

Antrim Gypsum Project: Fish and Fish Habitat Photograph Log

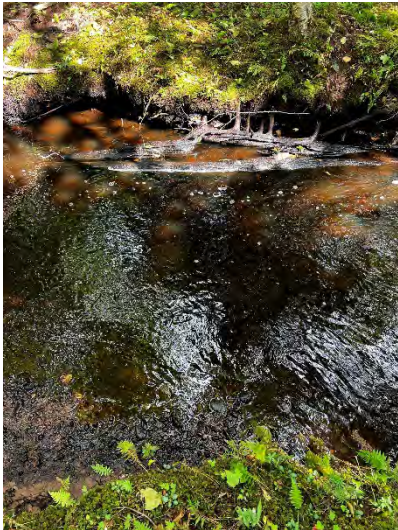


Photo 129: Brook Floater WC11 Reach 29



Photo 130: Brook Floater WC12 Reach 1



Photo 131: Brook Floater WC12 Reach 2

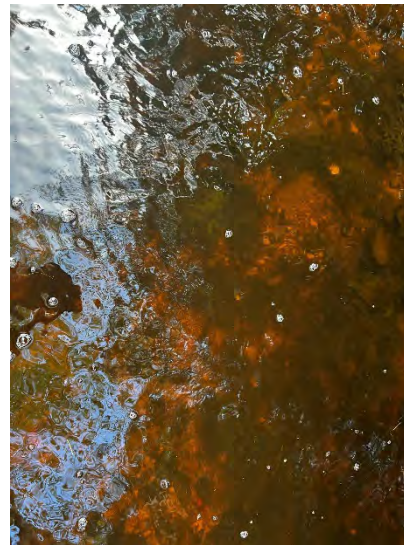


Photo 132: Brook Floater WC12 Reach 3

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Photo 133: Brook Floater WC12 Reach 4



Photo 134: Brook Floater WC12 Reach 5



Photo 135: Brook Floater WC12 Reach 6

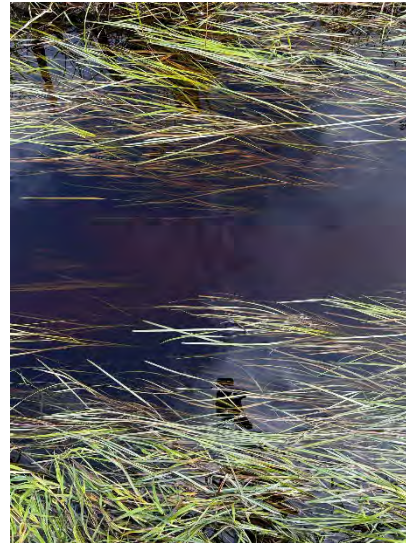


Photo 136: Brook Floater WC12 Reach 7

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Photo 137: Brook Floater WC12 Reach 8



Photo 139: Brook Floater WC12 Reach 10

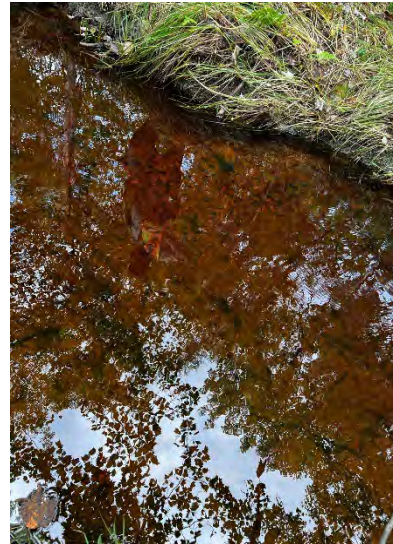


Photo 138: Brook Floater WC12 Reach 9

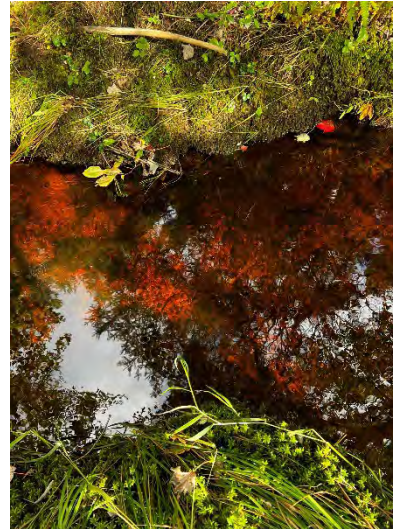


Photo 140: Brook Floater WC12 Reach 11

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Photo 141: Brook Floater WC12 Reach 12



Photo 143: Brook Floater WC12 Reach 14



Photo 142: Brook Floater WC12 Reach 13

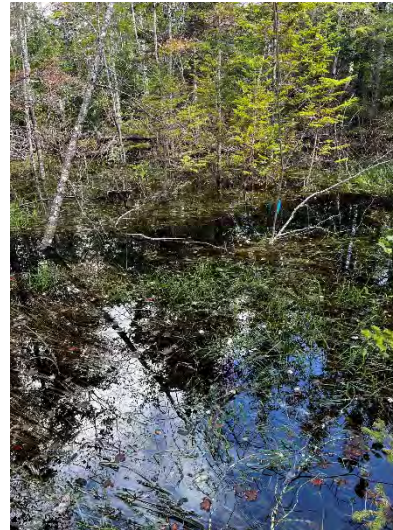


Photo 144: Brook Floater WC12 Reach 15

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Photo 145: American eel.



Photo 146: Ninespine stickleback



Photo 147: Brown bullhead



Photo 148: White Sucker

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Photo 149: Golden shiner



Photo 150: Threespine stickleback



Photo 151: Blacknose dace



Photo 152: Brook trout

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Photo 153: Chain pickerel



Photo 154: Norther redbelly dace



APPENDIX F: INDIVIDUAL FISH DATA AND DETAILED FISH HABITAT MEASUREMENTS



Table 1. Detailed Fish Habitat Assessment Data, Reach Information

Surveyors	Survey Date	WC #	Reach #	Upstream		Downstream		Water Quality					Reach Length (m)	Gradient (%)	Flow Type	Habitat Type	All included Habitat Types (Y OR N)					Dominant Riparian Veg.	Banks and Riparian Area	Comments (unique habitat features, survey method alterations, etc.)	
				Easting	Northing	Easting	Northing	Temp (°C)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)					Turbidity	Riffle	Run	Flat	Pool				Other
CD KF	2023-10-17	1	1	472873, 4981937		47262, 4982027		8.4	5.25	5.24	31.8	48.8	L	133.7	1	I	Flat	N	N	N	N	N	Wetland	wl tree swamp, no defined channel at times	includes WL mosaic, no defined channel at times. BA found on edge of WL
CD KF	2023-10-17	1	2	47262, 4982027		472835, 4982103		N/A	N/A	N/A	N/A	N/A	N/A	60.7	3	P	Riffle- Run	N	N	N	N	N	Wetland	tree swamp into shrub swamp, lots of snags, intermixed open and closed canopy cover, <2 gradient	Measured every other reach from here on-low YSI battery
CD KF	2023-10-17	1	3	472835 4982103		472835 4982103		8.5	5.09	9.27	31.32	20.8	L	38	1	P	Flat	N	N	N	N	N	Wetland	marsh , lots of snags, intermixed open and closed canopy cover, <2 gradient woolly bullrush	None
CD KF	2023-10-17	1	4	472841 4982410		472889 4982255		N/A	N/A	N/A	N/A	N/A	N/A	130.1	2	P	Run	N	N	Y	Y	N	Wetland	marsh, lots of snags, bog aster, sensitive fern, steeple bush.	None
CD KF	2023-10-17	1	5	472889 E, 4982255 N		4,728,804,982,359		8.7	5.48	10.75	32.1	29.9	N/A	150	3	P	Riffle- Run	N	N	N	Y	N	Wetland	narrow tree swamp, no erosion, lots of standing snags, old beaver activity present. light shrub cover	None
CD KF	2023-10-17	1	6	472944, 4982308		472849, 4982385		N/A	N/A	N/A	N/A	N/A	N/A	38.8	2	P	Run	N	N	N	N	N	Wetland	graminoid marsh, moderate snags woolly bullrush. open canopy cover	None
CD KF	2023-10-17	1	7	472849, 4982385		472730, 4982271		N/A	N/A	N/A	N/A	N/A	N/A	207.7	1	P	Flat	N	N	N	N	N	Wetland	graminoid marsh, moderate snags woolly bullrush. open canopy cover	None
CD KF	2023-10-17	1	8	472730, 4982271		472623, 4982248		9.1	5.54	11.84	94.5	19.4	L	94.3	2	P	Run	N	N	N	N	N	Wetland	shrub swamp, speckled alder. upland is >5 gradient	None
CD KF	2023-10-19	1	9	472623 4982248		472491 4982231		9.8	5.91	10.99	116.2	115.7	L	151.4	3	P	Riffle-Run	N	N	N	N	N	Wetland	old road crossing wc, old culvert found in wc. road leads to active hunting blind	None
CD KF	2023-10-19	1	10	472491 4982231		472360 4982283		7	6.05	10.34	159.4	159.25	L	159.2	1	P	Flat	N	N	N	N	N	Wetland	old road crossing wc, old culvert found in wc. road leads to active hunting blind	None
CD KF	2023-10-19	1	11	472360 4982283		472332 4982275		7.3	6.1	11.14	255.6	226.6	L	24.8	2	P	Run	N	N	N	N	N	Wetland	abundant downfall throughout	None
CD KF	2023-10-19	1	12	472332 4982275		472199 4982339		7.4	6.31	10.8	260.7	255.45	L	146.4	1	P	Flat	N	N	N	N	N	Wetland	abundant downfall throughout	None
CD KF	2023-10-19	1	13	472199, 4982339		4,718,374,982,401		8.1	6.38	11.58	378.8	354.65	L	477.1	3	P	Riffle- Run	N	N	N	N	N	Wetland	abundant downfall throughout	None
CD KF	2023-10-19	1	14	471837, 4982401		471757, 4982395		9.2	6.85	10.65	397	65	L	86.5	2	P	Run	N	N	N	N	N	Wetland	alder shrub swamp. Riparian land bridging onto old pasture land?	None
CD KF	2023-10-18	2	1	472980, 4981862		472944, 4981869		10.6	5.91	11.76	32.2	28.6	C	160.7	3%	P	Riffle- Run	N	N	N	N	N	Wetland	narrow wc with speckled alder cover, 2% gradient down stream, upstream >5% gradient upstream	The start of wc crosses natural gas line. Midway downstream the wc is <3ms beside main road, wc flow crosses over on road due to flooding events. The Downstream flow channels back into wl 1. Heavy sedimentation in WL1 due to broken culvert. The WC flow disappears in WL 1
EH RC	2023-10-24	3	1	473447, 4981958		473136, 4982617		10.6	4.72	8.95	55	27	N/A	531	1	P	Flat	N	N	N	N	N	Wetland	part gravel road, part shrubby swamp. mw forest along perimeter. downstream ends at beaver dam. no longer defined channel. many small dispersing channels into shrubby wetland/ alders	crosses road. area flooded due to beaver activity
EH RC	2023-10-26	3	2	4,734,474,981,960		4,734,114,982,218		12.4	5.58	9.91	46	23	L	253.8	3	P	Flat	N	N	Y	Y	N	Coniferous Forest	softwood dom, coming from alder wetland	DO is in %, wc comes from alder wetland, channalization happens after it leaves wetland, extremely braided throughout, stopped recording notable features tab as it would be almost very tra sect, wc leads into beaver dam lake
RC, MS	2023-10-13	4	1	473684, 4982102		473386, 4982259		11.6	6.48	10.22	41.4	36.4	L	391.4	2	I	Run	N	N	Y	Y	N	Mixed Wood	mixed wood	upstream end starts from wetland
RC, MS	2023-10-13	5	1	473560, 4982283		473545, 4982230		11.6	5.36	9.93	44.6	39	C	77	2	I	Riffle	Y	N	N	N	Y (falls)	Mixed Wood	upstream is ravine, downstream is more floodplain and water comes from a culvert upstream	None
RC, MS	2023-10-13	6	1	473642, 4982253		473603, 4982206		11.9	6.5	10.11	34.8	29.9	C	90.1	3	I	Riffle-Run	N	N	N	N	N	Mixed Wood		None



