

2021 Fish Habitat Assessments for Lake Babine Nations

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1 Introduction

In May 2021, FINS Consulting Ltd. (FINS) was retained by Capacity Forest Management Ltd. (CapFor) to assess fish habitat and establish fish presence/absence in select streams for Babine Lake Nations in the Granisle and Burns Lake Area. The overall purpose of the assessments was to determine fish presence/absence and evaluate fish habitat to assign streams' riparian classifications and alleviate forest management activities.

Fieldwork took place from July 23 – August 13, 2021.

2 Location and Access to Project Areas

Project areas (Figure 1) are located within 14 to 24 km from Granisle and approximately 25 km north of Burns Lake. Both areas were reached by 4X4 vehicle, while specific stream reaches for assessment were accessed on foot.

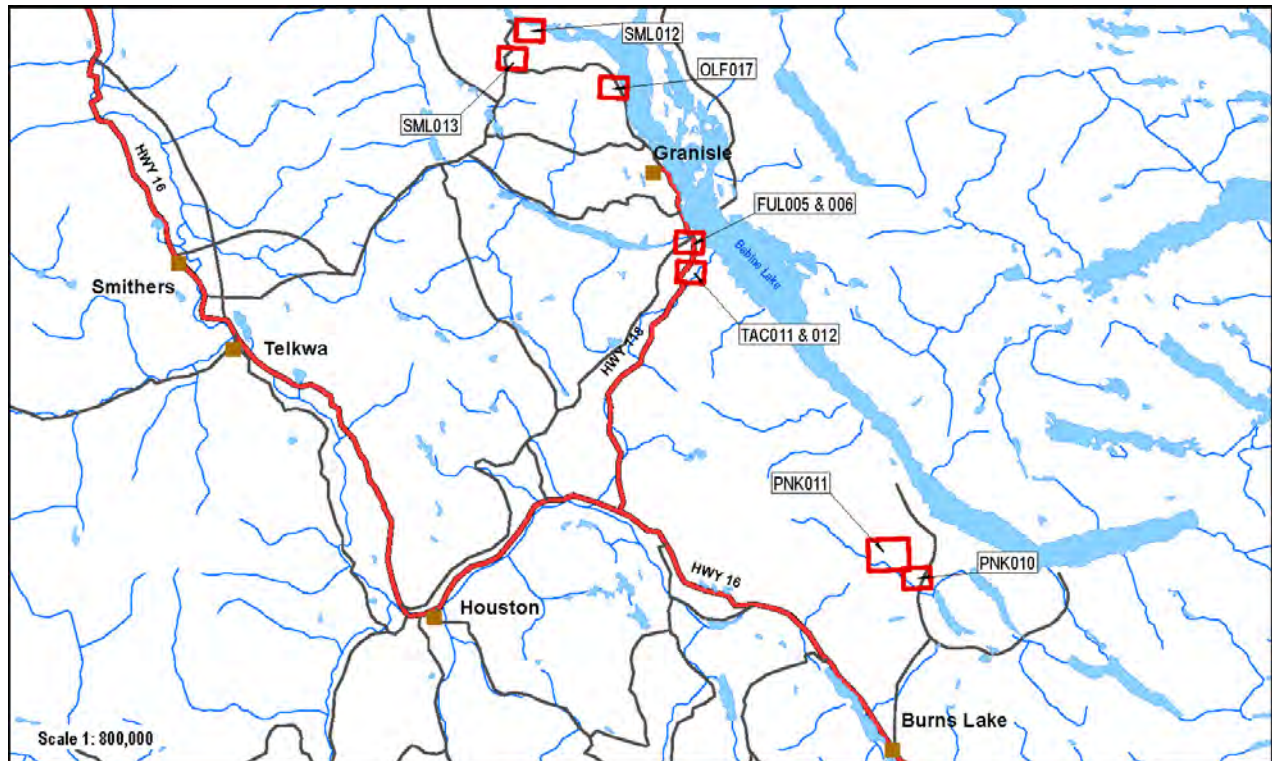


Figure 1: Location of Project Areas.

3 Methods

The methodology used throughout this project was consistent with the standards and methods outlined in the following publications:

- Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures. Version 2.0. (RIC, 2001)
- Fish-stream Identification Guidebook, Second Edition (FSID) (FPC, 1998)
- Riparian Management Area Guidebook (FPC, 1995)
- Modernized Fisheries Act (FA, 2019)

Areas of interest requiring stream assessments were identified by CapFor personnel before the field trip.

3.1 Review of Existing Fisheries Information

Assessed streams are within the Babine Lake (BABL) high-level watershed group in the Skeena Region.

Selected streams for evaluation located north of Granisle were part of the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory (RFFHI) of Unnamed Tributaries to Babine Lake (Smithers Landing Planning Area) completed in the year 2000 by Triton Environmental Consultants Ltd. (Triton) and operational fish habitat assessments finished in 2012 by FINS Consulting Ltd. (FINS).

Triton determined that the stream 11076 in block SML 012 was non-fish bearing due to the lack of access from Babine Lake and the missing perennial habitat upstream of the no channel barrier. Stream 48001 was never surveyed before.

For streams in question within block SML013, no fish were captured in reaches 7 and 9 of stream 480-558800 in 2000 by Triton; however, fish presence was assumed. It's left bank tributary 80001 to reach 9 was confirmed non-fish bearing by FINS in 2012.

Two streams adjacent to block OLF017 were visited by Triton in 2000. The unnamed creek 480-615800 was documented non-fish bearing by three sites upstream of the cascade barrier located ~1.7 km from Babine Lake. In stream 11021, fish presence was inferred by Triton within a 200 m section from the lake.

Selected streams for evaluation located south of Granisle were within the RFFHI of Selected Tributaries to the South Side of the Fulton River Watershed and RFFHI of Unnamed Tributaries to the Southwest Shore of Babine Lake, South of Topley Landing, both completed by Triton in 2001.

Two selected streams within blocks, FUL005 and 006, are right bank tributaries to fish-bearing Fulton River but were never assessed before. Two watercourses flowing through or adjacent to blocks TAC011 and 012 were also never surveyed. Both are tributaries to the fish-streams 480-

705800-06200 and Tachek Creek (480-705800), respectively. Tachek C. is inhabited by rainbow trout (RB) (*Oncorhynchus mykiss*) while the tributary by cutthroat trout (CT)(*O. clarki*).

Selected streams for evaluation located north of Burns Lake are left bank tributaries to Pinkut Creek (480-927700), which contains the RB population.

During 2001 RFFHI of the Upper Pinkut Creek Watershed FINS determined that the stream 42025 and its tributaries were non-fish bearing drainages, while the stream -927700-78100 required re-sampling to determine fish use. None of the 15 remaining and selected watercourses within blocks PNK010 and 011 were assessed before.

3.2 Air Photo Interpretation

Air photo/orthophoto interpretation (API) was completed to:

- delineate stream reaches for all drainages where reaches were missing,
- identify potential barriers to fish migration, which would be later verified in the field,
- assess if potential overwintering habitat is present above these obstructions.

During the API process of an unnamed stream 48001 within block SML012, reach 1 was selected for field investigation as the location of a potential barrier to the fish passage from Babine Lake due to approximately 20% slope near the lake.

In block OLF017, a very confined gully throughout reach 2 was identified in stream 480-615800. This finding suggested a high likelihood of an existing fish barrier downstream of identified by Triton cascade barrier in Reach 3. Other streams in this block were descending over >20% slopes within 100 – 200 m from the Babine Lake, and fish barriers were very likely present.

Stream -705800-06500 adjacent to block TAC012 descended at 20% gradient to Tachek Creek in reach 1, and a fish barrier was expected within 100 m from the mouth.

3.3 Stream Data Collection

Stream data were collected on Site Cards and Fish Collection Forms. These field cards are the currently accepted method of collecting data for stream evaluation. Printouts of all field data collected are provided in Appendix I. Abbreviations used in the Site Data Forms are provided in the List of Abbreviations on page 15.

3.4 Fish Sampling

During the assessments, electrofishing supplemented by visual observation of fish movement was employed as the method used for fish sampling.

3.5 Measurements, Calculations, and In-Field Markings

Stream channel and wetted widths were determined using a meter tape. Generally, a minimum of six channel width (CW) measurements were made within the site vicinity at a distance of approximately 15-20 m apart and were rounded to two decimal places. In cases where the channel was close to riparian class boundaries (i.e. 1.5m, 3m, etc.), more measurements at equal spacing were taken to determine a precise location of transition between riparian classes. Stream depth measurements were determined using a meter stick or were estimated if the channel was inaccessible due to treacherous conditions. Stream gradient measurements were determined using the Abney level along several site sections and were rounded to a whole number. In some instances, where the stream slope was close to 0%, the level readings were rounded to 0.5% to indicate flowing water. Site lengths were determined using a professional GPS unit or GIS software. Stream water temperatures, conductivity, and pH were determined using a portable Hanna water chemistry multi-meter, calibrated using standardized solutions. Water velocities for the velocity barrier were calculated using a modified Manning formula. Roughness factors were derived from Manning's and Cowan's coefficients (McCuen, R. H., 1989), adjusted by analyzing stream morphology data collected by FINS during the past 25 years. Heights and lengths of linear obstructions (cascades, velocity barriers, etc.) were determined using a meter tape and Abney level and then applying slope/distance tables to verify the vertical height.

Riparian class transitions (i.e., from S4 to S6, etc.) were marked in-field by a red and white flagging tape tied up to the opposite banks and above the transition point. From the center of the created "gate," another red-white ribbon was hung down and was labelled using a permanent marker with the stream ID, class transition, date, and the consultant's name (FINS).

