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Safety Plan - 2022-049-sern-skeena-fish-passage

The latest version of this pdf can be downloaded [here](#).

A zip file which includes kml (google earth) and gpx (garmin) files of the sites to be potentially assessed can be downloaded [here](#). Georeferenced pdf maps can be accessed and downloaded [here for Bulkley and Morice](#), [here for Kispiox](#) and [here for the Copper](#).

A summary of sites to be potentially assessed is included as Table [2](#). The process to shortlist these sites is documented [here](#) with a password provided in the email when this plan was originally forwarded. If you require the password again please email al@newgraphenvironment.com.

Accomodations

Al - 2013 Toyota Tundra black w/flatdeck and yellow can-am quad:

- Silverthorne RV park is located between Finning and the Sullivan Chevy dealership on the west side of town. The address is 1700 highway 16 but you could also type in Alix place which should bring you to the driveway as well. Contact Lance - 1 604 556 9903 - email: 399hffibdi8v4u8b70ax17dv3oy@reply.airbnb.com
- 595 Poplar Park Rd, Kitimat-Stikine B, BC V0J 1Y0 - Carol 250-842-8794
- QRHW JX6 Smithers, British Columbia - 54.779045, -127.152596

Mateo - 2007 Toyota Tacoma - gold with canopy:

- Silverthorne RV park is located between Finning and the Sullivan Chevy dealership on the west side of town. The address is 1700 highway 16 but you could also type in Alix place which should bring you to the driveway as well. Contact Lance - 1 604 556 9903 - email: 399hffibdi8v4u8b70ax17dv3oy@reply.airbnb.com

- 4685-4637 13 Ave, New Hazelton, BC V0J 2J0 - Carol 250-842-8794
- 7523 Lake Kathlyn Rd, Smithers, BC V0J 2N2 - 54.830952, -127.212028

Table 1: Crew members details and emergency contacts

name	email	phone	satellite	emerg_name	emerg_email	emerg_phone
Allan Irvine	al@newgraphenvironment.com	250-777-1518	allanirvine75@inreach.garmin.com	Tara Stark	tara.stark@gmail.com	250-505-9854
Dallas Nikal	dnikal@nicoridge.com	250-877-3892	—	alex nikal	Anikal@nicoridge.com	250-877-2873
Vern Joseph	vernon.joseph@wetsuweten.com	250-842-8204	truck radio equiped to call out	Mike Risdale	mike.ridsdale@wetsuweten.com	778-210-0310
Tiesha Pierre	pierretieasha@icloud.com	250-877-0849	truck radio equiped to call out	Mike Risdale	mike.ridsdale@wetsuweten.com	778-210-0310
Mateo Winterscheidt	matwint45@gmail.com	672-998-5293	807-790-9843	Felicitas Winterscheidt	fhwinterscheidt@gmail.com	519-636-5251
Jesse Olson	jesse.olson@gitxsanbusiness.com	—	—	—	—	—
Austin Green	austin21750@gmail.com	—	—	—	—	—

Equipment Checklists

Personal Equipment Checklist	•
GPS	headlamp
Sunscreen	hard hat
Bugspray	steel toed boots
Polarized glasses	clinometer
Bear Spray	field vest
phone/camera	note book
battery pack booster for phone	Extra clothes
Hat	rain gear
first aid kit personal	hand lens
Waders	GPS Case waterproof
Boots	Notebook waterproof
Ski poles	Drysuits
water	Snorkels
food	Goggles
gloves work	Fanny pack
glasses safety	–

Crew Equipment Checklist	•
Hand saw	pilon x 2
Linesman Gloves x 3	Measuring board
Backroads Mapbook	Scale
Locational maps	Permits
Background Documents	Fish ID book
radio road	Site Cards / Field Guide
Inreach	Minnow Traps
Field Safety Plan	Catfood
first aid kit level 1	Flagging
First Aid binder stocked	Laptop w/basecamp
Throw bags	GPS cable

Crew Equipment Checklist	•
polaski	Lazer level
shovel	Assessment cards fish passage
fire extinguisher backpack	UAV
fire extinguisher pressurized	Flow meter
Battery booster	ATV
Compressor 12V	bucket rigid x 2
Rubber boots (no-slip soles)	bucket foldable
Small BT Speaker (for bears)	clove oil kit w/ instructions
Oakton Multimeter	gloves leather
Backpack Electrofisher	sharpies
stop nets x 4	ATV gas
salt blocks	ATV lock
loose salt	UAV battery charger
dip nets x 2	wader disinfectant kit
tape measure hand	GPS batteries
tape measure eslon	ATV helmets