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				Easting	Northing	Easting	Northing	Temp (°C)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)					Turbidity	Riffle	Run	Flat	Pool			
KF, CD	2023-10-17	7	1	472567, 4982699	472802, 4982416	11.3	5.08	9.16	23.7	20.8	L	397	3	P	Riffle-Run	N	N	N	Y	N	Coniferous Forest	gradient of >5, wc flows into wl, red spruce balsam fir stand	None	
KF, CD	2023-10-17	7	2	472802, 4982416	472853, 4982416	11.3	5.43	10.48	23.4	20.8	C	49.4	5	P	Rapid	N	N	N	N	N	Coniferous Forest	red spruce balsam fir stand, no understory cover, heavy moss cover	None	
KF, CD	2023-10-17	8	1	472670, 4982385	472719, 4982366	10.9	4.59	11.17	9.9	8.45	C	53.9	3	P	Riffle	N	N	N	N	N	Coniferous Forest	stable bank, down woody debris over in stream, red spruce stand, heavy moss grown cover	None	
KF, CD	2023-10-17	8	2	472719, 4982366	472748, 4982338	N/A	N/A	N/A	N/A	N/A	N/A	39.6	7	P	Cascade	N	N	N	N	N	Coniferous Forest	stable bank, down woody debris over in stream, red spruce stand, heavy moss grown cover	None	
KF, CD	2023-10-18	9	1	472433, 4982746	472457, 4982401	11.4	5.52	11.21	18.9	16.25	L	88.3	4	I	Rapid	N	N	N	N	Y	Mixed Wood	young red spruce stand, no understory cover, heavy moss ground cover. Steep banks on left and right.	None	
KF, CD	2023-10-19	9	2	472457, 4982401	472479, 4982341	11.5	5.53	11.74	19.85	17.55	C	61.3	7	I	Cascade	N	N	N	N	N	Coniferous Forest	young red spruce stand, no understory cover, heavy moss ground cover.>2	None	
KF, CD	2023-10-20	9	3	472479, 4982341	472482, 4982305	11.2	5.54	9.04	22.97	17.88	L	37.4	6	I	Rapid	N	N	N	N	N	Mixed Wood	young red spruce stand, no understory cover, heavy moss ground cover.>2. lots of downed trees	None	
KF, CD	2023-10-21	9	4	472482, 4982305	472456, 4982257	11.4	5.54	9.54	21.88	17.69	C	56.7	2	P	Run	N	N	N	N	N	Mixed Wood	mature mixed wood, eastern hemlock, white ash, red maple, red spruce, 75 % moss ground cover, moderate put and mound landscape.	hunting blind SE of transect	
RC,MS	2023-10-12	10	1	472934, 4983049	473055, 4982956	14.1	5.24	9.91	29.4	24.05	L	172.4	3	I	Riffle-Run	Y	Y	Y	Y	N	Mixed Wood	young mixed wood hardwood dom, floodplain in middle section, banks are more stable at upstream	comes from upstream and ends in wl6, very narrowing areas hard to get any flow	
RC, EH	2023-10-10	11	1	473193, 4983638	473086, 4983957	13.3	6.29	9.27	77	64.35	N/A	1354.3	2	P	Run	N	N	N	N	N	Mixed Wood	Ends in r1. change in habitat type. at t15 temp=13.8, do=8.1, cond= 63.6, tds=52.65, ph=6.10	None	
RC, EH	2023-10-11	11	2	473086, 4983957	473112, 4984039	13.2	6.25	64.9	93.1	77.35	N/A	115.3	1	P	Flat	N	Y	N	N	N	Wetland and mixed wood forest	ends in open beaver pond marsh	None	
RC, EC	2023-07-18	12	1	473878, 4982887	473725, 4982934	25	5.6	2.22	30.5	20.15	T	198.4	1	P	Flat	N	N	N	N	N	Grass		None	
RC, EH	2023-10-24	12	2	473701, 4982945	473678, 4982953	9.6	3.47	9.44	24	22	N/A	34.2	3	P	Riffle-Run	N	N	N	N	N	wetland/Mixed wood	part grassy open wl, part coniferous forest (mature)	flowing faster than the downstream reach. the upstream coordinates here are from t2 but the stream continues. the rest is in someone else's data	
RC, EH	2023-10-25	12	3	473678, 4982953	473328, 4983310	8.3	3.94	9.79	24	12	N/A	559.3	2	P	Run	N	N	N	N	N	wetland/Mixed wood	mixed wood medium. age stand. south side has wetland. further along opens into graminoid open wl	None	
RC, EH	2023-10-11	14	1	473149, 4983272	473200, 4983310	11.2	6.19	10.14	78.3	69.55	N/A	74.1	1	E	Pool	Y	N	N	N	Y (cascade)	Mixed Wood	mixed wood, high decline	no flowing water at time of visit, some water in pools which is where ysi reading was taken	
RC, EH	2023-10-10	15	1	4983318, 4983318	473192, 4983318	12.7	6.66	10.62	55.4	46.8	N/A	140.6	6	I	Cascade	Y	Y	N	N	N	Mixed wood	Middle age mixed wood forest. wc is parallel to an old road. weaves in and out of it.		
RC, EH	2023-10-10	16	1	473063, 4983362	473181, 4983352	13.1	6.55	10.08	39.6	33.15	N/A	148.8	3	P	Riffle-Run	N	N	N	N	N	Mixed Wood	SW dominated, medium age forest		
RC, EH	2023-10-10	17	1	473147, 4983429	473172, 4983443	13.1	6.48	8.82	44.5	37.7	N/A	40	6	I	cascade	Y	Y	N	N	N	Coniferous Forest	mostly steep hill, fast running wc thru matre softwood	starts on hill, ends in wetland30. pooling in wetland. above upstream coords is underground flow (rest of mapped wc is underground)	
RC, LB	2023-10-11	18	1	473553, 4983610	473396, 4983646	11	5.94	8.46	41	36.4	L	189.1	2	E	Riffle-run	Y	Y	Y	Y	N	Grass, shrub, mixed-wood forest	floodplain mixed wood	stars from upland drainage and ends in WL	
RC, LB	2023-10-11	19	1	473447, 4983743	473433, 4983673	11.1	6	9.49	51.6	45.5	L	90.3	3	E	Riffle-Run	Y	Y	Y	N	N	Grass, Mixed-wood	floodplain mixed wood, small ephemeral	None	
RC, LB	2023-10-11	20	1	473082, 4983669	473134, 4983707	12.7	5.97	10.06	0.044	28.3	C	68.9	6	I	Riffle-Run	N	N	N	N	N	Shrub, mixed woods forest		lots of downed woods	



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				Easting	Northing	Easting	Northing	Temp (°C)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)					Turbidity	Riffle	Run	Flat	Pool			
SP, RC	2023-07-04	21	1	474220, 4983900	474157, 4984049	17.3	4.74	0.7	40	26	T	185.6	3	I	Riffle-run	N	N	N	N	N	Mixwood trees	Braided at the top of wc, then starts to have a more defined channel; mixwood forest. Stream braided intermittently and goes underground at points.	starts in a forested area, drains from upland	
SP, RC	2023-07-04	21	2	474169, 4984062	474175, 4984091	18	5.2	0.6	28	14	L	53.3	3	I	Riffle-run	N	N	N	N	N	Mixwood trees	WC starts in an open grassy area when transect starts, then transitions into mixwood forest	substrate changed to more sand muck, slow flow	
SP, RC	2023-07-04	21	3	474174, 4984113	474142, 4984371	17.3	4.9	0.6	36	18	M	250.8	2	I	Run	N	N	N	N	N	Softwood forest	Softwood dominated forest, lots of downed wood, lots of ferns and grasses, channel is not great very small in fresh and high grasses	transitions from hardwood dom to open area	
SP, RC	2023-07-04	21	4	474147, 4984393	474138, 4984465	18.9	6.3	0.3	31	13	M	137.7	3	I	Riffle-run	N	N	N	N	N	Softwood forest	Softwood dominated forest, lots of woody debris. WC ends in braided section and filters into ruts which flow into WC22	transitions for, open grassy area to softwood forest	
SP, RC	2023-07-05	22	1	474188, 4984511	473906, 4984911	19	5.15	0.4	47	24	M	663.5	2	P	Run	N	N	N	N	N	Grass, Deciduous Wetland	alder swamp/ grass wetland	Top of 22 seems to be drainage into open water section, open water was slightly flooded and too deep to wade. open water does not have a channel leaving, open drains into a culvert which is where WC 22 begins. Changes bank habitat a few times. Black ash in the second wetland, majority of watercourse was mucky with instream veg and woody debris throughout, flow meter stopped working halfway through.	
SP, RC	2023-07-05	22	2	473906, 4984911	473894, 4984778	N/A	N/A	N/A	N/A	N/A	N/A	107.1	3	P	Riffle-Run	N	N	N	N	N	Mixed woods forest	mixed wood	None	
SP, RC	2023-07-05	23	1	474598, 4984576	474461, 4984596	18.2	5.9	0.4	85	43	M	176.8	3	P	Riffle-Run	N	N	N	N	N	Grass, Deciduous Wetland	Alder swamp/wetland	Alder swamp/wetland	
SP, RC	2023-07-06	24	1	494913, 4983662	0475036, 4983832	19.7	5.7	0.3	28	14	L	259.9	3	I	Riffle	N	N	N	N	N	Mixed woods forest	slow flow, not much flow at start, not really defined channel then becomes more defined	mucky very slow flow with lots of instream veg, slightly braided with no direct channel at times	
SP, RC	2023-07-06	24	2	0475036, 4983832	475038, 4983908	19.4	5.9	0.3	72	37	M	217.2	2	P	Riffle-Run	N	N	N	N	N	Mixed woods forest	starts where t 8 ends	starts where t8 ends in mixwood forest, transitions from mucky substrate in reach 1 to more gravel cobble in second reach	
SP, RC	2023-07-06	25	1	474724, 4984180	0475037, 4983935	18	5.88	0.4	44	21	L	476.3	3	E	Riffle	N	N	N	N	N	Mixwood forest, grass	Mixwood forest, grass	channel started a bit further down then the mapped, about 20~60m south while top section was drainage turning into the actual channel. channel started at upland, trickles through, not much flow, goes through mixwood	
SP, RC	2023-07-06	26	1	474710, 4983924	474972, 4983881	18.8	5.77	0.4	43	17	T	311.6	3	E	Riffle	N	N	N	N	N	Mixwood forest	Mixwood forest	channel started a bit further down then the mapped, about 20~60m south while top section was drainage turning into the actual channel. channel started at upland, trickles through, not much flow, goes through mixwood	
SP, RC	2023-07-06	26	2	474972, 4983881	0475017, 4983904	19.9	6.4	0.4	55	26	T	22.8	1	I	Pool	N	N	N	N	N	mixwood forest	mixwood forest	starts at a bend in wc26, slow flowing	
SP, RC	2023-07-06	26	3	0475017, 4983904	475038, 4983910	19	6.3	0.6	62	31	L	32.4	3	I	Riffle	N	N	N	N	N	mixwood forest	mixwood forest	second reach ends, third reach starts	
SP, RC	2023-07-06	26	4	475038, 4983908	475157, 4983993	19.4	5.9	0.3	72	37	M	217.2	2	P	Riffle-Run	N	N	N	N	N	Mixed woods forest	Mixed wood forest	goes through 2 large culverts under Lake Egmont Rd and then continues on until transitioning into a flat and draining into the WL surrounding Gays River	
KF, MS	2024-01-12	26	5	475157, 4983993	475231, 4983947	-0.2	7.14	13.49	127.1	82.55	M		1	P	Flat	N	N	N	N	N	Wetland	are has recent flooding. Human debris near by	Recent flooding noticed. Flows into grassy wetland surrounding Gays River, no connection observed this time of year.	