3.6 GPS Recording

Existing drainages, survey sites, and any critical features affecting fish habitat and fish distribution were recorded using professional GPS. All point features were logged for 150 seconds.

Collected raw data were not post-processed.

3.7 Stream and Site Referencing

All watercourses without a gazetted name or watershed code (WSC) were assigned a Temporary Watershed Code (TWC) consisting of five unique digits (known as Interim Location Points (ILP)) - as recommended in the FSID.

If available, parent streams were identified by a combination of a gazetted name with a WSC or just by a WSC.

Existing and non-existing drainages were then referenced using gazetted names with TWC or a reduced WSC. A reduced WSC contains the last digit group of the parent stream and the last digit group of the watercourse in question.

Site numbers for this project have been assigned in ascending order based on the survey sequence.

3.8 Photographs

Representative site photographs and any significant site features are presented in Appendix I. A standard field book (20x15 cm) or a meter stick (folds every 22 cm) were used for scale to reference the size of the channel or features in pictures.

Photos have been reduced in size to present multiple images on one page. Each picture is labelled with a site number and the direction in which the photo was taken.

3.9 Fish Habitat Value

Fish habitat values represent the importance of existing habitat in sustaining a fish population in a specific watershed, as suggested by Fish-stream Crossing Guidebook (Revised Edition, 2012). Abbreviation “CR” indicates critical habitat value, “IM” – important, “MG” – marginal, and “NA” – not applicable, was added to show that there is no fish habitat in a specific stream.

The relevant values for the assessed stream reaches were presented in the “Summary of assessed streams” table in the “Results and Discussion” section to indicate that additional steps in preserving and protecting fish habitat may be warranted during forest management activities.

3.10 Mapping

The mapping convention for this project generally follows the standards as recommended in the FSID Guidebook. GIS software was used to produce one 1:15,000, and six 1:10,000 scale maps from shapefiles obtained from the BC Land and Resource Data Warehouse or created in the office from orthophoto interpretation. Maps are included in Appendix II at the end of this report.

Project maps depict current and pertinent earlier site information, barriers to fish migration, evaluated streams with an indication of their fish status and classification, sections of assessed streams, TRIM2 stream network, existing fish observation points, road network, and basic topographic features. This information is presented using unique symbols explained in the map’s legend.

3.11 Field Equipment

All field equipment used is listed below:

- GPS unit Ashtech MM100
- 1 Hanna water chemistry multi-meter
- 1 Abney level, Silva compass
- 1 Pentax Optio W80 digital camera
- 14 G type minnow traps
- Dip net
- assorted fish sampling equipment (measuring trough, fish anesthetic, collapsible bucket, fish bait, safety equipment)
- various other equipment including meter tape and meter stick
- personal First Aid kits, as per WorkSafe BC requirements
- satellite telephone

4 Results

The following tables within sections 4.1 and 4.2 summarize all surveyed reaches and present information for all non-fish bearing reaches. Both tables are sorted alphabetically by the area where assessments took place to ease a specific assessment search.

The first, "Summary of all assessed reaches," provides basic physical information and brief comments for all surveyed reaches.

The second, "Summary of non-fish bearing reaches," provides justifications for all non-fish bearing reaches and includes pertinent physical site-specific data, sampling method and effort, relevant historical information, and comments that provide a rationale to support derived riparian classification for non-fish bearing watercourses.

Site details can be found in the field forms in Appendix I.

4.1 Summary of all Assessed Reaches

The symbol “*” in all columns indicates that no data were collected in the table. In the column “Habitat Value Rating,” the abbreviation “NA” means that a riparian classification does not apply to non-fish bearing reaches, “MG” – marginal habitat, and “IM” – important habitat. In the column “Channel Width,” “NVC” means that the watercourse doesn’t have any sections with a scoured channel to the mineral soil, and “ND” (No Drainage) that the watercourse doesn’t exist; in the column “Sampling Results,” “NS” means that fish sampling was not performed; “(fish code)” indicates the inferred presence of a specific fish species and “NFC” that no fish were captured during fish sampling. Shaded rows highlight relevant past evaluations.

Table 1: Summary of assessed reaches.

AREA	Stream ID (Name, TWC or WSC)	Reach #	Site #	UTM zone	UTM Easting	UTM Northing	Riparian Class	Habitat Value Rating	Watercourse Slope (%)	Channel Width (m)	Channel Depth(m)	Sampling Results	Site Length (m)	Follow-up Sampling	Comments
TAC012	480-705800-06500	4	1	9	682288	6073085	NCD	NA	9	NVC	*	NS	120	N	Not a stream - see NFB report.
FUL005	480-697200-02864	1	2	9	681756	6077608	S6	NA	10	0.92	0.18	NS	200	N	Confirmed non-fish bearing - see NFB report.
FUL006	480-697200-02826	1	3	9	682903	6077520	S3	IM	3	2.5	0.3	CO, RB/ NFC(RB)	400	N	Stream with usable rearing and potential spawning habitat. Sediment wedge near the site UTM temporarily impedes fish passage; fish was captured in the pool at the base, but not upstream. Generally, a shallow creek with some shallow pools but lacks diverse instream cover.
		2	4	9	682564	6077246	S3	IM	3	2.1	0.3	NFC (RB)	400	N	Stream with fair rearing and spawning habitat. It is temporarily inaccessible to fish due to an impassable culvert under the highway.
OLF017	480-615800	2	5	9	672319	6097087	S3	MG	9	4	0.4	NS (DV)	1700	N	Overall accessible and usable habitat for DV is available from reach 1 to the cascade barrier at UTM 9.6712901.6096186 at the end of the reach. The 6m high and 2m long cascade was identified by Triton in 2000. Many salmonids were observed near the mouth in reach 1.
	480-615800	3	122	9	671292	6096106	S6	NA	9	2.37	0.5	NFC	150	N	Confirmed non-fish bearing by Triton in 2000 - see NFB report.
TAC011	62001	1	6	9	682444	6074007	NCD	NA	6	*	*	NS	250	N	Not a stream - see NFB report.
OLF017	11021	1	7	9	673069	6095295	S6	NA	23	1.55	0.3	NS	110	N	Confirmed non-fish bearing - see NFB report.
	11020	1	8	9	672981	6095695	NA	NA	*	ND	*	NS	100	N	No watercourse - see NFB report.
	11019	1	9	9	672567	6096559	S6	NA	24	0.7	0.09	NS	110	N	Confirmed non-fish bearing - see NFB report.
SML013	480-559900	7	10	9	659239	6099038	NCD	NA	*	NVC	*	NS	110	N	Not a stream - see NFB report.
	480-558800	9	11	9	659102	6099838	NCD	NA	*	NVC	*	NS	110	N	Not a stream - see NFB report.
	80001	1	178	9	659083	6100153	NCD	NA	*	*	*	NS	350	N	Not a stream – confirmed by FINS in 2012 - see NFB report.

Table 1: Summary of assessed reaches.

AREA	Stream ID (Name, TWC or WSC)	Reach #	Site #	UTM zone	UTM Easting	UTM Northing	Riparian Class	Habitat Value Rating	Watercourse Slope (%)	Channel Width (m)	Channel Depth(m)	Sampling Results	Site Length (m)	Follow-up Sampling	Comments
SML012	48001	1	*	*	*	*	S3	MG	16	~2	*	NS (DV RB)	350	N	Accessible to fish from Babine Lake.
SML012	48001	2	12	9	660764	6103034	S4	MG	4	~1.5	*	NS (DV RB)	230	N	Accessible to fish from reach 1.
		3					S4	MG	2	1.23	0.23	NS (DV RB)	150	N	Contains fair rearing habitat for salmonids up to the impassable 30m long barrier at UTM 9.660750. 6102813. The obstruction is a combination of underground channel and overland flows. The barrier marks the riparian class transition from S4 to S6.
		4					S6	NA	2	0.4	0.1	NS	70	N	Confirmed non-fish bearing - see NFB report.
	11076	1	20	9	661510	6103378	NCD	NA	24	*	*	NS	200	N	Not a stream – confirmed by Triton in 2000 - see NFB report.
PNK011	42016	1	13	10	323366	6034727	NCD	NA	*	*	*	NS	110	N	Not a stream - see NFB report.
	42017	1.1	14	10	323071	6034973	S4	MG	4	1.03	0.17	NS	40	N	The stream is accessible to RB for ~40m from Pinkut Creek up to an impassable underground channel barrier located at the site UTM and followed by a 20m long alluvial fan with no well-defined channel. The underground conduit is 0.7m high and 5m long. It marks the riparian class transition from S4 to S6. A 100m long section of the stream from its mouth is mismapped by TRIM.
		1.2					S6	NA				NS	160	N	Confirmed non-fish bearing - see NFB report.
	42020	1	15	10	322530	6035227	S6	NA	13	0.52	0.13	NS	110	N	Confirmed non-fish bearing - see NFB report.
PNK010	42025	1	162	10	320808	6036578	NA	NCD	*	*	*	NS	200	N	Not a stream – confirmed by FINS in 2012 - see NFB report.
	92703	1	16	10	320444	6037002	NA	NA	*	ND	*	NS	100	N	No watercourse - see NFB report.
	92704	1	17	10	320120	6037381	NCD	NA	25	*	*	NS	120	N	Not a stream - see NFB report.
	42027	1	18	10	319958	6037529	S6	NA	5	0.83	0.23	NS	150	N	Confirmed non-fish bearing - see NFB report.
	92712	1	19	10	319214	6037831	NA	NA	*	ND	*	NS	100	N	No watercourse - see NFB report.
	480-927700- 78100	1	20	10	319114	6037833	S6	NA	7	0.68	0.2	NS	220	N	Confirmed non-fish bearing - see NFB report.