Nearest Hospitals



Figure 1: Houston Health Centre - 3202 14 St, Houston, BC V0J 1Z0 - 250-845-2294

Houston Health Centre - 3202 14 St, Houston, BC V0J 1Z0 - 250-845-2294

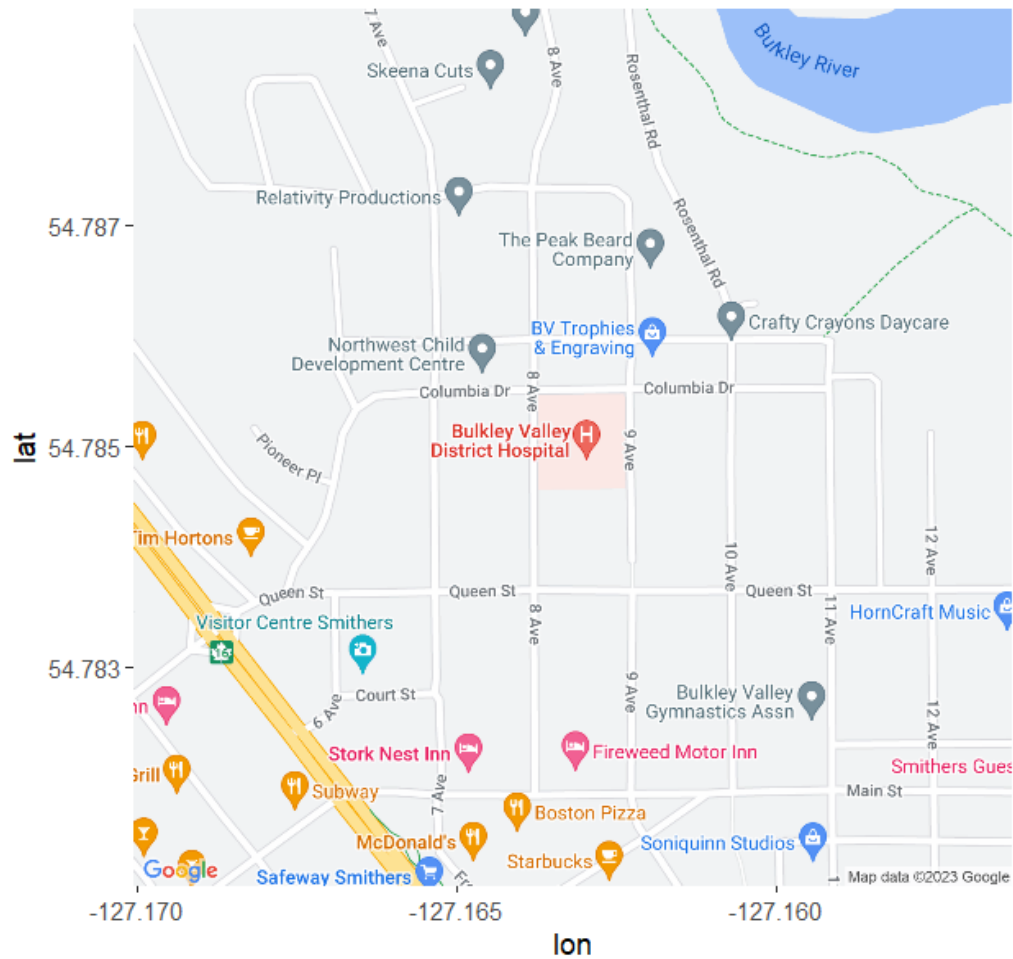


Figure 2: my_caption

(Smithers) Bulkley Valley District Hospital - 3950 8 Ave, Smithers, BC V0J 2N0 - 250-847-2611