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				Easting	Northing	Easting	Northing	Temp (°C)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)					Turbidity	Riffle	Run	Flat	Pool			
SP, RC	2023-07-06	27	1	474828, 4983710	474918, 4983689	23.9	5.9	0.3	50	25	L	116.2	3	I	Riffle	N	N	N	N	N	alder swamp, starts from culvert, not ,much flow	alder swamp, starts from culvert, not ,much flow	starts from culvert	
EH, RC	2023-10-10	28	1	472996, 4983864	473030, 4983896	13.4	5.97	10.49	36.3	30.5	N/A	54.4	3	I	Riffle	N	N	N	N	N	Mixed wood	Grass, shrub, upland coniferous forest	joins to wc11. upstream starts as drainage	
RC, LB	2023-10-11	29	1	472992, 4983844	473051, 498386	12.4	4.89	12.11	0.037	24.05	M	63	7	I	cascade	N	N	N	N	N	Deciduous	None	lots of downed wood everywhere	
SP, RC	2023-07-07	30	1	474999, 4983303	475042, 4983345	20	5.6	0.4	37	19	L	159.3	1	E	Flat	N	N	N	N	N	Mixed wood	Mixed wood	small stream section filtering in from one wetland to another and then filtering out, more eastern section closer to boarder was a much nicer stream section	
SP, RC	2023-07-07	30	2	475042, 4983345	475108, 4983282	N/A	N/A	N/A	N/A	N/A	N/A	21	3	P	Riffle	N	N	N	N	N	soft wood	soft wood	recently flooded	
SP, RC	2023-07-07	31	1	474833, 4983378	474925, 4983319	19.3	5.5	0.4	39	20	M	137.9	1	P	Flat	N	N	N	N	N	Mixed wood	Mixed wood	WC starts at yellow circle on avenza fish hab map, about halfway down WC	
SP, RC	2023-07-07	31	2	474925, 4983319	474938, 4983296	19.3	5.2	0.3	42	20	T	33.1	1	P	Flat	N	N	N	N	N	Mixed wood	Mixed wood	Last transect the wc went underground and then reappeared	
RC, EG	2023-07-18	32 (Gays River)	1	474905, 4985068	475256, 4984166	25.3	6.9	3.16	111.1	72.15	T	1178.6	1	P	Flat	Y	N	N	N	N	Grass		None	
SP, RC	2023-07-07	33	1	474713, 4983221	474759, 4983223	19	33	0.4	33	18	L	68.7	2	E	Riffle-run	N	N	N	N	N	mixwood forest, open grassy field, slow flow	mixwood forest, open grassy field, slow flow	Drainage from wetland upstream at start, very little flow.	
SP, RC	2023-07-07	33	2	474759, 4983223	474807, 4983230	19.5	6.3	0.6	32	15	M	94.6	3	E	Riffle-run	N	N	N	N	N	Mixed wood	Mixed wood	WC started halfway down mapped section, WC does not go into wetland, wetland is very flooded.	
SP, RC	2023-07-07	34	1	474218, 4983723	474159, 4983697	22.4	6	0.4	47	22	C	80.9	2	E	Riffle-run	N	N	N	N	N	Mixed wood	Mixed wood	started after mapped start. Started as drainage.	
SP, RC	2023-07-07	34	2	474159, 4983697	474135, 4983666	21.2	6.5	0.4	39	19	L	38.7	1	E	Flat	N	N	N	N	N	Mixed wood	Mixed wood	WC went under debris and gradient/substrate/instream habitat changed	
SP, RC	2023-07-07	35	1	474111, 4983618	474195, 4983408	20	5	0.4	25	14	L	282	2	E	Run	N	N	N	N	N	mixed wood	mixed wood	None	
SP, RC	2023-07-07	36	1	474026, 4983646	474103, 4983633	21	4.3	0.4	41	21	M	96.5	2	E	Run	N	N	N	N	N	mixed wood	mixed wood	None	
RC, EG	2023-07-18	37	1	474348, 4983406	474224 4983421	18	6.43	1.08	52.7	34.45	M	194.5	1	I	Flat	N	N	N	N	N	Coniferous woods	Coniferous woods	None	
LB, RC	2023-10-23	38	1	473825 4982843	473836 4982887	10.9	5.29	84.8% or 9.38 mg/l	25	12	L	65.4	2	I	Run	N	N	N	N	N	Coniferous woods	softwood dominated, lots of downed woody debris, slightly eroding banks	None	
RC, LB	2023-10-11	39	1	473139, 4983510	473150, 4983516	12.5	5.99	10.8	28.5	24.05	C	9.2	6	I	Cascade	N	N	N	N	N	Mixed wood Forest	Mixed wood Forest	None	
LB, RC	2023-10-23	40	1	473743 4982768	473661 4982947	10.9	4.55	9.77	21	11	L	231.5	1	P	Flat	Y	Y	N	Y	Y (cascade)	Mixed wood Forest	mixed wood forest , some woody debris and downed wood throughout. slightly entrenched wc with mossy banks	None	
LB, RC	2023-10-23	41	1	473970 4982614	474062 4982637	11.2	4.55	8.38	25	12	C	95.7	1	P	Flat	N	N	N	N	N	Wetland	flows from wl to wl with slightly entrenched and poorly defined channel. mix of softwood and alders	water is flowing from full wetland but no defined wc after 4th transect	
KF, CD	2023-10-17	42	1	472958-4982301	472944 4982308	9.4	4.54	10.59	18.3	16.9	M	36.1	6	I	Step pool	N	N	N	N	N	grass, shrub and mixed wood forest	red maple, balsam fir trembling aspen. >2 gradient	young mixed wood stand, 40 moss ground cover, intermixed open and closed canopy cover. pit and mound topography. moderate down woody debris	
LB, RC	2023-10-23	43	1	473964 4982418	473897 4982478	10.8	3.93	85.7% 9.5 mg/l	25	12	C	87.7	2	I	Run	N	N	Y	N	Y (cascade)	Coniferous forest	small channel with softwood forest. rocky and mossy ground. lots of downed wood and organic debris	None	
KF, CD	2023-10-20	44	1	473924 4982294	473881 4982468	10.6	5.56	9.89	25.8	22.75	C	231.2	3	I	Riffle	N	N	N	N	N	Shrub mixed wood forest	4 % gradient, mid successional yellow birch white ash, with moderate understory balsam fir REGEN (FEC TH8A?). downstream enters wl 44, lots of pooling water. wc continues beyond delineated point	None	



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Surveyors	Survey Date	WC #	Reach #	Upstream		Downstream		Water Quality					Reach Length (m)	Gradient (%)	Flow Type	Habitat Type	All included Habitat Types (Y OR N)					Dominant Riparian Veg.	Banks and Riparian Area	Comments (unique habitat features, survey method alterations, etc.)
				Eastings	Northing	Eastings	Northing	Temp (°C)	pH	DO (mg/L)	CON (µS/cm)	TDS (mg/L)					Turbidity	Riffle	Run	Flat	Pool			
KF, CD	2023-10-20	44	2	473881, 4982468	473896, 4982510	11.1	5.31	1.67	54.8	48.1	C	50.1	1	I	Flat	N	N	N	N	N		balsam fir, green alder tree swamp. gradient <2. wc flooded and pools into wl. wl mosaic downstream	no defined channel downstream.	
LB, RC	2023-10-23	45	1	473766, 4982380	473847, 4982387	11.2	4.61	93.9% or 10.31 mg/l	32	16	C	82.8	2	I	Run	Y	N	N	N	N	Mixed wood forest	mixed wood forest with rocky/mossy ground. woods somewhat open. trail between t3 and t4	None	
RC, LB	2023-10-11	46	1	473018, 4983786	473063, 4983803	12.4	6.09	10.21	0.053	34.45	M	59.1	6	I	Cascade	N	N	N	N	N	Mixed wood forest	lots of downed wood in floodplain	None	
KF, CD	2023-10-20	47	1	4740382, 4982020	473920, 4982291	10.4	5.6	36.27	4.78	39.7	C	319.5	1	I	Flat	N	N	N	N	N	Coniferous forest wetland	area looks to have history of disturbance. young grey birch, black spruce stand. along watercourse is alder grey birch swamp. no channel at times, wetland indicators present. old road crossing wc midway through wc	WC continues on after natural as line road. 47 and 44 the same wc	
RC, LB	2023-10-11	48	1	473575, 4981820	473743, 4981937	12.1	5.66	8.51	27.3	23.4	C	132.6	2	I	Run	N	N	N	N	N	Grass, shrub, mixed-wood forest	Grass	None	
KF, CD	2023-10-19	50	1	472368, 4982177	472416, 498 2272	N/A	N/A	N/A	N/A	N/A	N/A	101.6	3%	I	Riffle-run	N	N	N	N	N	Mixed wood forest	2 starts to wc. second wc start 472374 4982185	alder swamp. steep cliff face downstream. Exposed gypsum rockface surface water most likely reason for water flow accumulation. >10 gradient downstream	
KF, CD	2023-10-19	51	1	472158, 4982310	472169, 4982333	10.9	6.54	7.54	1482	1319.5	L	27.3	1	P	pool	N	N	N	Y	N	Grass wetland	balsam fir, red maple, white birch. area is disturbed. young stand 50 + yrs.	heavy woody downfall throughout wc. wc starts at old gypsum mine area. wc turns into pond with no in flow. pond flows into main branch of sw wc. wc is 30m long. rutting from old vehicle activity present. gypsum rock face exposed	
KF, CD	2023-10-19	52	1	471975, 4982468	471972, 4982460	8.5	6.81	0.88	1480	1410.5	M	32.4	1	P	pool	N	N	N	N	N	Coniferous Forest	alder swamp on edge of pool. no inflow found in pool. low outflow found into main wc channel- high flow during flooding	water in pool has slight blue color. pool surrounded by berm. Disturbed area. eastern hemlock yellow birch. gradient >5	
RC, LB	2023-10-11	53	1	473217, 4983660	473190, 4983664	11.3	5.47	6.65	39.3	35.1	Clear	42.6	1	I	Run	Y	N	Y	N	N	Shrub, coniferous forest	leaves from wetland, wc is wet alder swamp on wither side, wetland is very flooded	leaves from wetland, wc is wet alder swamp on wither side, wetland is very flooded	
KF, LB	2023-10-30	54	1	475039, 4983259	475067, 4983251	N/A	N/A	N/A	N/A	N/A	N/A	29.8	2	I	Run	N	N	N	N	N	Wetland	starts within WL55 (treed swamp) it begins as an accumulation of water coming from WL, no connection to WC56 but possibly during high flow	None	
KF, LB	2023-10-30	55	1	475009, 4983208	475038, 4983206	N/A	N/A	N/A	N/A	N/A	N/A	32.4	2	I	Run	N	N	N	N	N	Wetland	starts within WL55 (treed swamp) it begins as an accumulation of water coming from WL, no connection to WC56 but possibly during high flow	None	
RC, EM	2023-10-27	56	1	475022, 4983154	475846, 4983267	11.4	5.74	84.6% or 9.25 mg/l	20	99	N/A	2281	1	P	Flat	Y	N	N	Y	N	Mixed wood forest	downstream portion lots of wetland turns into coniferous forest. transmission line goes through wc	None	
RC, EM	2024-01-23	57	1	473515, 4984666	473626, 4984754	2.6	7.69	12.81	177	114.4	T	127	<1	P	Flat	N	N	N	N	N	Shrub and alders	No comment	begins at polishing pond	
RC, EM	2024-01-23	57	2	473626, 4984754	473789, 4984810	0.8	7.31	12.14	174.1	113.1	T	58	1	P	Run	N	N	N	N	N	Shrub and alders	No comment	None	
RC, EM	2024-01-23	57	3	473789, 4984810	473933, 4985079	2.3	7.33	13.59	175.2	113.75	M	388	3	P	Riffle-run	N	N	N	N	N	Mixed-wood forest	No comment	None	
RC, EM	2024-01-23	57	4	473933, 4985079	474137, 4985594	2.3	7.17	13.8	174.3	113.1	M	636	2	P	Run	N	N	N	N	N	shrub and mixed wood forest	No comment	None	
RC, EM	2024-01-24	58	1	473685, 4984360	473704, 4984418	Frozen over					65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Mixed wood forest	No comment	Frozen over, could not take any measurements from open water c disperses and disappears in wl	
RC, EM	2024-01-24	59	1	473840, 4984140	473823, 4984180	-0.2	6.37	7.19	168.8	109.85	Turbid	45	<1	I	Flat	N	N	N	N	N	mixedwood swamp	No comment		
RC, EM	2024-01-24	60	1	473838, 4984233	473866, 4984268	-0.2	6.62	5.53	188.4	122.2	Turbid	49	1	I	Run	N	N	N	N	N	Shrub and alders	No comment	comes from open water c, very small, alder floodplain, disperses into wl, old logging road goes over it	