4.2 Non-fish Bearing Report

The symbol “*” in all columns indicates that no data were collected in the table. In the column “Channel Width,” “NVC” means that the watercourse doesn’t have any sections with a scoured channel to the mineral soil, and “ND” (No Drainage) that the watercourse doesn’t exist. In the column “Flow Stage,” the abbreviation “INT” indicates that water flow was discontinuous, “L” means that the flow was in low levels (< 30% of bankfull), and “M” that flow was in moderate levels (30 – 80% of bankfull). In the column “Turbidity,” the abbreviation “C” indicates that water was clear during assessments and “L” that water was lightly turbid. In the column “Sampling Method,” “EF” indicates that electrofishing was used as a sampling method and “NS” means that no fish sampling was performed. In the column “Sampling Results,” “NFC” indicates that no fish were captured during fish sampling. Shaded rows highlight relevant past evaluations.

Table 2: Summary of the non-fish bearing reaches.

Area	Stream ID (Name, TWC or WSC)	Reach #	Site #	Date	Riparian Class	Watercourse Slope (%)	Channel Width (m)	Channel Depth (m)	Flow Stage	Water Temperature (°C)	Conductivity (µS/cm)	Turbidity	Sampling Method	Sampling Results	Effort (EF - sec/ dist.; MT #/Hrs)	EF Specs (V/ Hz/ µs)	Comments
TAC012	480-705800-06500	4	1	23-Jul-21	NCD	9	NVC	*	*	*	*	*	NS	*	*	*	No fish habitat - watercourse is within ~20m wide hummocky valley just u/s of an open water wetland. No alluvium in bed material - only organics. The course of drainage alternates every few meters between isolated puddles, seepage or surface flows with sparse cobbles protruding from the ground. ~60m u/s from the start of site gradient rises, and drainage flows through 10-12% gully with interchanging between overland flows and surface scour. No alluvial deposits - not a stream.
FUL005	480-697200-02864	1	2	23-Jul-21	S6	10	0.92	0.18	INT	*	*	*	NS	*	*	*	No fish habitat - moderately steep and seasonal stream, shallow with poor cover due to lack of complexity within the channel. No spawning or overwintering habitat was observed. The stream is inaccessible to fish from the Fulton River due to the 4 m long underground channel at 16% slope. No perennial habitat was observed upstream of the barrier to support any isolated fish population. The stream is mismapped by TRIM - it flows ~100m to the east from the TRIM location.
OLF017	480-615800	3	122	18-Sep-00	S6	9	2.37	0.5	L	7	90	C	EF	NFC	*	*	No fish habitat - cascade prevents upstream fish migration; no fish was captured in two additional sites u/s. The entire watershed is non-fish bearing upstream of the cascade barrier. Assessed by Triton in 2000.

Table 2: Summary of the non-fish bearing reaches.

Area	Stream ID (Name, TWC or WSC)	Reach #	Site #	Date	Riparian Class	Watercourse Slope (%)	Channel Width (m)	Channel Depth (m)	Flow Stage	Water Temperature (°C)	Conductivity (µS/cm)	Turbidity	Sampling Method	Sampling Results	Effort (EF - sec/ dist.; MT #Hrs)	EF Specs (V/ Hz/ µs)	Comments
TAC011	62001	1	6	26-Jul-21	NCD	6	*	*	*	*	*	*	NS	*	*	*	No fish habitat - the watercourse alternates between 10-20m long sections of scoured channel, overland flows, surface scour, and puddles. No alluvium was observed throughout, although a few boulders and large cobbles protruded from the ground. Not a stream as per definition. It descends to the parent stream at 21% for 15 m near the confluence with a discontinuous scoured channel bed over cobbles with gravels. It is too steep near the "mouth" to be used by CT as a refuge or access watercourse at high flows.
OLF017	11021	1	7	26-Jul-21	S6	23	1.55	0.3	L	9.5	286	C	NS	*	*	*	No fish habitat - steep stream with no instream cover present and highly movable bed material during high flows. It is inaccessible and unusable by fish at any time of year.
	11020	1	8	26-Jul-21	NA	*	ND	*	*	*	*	*	NS	*	*	*	No fish habitat - no watercourse of any kind found at the indicated TRIM location or 50 m up and down the road.
	11019	1	9	26-Jul-21	S6	24	0.70	0.09	L	*	*	C	NS	*	*	*	No fish habitat - barely a stream owing to a steep slope, no instream cover present, shallow, and inaccessible to fish.
SML013	480-559900	7	10	27-Jul-21	NCD	*	NVC	*	*	*	*	*	NS	*	*	*	No fish habitat - soggy swale with occasional puddles and surface scour; no scour to mineral soil or alluvium present - not a stream.
	480-558800	9	11	27-Jul-21	NCD	*	NVC	*	*	*	*	*	NS	*	*	*	No fish habitat - the watercourse alternates between surface scour, seepage, and puddles through a 5 m wide swale. No alluvium or scour to mineral soil observed, only occasionally protruding cobbles present - not a stream.
	80001	1	178	24-Sep-12	NCD	*	*	*	*	*	*	*	NS	*	*	*	No fish habitat – the watercourse disperses in a wetland and is inaccessible to fish for seasonal use. Assessed by FINS in 2012.
SML012	48001	4	12	27-Jul-21	S6	4	0.40	0.1	M	10.1	58	L	NS	*	*	*	No fish habitat - the stream becomes tiny with no usable fish habitat upstream of the impassable 30m long barrier at UTM 9.660750. 6102813, combined with an underground channel and overland flows. The obstruction marks the riparian class transition from S4 to S6.
	11076	1	20	21-Sep-00	NCD	24	*	*	*	*	*	*	NS	*	*	*	No fish habitat - channel is discontinuous throughout the site. The gradient is 26% upstream of the lake. Heavily vegetated gully with intermittent seepage. Assessed by Triton in 2000.
PNK011	42016	1	13	29-Jul-21	NCD	*	*	*	*	*	*	*	NS	*	*	*	No fish habitat - the scoured channel is within 30% slope for ~50m, then turns into seepage upstream through ~10m wide swale. There is no continuous scoured channel bed or alluvium >100m - not a stream. It entirely dissipates at the foot of the hill.

Table 2: Summary of the non-fish bearing reaches.

Area	Stream ID (Name, TWC or WSC)	Reach #	Site #	Date	Riparian Class	Watercourse Slope (%)	Channel Width (m)	Channel Depth (m)	Flow Stage	Water Temperature (°C)	Conductivity (µS/cm)	Turbidity	Sampling Method	Sampling Results	Effort (EF - sec/ dist.; MT #Hrs)	EF Specs (V/ Hz/ µs)	Comments
PNK011	42017	1.2	14	29-Jul-21	S6	4	1.03	0.17	L	9.8	116	C	NS	*	*	*	No fish habitat – the stream is extremely shallow and has nothing to offer to fish. The channel lacks complexity and instream cover for any flow conditions and has no perennial habitat. It is inaccessible to RB from Pinkut C. due to a 5m long and 0.7m high underground channel followed by an alluvial fine with no well-defined channel for ~20m. The barrier marks the riparian class transition from S4 to S6.
	42020	1	15	29-Jul-21	S6	13	0.52	0.13	L	*	*	C	NS	*	*	*	No fish habitat - tiny and shallow trickle with flow barely 1cm deep. The gradient rises rapidly, reaching 24% ~50m from the mouth. Several underground flow sections near the mouth combined with increasing gradient make the stream inaccessible to RB from Pinkut Creek.
PNK010	42025	1	162	23-Sep-01	NCD	*	NVC	*	*	*	*	*	NS	*	*	*	No fish habitat – the watercourse with no connectivity to upstream reaches from Pinkut Creek. Meadow adjacent to Pinkut C. has squishy ground and no sign of channel or fluvium; no overwintering habitat exists upstream in the watershed, and all tributaries are non-fish bearing. Assessed by FINS in 2001.
	92703	1	16	12-Aug-21	NA	*	ND	*	*	*	*	*	NS	*	*	*	No fish habitat - no watercourse of any kind present at the indicated TRIM location. Searched for any signs of flows between Pinkut C. and the head of an old talus/alluvial cone - no signs, only dry and forested gully uphill.
	92704	1	17	12-Aug-21	NCD	25	0.32	0.1	*	*	*	*	NS	*	*	*	No fish habitat - watercourse dissipates at site UTM ~25m away from Pinkut Creek. It is channelized for ~70m, then becomes a tiny and steep meltwater runoff; originates in a small catchment area ~150m from Pinkut C. No continuous scoured channel bed or alluvium >100m observed - not a stream.
	42027	1	18	12-Aug-21	S6	5	0.83	0.23	DRY	*	*	*	NS	*	*	*	No fish habitat - seasonal flows for a very short period indicated by established terrestrial mosses over developing soil layer and occasional oak fern, watered likely for 4-6 weeks after snowmelt - time too short to allow the development of any stream insects to provide food for fish and enabling seasonal fish use. Unlikely used for refuge at high flows as Pinkut C. contains lots of good cover at any flow conditions.
	92712	1	19	13-Aug-21	NA	*	ND	*	*	*	*	*	NS	*	*	*	No fish habitat - no watercourse of any kind found at indicated TRIM location or 50 m radius.
	480-927700-78100	1	20	13-Aug-21	S6	7	0.68	0.2	DRY	*	*	*	NS	*	*	*	No fish habitat - seasonal stream, inaccessible from Pinkut Creek for seasonal use by RB due to 0.7m high waterfall barrier without a residual pool at the base. No perennial habitat is present upstream to support any isolated fish population. No fish was captured in two reaches during the first visit in 2001.

