricane Dorian had receded by the time of the September 19th assessment, evidence of increased flow would still be visible. During each site assessment, contiguous standing or flowing water was not seen or heard in this section, and observations documented on June 6, 2019 were confirmed. Discontinuous small pockets of water were observed at the base of boulders, however the depth (5-10 cm) and distance between these pockets (2-3 m) was determined to be insufficient for most fish to navigate. Furthermore, the lack of flowing water between these isolated pockets would be a disincentive for fish to attempt to navigate between pockets of water. Those which may attempt to navigate between pockets of water would likely die as a result of stranding.

Moving further downstream, reaches 9.3 and 9.4 were assessed on August 12, 2019. While no flow was observed at reach 9.3, it was determined that this reach may be accessible to fish in higher flow conditions. Reach 9.4 was assessed during low flow, at which point there was no surface water connection to Gold Brook Lake. The assessor noted, however, that during periods of high flow, this reach may be accessible to fish. At the time of assessment, a 10 m long rock-filled berm separated the mouth of WC9 and the wetted edge of the lake. No water was observed flowing over the berm or beneath the rock substrate, nor was any obvious flow path identified.

During subsequent surveys in September 2019, discontinuous small pockets of water were observed at the base of boulders within the subterranean section, however the depth of these pockets (5-10 cm), and the distance between these pockets (2-3 m) was determined to be insufficient for most fish to navigate. Furthermore, the lack of flowing water between the isolated pockets would be a disincentive for fish to attempt to navigate between pockets of water, and those which may have attempted to navigate between pockets of water would likely die as a result of stranding.

During fall surveys (November and December 2019), water levels through the mapped subterranean section on WC9 were substantially higher than previously observed, with surface water dispersing as sheet flow into the surrounding swamp. During site visits completed on November 14-15, December 9-10, and December 18-19, 2019, flow was continuous throughout the previously identified subterranean reach, with the exception of three to five discontinuous, isolated pools which were documented throughout the reach following the most obvious flow path. These pools ranged from 5-25 cm deep, and were separated by horizontal distances ranging from 1-4 m, and vertical heights of 40-50 cm. While vertical heights between pools may be navigable by brook trout, the plunge pool depth would limit the ability of brook trout to navigate through this system.

During the assessment conducted on November 29, 2019, contiguous surface flow was observed throughout the barrier section. This assessment occurred immediately following a large storm event, during which 40.2 mm of precipitation was recorded at the Halifax Airport within 24 hours, and during seasonally high flow (November). Contiguous water was observed to connect the previously isolated pools predominantly through shallow (2-5 cm), wetland sheet flow. Based on these observations, this barrier section was determined to be accessible to fish immediately following a major rain event during seasonal high flow conditions. However, the vertical (40-50 cm) and horizontal (1-4 m) jump requirements between pools and the shallow sheet flow likely obstruct upstream passage for most fish, even during extreme high flow events. No fish have been caught in WC9 despite seven rounds of fish collection efforts comprising 306.2 seconds of electrofishing and 972.8 hours of trapping.

Additional high flow assessments were completed through 2020, the details of which are provided in an updated technical report (MEL, 2021).

3.2.3.2 Wetlands

Table 3-8 describes the fish habitat present within each wetland and its associated watercourse in the SA. Wetlands that were determined not to support fish habitat (i.e., no surface water connectivity and/or open water present within the wetland habitat) are not included in this table and are not discussed further in this section. In addition, wetlands with throughflow watercourses were not included if fish habitat was determined to the be confined to the watercourse channel.

Table 3-9. Fish Habitat - Wetlands

WL ID	Hydrological Regime	Associated Watercourse/Waterbody	Fish Habitat Description
1	Stream floodplain	WC1, WC2, WC3, WC10, WC11, WC12, Gold Brook	Wetland 1 serves as the active floodplain of Gold Brook with fish accessibility into the floodplain varying seasonally. Fish habitat is provided within open water (unconfined watercourses) in wetland. Contiguous surface water in wetland may provide shelter and food sources for generalist species, particularly small forage fish (American eel and banded killifish confirmed in Gold Brook, yellow perch, blacknose shiner, golden shiner, and ninespine stickleback potentially present).
18	Ponded throughflow	Beaver Pond, WC4, WC7	Open water observed in wetland with confirmed fish presence (adult brook trout and American eel; GEMTEC 2018). Inundated wetland habitat with deeper contiguous surface water may provide refuge and foraging areas for adult brook trout and American eel. No spawning habitat for brook trout (gravel substrate or groundwater seeps) identified. Fish passage into WC18 from Gold Brook Lake is currently restricted by the dechannelized portion of WC8 through WL20 (see Section 3.2.3.1.1.1).
20	Throughflow/bi-directional non-tidal	WC8 and Gold Brook Lake	Open water observed in wetland and unconfined WC5 throughflow. Inundated along the shores of Gold Brook Lake. Inundated wetland habitat with deeper contiguous

WL ID	Hydrological Regime	Associated Watercourse/Waterbody	Fish Habitat Description
			surface water may provide rearing, shelter and food for generalist species. Potential spawning habitat for generalist species observed along submerged vegetated wetland edge (yellow perch and banded killifish in Gold Brook Lake; American eel, blacknose shiner, golden shiner, and ninespine stickleback potentially present).
28	Throughflow/bi-directional non-tidal	WC14 and Gold Brook Lake	Open water observed in wetland and unconfined WC14 throughflow. Inundated from WC14/Gold Brook Lake. Inundated wetland habitat with deeper contiguous surface water may provide rearing, shelter and food for generalist species. Potential spawning habitat for generalist species observed along submerged vegetated wetland edge (yellow perch and banded killifish in Gold Brook Lake; American eel, blacknose shiner, golden shiner, and ninespine stickleback potentially present).

Four wetlands within the SA are considered to provide fish habitat. In addition to providing fish habitat within their associated watercourse and waterbodies, wetland habitat accessible to fish within the SA may generally provide suitable habitat for generalist species that prefer slack water, highly vegetated areas and soft, organic substrates for all or some life stages (i.e., American eel, blacknose shiner, golden shiner, ninespine stickleback, and yellow perch). Wetland habitat is generally considered to provide rearing, refuge, and food sources for these species.

4.0 CONCLUSIONS

This Baseline Fish and Fish Habitat Technical Report was prepared as background information in anticipation of an EARD for the Goldboro Gold Project. The purpose of this report was to describe existing baseline conditions of fish and fish habitat within the SA through the reporting of baseline fish and fish habitat studies conducted from 2015-2017.

The SA was defined as an area of land encompassing all aquatic features (watercourses, waterbodies, and wetlands) anticipated to be directly or indirectly anticipated by the Project based on preliminary infrastructure layouts. A comprehensive fish and fish habitat field program was conducted in 2020, the results of which are presented in a separate and updated technical report, in addition to an updated SA (MEL, 2020).

This Technical Report presented the results of field studies conducted from 2017-2019 and published literature. It is anticipated that this information will support the registering of a provincial EARD by understanding the potential project interactions with fish and fish habitat, and to facilitate regulatory approvals for impacts to fish and fish habitat wherever necessary.

Electrofishing and trapping surveys confirmed the presence of five fish species in the SA, including American eel, banded killifish, brook trout, golden shiner, and yellow perch. American eel and brook trout were most frequently captured within linear watercourses, while yellow perch was most abundant in Gold Brook Lake. While not identified within the dedicated fishing surveys, blacknose shiner and

ninespine stickleback are expected to be present within the Study Area based on fish studies conducted for the Goldboro LNG project (AMEC, 2006). Fish habitat characterizations were conducted for each linear watercourse and wetland within the SA confirmed or assumed to provide fish and fish habitat.

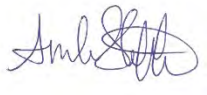
Overall, the aquatic ecosystem within the SA is characterized by moderately acidic conditions. Low pH levels may limit fish habitat quality throughout the SA, particularly when combined with high summer temperatures observed in Gold Brook and Gold Brook Lake).

All 17 linear watercourses (including Gold Brook) and three waterbodies (Beaver Pond, Gold Brook Lake, and a historic settling pond) identified within the SA were confirmed or presumed fisheries resources. Four wetlands within the SA are considered accessible to fish.

5.0 CERTIFICATE

This document has been prepared by Environmental Scientist Amber Stoffer (MREM) and reviewed by the undersigned.

Thank you,



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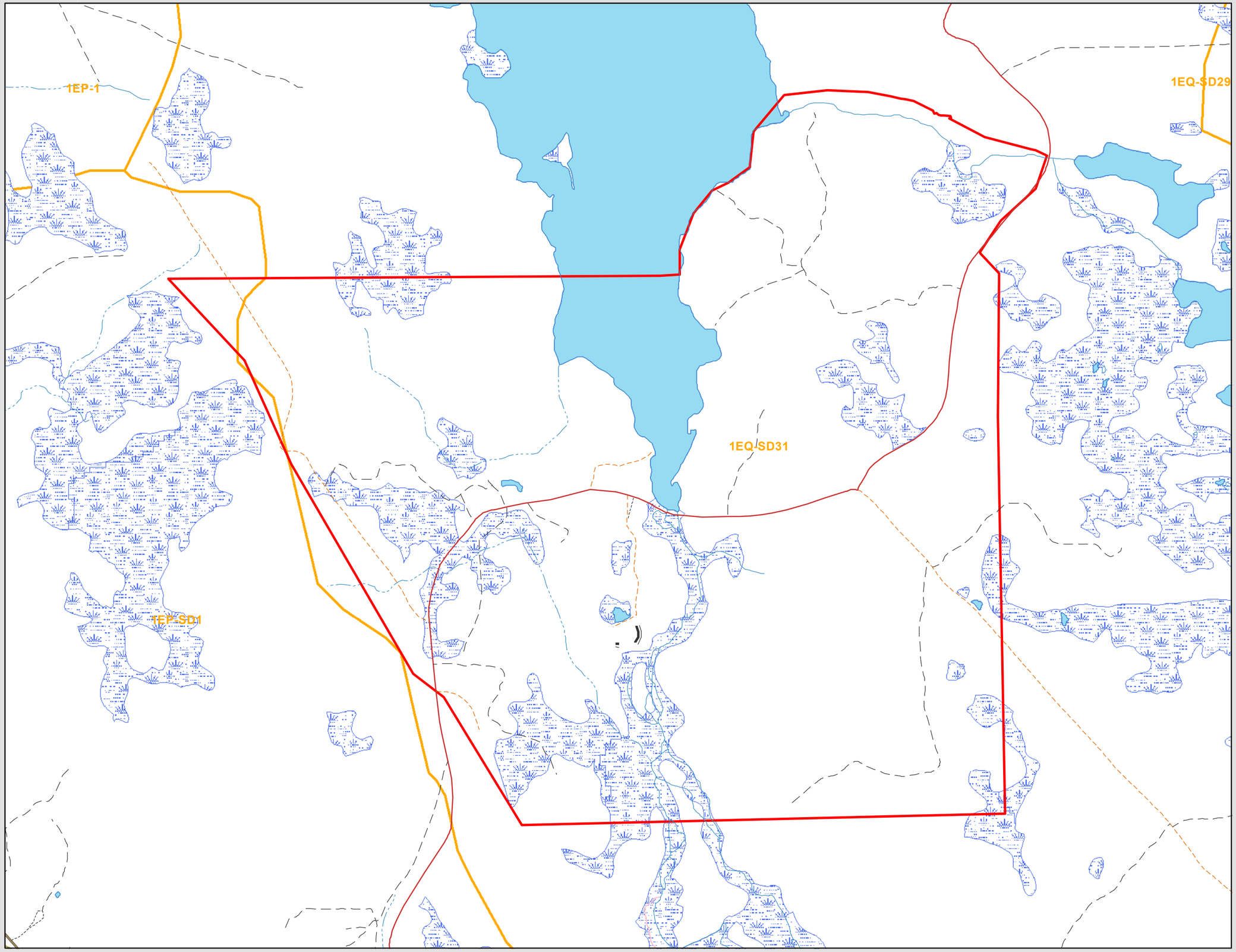
APPENDIX A: FIGURES



Prepared For:

Anaconda Mining

From the ground up

FIGURE 1

Goldboro Gold Project
Study Area

Goldboro, Guysborough, NS

- Project Area
- NSE Wetlands Inventory
- Lakes
- Secondary Watersheds

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 0.1 0.2 0.4 km

1:10,000 Scale when printed @ 11" x 17"

Drawn By: MMD
Reviewed By:

Date: 2021-08-19

McCallum Environmental Ltd.