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Assessors	Survey Date	WC#	Reach #	Transect #	Waypoint		Habitat Type	Bank Height (m)	Thalweg Depth (m)	Width (m)		Depths and Velocities				Entrenchment	Substrate types (add up to 100%)	Cover types (% of EACH instream, overhead, shade, aquatic vegetation)	Notes on Transect		
					Easting	Northing				Wetted	Bankfull	1/4 Depth (m)	1/4 Vel (m/s)	1/2 Depth (m)	1/2 Vel (m/s)					3/4 Depth (m)	3/4 Vel (m/s)
RC, EM	240123	57	2	5	473731	4984750	Run	0.25	0.82	5.3	7.5	0.7	<0.05	0.77	<0.05	0.76	<0.05	Not entrenched	100 muck	5woody debris	slow flow
RC, EM	240123	57	2	6	473757	4984766	Run	0.45	0.51	6	6.6	0.31	0.1	0.35	0.1	0.47	0.1	Not entrenched	60 cobble 20 gravel 10 sand 10 muck	15 overhead	slight cascade upstream
RC, EM	240123	57	3	1	473789	4984810	Riffle-Run	0.3	0.34	3.5	6	0.17	0.1	0.26	0.1	0.31	0.33	Slightly entrenched	30 rubble 40 cobble 20 muck 10 gravel	40 woody debris 2 instream veg	
RC, EM	240123	57	3	2	473787	4984836	riffle run	0.32	0.45	4.5	6.5	0.44	0.16	0.25	0.16	0.34	0.16	Slightly entrenched	50 sand 50 muck	40 woody debris 20 instream veg	
RC, EM	240123	57	3	3	473786	4984826	Riffle-Run	0.25	0.42	3	5.1	0.14	0.33	0.34	0.33	0.42	0.33	Slightly entrenched	20 rubble 50 cobble 20 gravel 10 sand	5 overhead	
RC, EM	240123	57	3	4	473793	4984894	riffle run	0.38	0.28	3.4	5	0.19	0.25	0.24	0.25	0.26	0.25	Slightly entrenched	10 rubble 40 cobble 10 gravel 20 sand 20 muck	5 undercut bank 2 woody debris	started past 25 m due to woody debris
RC, EM	240123	57	3	5	473806	4984914	Riffle-Run	0.25	0.35	5.4	6.5	0.26	0.16	0.2	0.16	0.32	0.16	Slightly entrenched	20 cobble 30 gravel 30 sand 20 muck	30 woody debris 10 instream veg	
RC, EM	240123	57	3	6	473813	4984938	Riffle-Run	0.35	0.43	3	5.5	0.4	0.25	0.35	0.25	0.4	0.25	Slightly entrenched	40 gravel 50 sand 10 muck	10 undercut bank 20 woody debris	
RC, EM	240123	57	3	7	473832	4984949	Riffle-Run	0.3	0.4	2.9	4.5	0.4	0.16	0.4	0.16	0.27	0.16	Moderately entrenched	40 cobble 20 gravel 30 sand 10 muck	5 undercut banks 10 woody debris	
RC, EM	240123	57	3	8	473855	4984941	Riffle-Run	0.2	0.41	6.2	7.2	0.41	0.25	0	0.25	0.23	0.16	Moderately entrenched	10 cobble 30 gravel 50 sand 10 muck	5 woody debris	3/4 flow faster
RC, EM	240123	57	3	9	473876	4984960	Riffle-Run	0.25	0.53	3.5	5	0.47	0.12	0.51	0.12	0.43	0.12	Moderately entrenched	10 gravel 30 sand 60 muck	5 woody debris	in-between 2 braids
RC, EM	240123	57	3	10	473901	4984983	Riffle-Run	0.18	0.46	7.1	8.5	0.46	0.12	0.3	0.12	0.31	0.12	Moderately entrenched	40 sand 60 muck	20 woody debris 5 instream veg	past 25m due to braid
RC, EM	240123	57	3	11	473925	4984998	Riffle-Run	0.24	0.57	4.4	7.5	0.52	0.2	0.55	0.2	0.35	0.2	Moderately entrenched	10 gravel 30 sand 60 muck	15 woody debris	
RC, EM	240123	57	3	12	473931	4985024	Riffle-Run	0.35	0.42	8.2	10.5	0.28	0.16	0.42	0.16	0.18	0.16	Moderately entrenched	10 gravel 20 sand 70 muck	30 woody debris	
RC, EM	240123	57	3	13	473943	4985047	Riffle-Run	0.16	0.45	3.7	5	0.17	0.16	0.34	0.16	0.45	0.16	Moderately entrenched	50 sand 50 muck	5 woody debris	
RC, EM	240123	57	4	1	473933	4985079	Run	0.25	0.52	4.6	6	0.38	0.2	0.47	0.2	0.39	0.2	Moderately entrenched	30 sand 70 muck	30 woody debris	
RC, EM	240123	57	4	2	473933	4985106	Run	0.22	0.59	4.8	9.5	0.26	<0.05	0.14	0.12	0.57	0.12	Moderately entrenched	100 muck	10 woody debris 5 veg	no flow @ 1/4
RC, EM	240123	57	4	3	473944	4985132	Run	0.15	0.55	4	6.5	0.2	0.14	0.34	0.14	0.55	0.14	Slightly entrenched	10 sand 90 muck	25 woody debris 5 instream veg	
RC, EM	240123	57	4	4	473961	4985153	Run	0.15	0.5	4.2	6	0.47	0.16	0.5	0.16	0.2	0.16	Slightly entrenched	20 sand 80 muck	10 woody debris	
RC, EM	240123	57	4	5	474001	4985190	Run	0.25	0.6	4	7	0.55	0.09	0.65	0.09	0.46	0.09	Slightly entrenched	100 muck	30 woody debris	
RC, EM	240123	57	4	6	474003	4985218	Run	0.28	0.7	3.9	7	0.58	0.16	0.68	0.16	0.52	0.16	Slightly entrenched	20 sand 80 muck	5 woody debris 10 veg	
RC, EM	240123	57	4	7	474002	4985252	Run	0.2	0.52	4.4	6.5	0.5	0.08	0.52	0.08	0.31	0.08	Slightly entrenched	10 sand 90 muck	5 instream veg 5 woody debris	
RC, EM	240123	57	4	8	473999	4985278	Run	0.3	0.55	4.5	6.5	0.49	0.14	0.4	0.14	0.31	0.14	Moderately entrenched	10 gravel 10 sand 80 muck	10 instream veg 10 woody debris	
RC, EM	240123	57	4	9	474010	4985309	Run	0.25	0.42	3	5.5	0.25	0.2	0.35	0.2	0.2	0.2	Moderately entrenched	10 cobble 50 gravel 20 sand 20 muck	10 instream veg	
RC, EM	240123	57	4	10	474092	4985355	Run	0.4	0.58	5.2	7.5	0.3	0.16	0.4	0.16	0.58	0.16	Moderately entrenched	40 gravel 30 sand 30muck	5undercut 5 woody debris	
RC, EM	240124	57	4	11	474033	4985363	Run	0.4	0.53	3.8	5	0.47	0.16	0.5	0.16	0.27	0.16	Moderately entrenched	10 gravel 40 sand 50 muck	40 woody debris	
RC, EM	240124	57	4	12	474031	4985391	Run	0.4	0.53	4.5	5.5	0.5	0.11	0.52	0.11	0.33	0.11	Moderately entrenched	100 muck	5 woody debris	
RC, EM	240124	57	4	13	474050	4985407	Run	0.4	0.54	6.7	8	0.31	0.12	0.33	0.12	0.17	0.12	Highly entrenched	100 muck	15 woody debris 5 undercut bank	
RC, EM	240124	57	4	14	474072	4985458	Run	0.25	0.54	6	7	0.52	0.11	0.48	0.11	0.42	0.11	Moderately entrenched	100 muck	70 woody debris 40 overhead	56 m away - large mosaic width estimated due to dense alders
RC, EM	240124	57	4	15	474053	4985470	Run	0.4	0.31	4	5	0.22	0.12	0.25	0.12	0.3	0.12	Moderately entrenched	100 muck	60 woody debris 40 overhead	widths estimated, 3/4 & thalweg couldn't be measured due to instream conditions
RC, EM	240124	57	4	16	474113	4985487	Run	0.42	0.62	2.2	4	0.47	0.16	0.49	0.16	0.28	0.16	Moderately entrenched	30 sand 70 muck	2 undercut banks 30 overhead	
RC, EM	240124	57	4	17	474128	4985507	Run	0.5	0.71	3.7	6.5	0.61	0.2	0.57	0.2	0.2	0.2	Highly entrenched	100 muck	10undercut banks	
RC, EM	240124	57	4	18	474132	4985531	Run	0.54	0.47	3	5	0.29	0.16	0.42	0.16	0.47	0.16	Highly entrenched	100 muck	5 undercut banks	
RC, EM	240124	57	4	19	474137	4985556	Run	0.52	0.74	2.3	3.5	0.68	0.12	0.71	0.12	0.63	0.12	Highly entrenched	100 muck	5 woody debris 50 undercut banks	
RC, EM	240124	57	4	20	474130	4985576	Run	0.54	0.65	2	4	0.59	0.14	0.47	0.14	0.29	0.14	Highly entrenched	50 sand 50 muck	15 woody debris 15 undercut banks	
RC, EM	240124	59	1	1	473822	4984178	flat	0.2	0.11	0.8	4	0.11	<0.05	0.1	<0.05	0.08	<0.05	Not entrenched	100 muck	40 instream veg 20 woody debris	too slow, no flow
RC, EM	240124	60	1	1	473822	4984178	Run	0.25	0.2	0.4	1.5	0.15	<0.05	0.2	<0.05	0.1	<0.05	Not entrenched	100 muck	80 instream veg 30 overhead	too slow, no flow
RC, EM	240124	60	1	2	473841	4984250	run	0.13	0.21	0.3	2	0.15	<0.05	0.21	<0.05	0.16	<0.05	Not entrenched	100 muck	30 instream veg 20 woody debris	too slow, no flow
RC, EM	240124	60	1	3	473863	4984260	Run	0.15	0.22	0.4	4	0.17	<0.05	0.2	<0.05	0.18	<0.05	Not entrenched	100 muck	80 instream veg 30 overhead	too slow, no flow