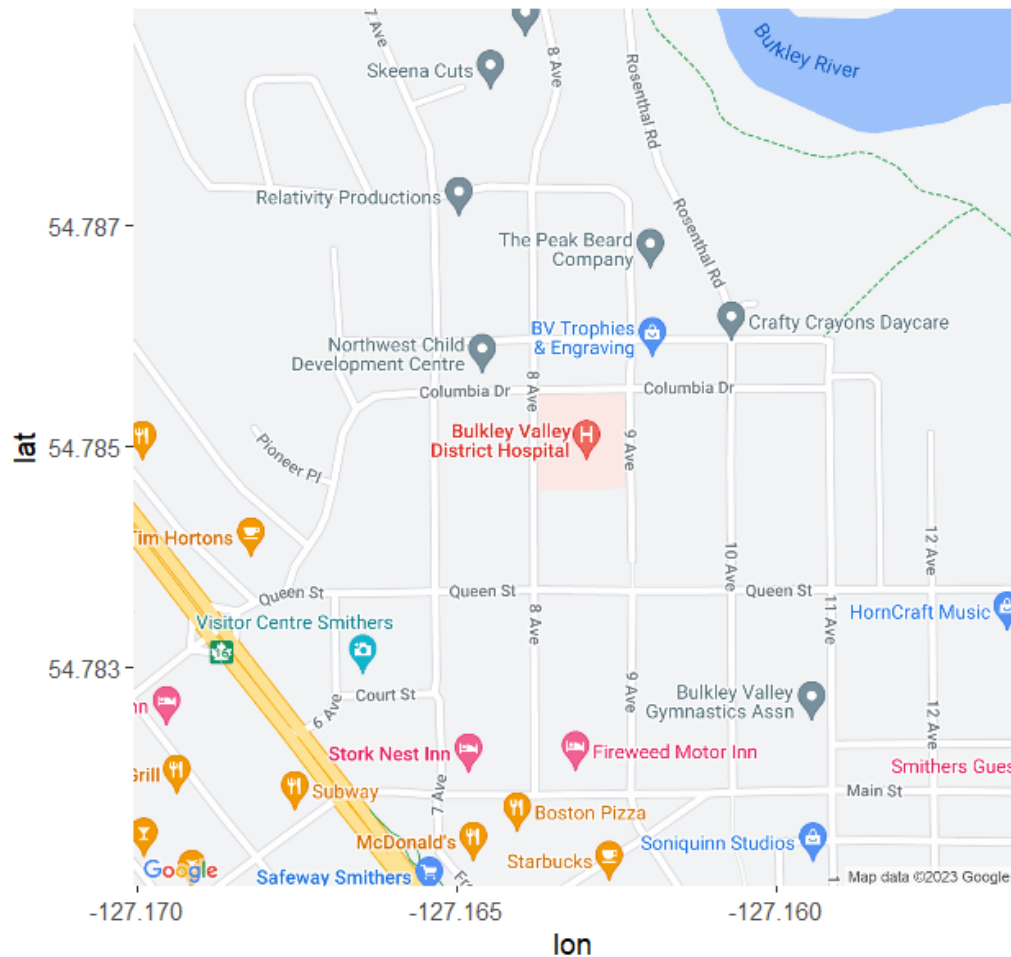


Figure 3: my_caption

Wrinch Memorial Hospital - Hazelton - 2510 Hwy 62, Hazelton, BC V0J 1Y0 - 250-842-5211

Field Plan

Field work methods will result in products feeding reporting formats such as [here](#) for 2020 and [here](#) for 2021. Still picking away at 2021 and just updating version IDs as I get through it. and will generally follow procedures in:

- [fish passage assessments](#) (MoE 2011)
- [habitat confirmations](#) (Fish Passage Technical Working Group 2011).

Presence/absence of fish, species composition/density and distribution limits can be useful for prioritizing which crossings are a best fit for fish passage restoration and help inform follow up

monitoring so electrofishing and minnowtrapping may be conducted. Standard Fish and Fish Habitat Inventory Standard Field Form [site cards](#) are used to gather habitat data. Field guide is [here](#)

We have PIT tagging equipment so we could consider [tagging](#) fish captured at electrofishing sites to help us better understand population sizes and fish movement upstream and downstream of sites over the years.

We are running digital field form tests using a product called [Mergin Maps](#) which syncs with QGIS. Crews can access projects with a free account. Please send me your usernames and I can begin to share projects/forms.

A guide to freshwater fish id such as McPhail and Carveth (1993) can be useful and can be downloaded [here](#).

Check In Procedures

Call, text or inreach Tara Stark (2505059854) each morning to share the plan for the day (i.e. name of roads and sites). Check in time is before 7 pm each evening although we regularly check in throughout the day (ex. at arrival to site, 1pm and 4pm) on the inreach or by text and report position/provide updates.