Document Name: 200504_Study_Area

Prepared For:

Anaconda Mining

From the ground up

FIGURE 2

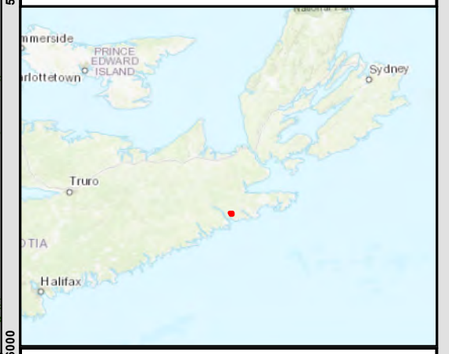
Fish and Fish Habitat Survey Methods

Goldboro, NS

- GEMTEC Stream Sample Location (2017)
- GEMTEC Stream Assessment Locations
- GEMTEC Fish Trapping
- MEL Fish Trapping
- RCAP MS Sampling
- Field Delineated Subterranean Watercourse Section
- MEL Electrofished Reaches
- Field Delineated Drainage
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Open Water
- Field Delineated Wetlands

Proposed Infrastructure

- Pit / Decline
- Noise Attenuation
- Tailings Storage Facility
- Waste Rock
- Overburden Pile
- Portal Ramp
- ROM Pad
- Water Pond
- Explosives-Detonator Storage
- Fuel Storage
- Mill; Site Buildings
- Portal; Shaft locations
- BP-GA-Portal outline-East Portal
- Ventilation
- Goldbrook Rd (Exisitng)
- Goldbrook Rd (New)
- Road-Site
- Road culverts
- NSE Wetlands outside Study



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Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

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1:8,000 Scale when printed @ 11" x 17"

Drawn By: EP

Reviewed By: MMD

Date: 2021-08-19

McCallum Environmental Ltd.

Document Name: 200504_Fish_Sample_Locations

605500 606000 606500 607000 607500 608000

5007500 5007000 5006500 5006000 5005500

Prepared For:

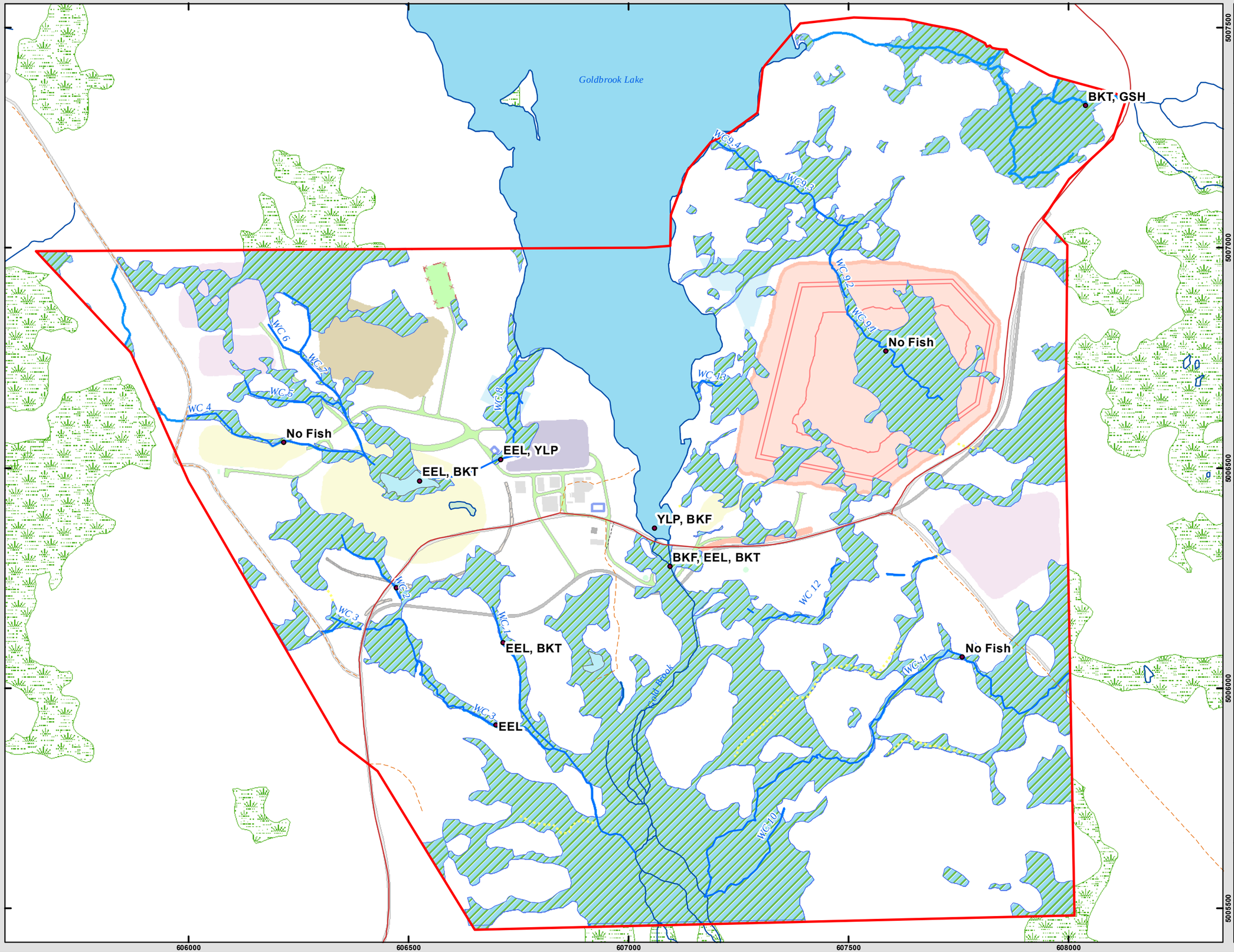
Anaconda Mining

From the ground up

FIGURE 3

Fish and Fish Habitat Results

Goldboro, NS



- Fish Survey Results: MEL & Gemtec, 2017-2019
- Field Delineated Drainage
- Field Delineated Watercourse
- NSE Mapped Watercourse
- Open Water
- Field Delineated Wetlands
- NSE Wetlands outside Study Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 120 240 480 m

1:8,000 Scale when printed @ 11" x 17"

Drawn By: EP

Reviewed By: MMD

Date: 2021-08-19

McCallum Environmental Ltd.

Document Name: 210819_Fig3_results

APPENDIX B: PHOTOLOG

Photo 1: Beaver Pond – WL 18 (June 2019)

Photo 2: Gold Brook Lake - Eastern Shoreline (August 2019)

Photo 3: Gold Brook Lake – Western Shoreline (June 2019)

Photo 4: Gold Brook Lake - Southern Shoreline (August 2019)

Photo 5: WC1 (June 2019)

Photo 6: WC2 (June 2019)

Photo 7: WC3 (June 2019)

Photo 8: WC4 (June 2019)

Photo 9: WC5 (November 2018)

Photo 10: WC6 (November 2018)

Photo 11: WC7 (June 2019)

Photo 12: WC8 (June 2019)

Photo 13: WC8 – Disperses through WL20 (June 2019)

Photo 14: WC9.1 (September 2019)

Photo 15: WC9.2 – Subterranean Section (August 2019)

Photo 16: WC9.3 (August 2019)

Photo 17: WC9.4 (August 2019)

Photo 18: WC9 – Outlet to Gold Brook Lake (August 2019)

Photo 19: WC10 (April 2019)

Photo 20: WC11 (June 2019)

Photo 21: WC12 – Channelized (June 2019)

Photo 22: WC12 – Dechannelized (June 2019)

Photo 23: WC13 (April 2019)

Photo 24: WC14.1 (August 2019)

Photo 25: WC14.2 (August 2019)

Photo 26: WC14.3 (August 2019)

Photo 27: WC15 (August 2019)

Photo 28: WC16 (August 2019)

Photo 29: Brook Trout

Photo 30: Golden Shiner

Photo 31: Yellow Perch

Photo 32: Banded Killifish

Photo 33: American Eel

APPENDIX C: ACCDC

Atlantic Canada Conservation Data Centre
Centre de données sur la conservation du Canada atlantique

DATA REPORT 5762: Goldboro, NS

Prepared 3 February 2017
by J. Churchill, Data Manager

CONTENTS OF REPORT

Map 1. A 100 km buffer around the study area

1.0 PREFACE

The Atlantic Canada Conservation Data Centre (ACCDC) is part of a network of NatureServe data centres and heritage programs serving 50 states in the U.S.A, 10 provinces and 1 territory in Canada, plus several Central and South American countries. The NatureServe network is more than 30 years old and shares a common conservation data methodology. The ACCDC was founded in 1997, and maintains data for the jurisdictions of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Although a non-governmental agency, the ACCDC is supported by 6 federal agencies and 4 provincial governments, as well as through outside grants and data processing fees. URL: www.ACCDC.com.

Upon request and for a fee, the ACCDC queries its database and produces customized reports of the rare and endangered flora and fauna known to occur in or near a specified study area. As a supplement to that data, the ACCDC includes locations of managed areas with some level of protection, and known sites of ecological interest or sensitivity.

1.1 DATA LIST

Included datasets:

Filename	Contents
GoldboroNS_5762ob.xls	All Rare and legally protected *Flora and Fauna* within 5 km of your study area
GoldboroNS_5762ob100km.xls	A list of Rare and legally protected *Flora and Fauna* within 100 km of your study area
GoldboroNS_5762ma.xls	All *Managed Areas* in your study area
GoldboroNS_5762ff.xls	Rare and common *Freshwater Fish* in your study area (DFO database)

1.2 RESTRICTIONS

The ACCDC makes a strong effort to verify the accuracy of all the data that it manages, but it shall not be held responsible for any inaccuracies in data that it provides. By accepting ACCDC data, recipients assent to the following limits of use:

a) Data is restricted to use by trained personnel who are sensitive to landowner interests and to potential threats to rare and/or endangered flora and fauna posed by the information provided.
b) Data is restricted to use by the specified Data User; any third party requiring data must make its own data request.
c) The ACCDC requires Data Users to cease using and delete data 12 months after receipt, and to make a new request for updated data if necessary at that time.
d) ACCDC data responses are restricted to the data in our Data System at the time of the data request.
e) Each record has an estimate of locational uncertainty, which must be referenced in order to understand the record's relevance to a particular location. Please see attached Data Dictionary for details.
f) ACCDC data responses are not to be construed as exhaustive inventories of taxa in an area.
g) The absence of a taxon cannot be inferred by its absence in an ACCDC data response.

1.3 ADDITIONAL INFORMATION

The attached file DataDictionary 2.1.pdf provides metadata for the data provided.

Please direct any additional questions about ACCDC data to the following individuals:

Plants, Lichens, Ranking Methods, All other Inquiries
Sean Blaney, Senior Scientist, Executive Director
Tel: (506) 364-2658
sblaney@mta.ca

Animals (Fauna)
John Klymko, Zoologist
Tel: (506) 364-2660
jklymko@mta.ca

Plant Communities
Sarah Robinson , Community Ecologist
Tel: (506) 364-2664
srobinson@mta.ca

Data Management, GIS
James Churchill, Data Manager
Tel: (902) 679-6146
jlchurchill@mta.ca

Billing
Jean Breau
Tel: (506) 364-2657
jrbreau@mta.ca

Questions on the biology of Federal Species at Risk can be directed to ACCDC: (506) 364-2658, with questions on Species at Risk regulations to: Samara Eaton, Canadian Wildlife Service (NB and PE): (506) 364-5060 or Julie McKnight, Canadian Wildlife Service (NS): (902) 426-4196.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in New Brunswick, please contact Stewart Lusk, Natural Resources: (506) 453-7110.