Table 3. Detailed Fish Habitat Assessment Data, Notable Feature Information

Surveyors	Survey Date	WC #	Reach #	Feature Type	Waypoint		Comments
					Easting	Northing	
CD, KF	231018	1	3	Other	472833	4982124	Pool: 4m wide, 50cm deep. pool is NW to WC, pool and wc are connected.
CD, KF	231018	1	3	Other	472841	4982410	road crossing wc, no culvert
CD, KF	231018	1	4	Beaver Dam	472883	4982250	old dam
CD, KF	231018	1	5	Other	472888	4982254	pool : 2m wide 42cm depth 20 instream cover
CD, KF	231018	1	5	Underground flow	472921	4982316	underground flow but almost cascade 1m length
CD, KF	231019	1	9	Other	472548	4982241	old road crossing stream. old metal culvert found in WC. road leads to hunting blind
CD, KF	231019	9	9	Other	472459	4982267	end of wc 9. poor connectivity to sw wc
CD, KF	231019	1	10	Other	472429	4982259	side branch tributary SW off of main wc. area has lots of snags and is very swampy
CD, KF	231019	1	10	Beaver Dam	472420	4982271	old dam
CD, KF	231019	1	10	Braid	472389	4982285	braiding for 20m. both section are even and are a 1m wide
CD, KF	231019	1	11	Debris jam	472333	4982274	downfall
CD, KF	231019	1	12	Other	472246	4982315	large pool, due to downfall and old beaver activity. Too deep/mucky to wade.
CD, KF	231019	1	13	Beaver Dam	472164	4982338	old dam
CD, KF	231019	1	13	Braid			17m long braid, flows back into main channel
CD, KF	231017	2	1	Other	472998	4981817	wc channels into road
EH, RC	231024	3	1	Beaver Dam	473136	4982617	3m wide, pretty small. disperses wc into an alder swamp
EH, RC	231024	3	1	Beaver Dam	473135	4982596	4.5m wide. pretty short. flooded road just upstream
EH, RC	231024	3	1	Braid	473170	4982562	12m wide. caused by downed wood and beaver activity
EH, RC	231024	3	2	Beaver Dam	473189	4982470	10m wide, 2m high, big drop!
rc , ms	231024	4	1	Braid	473628	4982188	wc splits into 2 channels
CD, KF	231017	7	1	Underground flow	472638	4982633	sections go underground 5m
CD, KF	231017	7	1	Underground flow	472649	4982590	section goes underground 12m
CD, KF	231017	7	1	Underground flow	472686	4982536	section goes underground 1m
CD, KF	231017	7	1	Underground flow	472729	4982460	section goes underground 7m
CD, KF	231017	7	1	Underground flow	472759	4982425	section goes underground 10m
CD, KF	231017	7	1	Underground flow	472777	4982416	section goes underground 7m
CD, KF	231017	7	2	Other	472834	4982413	step pool pool is 60 cm depth step is 35 in height
CD, KF	231017	8	1	Underground flow	472701	4982370	2 m underground
CD, KF	231017	8	2	Other	472730	4982352	2smallcascades , 1= 70cm, pool of 5cm 2 =50cm, pool of 12cm
CD, KF	231017	9	1	Falls	472446	4982418	65cm tall pool depth of 12
CD, KF	231017	9	2	Underground flow	472479	4982341	underground for 5m
CD, KF	231017	9	3	Underground flow	472481	4982330	underground for 8m
CD, KF	231017	10	1	No defined channel	472958	4983029	no defined channel slightly braided may go underground
RC LB	231011	11	1	Debris jam	473159	4983522	50cm high, slight falls
RC LB	231011	11	1	Braid	473165	4983495	large braided island
RC LB	231011	11	1	Debris jam	473222	4983391	25cm drop
RC LB	231011	11	1	Braid	473188	4983343	
RC LB	231011	11	1	Falls	437029	4983846	130cm fall, pool is 25cm deep
eh, rc	231010	16	1	Falls	473156	4983356	wc drops about 0.75m in height, some overhanging veg/ logs
eh, rc	231010	28	1	Falls	473006	4983873	drops about 1.5m
lb rc	231023	40	1	Falls	473670	4982918	length to top of pool 55cm, pool depth 25
lb rc	231023	40	1	Braid	473686	4982878	between t3 and t4 no visible channel
lb rc	231023	40	1	Braid	473721	4982815	large wet area
CD, KF	231020	44	2	Underground flow	473867	4982352	underground for 20m
CD, KF	231020	47	1	No defined channel	474032	4982040	braiding / lack of channel for 8m
CD, KF	231020	47	1	Underground flow	474024	498201	6m underground,
CD, KF	231020	47	1	No defined channel	474034	4982040	no defined channel, pockets of water found through area. wetland indicators present
CD, KF	231019	50	1	Underground flow	472387	4982198	underground for 10m stops here 472390 4982207
RC, LB	231027	56	1	Beaver Dam	475766	4983192	small dam
RC, LB	231027	56	1	Beaver Dam	475542	4983323	medium sized
RC, LB	231027	56	1	Braid	475205	4983206	splits
RC, LB	231027	56	1	Braid	475108	4983280	splits after t31
RC, EM	240123	57	2	Beaver Dam	473638	4984746	
RC, EM	240123	57	2	Beaver Dam	473726	4984749	
RC, EM	240123	57	2	Debris jam	473757	4984766	woody debris beaver activity
RC, EM	240123	57	2	Braid	473767	4984774	top of braid
RC, EM	240123	57	2	Braid	473787	4984808	bottom of braid
RC, EM	240123	57	3	Island	473855	4984941	r3t8
RC, EM	240123	57	3	Braid	473866	4984949	top of braid
RC, EM	240123	57	3	Braid	473869	4984964	bottom of braid
RC, EM	240123	57	3	Braid	473876	4984962	top of braid
RC, EM	240123	57	3	Braid	473899	4984983	bottom of braid
RC, EM	240123	57	3	Island	473391	4985024	
RC, EM	240123	57	3	Island	473942	4985053	
RC, EM	240123	57	4	Island	473933	4985106	
RC, EM	240123	57	4	Braid	473977	4985174	top of braid
RC, EM	240123	57	4	Braid	474001	4985190	bottom of braid
RC, EM	240123	57	4	Braid	474001	4985285	top of braid
RC, EM	240123	57	4	Braid	474007	4985302	bottom of braid
RC, EM	240123	57	4	Island	474050	4985407	by t13



Table 4. Detailed Fish Habitat Assessment Data, Culvert Information

Surveyors	Survey Date	WC #	Reach #	US Waypoint		DS Waypoint		Material	Shape	Dimensions				Condition
				Easting	Northing	Easting	Northing			Diameter (m)	Height (m)	Width (m)	Length (m)	
SP, RC	230704	21	1	474165	4984335	474164	4984339	Corrugated Metal Pipe (Spiral)	Circular	45	45	45	45	rusty
SP, RC	230705	22	1	474193	4984504	474190	4984510	Corrugated Metal Pipe (Spiral)	Circular	0.6	0.6	0.6		Rusty, Ds 10cm overhanging, pool is 32cm deep
SP, RC	230706	25	1	474735	4984158	474735	4984154	Corrugated Plastic	Circular	45	45	45		Filled with debris, not much flow into or out, cat tail. DS is embedded, filled with debris, no flow
SP, RC	230706	25	5	474847	4984024	474857	4984020	Corrugated Plastic	Circular	70	70	70		Good condition, Ds overhanging 11cm
SP, RC	230706	26	5	474845	4983929	474856	4983926	Corrugated Plastic	Circular	50	50	50		good condition, filled with debris, us, rocks up top it, 60cm high, pool 18cm
SP, RC	230706	27	1	474815	4983714	474823	4983710	Corrugated Plastic	Circular	35	35	35		good condition, ds 20 cm overhanging
SP, RC	230706	24	2	475,067	4983974	N/A	N/A	Corrugated Metal Pipe (Spiral)	Circular	90	90	90		2, left one filled with debris, slightly rusty
EM, RC	231027	56	1	475768	4983198	475789	498234	Corrugated Metal Pipe (Spiral)	Circular	1.22	1.3	1.22		perched 15cm bottom rusted out upstream end is in good condition



Table 5. Detailed Fish Habitat Assessment Data, Open Water and Mosaic Information