Procedures for Failed Check-In - for Check in person

Procedures are summarized in the following Figure. If phone call or inReach check-in is not received by 7pm send text to inreach units, call or text cell phones of field crew members. If no response please call accommodations then personal emergency contacts to see if they have heard anything. Wait 1 hour and text inreach, text or call cell phones and personal emergency contacts and accommodations again. Repeat after 2 hours (9 pm) - if no response then notify the RCMP of a missing persons in field.

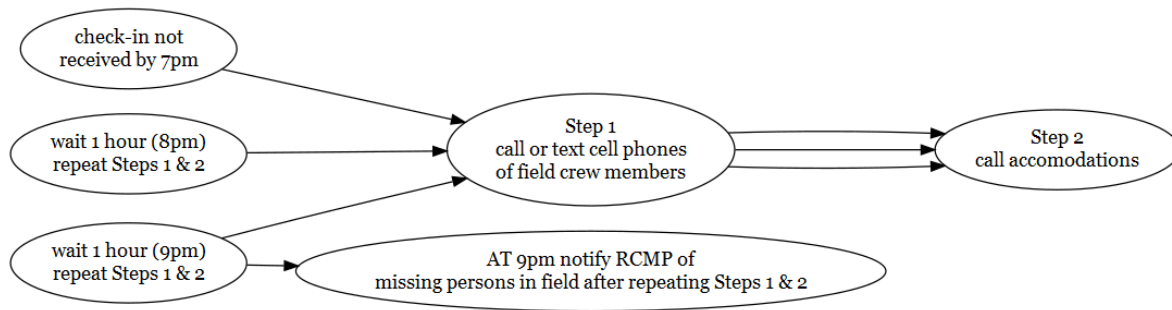


Figure 4: Procedures for failed check-in

Table 2: Potential sample locations.

id	Stream	long	lat	comments
3054	Johnny David Creek	-126.4478	54.59474	Sampling could provide insight into how high salmon ascend in this watershed.
8414	Clore	-128.0377	54.43099	Modelled 11% gradient upstream for 500m. close to Clore River so potential high values.
8454	Trib to Copper	-127.8154	54.80895	BT and DV confirmed. Two SFC priority sites upstream too.
8455	Trib to Copper	-127.8114	54.81153	SFC ranked as high priority. BT and DV confirmed.
8465	Trib to Copper	-127.7293	54.82940	Fish captured downstream. Smaller potential habitat gain.
8478	Trib to Copper	-127.5999	54.76787	DV known upstream at cascade. Small steeper habitat.
8511	Trib to Copper	-127.5744	54.82840	Small watershed. Close to larger stream with salmon though so may have some decent hab values.
8518	Trib to Copper	-127.3677	54.76332	Fish sampling already conducted but habitat confirmation may be helpful.

id	Stream	long	lat	comments
8525	Trib to Copper	-127.7396	54.81270	Smaller stream with DV upstream. Outlet drop.
8527	Trib to Copper	-127.7213	54.80815	DV confirmed upstream and SFC report indicates large outlet drop. Smaller stream though.
8530	Trib to Copper	-127.7129	54.80518	Duplicate. Matched to wrong modelled crossing so corrected in bcfishpass.
8532	Trib to Copper	-127.7007	54.81185	Habitat confirmation would be helpful. Fish confirmed here.
8543	Trib to Copper	-127.5671	54.78977	Just slightly highe than steelhead model criteria. Close to McDonell Lake with fish upstream
8545	Trib to Copper	-127.6451	54.79016	RB confirmed upstream. SFC recommends habitat assessment
8547	Trib to Copper	-127.6004	54.79309	CT (and potentially RB) confirmed. Small lake mapped upstream.
8742	–	-127.3084	54.04645	Remediated
57793	Vallee Creek	-126.8141	54.52438	–
57978	Tributary to Trout Creek	-127.4822	54.93291	–
58067	Tributary to Gramophone Creek	-127.2858	54.97087	–
58159	McDowell Creek	-127.0204	54.67521	Restoration likely forthcoming so sampling could inform monitoring program.
58242	Kathlyn Creek	-127.1811	54.79231	–
123377	Thompson Creek	-126.8090	54.57223	Would be good to get baseline conditions for species composition and abundance.
123392	Lemieux Creek	-126.8540	54.62160	–
123393	Lemieux Creek	-126.8549	54.62081	–
123426	Robin Creek	-126.8782	54.63903	–
123697	Tributary to Driftwood Creek	-126.9875	54.85582	–
123699	Tributary to Driftwood Creek	-127.0021	54.84796	–
123794	Tributary to Blunt Creek	-127.1806	55.09398	Sampling would provide insight into salmon use but unliley to have time.
123795	Tributary to Blunt Creek	-127.1855	55.09473	Sampling could provide insight into salmon use but time limited so unlikely to happen this year.
124500	Helps Creek	-127.0228	54.65954	Species compositionupstream and downstream could be insightful for prioritization and baseline if Telkwa Coal helps move this one ahead.
124504	Coffin Creek	-126.9195	54.62079	–
195288	Gibson Creek	-126.8188	54.59190	–
195290	Gibson Creek	-126.8328	54.59318	–
195559	Goathorn Creek	-127.1408	54.62009	–
195943	Stock Creek	-126.7571	54.44226	–
195944	Tributary to Stock Creek	-126.7495	54.44676	–