For provincial information about rare taxa and protected areas, or information about game animals, deer yards, old growth forests, archeological sites, fish habitat etc., in Nova Scotia, please contact Sherman Boates, NSDNR: (902) 679-6146. To determine if location-sensitive species (section 4.3) occur near your study site please contact a NSDNR Regional Biologist:

Western: Duncan Bayne
(902) 648-3536
Duncan.Bayne@novascotia.ca

Western: Donald Sam
(902) 634-7525
Donald.Sam@novascotia.ca

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(902) 893-6353
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(902) 863-7523
Mark.Pulsifer@novascotia.ca

Eastern: Donald Anderson
(902) 295-3949
Donald.Anderson@novascotia.ca

Eastern: Terry Power
(902) 563-3370
Terrance.Power@novascotia.ca

For provincial information about rare taxa and protected areas, or information about game animals, fish habitat etc., in Prince Edward Island, please contact Garry Gregory, PEI Dept. of Communities, Land and Environment: (902) 569-7595.

2.0 RARE AND ENDANGERED SPECIES

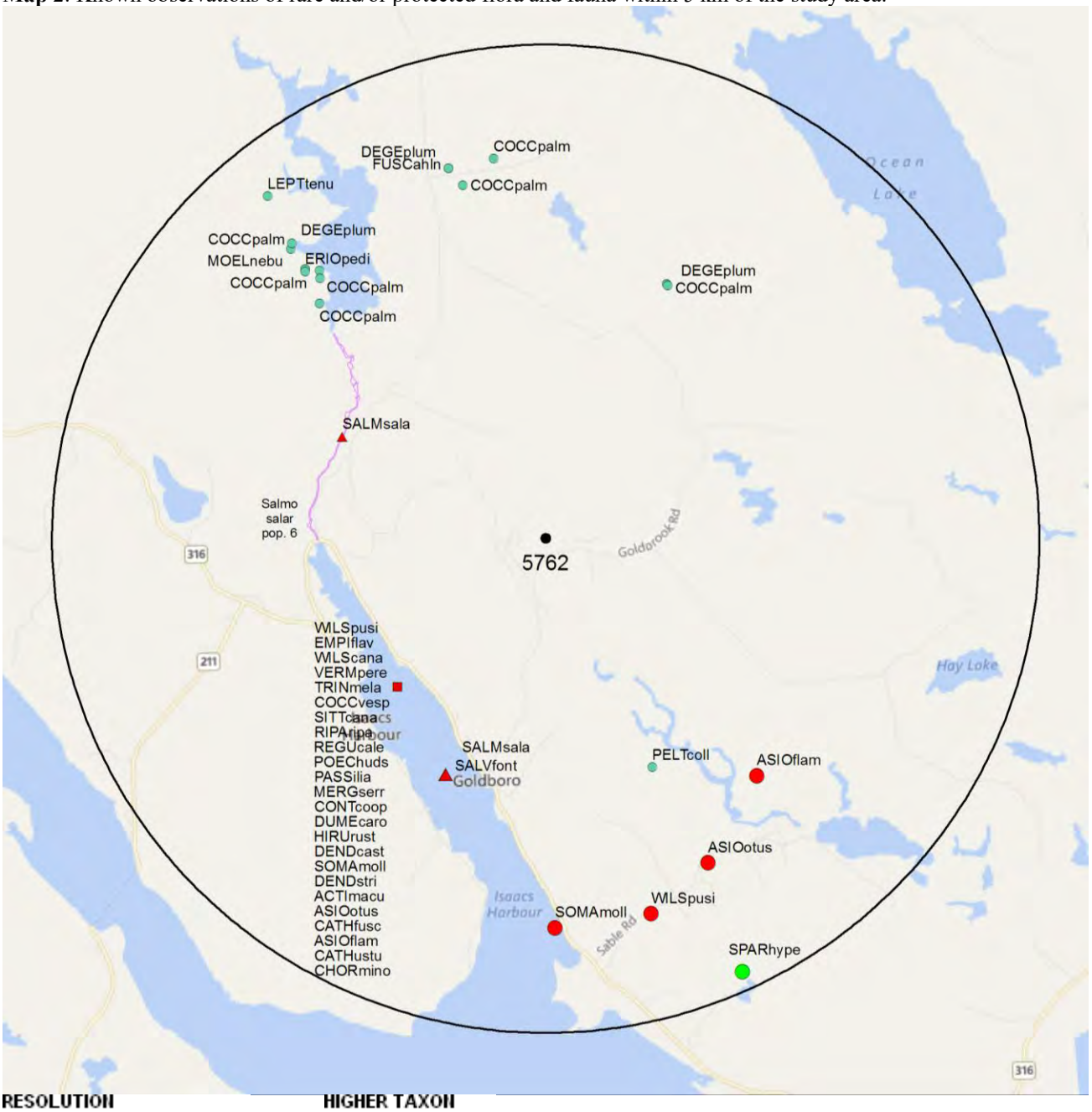
2.1 FLORA

A 5 km buffer around the study area contains 1 record of 1 vascular, 21 records of 7 nonvascular flora (Map 2 and attached: *ob.xls).

2.2 FAUNA

A 5 km buffer around the study area contains 37 records of 26 vertebrate, no records of invertebrate fauna (Map 2 and attached data files - see 1.1 Data List). Please see section 4.3 to determine if 'location-sensitive' species occur near your study site.

Map 2: Known observations of rare and/or protected flora and fauna within 5 km of the study area.



RESOLUTION
- 4.7 within 50s of kilometers
- 4.0 within 10s of kilometers
- 3.7 within 5s of kilometers
- 3.0 within kilometers
- 2.7 within 500s of meters
- 2.0 within 100s of meters
- 1.7 within 10s of meters

HIGHER TAXON
- vertebrate fauna
- invertebrate fauna
- vascular flora
- nonvascular flora

3.0 SPECIAL AREAS

3.1 MANAGED AREAS

The GIS scan identified 2 managed areas in the vicinity of the study area (Map 3 and attached file: *ma*.xls)

3.2 SIGNIFICANT AREAS

The GIS scan identified no biologically significant sites in the vicinity of the study area (Map 3)

Map 3: Boundaries and/or locations of known Managed and Significant Areas within 5 km of the study area.

4.0 RARE SPECIES LISTS

Rare and/or endangered taxa (excluding "location-sensitive" species, section 4.3) within the 5 km-buffered area listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record). [P] = vascular plant, [N] = nonvascular plant, [A] = vertebrate animal, [I] = invertebrate animal, [C] = community. Note: records are from attached files *ob.xls/*ob.shp only.

4.1 FLORA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
N	*Erioderma pedicellatum (Atlantic pop.)*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	1 At Risk	3	3.6 ± 0.0
N	*Degelia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	3	2.9 ± 0.0
N	*Peltigera collina*	Tree Pelt Lichen				S2?	3 Sensitive	1	2.6 ± 0.0
N	*Leptogium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	6 Not Assessed	1	4.5 ± 0.0
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	4 Secure	1	3.9 ± 0.0
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle Lichen				S3	4 Secure	1	3.7 ± 0.0
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	4 Secure	11	2.8 ± 0.0
P	*Sparganium hyperboreum*	Northern Burreed				S1S2	3 Sensitive	1	4.8 ± 0.0

4.2 FAUNA

	Scientific *Name*	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S2S3B	1 At Risk	1	2.1 ± 7.0
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B	2 May Be At Risk	1	2.1 ± 7.0
A	*Hirundo rustica*	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	1	2.1 ± 7.0
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	1	2.1 ± 7.0
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3S4B	1 At Risk	1	2.1 ± 7.0
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	2	2.1 ± 7.0
A	*Salmo salar*	Atlantic Salmon				S1	2 May Be At Risk	2	2.3 ± 0.0
A	*Asio otus*	Long-eared Owl				S2S3	2 May Be At Risk	2	2.1 ± 7.0
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	2	2.1 ± 7.0
A	*Sitta canadensis*	Red-breasted Nuthatch				S3	4 Secure	1	2.1 ± 7.0
A	*Salvelinus fontinalis*	Brook Trout				S3	3 Sensitive	1	2.6 ± 1.0
A	*Dumetella carolinensis*	Gray Catbird				S3B	2 May Be At Risk	1	2.1 ± 7.0
A	*Wilsonia pusilla*	Wilson's Warbler				S3B	3 Sensitive	2	2.1 ± 7.0
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	1	2.1 ± 7.0
A	*Somateria mollissima*	Common Eider				S3S4	4 Secure	3	2.1 ± 7.0
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	2	2.1 ± 7.0
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	1	2.1 ± 7.0
A	*Regulus calendula*	Ruby-crowned Kinglet				S3S4B	3 Sensitive	2	2.1 ± 7.0
A	*Catharus fuscescens*	Veery				S3S4B	4 Secure	1	2.1 ± 7.0
A	*Catharus ustulatus*	Swainson's Thrush				S3S4B	4 Secure	2	2.1 ± 7.0
A	*Vermivora peregrina*	Tennessee Warbler				S3S4B	3 Sensitive	1	2.1 ± 7.0
A	*Dendroica castanea*	Bay-breasted Warbler				S3S4B	3 Sensitive	2	2.1 ± 7.0
A	*Dendroica striata*	Blackpoll Warbler				S3S4B	3 Sensitive	1	2.1 ± 7.0
A	*Passerella iliaca*	Fox Sparrow				S3S4B	4 Secure	1	2.1 ± 7.0
A	*Coccothraustes vespertinus*	Evening Grosbeak				S3S4B,S3N	4 Secure	1	2.1 ± 7.0
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5N	4 Secure	1	2.1 ± 7.0

4.3 LOCATION SENSITIVE SPECIES

The Department of Natural Resources in each Maritimes province considers a number of species "location sensitive". Concern about exploitation of location-sensitive species precludes inclusion of precise coordinates in this report. Those intersecting a 5 km buffer of your study area are indicated below with "YES".

Nova Scotia

Scientific *Name*	Common Name	SARA	Prov Legal Prot	Known within 5 km of Study Site?
Fraxinus nigra	Black Ash		Threatened	No
Emydoidea blandingii	*Blanding's Turtle - Nova Scotia pop.*	Endangered	Vulnerable	No
Glyptemys insculpta	Wood Turtle	Threatened	Threatened	No
Falco peregrinus pop. 1	Peregrine Falcon - anatum/tundrius pop.	Special Concern	Vulnerable	No
Bat Hibernaculum		[Endangered][1]	[Endangered][1]	No

1 *Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NS Endangered Species Act.

4.4 SOURCE BIBLIOGRAPHY

The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

# recs	CITATION
34	Lepage, D. 2014. Maritime Breeding Bird Atlas Database. Bird Studies Canada, Sackville NB, 407,838 recs.
14	Cameron, R.P. 2011. Lichen observations, 2011. Nova Scotia Environment & Labour, 731 recs.
4	Benjamin, L.K. (compiler). 2007. Significant Habitat & Species Database. Nova Scotia Dept Natural Resources, 8439 recs.
4	Neily, T.H. & Pepper, C.; Toms, B. 2013. Nova Scotia lichen location database. Mersey Tobeatic Research Institute, 1301 records.
2	Staff, DNR 2007. Restricted & Limited Use Land Database (RLUL).
1	Cameron, R.P. 2009. Erioderma pedicellatum database, 1979-2008. Dept Environment & Labour, 103 recs.
1	Munro, Marian K. Nova Scotia Provincial Museum of Natural History Herbarium Database. Nova Scotia Provincial Museum of Natural History, Halifax, Nova Scotia. 2014.
1	Neily, T.H. 2010. Erioderma Pedicellatum records 2005-09. Mersey Tobiatic Research Institute, 67 recs.
1	Newell, R.E. 2000. E.C. Smith Herbarium Database. Acadia University, Wolfville NS, 7139 recs.

5.0 RARE SPECIES WITHIN 100 KM

A 100 km buffer around the study area contains 13059 records of 121 vertebrate and 363 records of 37 invertebrate fauna; 2792 records of 222 vascular, 607 records of 29 nonvascular flora (attached: *ob100km.xls).

Taxa within 100 km of the study site that are rare and/or endangered in the province in which the study site occurs. All ranks correspond to the province in which the study site falls, even for out-of-province records. Taxa are listed in order of concern, beginning with legally listed taxa, with the number of observations per taxon and the distance in kilometers from study area centroid to the closest observation (± the precision, in km, of the record).