Survey Date	Water Course Name	WC #	Reach #	Upstream Coordinates		Downstream Coordinates		General Characteristics				Water Quality					Measure-ment check #	Width (m)	Depth (m)	Velocity (m/s)	Comments	
				Easting	Northing	Easting	Northing	Habitat Type	Gradient (%)	Veg/ Water Ratio	Substrate	Temperature	pH	Dissolved Oxygen	Conductivity	TDS						Turbidity (T, M, L, C or NTU)
20231018	WL Mosaic F	1	1	472884	4981967	472871	4981990	flat	1	60/40	100 muck	8.2	5.02	4.28	32.5	31.2	L	1	15	0.08	0.05	None
20231020	Upland Mosaic B	47	1	474021	4982066	474020	4982097	flat	<2	60/40	60 muck, 20 rubble, 20 mud						L	1	0.1	0.09	0.05	mosaic with partial open water
20231020	Upland Mosaic B	47	1	474021	4982066	474020	4982097	flat	<2	60/40	60 muck, 20 rubble, 20 mud						L	2	0.1	0.07	0.05	None
20231020	Upland Mosaic B	47	1	474021	4982066	474020	4982097	flat	<2	60/40	60 muck, 20 rubble, 20 mud						L	3	0.1	0.14	0.05	None
20231020	Upland Mosaic B	47	1	474021	4982066	474020	4982097	flat	<2	60/40	60 muck, 20 rubble, 20 mud						L	4	0.1	0.12	0.05	None
20231020	Upland Mosaic B	47	1	474021	4982066	474020	4982097	flat	<2	60/40	60 muck, 20 rubble, 20 mud						L	5	0.1	0.13	0.05	None
20231020	Upland Mosaic C	47	1	474004	4982136	473972	4982236	run	<2	60/40	100 muck						L	1	1	0.04	0.05	mosaic. multiple flow paths, all <1m wide
20231020	Upland Mosaic C	47	1	474004	4982136	473972	4982236	run	<2	60/40	100 muck						L	2	1	0.16	0.05	None
20231020	Upland Mosaic C	47	1	474004	4982136	473972	4982236	run	<2	60/40	100 muck						L	3	1	0.11	0.05	None
20231020	Upland Mosaic C	47	1	474004	4982136	473972	4982236	run	<2	60/40	100 muck						L	4	1	0.13	0.05	None
20231020	Upland Mosaic C	47	1	474004	4982136	473972	4982236	run	<2	60/40	100 muck						L	5	1	0.21	0.05	None
20231020	Upland Mosaic D	47	1	473984	4982171	473972	4982235	Flat	<1	60/40	100 muck						L	1	3	0.15	0.05	Flooded area before gas ROW. Multiple small channels no defined main watercourse through the mosaic
20231020	Upland Mosaic D	47	1	473984	4982171	473972	4982235	Flat	<1	60/40	100 muck						L	2	4	0.22	0.05	None
20231020	Upland Mosaic D	47	1	473984	4982171	473972	4982235	Flat	<1	60/40	100 muck						L	3	3	0.23	0.05	None
20231020	Upland Mosaic D	47	1	473984	4982171	473972	4982235	Flat	<1	60/40	100 muck						L	4	3	0.11	0.05	None
20231020	WL Mosaic E	44	3	473909	4982423	473940	4982571	flat	<2	50/50	100 muck						C	1	<1	depth ranges from 10cm to 55cm	0.05	None
230706	Open Water A	None	N/A	473669		4984322		Flat	<1	60/40	95% Muck, 5% sand						L	0	20-50	0.3-1	0.05	slow flow, very flooded due to beaver activity
230706	Open Water B	None	N/A	473807		4984210		Flat			100 muck						L	0	7-16 m	0.11-0.34	0.05	None
230719	Open Water C	None	N/A	473830		4984214		Flat			100 muck						L	0	14- 34 m	>1	0.05	None
230727	Open Water D	None	N/A	474237		4984437		Flat	<1		100 muck						L	0	30	0.5	0.05	None
230727	Open Water E	3	3	473217		4982381		Flat	<1	20/80	100% muck						L	0	95-120	25-110	0.05	slow flow, open water had multiple snags and downed wood, created from beaver activity. Depth varied along each side. Only able to walk out as far as it was safe, no depth measurements of middle of open water. All measurements are 1-3 meters into open water



ANTRIM GYPSUM PROJECT
Detailed Fish Habitat Assessment Data

Survey Date	Water Course Name	WC #	Reach #	Upstream Coordinates		Downstream Coordinates		General Characteristics				Water Quality					Measurement check #	Width (m)	Depth (m)	Velocity (m/s)	Comments	
				Easting	Northing	Easting	Northing	Habitat Type	Gradient (%)	Veg/ Water Ratio	Substrate	Temperature	pH	Dissolved Oxygen	Conductivity	TDS						Turbidity (T, M, L, C or NTU)
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	Muck 100%	21.5	3.9		24	13	M	1	9	0.69	0.05	Slow flow, very flooded
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% Muck	21.5	3.9		24	13	M	2	25	0.45	0.05	Slow flow, very flooded, logs/woody debris, 20% instream cover
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% Muck	21.5	3.9		24	13	M	3	1	0.33	0.05	Slow flow, beaver activity, large woody debris
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	85% muck, 15% gravel	21.5	3.9		24	13	M	4	1	0.24	0.05	Lots of woody debris, beaver activity
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	50% muck, 25 Boulder, 25 gravel	21.5	3.9		24	13	M	5	9	0.66	0.05	Emerge veg, submerge veg, no woody debris
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	50% muck, 50% gravel	21.5	3.9		24	13	M	6	18	0.7	0.05	Emerge veg, open cover
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% muck	21.5	3.9		24	13	M	7	7	0.52	0.05	Emerge veg, open, lots of woody debris
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% muck	21.5	3.9		24	13	M	8	11	0.5	0.05	Emerge veg, lots of woody debris
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% muck	21.5	3.9		24	13	M	9	8	0.36	0.05	Emerge veg, submerge veg, woody debris
230727	Open Water F	12	1	473988		4982796		Flat	<1	60/40	100% muck	21.5	3.9		24	13	M	10	1	0.28	0.05	Emerge veg, submerge veg, flooded, woody debris, ends into wetland (hard to tell due to flash flooding).
231023	WL Mosaic A	11 and 12	1	473262	4982955	473230	4983132	Flat	<1	60/40	95% Muck, 5% sand								20-50	0.3-1	0.05	slow flow, very flooded due to beaver activity
231023	WL Mosaic G	12	1	473571	4982997	473550	4883009	Flat	<1	80/20	100% muck								10	0.7	0.05	slow flow, lots of instream veg and downed wood, stream is slightly flooded in this section
231023	WL Mosaic H	3	1	473181	4982494	473166	4982536	Flat		60/40	100% muck								30	0.85	0.05	slow flow, very flooded due to beaver activity. Lots of downed wood
231023	WL Mosaic I	3	1	473100	4982538	473161	4982564	Flat	<1	60/40	100% muck								15	0.7	0.05	slow flow, very flooded due to beaver activity. Lots of downed wood
231023	WL Mosaic J	3	1	473133	4982594	473119	4982636	Flat	<1	60/40	100% muck								40	0.65	0.05	slow flow, very flooded due to beaver activity. Lots of downed wood



Individual Fish Measurements

Date	Sampling site	Capture Method (identify Pass # or Trap Type #)	Fish ID Number	Species Code	Common name	Scientific name	Fork length (mm)	Total length (mm)	Weight (g)
230719	Open Water A	MT1	1	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	41	1
230719	Open Water A	MT1	2	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.31
230719	Open Water A	MT1	3	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	40	0.94
230719	Open Water A	MT1	4	nrd	northern redbelly dace	<i>Chrosomus eos</i>	41	45	1.12
230719	Open Water A	MT1	5	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	41	1.06
230719	Open Water A	MT1	6	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	42	1
230719	Open Water A	MT1	7	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.21
230719	Open Water A	MT1	8	nrd	northern redbelly dace	<i>Chrosomus eos</i>	42	45	2.8
230719	Open Water A	MT1	9	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.15
230719	Open Water A	MT1	10	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.35
230719	Open Water A	MT1	11	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	41	1.23
230719	Open Water A	MT1	12	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	43	1
230719	Open Water A	MT1	13	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	39	0.94
230719	Open Water A	MT1	14	nrd	northern redbelly dace	<i>Chrosomus eos</i>	36	40	1
230719	Open Water A	MT1	15	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.72
230719	Open Water A	MT1	16	nrd	northern redbelly dace	<i>Chrosomus eos</i>	47	51	1.16
230719	Open Water A	MT1	17	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.19
230719	Open Water A	MT1	18	nrd	northern redbelly dace	<i>Chrosomus eos</i>	39	45	1
230719	Open Water A	MT1	19	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1
230719	Open Water A	MT1	20	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT1	21	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT1	22	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	40	0.94
230719	Open Water A	MT1	23	nrd	northern redbelly dace	<i>Chrosomus eos</i>	55	60	1.17
230719	Open Water A	MT1	24	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	37	0.79
230719	Open Water A	MT1	25	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	40	1.09
230719	Open Water A	MT1	26	nrd	northern redbelly dace	<i>Chrosomus eos</i>	37	40	1.17
230719	Open Water A	MT1	27	nrd	northern redbelly dace	<i>Chrosomus eos</i>	37	40	0.75
230719	Open Water A	MT1	28	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.51
230719	Open Water A	MT1	29	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	42	1.15
230719	Open Water A	MT1	30	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.22
230719	Open Water A	MT1	31	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.15
230719	Open Water A	MT1	32	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1
230719	Open Water A	MT1	33	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.61
230719	Open Water A	MT1	34	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.21
230719	Open Water A	MT1	35	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	40	1.2
230719	Open Water A	MT1	36	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	40	1.15
230719	Open Water A	MT1	37	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.18
230719	Open Water A	MT1	38	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT1	39	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	50	1.75
230719	Open Water A	MT1	40	nrd	northern redbelly dace	<i>Chrosomus eos</i>	45	48	1.22
230719	Open Water A	MT1	41	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT1	42	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT1	43	nrd	northern redbelly dace	<i>Chrosomus eos</i>	39	43	0.97
230719	Open Water A	MT1	44	nrd	northern redbelly dace	<i>Chrosomus eos</i>	37	41	1
230719	Open Water A	MT1	45	nrd	northern redbelly dace	<i>Chrosomus eos</i>	39	42	1.14
230719	Open Water A	MT1	46	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	44	1.15
230719	Open Water A	MT1	47	nrd	northern redbelly dace	<i>Chrosomus eos</i>	35	40	1
230719	Open Water A	MT1	48	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.06
230719	Open Water A	MT1	49	nrd	northern redbelly dace	<i>Chrosomus eos</i>	38	42	1
230719	Open Water A	MT1	50	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1.05
230720	Open Water A	MT3	51	nrd	northern redbelly dace	<i>Chrosomus eos</i>	40	45	1
230719	Open Water A	MT	52-217	nrd	northern redbelly dace	<i>Chrosomus eos</i>	various	various	various
230720	Open Water C	MT	1-351	nrd	northern redbelly dace	<i>Chrosomus eos</i>	various	various	various
230721	Gays River A	EP1	1	bbh	brown bullhead	<i>Ictalurus nebulosus</i>	-	145	58.5
230721	Gays River A	EP1	2	bbh	brown bullhead	<i>Ictalurus nebulosus</i>	-	165	56.54
230721	Gays River A	EP1	3	bbh	brown bullhead	<i>Ictalurus nebulosus</i>	-	190	69.41
230721	Gays River A	EP1	4	bbh	brown bullhead	<i>Ictalurus nebulosus</i>	-	190	96.25
230721	Gays River A	EP1	5	bbh	brown bullhead	<i>Ictalurus nebulosus</i>	-	210	118.44
230721	Gays River A	MT1	1	eel	American eel	<i>Anguilla rostrata</i>	-	300	45.71
230721	Gays River A	MT1	2	eel	American eel	<i>Anguilla rostrata</i>	-	300	54.94
230801	WC12	Pass 1	1	EEL	American eel	<i>Anguilla rostrata</i>	-	190	not working
230801	WC12	Pass 1	2	EEL	American eel	<i>Anguilla rostrata</i>	-	180	not working
230801	WC12	Pass 1	3	EEL	American eel	<i>Anguilla rostrata</i>	-	225	not working
230801	WC12	Pass 1	4	EEL	American eel	<i>Anguilla rostrata</i>	-	140	not working
230801	WC12	Pass 1	5	WHS	white sucker	<i>Catostomus commersoni</i>	135	140	not working
230801	WC12	Pass 1	6	EEL	American eel	<i>Anguilla rostrata</i>	-	200	not working
230801	WC12	Pass 1	7	EEL	American eel	<i>Anguilla rostrata</i>	-	300	not working
230801	WC12	Pass 2	1	EEL	American eel	<i>Anguilla rostrata</i>	-	250	not working
230801	WC12	Pass 2	2	EEL	American eel	<i>Anguilla rostrata</i>	-	150	not working
230801	WC12	Pass 2	3	EEL	American eel	<i>Anguilla rostrata</i>	-	130	not working
230801	WC12	Pass 3	1	EEL	American eel	<i>Anguilla rostrata</i>	-	100	not working
230920	Open Water E	MT1	1	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6.5
230920	Open Water E	MT1	2	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	5.5
230920	Open Water E	MT1	3	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	2.2