id	Stream	long	lat	comments
197360	Riddeck Creek	-126.7093	54.05795	Prov engineers may want baseline monitoring data.
197365	Tributary to Owen Creek	-126.8005	54.15719	Flow looks good in photos.
197379	Unnamed	-126.8398	54.18209	Would be good to know what fish are here. Good site for tagging?
197640	Tributary to Buck Creek	-126.6322	54.23614	Design in progress so sampling could inform monitoring program. Unlikley to have time for this this year though.
197653	Perow Creek	-126.4428	54.51824	–
197658	Byman Creek	-126.4210	54.51926	Not likely to get here due to timing constraints.
197663	Johnny David Creek	-126.3700	54.52177	Backwatering was completed anumber of years ago so sampling could inform long term monitoring.
197668	Coffin Creek	-126.9193	54.62098	–
197926	Tributary to Morice River	-127.3659	54.19188	At Gidimt'en Camp. Maybe best left for another time.
197951	Tributatry to Morice River	-127.1586	54.23138	Large lake headed stream with fish observed.
197954	Tributary to Morice River	-126.9966	54.22716	Fish upstream. Good flow. Ford downstream.
197962	Peacock Creek	-126.7918	54.36065	Site remediated. Long term monitoring required but could wait another year as work was conducted late last summer and we might expect CO moving in this fall..
197967	Taman Creek	-126.0352	54.40227	Crossing remediated so samling could help inform long term monitoring.
197974	Watson Creek	-126.2159	54.47603	–
197975	Ailport Creek	-126.2090	54.47578	Should a remediation plan come together sampling could help infrom long term monitoring. Good candidate for riparian rencing as well as culvert replacement.
198008	Tributary to Nanika River	-127.3761	54.01832	Site should be reassessed as we surveyed the wrong upstream channel in 2021.
198016	Tributary to Thautil River	-127.3373	54.32459	Hab con conducted. Species presence would be insightful.
198022	Tributary to Tagit Creek	-127.2404	54.22487	Small stream with likley beaver activity upstream. Fish points upstream. Upstream culvert has note sof good flow and fish present.
198048	Cesford Creek	-126.3062	54.50844	Sampling could help build weight of evidence that no connection exists to Bulkley mainstem.
198049	Cesford Creek	-126.2986	54.51141	Here or hwy 16 sampling could help understand downstream connectivity (or likley lack thereof) at railway. If CO get through as fry they may not get back out to mainstem.
198060	Tributary to Owen Creek	-126.7967	54.14676	Was passable when assessed in 2021.