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Myotis lucifugus*	Little Brown Myotis	Endangered	Endangered	Endangered	S1	1 At Risk	21	27.3 ± 0.0	NS
A	*Salmo salar pop. 1*	Atlantic Salmon - Inner Bay of Fundy pop.	Endangered	Endangered		S1	2 May Be At Risk	1	95.3 ± 0.0	NS
A	*Charadrius melodus melodus*	Piping Plover melodus ssp	Endangered	Endangered	Endangered	S1B	1 At Risk	517	18.6 ± 7.0	NS
A	*Sterna dougallii*	Roseate Tern	Endangered	Endangered	Endangered	S1B	1 At Risk	61	10.8 ± 0.0	NS
A	*Calidris canutus rufa*	Red Knot rufa ssp	Endangered		Endangered	S2M	1 At Risk	11	48.4 ± 0.0	NS
A	*Caprimulgus vociferus*	Whip-Poor-Will	Threatened	Threatened	Threatened	S1?B	1 At Risk	2	57.8 ± 7.0	NS
A	*Catharus bicknelli*	Bicknell's Thrush	Threatened	Special Concern	Endangered	S1S2B	1 At Risk	1	76.0 ± 7.0	NS
A	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	3 Sensitive	124	21.6 ± 10.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Anguilla rostrata*	American Eel	Threatened			S2	4 Secure	1	91.7 ± 0.0	NS
A	*Chaetura pelagica*	Chimney Swift	Threatened	Threatened	Endangered	S2B,S1M	1 At Risk	80	20.4 ± 7.0	NS
A	*Chordeiles minor*	Common Nighthawk	Threatened	Threatened	Threatened	S2S3B	1 At Risk	173	2.1 ± 7.0	NS
A	*Riparia riparia*	Bank Swallow	Threatened			S2S3B	2 May Be At Risk	156	2.1 ± 7.0	NS
A	*Hirundo rustica*	Barn Swallow	Threatened		Endangered	S3B	1 At Risk	404	2.1 ± 7.0	NS
A	*Contopus cooperi*	Olive-sided Flycatcher	Threatened	Threatened	Threatened	S3B	1 At Risk	559	2.1 ± 7.0	NS
A	*Wilsonia canadensis*	Canada Warbler	Threatened	Threatened	Endangered	S3S4B	1 At Risk	318	2.1 ± 7.0	NS
A	*Dolichonyx oryzivorus*	Bobolink	Threatened		Vulnerable	S3S4B	3 Sensitive	188	16.3 ± 7.0	NS
A	*Sturnella magna*	Eastern Meadowlark	Threatened			SHB	3 Sensitive	2	24.8 ± 0.0	NS
A	*Hylocichla mustelina*	Wood Thrush	Threatened			SUB	5 Undetermined	8	12.0 ± 7.0	NS
A	*Passerculus sandwichensis princeps*	Savannah Sparrow princeps ssp	Special Concern	Special Concern		S1B	3 Sensitive	2	16.3 ± 7.0	NS
A	*Falco peregrinus pop. 1*	Peregrine Falcon - anatum/tundrius	Special Concern	Special Concern	Vulnerable	S1B,SNAM	3 Sensitive	2	51.9 ± 7.0	NS
A	*Bucephala islandica (Eastern pop.)*	Barrow's Goldeneye - Eastern pop.	Special Concern	Special Concern		S1N	1 At Risk	1	94.8 ± 0.0	NS
A	*Asio flammeus*	Short-eared Owl	Special Concern	Special Concern		S1S2B	2 May Be At Risk	4	2.1 ± 7.0	NS
A	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	2 May Be At Risk	165	17.8 ± 0.0	NS
A	*Histrionicus histrionicus pop. 1*	Harlequin Duck - Eastern pop.	Special Concern	Special Concern	Endangered	S2N	1 At Risk	33	36.0 ± 2.0	NS
A	*Morone saxatilis pop. 1*	Striped Bass- Southern Gulf of St Lawrence pop.	Special Concern			S2S3N	2 May Be At Risk	1	52.5 ± 1.0	NS
A	*Chelydra serpentina*	Snapping Turtle	Special Concern	Special Concern	Vulnerable	S3	3 Sensitive	12	33.7 ± 1.0	NS
A	*Contopus virens*	Eastern Wood-Pewee	Special Concern		Vulnerable	S3S4B	3 Sensitive	215	11.6 ± 7.0	NS
A	*Tryngites subruficollis*	Buff-breasted Sandpiper	Special Concern			SNA	8 Accidental	1	85.4 ± 0.0	NS
A	*Lynx canadensis*	Canadian Lynx	Not At Risk		Endangered	S1	1 At Risk	6	68.1 ± 1.0	NS
A	*Accipiter cooperii*	Cooper's Hawk	Not At Risk			S1?B	5 Undetermined	2	97.5 ± 0.0	NS
A	*Aegolius funereus*	Boreal Owl	Not At Risk			S2?B	5 Undetermined	5	30.7 ± 7.0	NS
A	*Hemidactylium scutatum*	Four-toed Salamander	Not At Risk			S3	4 Secure	11	14.5 ± 0.0	NS
A	*Sterna hirundo*	Common Tern	Not At Risk			S3B	3 Sensitive	323	8.6 ± 7.0	NS
A	*Sialia sialis*	Eastern Bluebird	Not At Risk			S3B	3 Sensitive	15	11.6 ± 7.0	NS
A	*Buteo lagopus*	Rough-legged Hawk	Not At Risk			S3N	4 Secure	2	25.7 ± 6.0	NS
A	*Accipiter gentilis*	Northern Goshawk	Not At Risk			S3S4	4 Secure	48	18.6 ± 7.0	NS
A	*Circus cyaneus*	Northern Harrier	Not At Risk			S3S4B	4 Secure	181	14.3 ± 7.0	NS
A	*Ammodramus nelsoni*	Nelson's Sparrow	Not At Risk			S3S4B	4 Secure	70	8.6 ± 7.0	NS
A	*Alces americanus*	Moose			Endangered	S1	1 At Risk	23	44.5 ± 1.0	NS
A	*Salmo salar*	Atlantic Salmon				S1	2 May Be At Risk	68	2.3 ± 0.0	NS
A	*Picoides dorsalis*	American Three-toed Woodpecker				S1?	5 Undetermined	4	21.8 ± 7.0	NS
A	*Passerina cyanea*	Indigo Bunting				S1?B	5 Undetermined	4	37.9 ± 0.0	NS
A	*Nycticorax nycticorax*	Black-crowned Night-heron				S1B	2 May Be At Risk	1	62.3 ± 7.0	NS
A	*Anas acuta*	Northern Pintail				S1B	2 May Be At Risk	2	38.1 ± 7.0	NS
A	*Oxyura jamaicensis*	Ruddy Duck				S1B	4 Secure	2	49.7 ± 7.0	NS
A	*Haematopus palliatus*	American Oystercatcher				S1B	5 Undetermined	7	51.9 ± 7.0	NS
A	*Myiarchus crinitus*	Great Crested Flycatcher				S1B	2 May Be At Risk	1	99.3 ± 7.0	NS
A	*Mimus polyglottos*	Northern Mockingbird				S1B	4 Secure	15	16.3 ± 7.0	NS
A	*Toxostoma rufum*	Brown Thrasher				S1B	5 Undetermined	4	47.7 ± 0.0	NS
A	*Vireo gilvus*	Warbling Vireo				S1B	5 Undetermined	5	53.1 ± 7.0	NS
A	*Dendroica pinus*	Pine Warbler				S1B	5 Undetermined	2	99.3 ± 7.0	NS
A	*Calidris minutilla*	Least Sandpiper				S1B,S3M	4 Secure	50	40.9 ± 0.0	NS
A	*Charadrius semipalmatus*	Semipalmated Plover				S1B,S3S4M	4 Secure	100	30.9 ± 0.0	NS
A	*Pluvialis dominica*	American Golden-Plover				S1S2M	3 Sensitive	10	53.9 ± 0.0	NS
A	*Limosa haemastica*	Hudsonian Godwit				S1S2M	3 Sensitive	4	53.9 ± 0.0	NS
A	*Vireo philadelphicus*	Philadelphia Vireo				S2?B	5 Undetermined	14	57.8 ± 7.0	NS
A	*Anas strepera*	Gadwall				S2B	2 May Be At Risk	2	48.7 ± 0.0	NS
A	*Empidonax traillii*	Willow Flycatcher				S2B	3 Sensitive	4	38.1 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
A	*Dendroica tigrina*	Cape May Warbler				S2B	3 Sensitive	67	11.6 ± 7.0	NS
A	*Piranga olivacea*	Scarlet Tanager				S2B	5 Undetermined	5	50.3 ± 7.0	NS
A	*Pooecetes gramineus*	Vesper Sparrow				S2B	2 May Be At Risk	6	21.8 ± 7.0	NS
A	*Molothrus ater*	Brown-headed Cowbird				S2B	4 Secure	28	20.4 ± 7.0	NS
A	*Bucephala clangula*	Common Goldeneye				S2B,S5N	4 Secure	103	7.1 ± 12.0	NS
A	*Branta bernicla*	Brant				S2M	3 Sensitive	1	36.3 ± 16.0	NS
A	*Phalacrocorax carbo*	Great Cormorant				S2S3	3 Sensitive	84	44.5 ± 7.0	NS
A	*Asio otus*	Long-eared Owl				S2S3	2 May Be At Risk	23	2.1 ± 7.0	NS
A	*Carduelis pinus*	Pine Siskin				S2S3	3 Sensitive	201	8.6 ± 7.0	NS
A	*Rallus limicola*	Virginia Rail				S2S3B	5 Undetermined	7	38.5 ± 7.0	NS
A	*Tringa semipalmata*	Willet				S2S3B	2 May Be At Risk	352	8.6 ± 7.0	NS
A	*Petrochelidon pyrrhonota*	Cliff Swallow				S2S3B	2 May Be At Risk	89	16.3 ± 7.0	NS
A	*Pheucticus ludovicianus*	Rose-breasted Grosbeak				S2S3B	3 Sensitive	158	8.6 ± 7.0	NS
A	*Icterus galbula*	Baltimore Oriole				S2S3B	2 May Be At Risk	20	36.5 ± 7.0	NS
A	*Pinicola enucleator*	Pine Grosbeak				S2S3B,S5N	2 May Be At Risk	71	12.0 ± 7.0	NS
A	*Numenius phaeopus hudsonicus*	Hudsonian Whimbrel				S2S3M	3 Sensitive	24	53.9 ± 0.0	NS
A	*Calidris melanotos*	Pectoral Sandpiper				S2S3M	4 Secure	12	58.6 ± 0.0	NS
A	*Perisoreus canadensis*	Gray Jay				S3	3 Sensitive	277	8.6 ± 7.0	NS
A	*Poecile hudsonica*	Boreal Chickadee				S3	3 Sensitive	494	2.1 ± 7.0	NS
A	*Sitta canadensis*	Red-breasted Nuthatch				S3	4 Secure	396	2.1 ± 7.0	NS
A	*Alosa pseudoharengus*	Alewife				S3	3 Sensitive	19	18.9 ± 1.0	NS
A	*Salvelinus fontinalis*	Brook Trout				S3	3 Sensitive	31	2.6 ± 1.0	NS
A	*Salvelinus namaycush*	Lake Trout				S3	3 Sensitive	1	80.4 ± 0.0	NS
A	*Calidris maritima*	Purple Sandpiper				S3?N	3 Sensitive	25	16.5 ± 13.0	NS
A	*Calcarius lapponicus*	Lapland Longspur				S3?N	4 Secure	1	79.9 ± 0.0	NS
A	*Falco sparverius*	American Kestrel				S3B	4 Secure	211	11.6 ± 7.0	NS
A	*Charadrius vociferus*	Killdeer				S3B	3 Sensitive	141	16.3 ± 7.0	NS
A	*Gallinago delicata*	Wilson's Snipe				S3B	3 Sensitive	224	8.6 ± 7.0	NS
A	*Sterna paradisaea*	Arctic Tern				S3B	2 May Be At Risk	84	8.6 ± 7.0	NS
A	*Coccyzus erythropthalmus*	Black-billed Cuckoo				S3B	2 May Be At Risk	43	21.8 ± 7.0	NS
A	*Tyrannus tyrannus*	Eastern Kingbird				S3B	3 Sensitive	70	16.3 ± 7.0	NS
A	*Dumetella carolinensis*	Gray Catbird				S3B	2 May Be At Risk	159	2.1 ± 7.0	NS
A	*Wilsonia pusilla*	Wilson's Warbler				S3B	3 Sensitive	58	2.1 ± 7.0	NS
A	*Tringa melanoleuca*	Greater Yellowlegs				S3B,S3S4M	3 Sensitive	173	2.1 ± 7.0	NS
A	*Oceanodroma leucorhoa*	Leach's Storm-Petrel				S3B,S5M	4 Secure	58	13.9 ± 0.0	NS
A	*Fratercula arctica*	Atlantic Puffin				S3B,S5N	3 Sensitive	2	60.4 ± 7.0	NS
A	*Pluvialis squatarola*	Black-bellied Plover				S3M	4 Secure	76	38.0 ± 0.0	NS
A	*Tringa flavipes*	Lesser Yellowlegs				S3M	4 Secure	99	44.4 ± 0.0	NS
A	*Arenaria interpres*	Ruddy Turnstone				S3M	4 Secure	44	30.9 ± 0.0	NS
A	*Calidris pusilla*	Semipalmated Sandpiper				S3M	3 Sensitive	80	48.4 ± 0.0	NS
A	*Calidris fuscicollis*	White-rumped Sandpiper				S3M	4 Secure	17	58.6 ± 0.0	NS
A	*Limnodromus griseus*	Short-billed Dowitcher				S3M	4 Secure	27	58.6 ± 0.0	NS
A	*Calidris alba*	Sanderling				S3M,S2N	4 Secure	31	52.3 ± 0.0	NS
A	*Somateria mollissima*	Common Eider				S3S4	4 Secure	504	2.1 ± 7.0	NS
A	*Picoides arcticus*	Black-backed Woodpecker				S3S4	3 Sensitive	71	8.6 ± 7.0	NS
A	*Loxia curvirostra*	Red Crossbill				S3S4	4 Secure	51	18.6 ± 7.0	NS
A	*Botaurus lentiginosus*	American Bittern				S3S4B	3 Sensitive	139	20.2 ± 0.0	NS
A	*Anas discors*	Blue-winged Teal				S3S4B	2 May Be At Risk	61	18.6 ± 7.0	NS
A	*Actitis macularius*	Spotted Sandpiper				S3S4B	3 Sensitive	401	2.1 ± 7.0	NS
A	*Empidonax flaviventris*	Yellow-bellied Flycatcher				S3S4B	3 Sensitive	481	2.1 ± 7.0	NS
A	*Regulus calendula*	Ruby-crowned Kinglet				S3S4B	3 Sensitive	1140	2.1 ± 7.0	NS
A	*Catharus fuscescens*	Veery				S3S4B	4 Secure	203	2.1 ± 7.0	NS