ANTRIM GYPSUM PROJECT
Individual Fish Data

Date	Sampling site	Capture Method (identify Pass # or Trap Type #)	Fish ID Number	Species Code	Common name	Scientific name	Fork length (mm)	Total length (mm)	Weight (g)
230920	Open Water E	MT1	4	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	85	100	3.2
230920	Open Water E	MT1	5	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	75	1.4
230920	Open Water E	MT1	6	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	75	80	5.1
230920	Open Water E	MT1	7	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	2.3
230920	Open Water E	MT1	8	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	40	50	0.4
230920	Open Water E	MT1	9	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	50	60	0.5
230920	Open Water E	MT1	10	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	60	2.8
230920	Open Water E	MT1	11	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	85	1.08
230920	Open Water E	MT1	12	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	65	2
230920	Open Water E	MT1	13	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	2.5
230920	Open Water E	MT1	14	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	75	86	6.5
230920	Open Water E	MT1	15	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	75	5
230920	Open Water E	MT1	16	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	65	6
230920	Open Water E	MT1	17	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	7.6
230920	Open Water E	MT1	18	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	95	105	19.2
230920	Open Water E	MT1	19	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	65	6
230920	Open Water E	MT1	20	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	50	60	4.1
230920	Open Water E	MT1	21	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	50	60	3.5
230920	Open Water E	MT1	22	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	75	5
230920	Open Water E	MT1	23	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	5.2
230920	Open Water E	MT1	24	nrd	northern redbelly dace	<i>Chrosomus eos</i>	65	70	1.2
230920	Open Water E	MT1	25	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	75	4.6
230920	Open Water E	MT1	26	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	8
230920	Open Water E	MT1	27	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	7.3
230920	Open Water E	MT1	28	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	60	5.2
230920	Open Water E	MT1	29	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	50	65	4.6
230920	Open Water E	MT1	30	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	95	100	10.2
230920	Open Water E	MT1	31	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	4.2
230920	Open Water E	MT1	32	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	6.5
230920	Open Water E	MT1	33	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	75	6.2
230920	Open Water E	MT1	34	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	90	12
230920	Open Water E	MT1	35	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	95	9.5
230920	Open Water E	MT1	36	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	7.2
230920	Open Water E	MT1	37	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	60	3.7
230920	Open Water E	MT1	38	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	50	65	4.3
230920	Open Water E	MT1	39	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	65	5.8
230920	Open Water E	MT1	40	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	45	50	2.3
230920	Open Water E	MT1	41	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	2.2
230920	Open Water E	MT1	42	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	90	8.5
230920	Open Water E	MT1	43	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	7.4
230920	Open Water E	MT1	44	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6
230920	Open Water E	MT1	45	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6.3
230920	Open Water E	MT1	46	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6.2
230920	Open Water E	MT1	47	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	4.5
230920	Open Water E	MT1	48	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	90	5
230920	Open Water E	MT1	49	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	80	6.5
230920	Open Water E	MT1	50	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6
230920	Open Water E	MT1	51	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	4.7
230920	Open Water E	MT1	52 to 69	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	Various	Various	Various
230920	Open Water E	MT2	1	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	90	6.5
230920	Open Water E	MT2	2	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	85	90	6.7
230920	Open Water E	MT2	3	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	1.7
230920	Open Water E	MT2	4	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	75	80	4.7
230920	Open Water E	MT2	5	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	2.4
230920	Open Water E	MT2	6	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	75	80	2.1
230920	Open Water E	MT2	7	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	65	3.2
230920	Open Water E	MT2	8	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	70	4.1
230920	Open Water E	MT2	9	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	8.7
230920	Open Water E	MT2	10	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	4.2
230920	Open Water E	MT2	11	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	85	6.75
230920	Open Water E	MT2	12	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	65	5.3
230920	Open Water E	MT2	13	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	90	7.1
230920	Open Water E	MT2	14	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	6.23
230920	Open Water E	MT2	15	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	80	95	9.46
230920	Open Water E	MT2	16	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	7.32
230920	Open Water E	MT2	17	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	75	85	6.5
230920	Open Water E	MT2	18	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	5.37
230920	Open Water E	MT2	19	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	70	80	9.62
230920	Open Water E	MT2	20	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	70	4.81
230920	Open Water E	MT2	21	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	60	70	6.1
230920	Open Water E	MT2	22	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	55	70	4.8
230920	Open Water E	MT2	23	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	5.1
230920	Open Water E	MT2	24	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	65	75	4.2
230920	Open Water E	EP1	1	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	140	150	24.5
230921	Open Water E	MT3	1	gsh	golden shiner	<i>Notemigonus crysoleucas</i>	45	50	3.6



ANTRIM GYPSUM PROJECT
Individual Fish Data

Date	Sampling site	Capture Method (identify Pass # or Trap Type #)	Fish ID Number	Species Code	Common name	Scientific name	Fork length (mm)	Total length (mm)	Weight (g)
230921	WC44	Pass 1	1	GSH	golden shiner	<i>Notemigonus crysoleucas</i>	65	70	3.7
230925	WC11	Pass 1	1	CHP	chain pickerel	<i>Esox niger</i>	180	190	44.12
230925	WC11	Pass 1	2	EEL	American eel	<i>Anguilla rostrata</i>	-	230	15.41
230925	WC11	Pass 1	3	CHP	chain pickerel	<i>Esox niger</i>	240	250	103.97
230925	WC11	Pass 1	4	WHS	white sucker	<i>Catostomus commersoni</i>	180	190	10.9
230925	WC11	Pass 1	5	BKT	brook trout	<i>Salvelinus fontinalus</i>	163	170	48.29
230925	WC11	Pass 1	6	BKT	brook trout	<i>Salvelinus fontinalus</i>	81	86	7.16
230925	WC11	Pass 1	7	EEL	American eel	<i>Anguilla rostrata</i>	-	160	3.36
230925	WC11	Pass 1	8	EEL	American eel	<i>Anguilla rostrata</i>	-	195	9.73
230925	WC11	Pass 1	9	EEL	American eel	<i>Anguilla rostrata</i>	-	250	24.65
230925	WC11	Pass 1	10	EEL	American eel	<i>Anguilla rostrata</i>	-	205	12.67
230925	WC11	Pass 1	11	EEL	American eel	<i>Anguilla rostrata</i>	-	235	24.45
230925	WC11	Pass 1	12	EEL	American eel	<i>Anguilla rostrata</i>	-	225	18.72
230925	WC11	Pass 1	13	EEL	American eel	<i>Anguilla rostrata</i>	-	135	5.18
230925	WC11	Pass 1	14	EEL	American eel	<i>Anguilla rostrata</i>	-	240	28.42
230925	WC11	Pass 1	15	EEL	American eel	<i>Anguilla rostrata</i>	-	130	4.23
230925	WC11	Pass 1	16	EEL	American eel	<i>Anguilla rostrata</i>	-	235	23.67
230925	WC11	Pass 1	17	EEL	American eel	<i>Anguilla rostrata</i>	-	125	3.09
230925	WC11	Pass 1	18	EEL	American eel	<i>Anguilla rostrata</i>	-	165	5.18
230925	WC11	Pass 1	19	EEL	American eel	<i>Anguilla rostrata</i>	-	185	10
230925	WC11	Pass 1	20	EEL	American eel	<i>Anguilla rostrata</i>	-	195	9.13
230925	WC11	Pass 1	21	EEL	American eel	<i>Anguilla rostrata</i>	-	150	4.53
230925	WC11	Pass 1	22	EEL	American eel	<i>Anguilla rostrata</i>	-	205	10.39
230925	WC11	Pass 1	23	EEL	American eel	<i>Anguilla rostrata</i>	-	90	1.15
230925	WC11	Pass 1	24	EEL	American eel	<i>Anguilla rostrata</i>	-	185	7.08
230925	WC11	Pass 1	25	EEL	American eel	<i>Anguilla rostrata</i>	-	160	5.53
230925	WC11	Pass 2	1	CHP	chain pickerel	<i>Esox niger</i>	105	111	6.08
230925	WC11	Pass 2	2	EEL	American eel	<i>Anguilla rostrata</i>	-	130	4.36
230925	WC11	Pass 2	3	EEL	American eel	<i>Anguilla rostrata</i>	-	195	12.37
230925	WC11	Pass 2	4	WHS	white sucker	<i>Catostomus commersoni</i>	94	100	10.31
230925	WC11	Pass 2	5	EEL	American eel	<i>Anguilla rostrata</i>	-	250	36.18
230925	WC11	Pass 2	6	EEL	American eel	<i>Anguilla rostrata</i>	-	240	32.07
230925	WC11	Pass 2	7	EEL	American eel	<i>Anguilla rostrata</i>	-	210	17.26
230925	WC11	Pass 2	8	EEL	American eel	<i>Anguilla rostrata</i>	-	125	2.28
230925	WC11	Pass 2	9	EEL	American eel	<i>Anguilla rostrata</i>	-	290	63.13
230925	WC11	Pass 2	10	EEL	American eel	<i>Anguilla rostrata</i>	-	205	9.53
230925	WC11	Pass 2	11	EEL	American eel	<i>Anguilla rostrata</i>	-	145	3.76
230925	WC11	Pass 2	12	EEL	American eel	<i>Anguilla rostrata</i>	-	135	5.13
230925	WC11	Pass 2	13	EEL	American eel	<i>Anguilla rostrata</i>	-	235	36.54
230925	WC11	Pass 2	1	EEL	American eel	<i>Anguilla rostrata</i>	-	220	16.62
230925	WC11	Pass 3	2	EEL	American eel	<i>Anguilla rostrata</i>	-	195	8.22
230925	WC11	Pass 3	3	EEL	American eel	<i>Anguilla rostrata</i>	-	260	44.55
230925	WC11	Pass 3	4	EEL	American eel	<i>Anguilla rostrata</i>	-	210	15.5
230925	WC11	Pass 3	5	EEL	American eel	<i>Anguilla rostrata</i>	-	215	16.44
230927	WC1	Pass 1	1	BKT	brook trout	<i>Salvelinus fontinalus</i>	77	79	4.8
230927	WC1	Pass 1	2	BKT	brook trout	<i>Salvelinus fontinalus</i>	109	115	15.81
230927	WC1	Pass 1	3	GSH	golden shiner	<i>Notemigonus crysoleucas</i>	69	76	3.65
230927	WC1	Pass 1	4	BKT	brook trout	<i>Salvelinus fontinalus</i>	108	116	16.12
230927	WC1	Pass 1	5	BKT	brook trout	<i>Salvelinus fontinalus</i>	96	102	10.9
230927	WC1	Pass 1	6	BND	blacknose dace	<i>Rhinichthys atratulus</i>	54	56	1.89
230927	WC1	Pass 1	7	BND	blacknose dace	<i>Rhinichthys atratulus</i>	108	115	14.46
230927	WC1	Pass 1	8	EEL	American eel	<i>Anguilla rostrata</i>	-	190	15.49
230927	WC1	Pass 1	9	EEL	American eel	<i>Anguilla rostrata</i>	-	205	12.39
230927	WC1	Pass 1	10	EEL	American eel	<i>Anguilla rostrata</i>	-	220	21.31
230927	WC1	Pass 1	11	EEL	American eel	<i>Anguilla rostrata</i>	-	240	31.88
230927	WC1	Pass 2	1	BKT	brook trout	<i>Salvelinus fontinalus</i>	123	129	18.55
230927	WC1	Pass 2	2	BKT	brook trout	<i>Salvelinus fontinalus</i>	93	96	80.6
230927	WC1	Pass 2	3	BKT	brook trout	<i>Salvelinus fontinalus</i>	77	82	5
230920	WC3	Pass 1	1	9sb	ninespine stickleback	<i>Pungitius pungitius</i>	29	30	0.1
230920	WC3	Pass 1	2	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	20	0.1
230920	WC3	Pass 1	3	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	30	0.2
230920	WC3	Pass 1	4	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	20	0.1
230920	WC3	Pass 1	5	9sb	ninespine stickleback	<i>Pungitius pungitius</i>	-	30	0.3
230920	WC3	Pass 1	6	9sb	ninespine stickleback	<i>Pungitius pungitius</i>	-	35	0.3
230920	WC3	Pass 1	7	9sb	ninespine stickleback	<i>Pungitius pungitius</i>	-	40	0.3
230920	WC3	Pass 1	8	9sb	ninespine stickleback	<i>Pungitius pungitius</i>	-	30	0.2
230920	WC3	Pass 1	9	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	45	0.4
230920	WC3	Pass 1	10	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	25	0.1
230920	WC3	Pass 1	11	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	30	0.2
230920	WC3	Pass 1	12	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	20	0.15
230920	WC3	Pass 1	13	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	30	0.25
230920	WC3	Pass 1	14	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	35	0.31
230920	WC3	Pass 1	15	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	25	0.15
230920	WC3	Pass 1	16	3sb	threespine stickleback	<i>Gasterosteus aculeatus</i>	-	25	0.15