5 List of Abbreviations

REPORT

C	Clear (turbidity)	MT	Minnow trap
dist.	Distance	NA	Not applicable
EF	Electrofishing	NCD	Not Classified Drainage
FPC	Forest Practices Code	RIC	Resource Inventory Committee
FRPA	Forest and Range Practices Act	S1 - S6	Riparian classes (streams)
FSID	Fish-stream Identification Guidebook	sec	seconds
GIS	Geographic Information System	TRIM	Terrain Resource Information Management
GPS	Global Positioning System	TWC	Temporary Watershed Code
Hz	Hertz	UTM	Universal Transverse Mercator
ID	Identifier	V	Volts
IM	Important Fish Habitat Value Rating	WBID	Waterbody Identifier
m	meter	WSC	Watershed Code
M	Moderately turbid	°C	Degree Celsius
MG	Marginal Fish Habitat Value Rating	µS	micro-Siemens

SITE DATA FORM

SITE REFERENCE	FT - foot, GIS - Geographic Information System, GP2 - GPS unit with differential correction, Lg - length, TWC - Temporary Watershed Code, UTM - Universal Transverse Mercator, V4 - 4x4 vehicle, WSC - Watershed Code, ZEN - Zone. Easting. Northing
CHANNEL	Avg - average, Chan. - channel, Dp - depth, DW - dewatered (water under alluvium), DRY - dry channel, H - high flow (>80% bankfull), INT - intermittent flow, L - low flow (<30% bankfull), m - meter, M - moderate flow (30-80% bankfull), ND - no watercourse exists, NVC - no visible channel, Res. - residual
WATER	C - clear water, Cond - conductivity in micro-Siemens, L - low turbidity, M - moderately turbid, pH - acidity (<7) or alkalinity (>7), T - turbid water, Temp - temperature in °Celsius
COVER	Cover Total: A - abundant, B - boulder cover, CB - cutbanks, D - dominant, DP - deep pools, IV - instream vegetation, LWD - large woody debris, M - moderate, N - none, OV - overstream vegetation, S - sub-dominant, SWD - small woody debris, T - trace Banks: LB - left bank, O - overhanging, RB - right bank, S - sloping, U - undercut, V - v-shaped Bank texture: A - anthropomorphic, B - boulders, C - cobbles, F - fines, G - gravels, R - bedrock Riparian vegetation: C - coniferous, D - deciduous, G - grasses, M - mixed C and D, N - none, S - shrubs, W - wetland Riparian Vegetation Stage: INIT - initial, MF - mature forest, NA - not applicable, PS - pole sapling, SHR - shrub, YF - young forest LWD Function & Distr (Distribution): A/C - abundant and clumped, A/E - abundant and even, F/C - few and clumped, F/E - few and even, N - none IV Type: A - algae, M - mosses, N - none, V - vascular.
MORPHOLOGY	Stream Bed Substrate: B - boulders, C - cobbles, D - largest movable particle, Dom - dominant, D95 - largest 5% of particles, F - fines, G - gravels, NA - not applicable, R - bedrock, Subdom - sub-dominant, Substr - substrate Channel Morphology: CP - cascade-pool, CPb - cascade-pool with boulders, CPcw - cascade-pool with cobbles and functioning LWD, LC - large channel (≥100 particles per channel width), RP - riffle-pool, RPCw - riffle-pool with cobbles and functioning LWD, RPg - riffle-pool with gravels and functioning LWD, SP - step-pool, SPb - step-pool with boulders, SPbw - step-pool with boulders and functioning LWD, SPp - step-pool through bedrock StrmPatt (Stream pattern): IM - irregular meandering, IR - irregular wandering, ME - regular meandering, SI - sinuous, ST - straight, TM - tortuous meandering Confinment (Confinement): CO - confined, EN - entrenched, FC - frequently confined, NA - not applicable, OC - occasionally confined, UN - unconfined Coupling: CO - coupled, DC - decoupled, PC - partially coupled Islands: AN - anastomosing, F - frequent, I - irregular, N - none, O - occasional, S - split Bars: BR - braided, DIAG - diagonal, MID - mid-stream, N - none, SIDE - intermittent along the channel, SPAN - continuous along the channel Disturbance Indicators (most common): B2 - eroded banks, C1 - extensive riffles, C2 - no pools, C3 - elevated mid-channel bars, C4 - multi-channels, D2 - parallel logs, O1 - beaver dams, S3 - frequent sediment wedges
FEATURES (most common)	BD - beaver dam, C - cascades/chute, CN - canyon, CV - culvert, F - waterfall, FLD - dewatering, FSB - subsurface flow/ dissipation/ dispersion, H - height, L - length, SP - spring, U - undefined obstruction, UC - underground channel (conduit), VB - velocity barrier, X - log jam, XW - sediment wedge
SAMPLING (most common)	BB - burbot, BMC - brassy minnow, BT - bull trout or bottom habitat, CSU - largescale (coarsescale) sucker, CT - cutthroat trout, CO - coho, d - days, DN - dip netting, DV - Dolly Varden, EB - eastern brook trout, EF - electrofishing, freq - frequency, h - hours, Hab - habitat, KO - kokanee, LKC - lake chub, LNC - longnose dace, LSU - longnose sucker, Max L - maximum length, MD - midwater, min - minutes, Min L - minimum length, MT - minnow trap, MW - mountain whitefish, NFC - no fish capture, NFP - no fish present, NS - not sampled, NSC - northern pike minnow, O - other, PCC - peamouth chub, PS - pole seining, R - rearing, RB - rainbow trout, RSC - redside shiner, S - spawning, Samp L - sampling length, sec - seconds, SK - sockeye, SP - species unidentified, ST - steelhead, SU - suckers or surface habitat, TR - trout unknown, VO - visual observation, VR - variable, WSU - white sucker

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List of Appendices

Appendix I: Site Data Forms and Photos

Appendix II: Maps

Appendix I: Site Data Forms and Photos

SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 1

SITE REFERENCE															
Gazetted Name:		WSC: 480-705800-06500					Map: 093L.080		Access: FT		Riparian Class: NCD				
Local Name:		TWC:		Reach: 4		Assessed Lg: 120		Crew: MJ							
UTM Z.E.N:		9		682288		6073085		Method: GP2		Survey Date: 2021-07-23					Time: 12:45
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):	10	12	7	5									8.5		
Flow Stage:		Channel Conditions: NVC			Flood Signs:										
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:			IV Type:		
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:							
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:							
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - watercourse within ~20m wide valley just u/s of open water wetland. Mucky substrate, no alluvium, some isolated puddles, seepage or surface flows for a few meters; sparse cobbles protruding from the ground; hummocky within the valley.														
Comm 2	~60m u/s from site gradient rises and drainage flows through 10-12% gully with overland flows; surface scour, no alluvium, some protruding cobbles from the ground observed.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 1: view u/s, within gully



Site 1: view d/s, within gully



Site 1: view u/s, within valley



Site 1: view d/s, within valley



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 2

SITE REFERENCE															
Gazetted Name:		WSC: 480-697200-02864				Map: 093L.090		Access: FT		Riparian Class: S6					
Local Name:		TWC:		Reach: 1		Assessed Lg: 200		Crew: MJ							
UTM Z.E.N:		9		681756		6077608		Method: GP2						Survey Date: 2021-07-23	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	0.9	0.5	0.9	1	1.1	1.1							0.92		
Wetted Width (m):	0.5	0	0	0	0.1	0.3							0.15		
Res. Pool Dp (m):	0												0		
Bankfull Depth (m):	0.15	0.2	0.2										0.18		
Chan. Gradient (%):	7	10	11	13									10.25		
Flow Stage: INT		Channel Conditions:				Flood Signs: None									
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 71-90%			LWD Function & Distr: F/E			IV Type: M	
T	T	N	S	N	N	D	N								
LB Shape: V		LB Texture: CB		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA									
RB Shape: V		RB Texture: CB		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA									
CHANNEL MORPHOLOGY															
Dom Substrate: C		D95 (cm): 40		Morphology: CP		Strm Patt: SI		Confmnt: CO		Coupling: CO		Islands: N			
Subdom Substr: F		D (cm): 0.1		Bars: N		Disturbance Indicators: C2									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
UC	1	4	Underground flow at 16% gradient - impassable to fish									9 681756 6077608			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - seasonal stream, moderately steep, shallow with poor cover d/t lack of complexity within channel.														
Comm 2	No SHAB or OHAB observed.														
Comm 3	Inaccessible to fish from Fulton R. d/t mentioned barrier; no perennial habitat u/s to support any isolated fish population.														
Comm 4	Crossing UTM 9.681771.6077436.														
Comm 5	Mismatched by TRIM - does not exist at 9.681681.6077406, located ~100m to the east.														
Comm 6															
Comm 7															
Comm 8															