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A	*Catharus ustulatus*	Swainson's Thrush				S3S4B	4 Secure	887	2.1 ± 7.0	NS
A	*Vermivora peregrina*	Tennessee Warbler				S3S4B	3 Sensitive	155	2.1 ± 7.0	NS
A	*Dendroica castanea*	Bay-breasted Warbler				S3S4B	3 Sensitive	279	2.1 ± 7.0	NS
A	*Dendroica striata*	Blackpoll Warbler				S3S4B	3 Sensitive	85	2.1 ± 7.0	NS
A	*Passerella iliaca*	Fox Sparrow				S3S4B	4 Secure	84	2.1 ± 7.0	NS
A	*Coccothraustes vespertinus*	Evening Grosbeak				S3S4B,S3N	4 Secure	227	2.1 ± 7.0	NS
A	*Mergus serrator*	Red-breasted Merganser				S3S4B,S5N	4 Secure	103	2.1 ± 7.0	NS
A	*Bucephala albeola*	Bufflehead				S3S4N	4 Secure	30	7.1 ± 12.0	NS
A	*Progne subis*	Purple Martin				SHB	2 May Be At Risk	3	33.6 ± 0.0	NS
A	*Eremophila alpestris*	Horned Lark				SHB,S4S5N	4 Secure	1	82.7 ± 7.0	NS
A	*Morus bassanus*	Northern Gannet				SHB,S5M	4 Secure	14	56.2 ± 16.0	NS
I	*Alasmidonta varicosa*	Brook Floater	Special Concern		Threatened	S1S2	3 Sensitive	8	20.8 ± 0.0	NS
I	*Danaus plexippus*	Monarch	Special Concern	Special Concern		S2B	3 Sensitive	19	13.4 ± 0.0	NS
I	*Satyrium acadica*	Acadian Hairstreak				S1	5 Undetermined	5	99.4 ± 1.0	NS
I	*Neurocordulia michaeli*	Broadtailed Shadowdragon				S1		26	26.6 ± 0.0	NS
I	*Lycaena dorcas*	Dorcas Copper				S1?	6 Not Assessed	7	82.7 ± 0.0	NS
I	*Strymon melinus*	Grey Hairstreak				S1S2	4 Secure	1	71.4 ± 0.0	NS
I	*Nymphalis l-album*	Compton Tortoiseshell				S1S2	4 Secure	1	86.0 ± 1.0	NS
I	*Haematopota rara*	Shy Cleg				S1S3	5 Undetermined	1	85.6 ± 0.0	NS
I	*Lycaena dospassosi*	Salt Marsh Copper				S2	1 At Risk	1	96.8 ± 0.0	NS
I	*Margaritifera margaritifera*	Eastern Pearlshell				S2	3 Sensitive	61	19.5 ± 0.0	NS
I	*Pantala hymenaea*	Spot-Winged Glider				S2?B	3 Sensitive	1	35.5 ± 1.0	NS
I	*Thorybes pylades*	Northern Cloudywing				S2S3	3 Sensitive	13	35.5 ± 0.0	NS
I	*Amblyscirtes hegon*	Pepper and Salt Skipper				S2S3	4 Secure	1	49.3 ± 0.0	NS
I	*Euphydryas phaeton*	Baltimore Checkerspot				S2S3	4 Secure	8	35.4 ± 0.0	NS
I	*Gomphus descriptus*	Harpoon Clubtail				S2S3	3 Sensitive	16	68.8 ± 0.0	NS
I	*Ophiogomphus aspersus*	Brook Snaketail				S2S3	2 May Be At Risk	5	68.8 ± 0.0	NS
I	*Ophiogomphus mainensis*	Maine Snaketail				S2S3	2 May Be At Risk	14	53.4 ± 0.0	NS
I	*Ophiogomphus rupinsulensis*	Rusty Snaketail				S2S3	2 May Be At Risk	37	26.6 ± 0.0	NS
I	*Alasmidonta undulata*	Triangle Floater				S2S3	4 Secure	7	33.2 ± 0.0	NS
I	*Callophrys henrici*	Henry's Elfin				S3	4 Secure	1	39.0 ± 0.0	NS
I	*Speyeria aphrodite*	Aphrodite Fritillary				S3	4 Secure	3	44.0 ± 100.0	NS
I	*Polygonia faunus*	Green Comma				S3	4 Secure	8	35.4 ± 0.0	NS
I	*Oeneis jutta*	Jutta Arctic				S3	2 May Be At Risk	3	39.0 ± 0.0	NS
I	*Aeshna clepsydra*	Mottled Darner				S3	4 Secure	3	45.8 ± 1.0	NS
I	*Aeshna constricta*	Lance-Tipped Darner				S3	4 Secure	1	98.8 ± 1.0	NS
I	*Boyeria grafiana*	Ocellated Darner				S3	3 Sensitive	7	26.8 ± 0.0	NS
I	*Gomphaeschna furcillata*	Harlequin Darner				S3	3 Sensitive	3	56.4 ± 0.0	NS
I	*Nannothemis bella*	Elfin Skimmer				S3	4 Secure	3	56.4 ± 0.0	NS
I	*Sympetrum danae*	Black Meadowhawk				S3	3 Sensitive	8	7.6 ± 0.0	NS
I	*Enallagma vernale*	Vernal Bluet				S3	5 Undetermined	4	63.8 ± 0.0	NS
I	*Amphiagrion saucium*	Eastern Red Damsel				S3	4 Secure	4	85.1 ± 0.0	NS
I	*Polygonia interrogationis*	Question Mark				S3B	4 Secure	21	30.2 ± 0.0	NS
I	*Erynnis juvenalis*	Juvenal's Duskywing				S3S4	4 Secure	1	50.4 ± 1.0	NS
I	*Amblyscirtes vialis*	Common Roadside-Skipper				S3S4	4 Secure	4	80.4 ± 2.0	NS
I	*Polygonia progne*	Grey Comma				S3S4	4 Secure	11	33.4 ± 0.0	NS
I	*Lanthus parvulus*	Northern Pygmy Clubtail				S3S4	4 Secure	30	26.6 ± 0.0	NS
I	*Lampsilis radiata*	Eastern Lampmussel				S3S4	3 Sensitive	16	27.7 ± 0.0	NS
N	*Erioderma pedicellatum (Atlantic*	Boreal Felt Lichen - Atlantic pop.	Endangered	Endangered	Endangered	S1	1 At Risk	335	3.6 ± 0.0	NS