**APPENDIX G: LIFE CYCLE AND HABITAT CHARACTERISTICS OF FISH SPECIES
DOCUMENTED WITHIN THE ASA**



Life cycle and habitat characteristics of fish species documented within the Aquatic Study Area

Common Name	Scientific Name	S-Rank	Status	Kanno & Beazley, 2004		Life Cycle			Stage	Habitat Description	Depth (m)	Velocity (m/s)	Substrate	Cover	Optimal Growth Temp (°C)*
				Disturbance tolerance	Temperature regime	Age of Maturity	Life Span	Spawning Period							
American Eel	<i>Anguilla rostrata</i>	S3N	COSEWIC: Threatened	Tolerant	Warmwater	17.1-21.9 (female); 5-10 (males)	Die after spawning	N/A	Juvenile/ Adult	Both lentic and lotic waters up to 10 m in depth. In rivers, slow-fast water habitats including runs/riffles/flats/pools/eddies. Variable but unlikely to utilize certain fast-water habitats (rapids, falls).	-	-	Soft substrates	AP/IN	25
Blacknose dace	<i>Rhinichthys atratulus</i>	S5	-	Tolerant	Coolwater	2 years	Rarely reaches 3 years of age	May-July	Spawning	Spawning occurs in shallow water of streams, preferably within riffles but may occur in pools	<0.25	0.2-0.45	Sa/Gr/C	-	Lethal limit of 29.3.
									YOY	YOY occupy shoals and pool margins.	-	<0.15	Si/Sa	-	
									Juvenile	Slow - Pools	-	0.15-0.3	Sa/Gr/C/R/B (Note – highest densities over Gr)	-	
									Adult	Found within pools of small streams, occasionally large rivers and rarely lakes.	-	0.15-0.45	Gr/C	IN/O	
Brook Trout	<i>Salvelinus fontinalis</i>	S3	-	Intolerant	Coldwater	3 years (average), range of 1-4 years	5 years	October-November	Spawning, Incubation, Emergence	Fast - slow riverine habitats (eddies, pools, flats, runs, riffles, rapids). Optimal spawning among loose gravel in streams or shoals of lakes. Groundwater upwelling is an important determinant for brook trout spawning.	0.1-0.3	0.01-0.9	Si/Sa/Gr (Note - preferred substrates, also documented over M/C)	IN/O	14.2
									YOY	Moderate - slow riverine habitats (eddies, pools, flats, riffles).	0.1-0.7	0.02-0.4	C/R/B (Note - preferred substrates, also documented over M/Si/G)	AP/IN	
									Juvenile	Fast - slow riverine habitats (eddies, pools, flats, runs, riffles, rapids).	0.2->2.0	0.01-1.5	Si/S/G/C/R/B	AP/IN/O	
									Adult	Moderate-slow riverine habitats (eddies, pools, flats, riffles, runs).	0.06-1.1	0.01-0.5	All substrates	AP/IN/O	
Brown bullhead	<i>Ameiurus nebulosus</i>	S5	-	Tolerant	Warmwater	2-3 years	6-8 years	Late spring to early summer	Spawning	Eggs are laid in open excavations in the shelter of logs, rocks, or vegetation. Nests are usually around shores or in coves.	-	-	Gr/Sa/M	IN/AP	20-30
									Juvenile/ Adult	Reside in pools or sluggish runs in small to large rivers, including lakes and ponds	Shallow	<0.4m/s	Gr/Sa/Si/M	AP/IN	
Chain pickerel	<i>Esox niger</i>	SNA	-	N/A Invasive	No reference (Warmwater)	2-4 (males) 3-4 (females)	3-4 years	April-May	All stages	Sluggish, heavily vegetated lakes and ponds, no deeper than 10 ft.	1-3 (average 1)	-	Si/M	AP	21-30
Golden Shiner	<i>Carassius auratus</i>	S4	-	Tolerant	Warmwater	2-3 years	5-8 years	June-August	All stages	Clear quiet waters with extensive shallow water. Aquatic vegetation (submerged) is essential for spawning. Primarily, but not exclusively a lake species.	Shallow	Slow	M	AP	25



Common Name	Scientific Name	S-Rank	Status	Kanno & Beazley, 2004		Life Cycle			Stage	Habitat Description	Depth (m)	Velocity (m/s)	Substrate	Cover	Optimal Growth Temp (°C)*
				Disturbance tolerance	Temperature regime	Age of Maturity	Life Span	Spawning Period							
Ninespine stickleback	<i>Pungitius pungitius</i>	S5	-	Intermediate	Coolwater	1-2 years	3 years (male) and 5 years (female)	May-July	Spawning	Slow to moderate waters, Eddy, plunge/trench/debris/pools, steady/flat, riffle	0.25-1.4	<0.3	Cl/Si/S/G	AP	0.4-10.2
									YOY/Juvenile	Slow to moderate waters, Eddy, plunge/trench/debris/pools, steady/flat, riffle	Shallow		Cl/Si/S/G	AP	
									Adult	Slow to moderate waters, Eddy, plunge/trench/debris/pools, steady/flat, riffle	0.1-2.5	<0.3	Cl/M/S/G	AP	
Northern redbelly dace	<i>Chrosomus eos</i>	S5	-	Intermediate	Coldwater	1 year	3-4 years	Two or more spawning periods during spring and summer	Spawning	Deposition of non adhesive eggs within masses of filamentous algae.	0.1-0.6	0.03-0.2	Cl/M/S/Gr/Bo	AP	17-24
									YOY/Juvenile	Prefers quiet waters of beaver ponds, small lakes or small pool-like expansions of streams.	0.1-0.6	0.03-0.2	Cl/S	AP	
									Adult	Prefers quiet waters of beaver ponds, small lakes or small pool-like expansions of streams.	0.1-1.0	0.1-1.0	Cl/M/S/Gr	AP	
Threespine stickleback	<i>Gasterosteus aculeatus</i>	S5	-	Intermediate	Coolwater	1-2 years	5 years (8 years max in a lab)	April – July	Spawning	Eggs deposited in shallow water in a nest of sand and plant materials.	0.1-0.6	0.03-0.2	Cl/M/S/Gr/Bo	AP	16-18
									YOY	Marine, brackish and fresh waters. Tend to live in quiet weedy pools and lakes.	0.1-0.6	0.03-0.2	Cl/S	AP	
									Juvenile/Adult	Marine, brackish and fresh waters. Tend to live in quiet weedy pools and lakes.	0.1-1.0	0.1-1.0	Cl/M/S/Gr	AP	
White sucker	<i>Catostomus commersonii</i>	S5	-	Tolerant	Coolwater	2-6 years (females tend to mature 1-2 years later than males)	10-12 years (max of 17 recorded)	In spring when water is 10°C	Spawning	Slow to fast water, Plunge/trench/debris/pools, eddy, steady/flat, riffle, run, rapid	0-1 m	0.1-0.9 m	Bo/G/S	AP	15-25
									YOY	Slow to moderate water, steady/flat, riffle	0-1 m	<0.3	Bo/G/S	AP	
									Juvenile	Slow to fast water, steady/flat, riffle, run, rapid	0-5 m	0.3-0.6	Bo/G/S	AP	
									Adult	Slow to moderate water, plunge/trench/debris/pools, steady/flat, riffle	0-5 m	<0.4	Bo/R/C/G/S/Si	AP	

Notes: *Optimal Growth Temperature from Hasnain et al., 2010

Substrate types: Cl = Clay (Mud), M = Muck (Detritus), Si = Silt, S = Sand, G = Gravel, C = Cobble, R = Rubble, B = Boulder, Be = Bedrock

Cover Types: AP = aquatic plants (submergent and/or emergent); IN = instream objects/in situ cover within the streambed in the form of fallen trees, submerged logs, rocks, boulders, undercut banks, and accumulated debris; O = overhead cover from riparian vegetation overhanging the stream

Information collected from the following sources: Scott and Crossman, 1973; Gilhen, 1974; Raleigh, 1982; Coad et al., 1995; Grant and Lee, 2004; Kanno and Beazley, 2004; NSDFA, 2005; McCarthy et al., 2006; Brown et al., 2009; Hasnain et al., 2010; Hokanson et al., 2011; COSEWIC, 2012; COSEWIC, 2014; Fuller et al., 2019; Eakins, 2023; Twomey, 1984; Trial et. al., 1983; New Jersey Fish & Wildlife, 2022; Alaska Department of Fish and Game, N/A .