Site 2: view u/s



Site 2: view d/s



Site 2: view d/s, underground channel



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 3

SITE REFERENCE															
Gazetted Name:		WSC: 480-697200-02826				Map: 093L.090		Access: V4		Riparian Class: S3					
Local Name:		TWC:		Reach: 1		Assessed Lg: 400		Crew: MJ							
UTM Z.E.N:		9		682903		6077520		Method: GP2						Survey Date: 2021-07-24	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	2	3											2.5		
Wetted Width (m):	1	1											1		
Res. Pool Dp (m):	0.37	0.43											0.4		
Bankfull Depth (m):	0.3	0.3	0.3										0.3		
Chan. Gradient (%):	2	4	4	1									2.75		
Flow Stage: L Channel Conditions: Flood Signs: None															
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV								
A	S	T	S	T	T	D	N	Canopy: 21-40%		LWD Function & Distr: F/E		IV Type: N			
LB Shape: V		LB Texture: FG		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA									
RB Shape: V		RB Texture: FG		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA									
CHANNEL MORPHOLOGY															
Dom Substrate: F		D95 (cm): 27		Morphology: RP		Strm Patt: SI		Confmnt: FC		Coupling: PC		Islands: N			
Subdom Substr: G		D (cm): 7		Bars: SIDE DIAG		Disturbance Indicators: C1									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
XW	0.9	5	Temporary barrier, 0.37m pool - impassable to fish.									9 682900 6077518			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
EF1	61	30	300	70	2										
EF2	433	250	300	70	2										
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
CO	F	2	70	72	R	EF1 d/s of the wedge, EF2 u/s - NFC u/s.									
RB	J	2	98	124	R										
NFC															
COMMENTS															
Comm 1	Stream with usable RHAB and potential SHAB - 1-2cm gravel patches for a few meters observed and OK holding areas (overstream vegetation and some undercut banks).														
Comm 2	More larges near R2.														
Comm 3	Sediment wedge near site UTM temporarily impedes fish passage; fish present in pool at the base, but not u/s.														
Comm 4	Generally shallow creek with some shallow pools but lacks diverse instream cover.														
Comm 5	Channel widths estimated.														
Comm 6															
Comm 7															
Comm 8															

Site 3: view u/s



Site 3: view u/s, sediment wedge



Site 3: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 4

SITE REFERENCE													
Gazetted Name:		WSC: 480-697200-02826				Map: 093L.090		Access: V2		Riparian Class: S3			
Local Name:		TWC:		Reach: 2		Assessed Lg: 400		Crew: MJ					
UTM Z.E.N:		9 682564 6077246		Method: GP2		Survey Date: 2021-07-24		Time: 14:10					
CHANNEL													
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:
Channel Width (m):	2.2	1.7	1.6	2.6	2.2	2.3							2.1
Wetted Width (m):	1.7	0.5	0.7	1.5	1	1.4							1.13
Res. Pool Dp (m):	0.33												0.33
Bankfull Depth (m):	0.3	0.3	0.3										0.3
Chan. Gradient (%):	2	5	3	2									3
Flow Stage: L Channel Conditions: Flood Signs: None													
COVER													
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 41-70% LWD Function & Distr: A/E IV Type: N					
A	S	S	T	T	T	D	N						
LB Shape:	V	LB Texture:	FB	LB Riparian Vegetation:	S	LB Riparian Vegetation Stage:	NA						
RB Shape:	V	RB Texture:	FB	RB Riparian Vegetation:	S	RB Riparian Vegetation Stage:	NA						
CHANNEL MORPHOLOGY													
Dom Substrate:	G	D95 (cm):	50	Morphology:	RP	Strm Patt:	SI	Confmnt:	CO	Coupling:	CO	Islands:	O
Subdom Substr:	F	D (cm):	6	Bars:	SIDE DIAG	Disturbance Indicators:							
FEATURES													
Feature	H (m)	L (m)	Comment									UTM Z.E.N	
CV	0.8	60	Under the Hwy 118, res. pool=0.6m deep - impassable to fish. Length by GPS, inlet at									9 682557 6077237	
			UTM 9.682523.6077187.										
SAMPLING													
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab			
EF	101	40	400	60	2								
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments							
NFC						Sampled outlet pool + 30m d/s; hoped for RB in big outlet pool. Extensive sampling d/s in R1.							
COMMENTS													
Comm 1	RHAB - OK - abundant cover with fair amount of shallow pools.												
Comm 2	SHAB - fair - 10-20m long stretches of 1-2 cm gravels with ~30% of fines, holding OK in a few undercut banks and under overstream vegetation.												
Comm 3	OHAB - none - stream is too shallow.												
Comm 4	Stream is inaccessible d/t culvert barrier under highway.												
Comm 5													
Comm 6													
Comm 7													
Comm 8													

Site 4: view u/s



Site 4: view d/s



Site 4: view u/s, culvert under hwy



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 5

SITE REFERENCE														
Gazetted Name:		WSC: 480-615800				Map: 093L.099		Access: FT		Riparian Class: S3				
Local Name:		TWC:		Reach: 1, 2		Assessed Lg:1700		Crew: MJ						
UTM Z.E.N:		9	672319	6097087	Method: GP2		Survey Date: 2021-07-25		Time: 10:00					Agency: C016
CHANNEL														
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: 9.8 pH: 6.9 Cond: 146 Turbidity: C
Channel Width (m):	4	4											4	
Wetted Width (m):	2	1.5											1.75	
Res. Pool Dp (m):	0.29	0.26											0.28	
Bankfull Depth (m):	0.4	0.4											0.4	
Chan. Gradient (%):	10	11	8	8									9.25	
Flow Stage: L		Channel Conditions:				Flood Signs: None								
COVER														
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 41-70%		LWD Function & Distr: A/E		IV Type: M		
A	S	S	T	N	N	D	N							
LB Shape: V		LB Texture: FC		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA								
RB Shape: V		RB Texture: FCB		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA								
CHANNEL MORPHOLOGY														
Dom Substrate: C		D95 (cm): 400		Morphology: CP		Strm Patt: SI		Confmnt: CO		Coupling: CO		Islands: N		
Subdom Substr: G		D (cm): 11		Bars: SIDE DIAG MID		Disturbance Indicators: B2D2C2C3S3								
FEATURES														
Feature	H (m)	L (m)	Comment									UTM Z.E.N		
SAMPLING														
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS														
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments								
COMMENTS														
Comm 1	RHAB - poor - no diversity in channel, no deep pools, short and shallow pools at the base of sediment wedges, relatively violent creek.													
Comm 2	SHAB - poor - some suitable -0.5 sq.m gravel pockets present, more at the upper end of reach, size 1-3cm; usable for DV in several tailouts of sediment wedge pools.													
Comm 3	Walked stream u/s of bridge to site UTM and d/s to mouth to verify fish access - no barriers present; many salmonids observed near mouth (~70m section from Babine L.).													
Comm 4	Reach 2 is the same all the way to the Triton site.													
Comm 5	The stream is accessible to fish from Babine Lake.													
Comm 6	Channel widths estimated.													
Comm 7														
Comm 8														

Site 5: view u/s



Site 5: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 6

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093L.080		Access: FT		Riparian Class: NCD							
Local Name:		TWC: 62001		Reach: 1		Assessed Lg: 250								Crew: MJ	
UTM Z.E.N: 9 682444 6074007		Method: GP2		Survey Date: 2021-07-26		Time: 9:25								Agency: C016	
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):	6												6		
Flow Stage:		Channel Conditions:			Flood Signs:										
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:			IV Type:		
LB Shape:	LB Texture:		LB Riparian Vegetation:			LB Riparian Vegetation Stage:									
RB Shape:	RB Texture:		RB Riparian Vegetation:			RB Riparian Vegetation Stage:									
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - watercourse with alternating overland flows, surface scour, and some puddles; overland flow sections 10-20m long. No alluvium throughout, although a few boulders and large cobbles protruding from the ground observed.														
Comm 2	Not a stream as per definition.														
Comm 3	Alluvium noted for ~15-20m d/s from an old road crossing.														
Comm 4	Descends to the parent stream at 21% for 15 m near confluence with discontinuous scoured bed and cobbles with gravels.														
Comm 5	Too steep near "mouth" to be used by CT as a refuge or access watercourse at high flows.														
Comm 6	Continuously scoured channel no greater than 30m above NCD UTM.														
Comm 7															
Comm 8															

Site 6: view u/s



Site 6: view d/s



Site 6: streambed view



Site 6: view u/s near mouth



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 7

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093L.099		Access: V4		Riparian Class: S6							
Local Name:		TWC: 11021		Reach: 1		Assessed Lg: 110								Crew: MJ	
UTM Z.E.N: 9 673069 6095295		Method: GP2		Survey Date: 2021-07-26		Time: 11:15								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: 9.5 pH: 6.9 Cond: 286 Turbidity: C	
Channel Width (m):	1.2	1.2	1.5	1.5	1.8	2.1							1.55		
Wetted Width (m):	1.1	0.6	0.4	0.2	0.7	1.6							0.77		
Res. Pool Dp (m):	0.17												0.17		
Bankfull Depth (m):	0.2	0.4	0.3										0.3		
Chan. Gradient (%):	25	21											23		
Flow Stage: L		Channel Conditions:		Flood Signs: None											
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 71-90%		LWD Function & Distr: F/E		IV Type: M			
A	S	T	T	N	N	D	N								
LB Shape: V		LB Texture: GC		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA									
RB Shape: V		RB Texture: GC		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA									
CHANNEL MORPHOLOGY															
Dom Substrate: G		D95 (cm): 40		Morphology: CP		Strm Patt: ST		Confmnt: CO		Coupling: CO		Islands: N			
Subdom Substr: C		D (cm): 20		Bars: N		Disturbance Indicators: C1									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - steep stream with no instream cover, no channel complexity, highly movable bed material during high flows, only one small pool found over 100m length.														
Comm 2	Inaccessible and unusable by fish at any time of year.														
Comm 3	Road crossing at site UTM.														
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 7: view u/s



Site 7: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 8

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093L.099		Access: V4		Riparian Class: NA							
Local Name:		TWC: 11020		Reach: 1		Assessed Lg: 100								Crew: MJ	
UTM Z.E.N: 9 672981 6095695		Method: GP2		Survey Date: 2021-07-26		Time: 12:30								Agency: C016	
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):															
Flow Stage:		Channel Conditions:		ND		Flood Signs:									
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:		IV Type:			
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:							
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:							
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - no watercourse of any kind found at indicated TRIM location or 50 m up and down the road.														
Comm 2	No photos taken - nothing to photograph.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 9