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	pop.)									
N	*Erioderma mollissimum*	Graceful Felt Lichen	Endangered		Endangered	S1S2	2 May Be At Risk	1	97.2 ± 0.0	NS
N	*Peltigera hydrothyria*	Eastern Waterfan	Threatened			S1	2 May Be At Risk	1	50.1 ± 1.0	NS
N	*Sclerophora peronella (Nova Scotia pop.)*	Frosted Glass-whiskers Lichen - Nova Scotia pop.	Special Concern	Special Concern		S1?		5	47.2 ± 0.0	NS
N	*Degelia plumbea*	Blue Felt Lichen	Special Concern	Special Concern	Vulnerable	S3	4 Secure	29	2.9 ± 0.0	NS
N	*Conardia compacta*	Coast Creeping Moss				S1?	3 Sensitive	1	99.5 ± 2.0	NS
N	*Lichina confinis*	Marine Seaweed Lichen				S1?	6 Not Assessed	1	88.9 ± 2.0	NS
N	*Cyrto-hypnum minutulum*	Tiny Cedar Moss				S1S2	3 Sensitive	1	76.5 ± 0.0	NS
N	*Atrichum angustatum*	Lesser Smoothcap Moss				S2?	3 Sensitive	1	54.2 ± 3.0	NS
N	*Platydictya jungermannioides*	False Willow Moss				S2?	3 Sensitive	1	87.9 ± 0.0	NS
N	*Scorpidium scorpioides*	Hooked Scorpion Moss				S2?	3 Sensitive	1	83.6 ± 0.0	NS
N	*Leptogium teretiusculum*	Beaded Jellyskin Lichen				S2?	3 Sensitive	1	81.6 ± 0.0	NS
N	*Peltigera collina*	Tree Pelt Lichen				S2?	3 Sensitive	3	2.6 ± 0.0	NS
N	*Fuscopannaria leucosticta*	Rimmed Shingles Lichen				S2S3	2 May Be At Risk	3	67.1 ± 0.0	NS
N	*Leptogium tenuissimum*	Birdnest Jellyskin Lichen				S2S3	6 Not Assessed	1	4.5 ± 0.0	NS
N	*Usnea mutabilis*	Bloody Beard Lichen				S2S3	3 Sensitive	1	82.6 ± 0.0	NS
N	*Sticta fuliginosa*	Peppered Moon Lichen				S3	3 Sensitive	5	66.5 ± 0.0	NS
N	*Leptogium subtile*	Appressed Jellyskin Lichen				S3	3 Sensitive	1	65.0 ± 0.0	NS
N	*Fuscopannaria ahlneri*	Corrugated Shingles Lichen				S3	4 Secure	16	3.9 ± 0.0	NS
N	*Heterodermia speciosa*	Powdered Fringe Lichen				S3	4 Secure	2	30.3 ± 0.0	NS
N	*Leptogium corticola*	Blistered Jellyskin Lichen				S3	3 Sensitive	7	45.4 ± 0.0	NS
N	*Nephroma bellum*	Naked Kidney Lichen				S3	3 Sensitive	1	98.9 ± 0.0	NS
N	*Moelleropsis nebulosa*	Blue-gray Moss Shingle Lichen				S3	4 Secure	18	3.7 ± 0.0	NS
N	*Dicranella varia*	a Moss				S3S4	5 Undetermined	1	98.6 ± 0.0	NS
N	*Encalypta procera*	Slender Extinguisher Moss				S3S4	4 Secure	2	55.6 ± 0.0	NS
N	*Schistidium agassizii*	Elf Bloom Moss				S3S4	4 Secure	1	26.8 ± 3.0	NS
N	*Leptogium saturninum*	Bearded Jellyskin Lichen				S3S4	5 Undetermined	1	81.6 ± 0.0	NS
N	*Coccocarpia palmicola*	Salted Shell Lichen				S3S4	4 Secure	161	2.8 ± 0.0	NS
N	*Heterodermia neglecta*	Fringe Lichen				S3S4	4 Secure	5	17.8 ± 0.0	NS
P	*Bartonia paniculata ssp. paniculata*	Branched Bartonia	Threatened	Threatened		SNA		1	91.5 ± 10.0	NS
P	*Juncus caesariensis*	New Jersey Rush	Special Concern	Special Concern	Vulnerable	S2	3 Sensitive	70	83.6 ± 0.0	NS
P	*Floerkea proserpinacoides*	False Mermaidweed	Not At Risk			S2	3 Sensitive	9	43.4 ± 1.0	NS
P	*Thuja occidentalis*	Eastern White Cedar			Vulnerable	S1	1 At Risk	2	13.7 ± 0.0	NS
P	*Sanicula odorata*	Clustered Sanicle				S1	2 May Be At Risk	2	94.6 ± 0.0	NS
P	*Zizia aurea*	Golden Alexanders				S1	2 May Be At Risk	19	31.6 ± 0.0	NS
P	*Arnica lonchophylla*	Northern Arnica				S1	2 May Be At Risk	1	68.6 ± 7.0	NS
P	*Bidens hyperborea*	Estuary Beggarticks				S1	2 May Be At Risk	1	53.9 ± 1.0	NS
P	*Ageratina altissima*	White Snakeroot				S1	2 May Be At Risk	2	53.1 ± 7.0	NS
P	*Barbarea orthoceras*	American Yellow Rocket				S1	2 May Be At Risk	12	54.0 ± 0.0	NS
P	*Cardamine pratensis var. angustifolia*	Cuckoo Flower				S1	2 May Be At Risk	1	80.7 ± 0.0	NS
P	*Cochlearia tridactylites*	Limestone Scurvy-grass				S1	2 May Be At Risk	12	28.9 ± 0.0	NS
P	*Stellaria crassifolia*	Fleshy Stitchwort				S1	2 May Be At Risk	1	88.6 ± 2.0	NS
P	*Suaeda maritima ssp. richii*	White Sea-blite				S1	5 Undetermined	4	27.6 ± 2.0	NS
P	*Hudsonia tomentosa*	Woolly Beach-heath				S1	2 May Be At Risk	6	50.9 ± 1.0	NS
P	*Desmodium canadense*	Canada Tick-trefoil				S1	2 May Be At Risk	10	87.5 ± 0.0	NS
P	*Polygonum viviparum*	Alpine Bistort				S1	2 May Be At Risk	1	77.4 ± 1.0	NS

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P	*Montia fontana*	Water Blinks				S1	2 May Be At Risk	2	50.9 ± 3.0	NS
P	*Agalinis paupercula var. borealis*	Small-flowered Agalinis				S1		1	94.8 ± 0.0	NS
P	*Scrophularia lanceolata*	Lance-leaved Figwort				S1	5 Undetermined	1	27.6 ± 1.0	NS
P	*Pilea pumila*	Dwarf Clearweed				S1	2 May Be At Risk	1	73.9 ± 6.0	NS
P	*Carex alopecoidea*	Foxtail Sedge				S1	2 May Be At Risk	2	49.3 ± 0.0	NS
P	*Carex granularis*	Limestone Meadow Sedge				S1	2 May Be At Risk	13	98.1 ± 0.0	NS
P	*Carex gynocrates*	Northern Bog Sedge				S1	2 May Be At Risk	9	85.2 ± 0.0	NS
P	*Carex haydenii*	Hayden's Sedge				S1	2 May Be At Risk	2	61.4 ± 5.0	NS
P	*Carex pellita*	Woolly Sedge				S1	2 May Be At Risk	7	87.6 ± 0.0	NS
P	*Carex plantaginea*	Plantain-Leaved Sedge				S1	2 May Be At Risk	1	96.4 ± 0.0	NS
P	*Carex tenuiflora*	Sparse-Flowered Sedge				S1	2 May Be At Risk	3	21.4 ± 1.0	NS
P	*Carex tincta*	Tinged Sedge				S1	2 May Be At Risk	1	49.3 ± 1.0	NS
P	*Carex viridula var. saxilittoralis*	Greenish Sedge				S1	2 May Be At Risk	4	90.6 ± 0.0	NS
P	*Carex viridula var. elatior*	Greenish Sedge				S1	2 May Be At Risk	8	85.1 ± 0.0	NS
P	*Carex grisea*	Inflated Narrow-leaved Sedge				S1	2 May Be At Risk	6	48.8 ± 0.0	NS
P	*Cyperus lupulinus ssp. macilentus*	Hop Flatsedge				S1	2 May Be At Risk	10	50.9 ± 1.0	NS
P	*Eleocharis erythropoda*	Red-stemmed Spikerush				S1	2 May Be At Risk	2	92.3 ± 0.0	NS
P	*Iris prismatica*	Slender Blue Flag				S1	2 May Be At Risk	2	32.6 ± 7.0	NS
P	*Malaxis brachypoda*	White Adder's-Mouth				S1	2 May Be At Risk	1	39.4 ± 7.0	NS
P	*Bromus latiglumis*	Broad-Glumed Brome				S1	2 May Be At Risk	15	61.1 ± 0.0	NS
P	*Elymus wiegandii*	Wiegand's Wild Rye				S1	2 May Be At Risk	7	64.1 ± 0.0	NS
P	*Elymus hystrix var. bigeloviana*	Spreading Wild Rye				S1	2 May Be At Risk	1	78.0 ± 1.0	NS
P	*Potamogeton nodosus*	Long-leaved Pondweed				S1	2 May Be At Risk	1	36.0 ± 5.0	NS
P	*Equisetum palustre*	Marsh Horsetail				S1	2 May Be At Risk	8	94.3 ± 0.0	NS
P	*Solidago hispida*	Hairy Goldenrod				S1?	2 May Be At Risk	1	71.5 ± 7.0	NS
P	*Crataegus robinsonii*	Robinson's Hawthorn				S1?	5 Undetermined	2	86.4 ± 50.0	NS
P	*Dichanthelium acuminatum var. lindheimeri*	Woolly Panic Grass				S1?	5 Undetermined	1	85.8 ± 0.0	NS
P	*Fraxinus nigra*	Black Ash			Threatened	S1S2	1 At Risk	47	40.3 ± 0.0	NS
P	*Rudbeckia laciniata*	Cut-Leaved Coneflower				S1S2	2 May Be At Risk	2	36.3 ± 0.0	NS
P	*Cornus suecica*	Swedish Bunchberry				S1S2	3 Sensitive	1	54.6 ± 6.0	NS
P	*Anemone virginiana var. alba*	Virginia Anemone				S1S2	3 Sensitive	6	95.4 ± 0.0	NS
P	*Parnassia palustris var. parviflora*	Marsh Grass-of-Parnassus				S1S2	2 May Be At Risk	9	74.1 ± 1.0	NS
P	*Carex livida var. radicaulis*	Livid Sedge				S1S2	2 May Be At Risk	22	78.0 ± 5.0	NS
P	*Juncus greenei*	Greene's Rush				S1S2	2 May Be At Risk	1	51.0 ± 1.0	NS
P	*Juncus alpinoarticulatus ssp. nodulosus*	Richardson's Rush				S1S2	2 May Be At Risk	8	52.0 ± 5.0	NS
P	*Platanthera huronensis*	Fragrant Green Orchid				S1S2	5 Undetermined	2	56.6 ± 10.0	NS
P	*Cinna arundinacea*	Sweet Wood Reed Grass				S1S2	2 May Be At Risk	24	61.1 ± 0.0	NS
P	*Sparganium hyperboreum*	Northern Burreed				S1S2	3 Sensitive	3	4.8 ± 0.0	NS
P	*Cryptogramma stelleri*	Steller's Rockbrake				S1S2	2 May Be At Risk	17	96.9 ± 0.0	NS
P	*Selaginella selaginoides*	Low Spikemoss				S1S2	2 May Be At Risk	2	81.7 ± 0.0	NS
P	*Carex vacillans*	Estuarine Sedge				S1S3	5 Undetermined	2	49.3 ± 0.0	NS
P	*Osmorhiza longistylis*	Smooth Sweet Cicely				S2	2 May Be At Risk	16	40.3 ± 0.0	NS