id	Stream	long	lat	comments
198065	Watson Creek	-126.2178	54.49038	–
198066	Thompson Creek	-126.8311	54.56060	Great candidate for channel redirection and would be good to get idea of baseline species composition/abundance.
1001800067	Perow Creek	-126.4427	54.51753	–
1001800255	Stock Creek	-126.7483	54.44729	–
1001800403	–	-126.3443	54.48465	–
1001800670	Vandervan Creek	-126.8799	54.65751	–
1001800865	–	-127.3516	54.48459	–
1001801039	–	-126.8010	55.12847	–
1001801071	Perow Creek	-126.4438	54.52105	–
1001801115	Watson Creek	-126.1912	54.49465	–
1001801123	Watson Creek	-126.2046	54.49383	–
1001801328	Robin Creek	-126.8760	54.65013	–
1001802047	Bulkley River	-126.1262	54.42364	–
1001802069	Johnny David Creek	-126.4370	54.59094	–
1001802239	–	-126.0217	54.14638	–
1001802374	Causqua Creek	-127.3052	55.03743	–
1001802482	Vallee Creek	-126.8239	54.52943	–
1001802798	Coffin Creek	-126.9224	54.60968	–
1001803294	–	-127.6018	55.23941	–
1001803607	–	-126.6900	55.10620	–
1001804538	–	-126.0988	54.45026	–
1001805019	–	-126.0716	54.42277	–
1001805507	Stock Creek	-126.7647	54.42550	–
1001806259	Maish Creek	-126.9413	55.22649	–
1008300001	–	-127.6763	55.31842	Very close to Skeena mainstem. On aerial imagery appears as though stream might be difficult to locate and not a straight forward connection.
1008300023	–	-127.6636	55.31161	Private driveway on private land. CO fry observed upstream during salvage (FISS).
1008300024	–	-127.6765	55.39932	No fisheries information
1008300095	–	-128.0053	55.12911	Phase 1 required. Backwater location. Large stream with many species confirmed upstream.
1008300103	–	-127.7272	55.45409	Coho upstream with significant amounts of lake and wetland habitat.
1008300104	–	-127.7475	55.48778	CO points upstream and downstream.

id	Stream	long	lat	comments
1008300105	–	-127.7614	55.49663	Coho and CT obs immediately downstream of the crossing.
1008300118	–	-127.8498	55.48371	Access to Afleck Lake. No fish info.
1008300124	–	-128.4618	55.73204	Fish sampling completed by SFC. Confirm if this road has been deactivated.
1008300128	Sterritt Creek	-127.6561	55.51102	Downstream gradient models at 10% with potentially tight confinement so some potential for natural barrier downstream.
1008300142	McIntosh Landing Creek	-127.7438	55.19779	Road mapped as approaching from either side.
1008300144	–	-127.7606	55.18612	Could be difficult surveying due to wetland type terrain.
1008300157	Shandilla Creek	-128.0209	55.08814	PK noted upstream and downstream. Rock obstacles noted upstream 400 and 500m in both Shandillas
1008300161	–	-127.8117	55.49344	Private land 200m downstream and 400m upstream.
1008300162	–	-127.8436	55.50858	Provides access to Pentz Lake
1008300163	–	-127.9080	55.54445	Wetlands pstream. Not far from Kispiox.
1008300178	–	-128.0719	55.27938	Stream network looks all over the place here. May not be straight forward to find channel.
1008300188	–	-128.0817	55.28883	Wetland/lake area upstream.
1008300437	–	-128.1692	55.40011	Wetland type area. May be difficult to find channel
1008300440	–	-128.1704	55.40725	Downstream of SFC Map reference 15. SFC indicate FHAP completed in 2008.
1008300465	–	-128.2141	55.40645	SFC references FHAP in 2008. No streamline apparent above the road but SFC report mentions mapping error in map...
1008300483	–	-127.7887	55.50325	Private land. Need to approach landowner about access. May be bridge but difficult to tell. Historic restoration work on this stream by AMEC and McElhanney.
1008300492	Hevenor Creek	-127.7372	55.42802	Private land. Difficult to tell if this crossing is present. Seems likely due to amount of buildings on otherside of stream from main farm yard.
1008300849	Hazeltown Creek	-127.7489	55.26378	Known PK spawning locations downstream.
1008300856	–	-127.7501	55.25657	Wetland areas upstream. Some areas upstream look like gravels from aerial imagery. Streams are tagged as intermittent about 350m upstream.
1008300970	–	-127.9172	55.09411	SFC mod priority with cost/benefit noted as required. Surveying upstream crossing could be enlightening. Downstream is private land.
1008301137	Beaverlodge Creek	-128.2883	55.66013	CO and PK points in Kispiox just downstream.
1008301242	–	-128.3837	55.71050	Road may be deactivated. Suspect difficult surveying due to wetland areas.
1008301290	–	-127.9975	55.57653	Private land. Road difficult to make out on aerial imagery.
1008301326	–	-127.7303	55.43296	Very close to Hevenor Creek with numerous species downstream. PK and CM spawning locations just downstream of confluence. Private land crossing. Seventeen mile road crossing just upstream.