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093L.099		Access: V4		Riparian Class: S6							
Local Name:		TWC: 11019		Reach: 1		Assessed Lg: 110								Crew: MJ	
UTM Z.E.N: 9 672567 6096559		Method: GP2		Survey Date: 2021-07-26		Time: 13:15								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	0.5	1	0.5	0.6	0.9	0.7							0.7		
Wetted Width (m):	0.1	0.7	0.4	0.6	0.4	0.3							0.42		
Res. Pool Dp (m):	0												0		
Bankfull Depth (m):	0.1	0.07	0.1										0.09		
Chan. Gradient (%):	26	22											24		
Flow Stage: L		Channel Conditions:		Flood Signs: None											
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 71-90%		LWD Function & Distr: F/E		IV Type: M			
A	S	T	T	N	N	D	N								
LB Shape:	V	LB Texture:	FGB	LB Riparian Vegetation:	S	LB Riparian Vegetation Stage:	NA								
RB Shape:	V	RB Texture:	FGB	RB Riparian Vegetation:	S	RB Riparian Vegetation Stage:	NA								
CHANNEL MORPHOLOGY															
Dom Substrate:	G	D95 (cm):	35	Morphology:	CP	Strm Patt:	SI	Confmnt:	CO	Coupling:	CO	Islands:	N		
Subdom Substr:	B	D (cm):	6	Bars:	N	Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - barely a stream owing to a steep slope, no instream cover, shallow, inaccessible to fish and unusable by fish; trickle flow now, likely will dry in a few weeks.														
Comm 2	Road crossing at site UTM.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 9: view u/s



Site 9: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 10

SITE REFERENCE														
Gazetted Name:		WSC: 480-559900				Map: 093M.008				Access: FT		Riparian Class: NCD		
Local Name:		TWC:		Reach: 7		Assessed Lg: 110		Crew: MJ						
UTM Z.E.N:		9 659239 6099038		Method: GP2		Survey Date: 2021-07-27		Time: 12:30		Agency: C016				
CHANNEL													WATER	
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:
Channel Width (m):														
Wetted Width (m):														
Res. Pool Dp (m):														
Bankfull Depth (m):														
Chan. Gradient (%):														
Flow Stage:		Channel Conditions: NVC			Flood Signs:									
COVER														
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:		IV Type:		
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:						
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:						
CHANNEL MORPHOLOGY														
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:		
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:								
FEATURES														
Feature	H (m)	L (m)	Comment										UTM Z.E.N	
SAMPLING														
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab			
NS														
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments								
COMMENTS														
Comm 1	No fish habitat - soggy swale with occasional puddles and surface scour; no alluvium, no scour to mineral soil - not a stream.													
Comm 2														
Comm 3														
Comm 4														
Comm 5														
Comm 6														
Comm 7														
Comm 8														

Site 10: view u/s



Site 10: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 11

SITE REFERENCE															
Gazetted Name:		WSC: 480-558800				Map: 093M.008				Access: V4		Riparian Class: NCD			
Local Name:		TWC:		Reach: 9		Assessed Lg: 110		Crew: MJ							
UTM Z.E.N:		9		659102		6099838		Method: GP2		Survey Date: 2021-07-27				Time: 13:45	
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):															
Flow Stage:		Channel Conditions: NVC				Flood Signs:									
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:			IV Type:		
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:							
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:							
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - discontinuous surface scour, seepage, and puddles through 5 m wide swale (vegetated by alder and devil's club); no alluvium, occasionally protruding cobbles in isolated scour pockets, no scour to mineral soil - not a stream.														
Comm 2															
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 11: view u/s



Site 11: view across



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 12

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093M.008		Access: V4		Riparian Class: S4/S6							
Local Name:		TWC: 48001		Reach: 1 - 4		Assessed Lg: 800								Crew: MJ	
UTM Z.E.N: 9 660764 6103034		Method: GP2		Survey Date: 2021-07-27		Time: 14:30								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	1.2	1.2	1.3	1.1	1.2	1.4							1.23		
Wetted Width (m):	1.2	1.1	1.2	1.1	1	1.3							1.15		
Res. Pool Dp (m):	0.11	0.12											0.12		
Bankfull Depth (m):	0.3	0.2	0.2										0.23		
Chan. Gradient (%):	2	2											2		
Flow Stage: M		Channel Conditions:		Flood Signs: None											
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 41-70%		LWD Function & Distr: F/E		IV Type: N			
A	S	T	N	S	N	D	N								
LB Shape: U		LB Texture: F		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA									
RB Shape: V		RB Texture: F		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA									
CHANNEL MORPHOLOGY															
Dom Substrate: F		D95 (cm): 1		Morphology: LC		Strm Patt: IR		Confmnt: UN		Coupling: DC		Islands: O			
Subdom Substr: G		D (cm): 0.1		Bars: N		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
UN		30	Impassable combination of underground channel and overland flows for 30 m									9 660750 6102813			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	RHAB - fair - provided by undercut banks, SWD and shallow pools in R2 and R3.														
Comm 2	SHAB - none - 95% fines in bed. OHAB - none - no deep pools.														
Comm 3	Walked stream down to Babine L. - no barriers; fast stream, however many cobbles create pockets of calm water and fish could easily access the stream.														
Comm 4	Stream is larger than indicated by TRIM; all cobbles with sparse boulder d/s in R1; channel ~2m, slope 15-17%; in R2 channel ~1.5m and slope 3-5% with 80% fines and 20% gravels.														
Comm 5	Past 90m u/s from site becomes flat with fines in channel (R3).														
Comm 6	Transition S4/S6 at the barrier; stream becomes tiny u/s - 0.4m channel width and 0.1m bankfull depth.														
Comm 7															
Comm 8															

Site 12: view u/s, S4 section



Site 12: view d/s, S4 section



Site 12: view u/s, S6 section



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 13

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: NCD							
Local Name:		TWC: 42016		Reach: 1		Assessed Lg: 110								Crew: MJ	
UTM Z.E.N: 10 323366 6034727		Method: GP2		Survey Date: 2021-07-29		Time: 10:15								Agency: C016	
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):															
Flow Stage:		Channel Conditions:			Flood Signs:										
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:			IV Type:		
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:							
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:							
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - continuous scoured channel within 30% slope for ~50m, then turns into seepage through ~10m wide swale.														
Comm 2	No continuous scoured channel bed or alluvium >100m - not a stream.														
Comm 3	Completely dissipates at the foot of the hill.														
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 13: view u/s within 30% slope



Site 13: view d/s within 30% slope



Site 13: view u/s within swale



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 14

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: S4/S6							
Local Name:		TWC: 42017		Reach: 1.1, 1.2		Assessed Lg: 200								Crew: MJ	
UTM Z.E.N: 10 323071 6034973		Method: GP2		Survey Date: 2021-07-29		Time: 11:00								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	1.1	1	1.1	1	1	1							1.03		
Wetted Width (m):	1.1	0.9	0.9	1	1	0.9							0.97		
Res. Pool Dp (m):	0.09	0.11	0.11	0.19									0.13		
Bankfull Depth (m):	0.2	0.2	0.1										0.17		
Chan. Gradient (%):	4	4											4		
Flow Stage: L		Channel Conditions:		Flood Signs: None											
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 41-70%		LWD Function & Distr: F/E		IV Type: N			
M	S	T	N	T	N	D	N								
LB Shape: V		LB Texture: FG		LB Riparian Vegetation: S		LB Riparian Vegetation Stage: NA									
RB Shape: S		RB Texture: FG		RB Riparian Vegetation: S		RB Riparian Vegetation Stage: NA									
CHANNEL MORPHOLOGY															
Dom Substrate: G		D95 (cm): 10		Morphology: RP		Strm Patt: SI		Confmnt: FC		Coupling: CO		Islands: O			
Subdom Substr: C		D (cm): 6		Bars: N		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
UC	0.7	5	Impassable to fish									10 323071 6034973			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - stream is extremaly shallow and has nothing to offer to fish; channel lacks complexity and instream cover for any flow conditions.														
Comm 2	Inaccessible to RB from Pinkut C. d/t underground channel followed by an alluvial fan with not well defined channel for ~20m.														
Comm 3	Unable to take a photo of barrier d/t dense vegetation.														
Comm 4	Stream is mismapped in the lower 100m; stream confluence at UTM 10.323092.6034953.														
Comm 5	The stream is accessible to RB from Pinkut C. for ~40m; the barrier marks transition S4/S6.														
Comm 6															
Comm 7															
Comm 8															

Site 14: view u/s



Site 14: view across



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 15

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: S6							
Local Name:		TWC: 42020		Reach: 1		Assessed Lg: 110								Crew: MJ	
UTM Z.E.N: 10 322530 6035227		Method: GP2		Survey Date: 2021-07-29		Time: 12:30								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	0.3	0.6	0.6	0.6	0.5	0.5							0.52		
Wetted Width (m):	0.3	0.5	0.5	0.5	0.2	0.1							0.35		
Res. Pool Dp (m):	0.07	0.08											0.08		
Bankfull Depth (m):	0.1	0.1	0.2										0.13		
Chan. Gradient (%):	5	8	13	24									12.5		
Flow Stage: L		Channel Conditions:		Flood Signs: None											
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 21-40%		LWD Function & Distr: F/E		IV Type: N			
N	N	N	N	N	N	N	N								
LB Shape: U		LB Texture: FGC		LB Riparian Vegetation: C		LB Riparian Vegetation Stage: MF									
RB Shape: U		RB Texture: FGC		RB Riparian Vegetation: C		RB Riparian Vegetation Stage: MF									
CHANNEL MORPHOLOGY															
Dom Substrate: C		D95 (cm): 30		Morphology: CP		Strm Patt: SI		Confmnt: CO		Coupling: CO		Islands: N			
Subdom Substr: G		D (cm): 4		Bars: N		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
UC		20	Impassable to fish.									10 322530 6035227			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from mouth.														
Comm 2	Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pinkut C.														
Comm 3	Incised channel upslope past underground sections.														
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 15: view u/s underground flow