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P	*Erigeron philadelphicus*	Philadelphia Fleabane				S2	3 Sensitive	4	57.8 ± 7.0	NS
P	*Symphyotrichum ciliolatum*	Fringed Blue Aster				S2	3 Sensitive	2	36.5 ± 7.0	NS
P	*Impatiens pallida*	Pale Jewelweed				S2	3 Sensitive	7	28.4 ± 7.0	NS
P	*Caulophyllum thalictroides*	Blue Cohosh				S2	2 May Be At Risk	35	40.2 ± 0.0	NS
P	*Cardamine parviflora var. arenicola*	Small-flowered Bittercress				S2	3 Sensitive	2	94.6 ± 0.0	NS
P	*Draba arabisans*	Rock Whitlow-Grass				S2	3 Sensitive	3	97.6 ± 1.0	NS
P	*Lobelia kalmii*	Brook Lobelia				S2	2 May Be At Risk	48	77.0 ± 0.0	NS
P	*Stellaria humifusa*	Saltmarsh Starwort				S2	3 Sensitive	4	35.7 ± 0.0	NS
P	*Stellaria longifolia*	Long-leaved Starwort				S2	3 Sensitive	1	64.4 ± 0.0	NS
P	*Chenopodium rubrum*	Red Pigweed				S2	2 May Be At Risk	5	62.3 ± 7.0	NS
P	*Crassula aquatica*	Water Pygmyweed				S2	3 Sensitive	2	76.0 ± 7.0	NS
P	*Myriophyllum farwellii*	Farwell's Water Milfoil				S2	3 Sensitive	4	22.9 ± 0.0	NS
P	*Utricularia resupinata*	Inverted Bladderwort				S2	3 Sensitive	1	99.6 ± 0.0	NS
P	*Rumex salicifolius var. mexicanus*	Triangular-valve Dock				S2	3 Sensitive	4	60.8 ± 6.0	NS
P	*Anemone canadensis*	Canada Anemone				S2	2 May Be At Risk	2	53.5 ± 3.0	NS
P	*Anemone quinquefolia*	Wood Anemone				S2	3 Sensitive	3	26.9 ± 0.0	NS
P	*Anemone virginiana*	Virginia Anemone				S2	3 Sensitive	24	49.7 ± 0.0	NS
P	*Caltha palustris*	Yellow Marsh Marigold				S2	3 Sensitive	2	81.0 ± 0.0	NS
P	*Galium labradoricum*	Labrador Bedstraw				S2	3 Sensitive	25	80.8 ± 0.0	NS
P	*Salix pedicellaris*	Bog Willow				S2	3 Sensitive	6	82.1 ± 0.0	NS
P	*Comandra umbellata*	Bastard's Toadflax				S2	2 May Be At Risk	10	50.1 ± 0.0	NS
P	*Saxifraga paniculata ssp. neogaea*	White Mountain Saxifrage				S2	3 Sensitive	1	93.0 ± 7.0	NS
P	*Tiarella cordifolia*	Heart-leaved Foamflower				S2	3 Sensitive	1	83.6 ± 7.0	NS
P	*Viola nephrophylla*	Northern Bog Violet				S2	3 Sensitive	6	65.7 ± 0.0	NS
P	*Carex atratiformis*	Scabrous Black Sedge				S2	3 Sensitive	2	96.5 ± 7.0	NS
P	*Carex bebbii*	Bebb's Sedge				S2	3 Sensitive	9	44.1 ± 10.0	NS
P	*Carex castanea*	Chestnut Sedge				S2	2 May Be At Risk	15	80.8 ± 0.0	NS
P	*Carex hystericina*	Porcupine Sedge				S2	2 May Be At Risk	29	49.7 ± 0.0	NS
P	*Carex tenera*	Tender Sedge				S2	3 Sensitive	3	50.0 ± 1.0	NS
P	*Eleocharis quinqueflora*	Few-flowered Spikerush				S2	3 Sensitive	10	84.7 ± 0.0	NS
P	*Juncus stygius ssp. americanus*	Moor Rush				S2	3 Sensitive	26	81.6 ± 1.0	NS
P	*Allium schoenoprasum var. sibiricum*	Wild Chives				S2	2 May Be At Risk	1	61.9 ± 7.0	NS
P	*Lilium canadense*	Canada Lily				S2	2 May Be At Risk	45	26.6 ± 1.0	NS
P	*Cypripedium parviflorum var. pubescens*	Yellow Lady's-slipper				S2	3 Sensitive	5	50.5 ± 0.0	NS
P	*Cypripedium parviflorum var. makasin*	Small Yellow Lady's-Slipper				S2	3 Sensitive	1	99.1 ± 0.0	NS
P	*Cypripedium reginae*	Showy Lady's-Slipper				S2	2 May Be At Risk	101	52.9 ± 0.0	NS
P	*Spiranthes lucida*	Shining Ladies'-Tresses				S2	2 May Be At Risk	30	87.0 ± 0.0	NS
P	*Dichanthelium linearifolium*	Narrow-leaved Panic Grass				S2	3 Sensitive	1	90.1 ± 7.0	NS
P	*Potamogeton friesii*	Fries' Pondweed				S2	2 May Be At Risk	5	65.1 ± 0.0	NS
P	*Potamogeton richardsonii*	Richardson's Pondweed				S2	2 May Be At Risk	6	33.1 ± 0.0	NS
P	*Cystopteris laurentiana*	Laurentian Bladder Fern				S2	2 May Be At Risk	5	96.5 ± 10.0	NS
P	*Dryopteris fragrans*	Fragrant Wood Fern				S2	3 Sensitive	1	42.7 ± 7.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
	var. remotiuscula									
P	*Polystichum lonchitis*	Northern Holly Fern				S2	3 Sensitive	5	78.6 ± 5.0	NS
P	*Woodsia glabella*	Smooth Cliff Fern				S2	3 Sensitive	2	96.5 ± 7.0	NS
P	*Symphyotrichum boreale*	Boreal Aster				S2?	3 Sensitive	35	83.9 ± 0.0	NS
P	*Cuscuta cephalanthi*	Buttonbush Dodder				S2?	5 Undetermined	5	49.8 ± 7.0	NS
P	*Epilobium coloratum*	Purple-veined Willowherb				S2?	3 Sensitive	3	55.8 ± 0.0	NS
P	*Crataegus submollis*	Quebec Hawthorn				S2?	5 Undetermined	2	63.8 ± 7.0	NS
P	*Eleocharis ovata*	Ovate Spikerush				S2?	3 Sensitive	1	16.7 ± 0.0	NS
P	*Scirpus pedicellatus*	Stalked Bulrush				S2?	3 Sensitive	4	55.1 ± 0.0	NS
P	*Senecio pseudoarnica*	Seabeach Ragwort				S2S3	3 Sensitive	17	14.1 ± 0.0	NS
P	*Betula michauxii*	Michaux's Dwarf Birch				S2S3	3 Sensitive	12	8.6 ± 0.0	NS
P	*Sagina nodosa*	Knotted Pearlwort				S2S3	4 Secure	7	36.0 ± 1.0	NS
P	*Sagina nodosa ssp. borealis*	Knotted Pearlwort				S2S3	4 Secure	2	89.3 ± 0.0	NS
P	*Hypericum dissimulatum*	Disguised St John's-wort				S2S3	3 Sensitive	1	20.2 ± 1.0	NS
P	*Triosteum aurantiacum*	Orange-fruited Tinker's Weed				S2S3	3 Sensitive	109	40.2 ± 0.0	NS
P	*Shepherdia canadensis*	Soapberry				S2S3	3 Sensitive	6	94.0 ± 0.0	NS
P	*Empetrum eamesii ssp. atropurpureum*	Pink Crowberry				S2S3	3 Sensitive	1	52.9 ± 3.0	NS
P	*Chamaesyce polygonifolia*	Seaside Spurge				S2S3	3 Sensitive	9	52.9 ± 0.0	NS
P	*Halenia deflexa*	Spurred Gentian				S2S3	3 Sensitive	23	28.7 ± 1.0	NS
P	*Hedeoma pulegioides*	American False Pennyroyal				S2S3	3 Sensitive	2	72.9 ± 5.0	NS
P	*Polygonum buxiforme*	Small's Knotweed				S2S3	5 Undetermined	1	89.9 ± 0.0	NS
P	*Polygonum raii*	Sharp-fruited Knotweed				S2S3	5 Undetermined	4	22.1 ± 1.0	NS
P	*Amelanchier fernaldii*	Fernald's Serviceberry				S2S3	5 Undetermined	1	21.9 ± 1.0	NS
P	*Potentilla canadensis*	Canada Cinquefoil				S2S3	3 Sensitive	1	52.3 ± 2.0	NS
P	*Galium aparine*	Common Bedstraw				S2S3	3 Sensitive	15	49.5 ± 0.0	NS
P	*Salix pellita*	Satiny Willow				S2S3	3 Sensitive	1	47.1 ± 1.0	NS
P	*Veronica serpyllifolia ssp. humifusa*	Thyme-Leaved Speedwell				S2S3	3 Sensitive	1	55.0 ± 0.0	NS
P	*Carex adusta*	Lesser Brown Sedge				S2S3	3 Sensitive	1	41.2 ± 5.0	NS
P	*Carex hirtifolia*	Pubescent Sedge				S2S3	3 Sensitive	20	40.3 ± 0.0	NS
P	*Eleocharis olivacea*	Yellow Spikerush				S2S3	3 Sensitive	3	44.3 ± 0.0	NS
P	*Eriophorum gracile*	Slender Cottongrass				S2S3	3 Sensitive	8	7.4 ± 1.0	NS
P	*Cypripedium parviflorum*	Yellow Lady's-slipper				S2S3	3 Sensitive	44	49.7 ± 0.0	NS
P	*Poa glauca*	Glaucous Blue Grass				S2S3	3 Sensitive	8	96.9 ± 0.0	NS
P	*Stuckenia filiformis*	Thread-leaved Pondweed				S2S3	3 Sensitive	1	98.6 ± 0.0	NS
P	*Stuckenia filiformis ssp. alpina*	Thread-leaved Pondweed				S2S3	3 Sensitive	7	60.8 ± 0.0	NS
P	*Botrychium lanceolatum var. angustisegmentum*	Lance-Leaf Grape-Fern				S2S3	3 Sensitive	4	79.1 ± 0.0	NS
P	*Botrychium simplex*	Least Moonwort				S2S3	3 Sensitive	3	75.1 ± 1.0	NS
P	*Angelica atropurpurea*	Purple-stemmed Angelica				S3	4 Secure	12	60.2 ± 0.0	NS
P	*Erigeron hyssopifolius*	Hyssop-leaved Fleabane				S3	3 Sensitive	9	49.7 ± 0.0	NS
P	*Megalodonta beckii*	Water Beggarticks				S3	4 Secure	5	43.5 ± 0.0	NS
P	*Packera paupercula*	Balsam Groundsel				S3	4 Secure	47	49.7 ± 0.0	NS
P	*Campanula aparinoides*	Marsh Bellflower				S3	3 Sensitive	9	34.4 ± 0.0	NS
P	*Vaccinium boreale*	Northern Blueberry				S3	3 Sensitive	5	21.9 ± 2.0	NS
P	*Vaccinium caespitosum*	Dwarf Bilberry				S3	4 Secure	45	26.5 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Bartonia virginica*	Yellow Bartonia				S3	4 Secure	1	78.8 ± 0.0	NS
P	*Proserpinaca palustris*	Marsh Mermaidweed				S3	4 Secure	15	61.1 ± 0.0	NS
P	*Proserpinaca palustris var. crebra*	Marsh Mermaidweed				S3	4 Secure	9	61.1 ± 0.0	NS
P	*Proserpinaca pectinata*	Comb-leaved Mermaidweed				S3	4 Secure	2	87.2 ± 1.0	NS
P	*Teucrium canadense*	Canada Germander				S3	3 Sensitive	33	46.7 ± 0.0	NS
P	*Decodon verticillatus*	Swamp Loosestrife				S3	4 Secure	1	82.7 ± 7.0	NS
P	*Epilobium strictum*	Downy Willowherb				S3	3 Sensitive	5	36.3 ± 0.0	NS
P	*Polygala sanguinea*	Blood Milkwort				S3	3 Sensitive	2	89.6 ± 1.0	NS
P	*Polygonum pensylvanicum*	Pennsylvania Smartweed				S3	4 Secure	14	48.9 ± 0.0	NS
P	*Polygonum scandens*	Climbing False Buckwheat				S3	3 Sensitive	26	28.6 ± 0.0	NS
P	*Plantago rugelii*	Rugel's Plantain				S3	4 Secure	1	94.7 ± 0.0	NS
P	*Samolus valerandi ssp. parviflorus*	Seaside Brookweed				S3	3 Sensitive	7	49.0 ± 0.0	NS
P	*Pyrola asarifolia*	Pink Pyrola				S3	4 Secure	3	83.9 ± 0.0	NS
P	*Pyrola minor*	Lesser Pyrola				S3	3 Sensitive	1	97.1 ± 2.0	NS
P	*Ranunculus gmelinii*	Gmelin's Water Buttercup				S3	4 Secure	36	32.4 ± 2.0	NS
P	*Rhamnus alnifolia*	Alder-leaved Buckthorn				S3	4 Secure	221	61.3 ± 0.0	NS
P	*Agrimonia gryposepala*	Hooked Agrimony				S3	4 Secure	154	40.2 ± 0.0	NS
P	*Amelanchier stolonifera*	Running Serviceberry				S3	4 Secure	2	41.6 ± 5.0	NS
P	*Galium kamtschaticum*	Northern Wild Licorice				S3	4 Secure	1	99.5 ± 1.0	NS
P	*Geocaulon lividum*	Northern Comandra				S3	4 Secure	4	47.6 ± 2.0	NS
P	*Limosella australis*	Southern Mudwort				S3	4 Secure	3	82.2 ± 5.0	NS
P	*Lindernia dubia*	Yellow-seeded False Pimperel				S3	4 Secure	9	63.9 ± 0.0	NS
P	*Laportea canadensis*	Canada Wood Nettle				S3	3 Sensitive	15	40.1 ± 3.0	NS
P	*Verbena hastata*	Blue Vervain				S3	4 Secure	35	40.2 ± 0.0	NS
P	*Carex cryptolepis*	Hidden-scaled Sedge				S3	4 Secure	7	45.5 ± 1.0	NS
P	*Carex eburnea*	Bristle-leaved Sedge				S3	3 Sensitive	23	54.1 ± 5.0	NS
P	*Carex lupulina*	Hop Sedge				S3	4 Secure	9	49.1 ± 6.0	NS
P	*Carex rosea*	Rosy Sedge				S3	4 Secure	4	34.5 ± 4.0	NS
P	*Carex tribuloides*	Blunt Broom Sedge				S3	4 Secure	6	31.9 ± 5.0	NS
P	*Carex wiegandii*	Wiegand's Sedge				S3	3 Sensitive	1	80.5 ± 0.0	NS
P	*Carex foenea*	Fernald's Hay Sedge				S3	4 Secure	1	68.7 ± 0.0	NS
P	*Juncus subcaudatus var. planisepalus*	Woods-Rush				S3	3 Sensitive	3	70.6 ± 5.0	NS
P	*Juncus dudleyi*	Dudley's Rush				S3	4 Secure	80	30.7 ± 0.0	NS
P	*Goodyera repens*	Lesser Rattlesnake-plantain				S3	3 Sensitive	7	65.7 ± 0.0	NS
P	*Listera australis*	Southern Twayblade				S3	4 Secure	36	10.5 ± 0.0	NS
P	*Platanthera grandiflora*	Large Purple Fringed Orchid				S3	4 Secure	31	18.6 ± 10.0	NS
P	*Platanthera hookeri*	Hooker's Orchid				S3	4 Secure	3	46.5 ± 0.0	NS
P	*Platanthera orbiculata*	Small Round-leaved Orchid				S3	4 Secure	1	82.7 ± 5.0	NS
P	*Alopecurus aequalis*	Short-awned Foxtail				S3	4 Secure	5	55.5 ± 1.0	NS
P	*Dichanthelium clandestinum*	Deer-tongue Panic Grass				S3	4 Secure	79	26.7 ± 0.0	NS
P	*Potamogeton obtusifolius*	Blunt-leaved Pondweed				S3	4 Secure	10	44.4 ± 1.0	NS
P	*Potamogeton praelongus*	White-stemmed Pondweed				S3	3 Sensitive	9	28.4 ± 10.0	NS
P	*Potamogeton zosteriformis*	Flat-stemmed Pondweed				S3	3 Sensitive	1	96.8 ± 7.0	NS
P	*Sparganium natans*	Small Burreed				S3	4 Secure	5	25.3 ± 0.0	NS
P	*Asplenium trichomanes*	Maidenhair Spleenwort				S3	4 Secure	3	46.5 ± 0.0	NS
P	*Asplenium trichomanes-ramosum*	Green Spleenwort				S3	3 Sensitive	19	62.1 ± 0.0	NS
P	*Equisetum pratense*	Meadow Horsetail				S3	3 Sensitive	7	79.1 ± 0.0	NS