id	Stream	long	lat	comments
1008301446	–	-128.1221	55.08659	Private land. Need to knock on door for access.
1008301747	–	-127.9938	55.67868	SFC work conducted but no formal hab con. Smaller system
1008301754	–	-127.9811	55.64290	FISS site notes indicate high value habitat. NFC at upper site. Suspect distribution limit is open wetland area well upstream of second crossing up.
1008301892	–	-127.9002	55.63994	Stream may not be located where mapped. Suspect main crossing is further to the east a bit.
1008301923	–	-128.2909	55.33994	Crossing is way up in the mountains. Although there are no sample sites I would think that forestry would have fish info for this area.
1008301994	–	-128.2055	55.40990	SFC completed FHAP.CO and CT. Habitat models as 8% upstream.
1008302085	–	-127.5850	54.94306	CO not too far downstream. CT upstream. Maybe be bridge.
1008302116	–	-128.3780	55.67988	Cascade at road. Decent size lake with CT and MW.
1008302257	Pinenut Creek	-127.6258	55.38699	No fisheries information.
1008302324	–	-128.3269	55.74628	Small lake upstream. Road deactivated?
1008302371	–	-128.0575	55.63136	CO and PK downstream with CT upstream.
1008302377	–	-128.0884	55.64649	Falls at end of reach 3 on main trib (see FISS sites for details). CT present upstream.
1008302403	–	-128.3250	55.65646	Numerous sample sites upstream with no fish noted. AT 1km upstream gradient noted as 17%.
1008302422	–	-127.9222	55.51787	CT and DV downstream. Small lake upstream.
1008302518	–	-127.8371	55.47573	Numerous wetlands upstream but stream habitat likely limited. CH spawning noted just downstream in McCully.
1008302758	–	-128.0083	55.66285	Difficult to tell if road is there. Suspect backwatered crossing if CBS present.
1008302857	Andi Creek	-127.9647	55.09927	Railway. Difficult access.
1008302868	Chicago Creek	-127.6735	55.21494	No obvious access to this site.
1008302869	Gershwin Creek	-127.7363	55.18229	Railway crossing. Phase 1 not completed but SFC references work from 2000, and 2015.
1014000009	–	-126.7377	54.38009	Design already completed by Steve Andrade. Plugging issues. Dry at time of photos from Steve.
1014000057	–	-126.8854	54.32498	Large wetlands upstream and close to Morice mainstem.
1014000255	–	-127.2638	54.13167	Phase 1 needed. Larger system with channel visible in aerial imagery.
1014000571	–	-126.9767	54.28765	Heavily logged upstream and many branches upstream are classed as intermittent.
1014000666	–	-127.2445	54.05843	SFC site with fish point and lake upstream.
1014000768	–	-126.8489	54.23059	Smaller stream with other road just upstream. Should assess but unlikely high value habitat.
1014000819	–	-126.9732	54.19572	Needs phase 1!
1014000855	–	-126.8984	54.31800	CT point upstream. Small split watershed with many intermittent tagged streams.
1014001120	–	-127.1446	54.23852	Fish noted in outlet pool. Huge outlet drop. Fish points upstream.

id	Stream	long	lat	comments
1024600895	Silvern Creek	-127.4035	54.77358	Silvern Creek. Not yet assessed. Large system.
1024600913	Sandstone Creek	-127.7130	54.80526	Duplicate of PSCIS 8530. DV and CT confirmed. SFC recommends habitat confirmation
1024601067	—	-127.5223	54.81647	Adjacent to CO points with some lake/wetland upstream.
1024601216	—	-127.6873	54.78100	Not associated with mapped stream. Seems unlikely to have significant amounts of high value habitat although could be crossing downstream of 8501 where there are DV known upstream.
1024702220	—	-127.2789	54.04956	SFC site with fish known upstream.
1100001493	Coffin Creek	-126.9143	54.59003	—

References

Fish Passage Technical Working Group. 2011. "A Checklist for Fish Habitat Confirmation Prior to the Rehabilitation of a Stream Crossing." <https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/land-based-investment/forests-for-tomorrow/checklist-for-fish-habitat-confirmation-201112.pdf>.

McPhail, J. D., and R Carveth. 1993. "Field Key to the Freshwater Fishes of British Columbia." https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nr-laws-policy/risc/field_key_to_freshwater_fishes_of_bc_field_size_water_resistant_version.pdf.

MoE. 2011. "Field Assessment for Determining Fish Passage Status of Closed Bottom Structures." BC Ministry of Environment (MoE). <https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/land-based-investment/forests-for-tomorrow/field-assessment-for-determining-fish-passage-status-of-cbs.pdf>.