Site 15: view u/s



Site 15: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 16

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: NA							
Local Name:		TWC: 92703		Reach: 1		Assessed Lg: 100								Crew: MJ	
UTM Z.E.N: 10 320444 6037002		Method: GP2		Survey Date: 2021-12-08		Time: 9:45								Agency: C016	
CHANNEL													WATER		
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp: pH: Cond: Turbidity:	
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):															
Flow Stage:		Channel Conditions:		ND		Flood Signs:									
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:		IV Type:			
LB Shape:		LB Texture:		LB Riparian Vegetation:		LB Riparian Vegetation Stage:									
RB Shape:		RB Texture:		RB Riparian Vegetation:		RB Riparian Vegetation Stage:									
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment										UTM Z.E.N		
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - no watercourse of any kind present at indicated TRIM location. Searched for any kind of flows between Pinkut C. and the head of old talus/alluvial cone - no signs. Dry gully uphill.														
Comm 2	No photos taken - nothing to photograph.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 17

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: NCD							
Local Name:		TWC: 92704		Reach: 1		Assessed Lg: 120								Crew: MJ	
UTM Z.E.N: 10 320120 6037381		Method: GP2		Survey Date: 2021-12-08		Time: 10:30								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	0.1	0.3	0.5	0.5	0.2								0.32		
Wetted Width (m):	0.1	0.2	0.3	0.3	0.2								0.22		
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):	25												25		
Flow Stage:		Channel Conditions:			Flood Signs:										
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:			IV Type:		
LB Shape:		LB Texture:		LB Riparian Vegetation:				LB Riparian Vegetation Stage:							
RB Shape:		RB Texture:		RB Riparian Vegetation:				RB Riparian Vegetation Stage:							
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
SAMPLING															
Method	EF sec	Samp L (m)		EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - watercourse dissipates at site UTM ~25m away from Pinkut C.														
Comm 2	Channelized for ~70m, then uphill is a meltwater runoff; tiny and steep; originates in a small catchment area.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 17: streambed view



Site 17: view u/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 18

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: S6							
Local Name:		TWC: 42027		Reach: 1		Assessed Lg: 150								Crew: MJ	
UTM Z.E.N: 10 319958 6037529		Method: GP2		Survey Date: 2021-12-08		Time: 11:10								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):	0.8	0.8	0.7	0.9	1.1	0.7							0.83		
Wetted Width (m):	0	0	0	0	0	0							0		
Res. Pool Dp (m):	0												0		
Bankfull Depth (m):	0.2	0.3	0.2										0.23		
Chan. Gradient (%):	4	4	6										4.67		
Flow Stage: DRY Channel Conditions: Flood Signs: None															
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 1-20%		LWD Function & Distr: F/E		IV Type: M			
N	N	N	N	N	N	N	N								
LB Shape:	U	LB Texture:	FC	LB Riparian Vegetation:	C	LB Riparian Vegetation Stage:	MF								
RB Shape:	V	RB Texture:	FC	RB Riparian Vegetation:	C	RB Riparian Vegetation Stage:	MF								
CHANNEL MORPHOLOGY															
Dom Substrate:	G	D95 (cm):	25	Morphology:	CP	Strm Patt:	IR	Confmnt:	OC	Coupling:	PC	Islands:	N		
Subdom Substr:	C	D (cm):	4	Bars:	N	Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - seasonal flows for a very short period indicated by established terrestrial mosses over developing soil layer and occasional oak fern.														
Comm 2	Watered likely for 4-6 weeks after snowmelt - time too short to allow development of any stream insects to provide food for fish and enabling seasonal fish use.														
Comm 3	Unlikely used for refuge at high flows as Pinkut C. provides lots of good cover at any flow conditions.														
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

Site 18: view u/s



Site 18: streambed view



Site 18: view d/s



SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 19

SITE REFERENCE															
Gazetted Name:		WSC:		Map: 093K.042		Access: FT		Riparian Class: NA							
Local Name:		TWC: 92712		Reach: 1		Assessed Lg: 100								Crew: MJ	
UTM Z.E.N: 10 319214 6037831		Method: GP2		Survey Date: 2021-08-13		Time: 9:50								Agency: C016	
CHANNEL															
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		
Channel Width (m):															
Wetted Width (m):															
Res. Pool Dp (m):															
Bankfull Depth (m):															
Chan. Gradient (%):															
Flow Stage:		Channel Conditions:		ND		Flood Signs:									
COVER															
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy:		LWD Function & Distr:		IV Type:			
LB Shape:		LB Texture:		LB Riparian Vegetation:		LB Riparian Vegetation Stage:									
RB Shape:		RB Texture:		RB Riparian Vegetation:		RB Riparian Vegetation Stage:									
CHANNEL MORPHOLOGY															
Dom Substrate:		D95 (cm):		Morphology:		Strm Patt:		Confmnt:		Coupling:		Islands:			
Subdom Substr:		D (cm):		Bars:		Disturbance Indicators:									
FEATURES															
Feature	H (m)	L (m)	Comment									UTM Z.E.N			
SAMPLING															
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab					
NS															
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments									
COMMENTS															
Comm 1	No fish habitat - no watercourse of any kind found at indicated TRIM location or 50 m radius.														
Comm 2	No photos taken - nothing to photograph.														
Comm 3															
Comm 4															
Comm 5															
Comm 6															
Comm 7															
Comm 8															

SITE DATA

2021 Stream Assessments for Lake Babine Nations

Site: 20

SITE REFERENCE														
Gazetted Name:		WSC: 480-927700-78100				Map: 093K.042		Access: FT		Riparian Class: S6				
Local Name:		TWC:		Reach: 1		Assessed Lg: 220		Crew: MJ						
UTM Z.E.N:		10	319114	6037833	Method: GP2		Survey Date: 2021-08-13		Time: 10:10					Agency: C016
CHANNEL														
Measurement	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	
Channel Width (m):	0.6	0.7	0.7	0.5	0.6	1							0.68	
Wetted Width (m):	0	0	0	0	0	0							0	
Res. Pool Dp (m):	0												0	
Bankfull Depth (m):	0.2	0.2	0.2										0.2	
Chan. Gradient (%):	10	4	6	6									6.5	
Flow Stage: DRY Channel Conditions: Flood Signs: None														
COVER														
CoverTotal:	SWD	LWD	B	CB	DP	OV	IV	Canopy: 1-20%			LWD Function & Distr: F/E		IV Type: N	
N	N	N	N	N	N	N	N							
LB Shape: U		LB Texture: FC		LB Riparian Vegetation: C		LB Riparian Vegetation Stage: MF								
RB Shape: U		RB Texture: FC		RB Riparian Vegetation: C		RB Riparian Vegetation Stage: MF								
CHANNEL MORPHOLOGY														
Dom Substrate: G		D95 (cm): 25		Morphology: CP		Strm Patt: IR		Confmnt: FC		Coupling: PC		Islands: N		
Subdom Substr: C		D (cm): 4		Bars: N		Disturbance Indicators:								
FEATURES														
Feature	H (m)	L (m)	Comment									UTM Z.E.N		
F	0.7		Impassable, no pool, 3m u/s from Pinkut C. side channel.									10	319114	6037833
SAMPLING														
Method	EF sec	Samp L (m)	EF Volt	EF freq	EF pulse	Traps	Nets	Duration	Depth (m)	Hab				
NS														
Species	Stage	Total #	Min L	Max L	Act	Sampling Comments								
COMMENTS														
Comm 1	No fish habitat - seasonal stream, inaccessible from Pinkut C. for seasonal use by RB d/t small falls barrier.													
Comm 2	No perennial habitat u/s to support any isolated fish population.													
Comm 3	No fish captured during the first visit in 2001.													
Comm 4	15% slope for 10m with 0.7m step over 20cm cobbles 3m from mouth; the base of the step situated 0.2m above the high water mark in Pinkut C. - impassable to fish.													
Comm 5														
Comm 6														
Comm 7														
Comm 8														