Taxonomic Group	Scientific Name	Common Name	COSEWIC	SARA	Prov Legal Prot	Prov Rarity Rank	Prov GS Rank	# recs	Distance (km)	Prov
P	*Equisetum variegatum*	Variegated Horsetail				S3	4 Secure	37	58.2 ± 0.0	NS
P	*Isoetes acadiensis*	Acadian Quillwort				S3	3 Sensitive	1	37.6 ± 1.0	NS
P	*Lycopodium sitchense*	Sitka Clubmoss				S3	4 Secure	3	34.6 ± 1.0	NS
P	*Huperzia appalachiana*	Appalachian Fir-Clubmoss				S3	3 Sensitive	1	92.6 ± 1.0	NS
P	*Botrychium dissectum*	Cut-leaved Moonwort				S3	4 Secure	3	48.5 ± 1.0	NS
P	*Polypodium appalachianum*	Appalachian Polypody				S3	5 Undetermined	1	91.0 ± 0.0	NS
P	*Asclepias incarnata ssp. pulchra*	Swamp Milkweed				S3?	5 Undetermined	8	81.3 ± 0.0	NS
P	*Lycopodium sabinifolium*	Ground-Fir				S3?	4 Secure	3	57.3 ± 5.0	NS
P	*Suaeda calceoliformis*	Horned Sea-blite				S3S4	4 Secure	4	89.1 ± 0.0	NS
P	*Myriophyllum sibiricum*	Siberian Water Milfoil				S3S4	4 Secure	2	53.4 ± 0.0	NS
P	*Nuphar lutea ssp. pumila*	Small Yellow Pond-lily				S3S4	4 Secure	1	95.2 ± 2.0	NS
P	*Sanguinaria canadensis*	Bloodroot				S3S4	4 Secure	105	39.3 ± 5.0	NS
P	*Polygonum fowleri*	Fowler's Knotweed				S3S4	4 Secure	3	53.6 ± 0.0	NS
P	*Rumex maritimus*	Sea-Side Dock				S3S4		4	88.7 ± 0.0	NS
P	*Rumex maritimus var. fueginus*	Tierra del Fuego Dock				S3S4	4 Secure	5	88.0 ± 0.0	NS
P	*Fragaria vesca ssp. americana*	Woodland Strawberry				S3S4	4 Secure	18	55.6 ± 0.0	NS
P	*Salix petiolaris*	Meadow Willow				S3S4	4 Secure	4	82.1 ± 0.0	NS
P	*Eriophorum russeolum*	Russet Cottongrass				S3S4	4 Secure	7	46.5 ± 5.0	NS
P	*Triglochin gaspensis*	Gasp ├⌐ Arrowgrass				S3S4	5 Undetermined	23	54.2 ± 0.0	NS
P	*Juncus acuminatus*	Sharp-Fruit Rush				S3S4	4 Secure	2	94.6 ± 0.0	NS
P	*Luzula parviflora*	Small-flowered Woodrush				S3S4	4 Secure	2	45.5 ± 0.0	NS
P	*Liparis loeselii*	Loesel's Twayblade				S3S4	4 Secure	7	60.0 ± 1.0	NS
P	*Panicum tuckermanii*	Tuckerman's Panic Grass				S3S4	4 Secure	1	77.2 ± 0.0	NS
P	*Trisetum spicatum*	Narrow False Oats				S3S4	4 Secure	1	87.6 ± 0.0	NS
P	*Cystopteris bulbifera*	Bulblet Bladder Fern				S3S4	4 Secure	106	46.6 ± 1.0	NS
P	*Equisetum hyemale var. affine*	Common Scouring-rush				S3S4	4 Secure	11	50.4 ± 0.0	NS
P	*Equisetum scirpoides*	Dwarf Scouring-Rush				S3S4	4 Secure	39	79.5 ± 0.0	NS
P	*Lycopodium complanatum*	Northern Clubmoss				S3S4	4 Secure	3	82.7 ± 5.0	NS
P	*Schizaea pusilla*	Little Curlygrass Fern				S3S4	4 Secure	8	8.3 ± 0.0	NS
P	*Solidago simplex var. randii*	Sticky Goldenrod				SH	0.1 Extirpated	2	23.5 ± 5.0	NS
P	*Viola canadensis*	Canada Violet				SH	0.1 Extirpated	1	97.3 ± 0.0	NS

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The recipient of these data shall acknowledge the ACCDC and the data sources listed below in any documents, reports, publications or presentations, in which this dataset makes a significant contribution.

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APPENDIX G:
SUMMARIZED NOTES FROM SPRING 2020 HIGH FLOW ASSESSMENT

2020 High Flow Assessment Methods

During baseline data collection completed in the summer of 2019, a potential barrier to fish passage was identified in WC9 within the original proposed footprint of the TMF perimeter berm. WC9 is a first order stream which commences in open fen habitat within WL25. Near the outlet of WL25, WC9 flows north/northwest through a subterranean section, then into WL12 before ultimately flowing west into Gold Brook Lake.

High flow evaluations of WC9 began in the fall of 2019. Methods and results of these surveys are detailed in the 2017-2019 Baseline Report. A barrier assessment and fish collection program on WC9 was continued through April 2020 to capture conditions during seasonal, spring high flow as identified through regional hydrometeorology data. Barrier assessment methodology in 2020 was identical to that outlined in the 2017-2019 Baseline Report.

In Spring 2020, the overarching goal of the fish collection program (developed in consultation with DFO) was to continue the assessment of WC9 through seasonal high flow which commenced in Fall 2019. Details and results of the Fall 2019 high flow trapping program are presented in the 2017-2019 Baseline Report (Appendix F).

A request to extend the high flow fish collection license was submitted to DFO by MEL to allow sampling to occur through high flow in the spring of 2020 (License #357626). This license was reissued on 11 March 2020. During each spring high flow assessment (April 3 and April 18, 2020) assessment, MEL biologists deployed minnow traps upstream and downstream of the subterranean reach. Baited minnow traps were deployed, left overnight, and collected the following day to increase trap set time and increase the efficiency and likelihood of catching fish. Single event, opportunistic trapping was also conducted in the Beaver Pond and Settling Ponds.

Table 1. WC9 Fish collection methods

Site	Survey Date	Fish Species Collected	Total Catch	Total Effort Per Trap Type (hours)	Total Catch Per Trap Type	CPUE (per trap type)	CPUE (per species)
WC9 Reach A	April 3-4, 2020	none	0	MT- 78.33 hrs	0	0	0
	April 18-19, 2020	none	0	MT- 76.00 hrs	0	0	0
WC9 Reach B	April 3-4, 2020	none	0	MT- 87.00 hrs	0	0	0
	April 18-19, 2020	none	0	MT- 83.67 hrs	0	0	0

High Flow Assessment Results

During assessments outlined in the 2017-2019 Baseline Report, WC9 was described as potentially inaccessible to fish in the upper reach due to presence of a section of subterranean flow. In 2019, WC9 was assessed in June, August, November and December; and it was recommended that the high flow evaluation extend into spring of 2020. WC9 was assessed over two field surveys in April 2020, the details of which are provided in Table2.

Table 2. WC9 Assessments (April 2020) Observations

WC Reach	Date assessed	Seasonal Flow	Precipitation: 7 previous days	Observations
9.1 to 9.4	April 3-4, 2020	High + Storm	60 mm (30 mm in past 24 hours)	Multiple step-wise prevent movement of smaller fish, larger fish limited by small pond size. The lake outlet has a defined channel and may have limited passage in different seasons.
9.1 to 9.2	April 18-19, 2020	High	20 mm (0 mm in past 24 hours)	Five separate pinch points observed. Flow is reduced from last visit with several side channels showing no flow at all. Pinch points are all small drops or follow with 30-50 cm drop without adequate size or depth of plunge pool below. Cascades are narrow, <10 cm wide and flowing very fast.

To supplement observations recorded during watercourse delineation, WC9 was reassessed during seasonal high flow following a storm event (30 mm in 24 hours) on April 3, 2020, with Senior Fish Biologist, Michael Browne from EcoFish Research. This site assessment focused on describing the condition of the subterranean section between reaches 9.1 and 9.2, and to assess the outlet of WC9 into Gold Brook Lake. During this assessment, the watercourse connection to Gold Brook Lake was contiguous and free flowing. As such, WC9 is accessible to fish from Gold Brook Lake during high flow, though access is limited seasonally.

The subterranean section was observed to have continuous, contiguous flow, similar to that observed in high flow in November 2019. Within this section, however, impediments to fish passage are still present. At least three 'drops' (small cascades) were observed, with drop heights of 30-40 cm, dropping to a plunge pool only 10 cm deep. In each of these step pools, water flows through a pinch point only 10-15 cm wide with high velocity (0.5 to 1 m/s). The height of these drops and the velocity of water flowing over them would limit passage of small fishes, while the shallow plunge pool depth on the downstream side would limit passage to larger, stronger swimmers such as brook trout. In some areas, the watercourse flows underground between boulders (distances of approximately 0.5 m), while laminar flow is present near the top of the barrier.

An additional assessment of the subterranean section was completed in high flow on April 18, 2020. During this assessment, water levels had receded slightly from the previous assessment, to what is considered regular seasonal high flow. Observations of three drops previously documented were confirmed to remain intact during regular seasonal high flow. Two additional drops were observed with the lowered water level. These were similar in nature to those described on April 3rd, with high velocities, drop heights of 40 cm, with small, shallow (10 cm) plunge pools on the downstream side. The only variance noted is one drop, located at the intersection of WC9 and a trail, where the drop height was 50 cm, and the plunge pool below is deeper, at 15-20 cm.

The conclusion drawn from the April seasonal high flow is consistent with observations recorded in seasonal high flow in November and December 2019. WC9 is contiguous during seasonal high flow, particularly following heavy rainfall. Despite the contiguity of flow, impediments to fish passage are still present in the form of high velocity 'drops'. These small cascades are on the range of 40 cm in height which, paired with high velocity, would limit passage of smaller fishes. The plunge pool depths on the downstream sides of these drops are inadequate to allow stronger swimmers such as trout to navigate

upstream. American eel are present within Gold Brook Lake. The barriers observed during both high and low flow would not necessarily exclude eel. Overall, this subterranean section is described as a complete barrier to fish (excluding eel) during low flow. During seasonal high flow, the subterranean section has more contiguous flow, but still presents considerable navigational challenges to fish species known or expected to be present in this system.