Site 20: view u/s



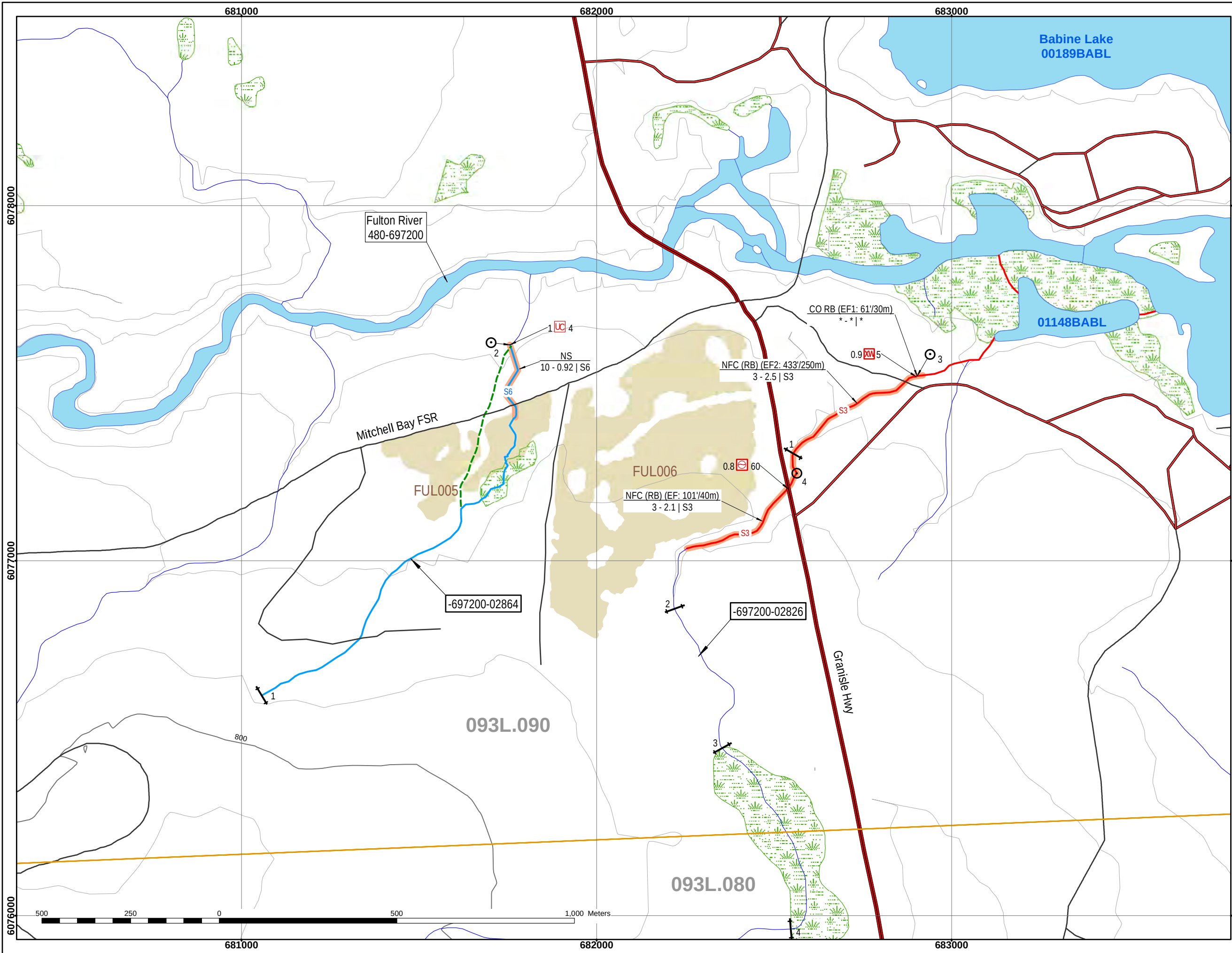
Site 20: view u/s 0.7 m falls



Site 20: view d/s



Appendix II: Maps



2021 Fish Habitat Assessments for Lake Babine Nations

Proposed Blocks FUL005 and 006

Scale 1:10,000

Projection: Transverse Mercator
Datum: NAD 83
Coordinates: UTM Zone 9
Field Survey: July 23 - 24, 2021

Inventory and Mapping by:

LEGEND

S1 - S4

Fish Bearing with Riparian Class

S5 - S6

Non-fish Bearing with Riparian Class

NCD

No Watercourse

Other Streams

Past Assessment

Current Assessment

Fish Info (Inferred)

NFC(RB)

1 - 2.3 | S3

Slope (%)

Channel Width (m)

Riparian Class (Inferred)

Stream Assessment Info (past assessments in purple)

2

TRIT99

2

Site with ID
Past Assessment Site with Reference Source and Year
Stream Reach with ID

Stream Name

123-456000-78900

Stream ID (Name and/or WSC and/or TWC)

C

Cascades

F

Falls

A

Alluvial Fan

C

Culvert

UC

Underground Channel

UN

Undefined

XW

Sediment Wedge

2

30

Height (m)

Length (m)

Feature Parameters

Highway

Paved Roads

Gravel Roads

1:20K Map Tile

1:20K Map Tile Label

200

20 m Contours and 100 m Labels

01234ABCD

Proposed Cutblock with ID

01234ABCD

Lakes/Rivers with ID

Wetlands

Abbreviations:

CAS Prickly sculpin

CC Sculpin (General)

CO Coho salmon

CT Cutthroat trout

DV Dolly Varden char

FINS FINS Consulting Ltd.

FSR Forest Service Road

KO Kokanee

MW Mountain whitefish

ND No Drainage

NFC No fish captured

NS Not Sampled

NVC No Visible Chnnel

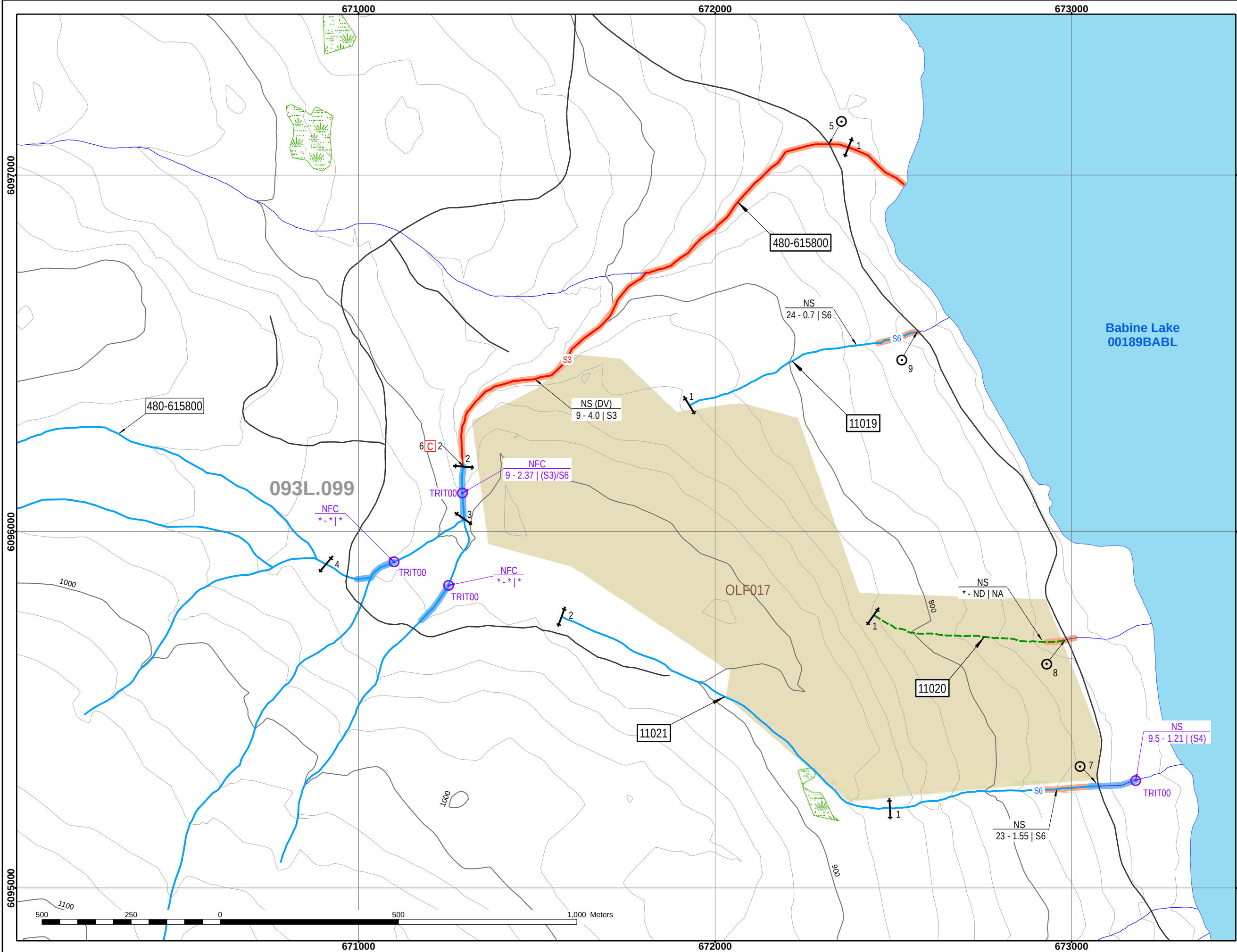
RB Rainbow trout

SK Sockeye salmon

TRIT Triton Environmental Consultants Ltd.

TWC Temporary Watershed Code

WSC Watershed Code



**2021 Fish Habitat Assessments
for Lake Babine Nations**

Proposed Block OLF017

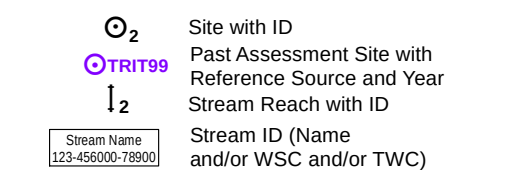
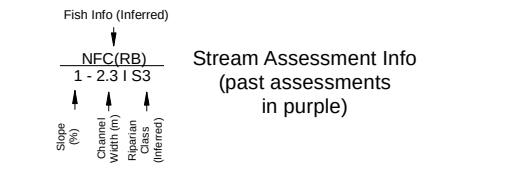
Scale 1:10,000

Projection: Transverse Mercator
Datum: NAD 83
Coordinates: UTM Zone 9
Field Survey: July 25 - 26, 2021

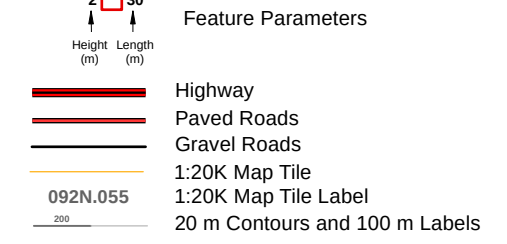
Inventory and Mapping by: **FINS CONSULTING LTD.**

LEGEND

- **S1 - S4** Fish Bearing with Riparian Class
- **S5 - S6** Non-fish Bearing with Riparian Class
- **NFC** No fish captured
- **No Watercourse**
- **Other Streams**
- **Past Assessment**
- **Current Assessment**

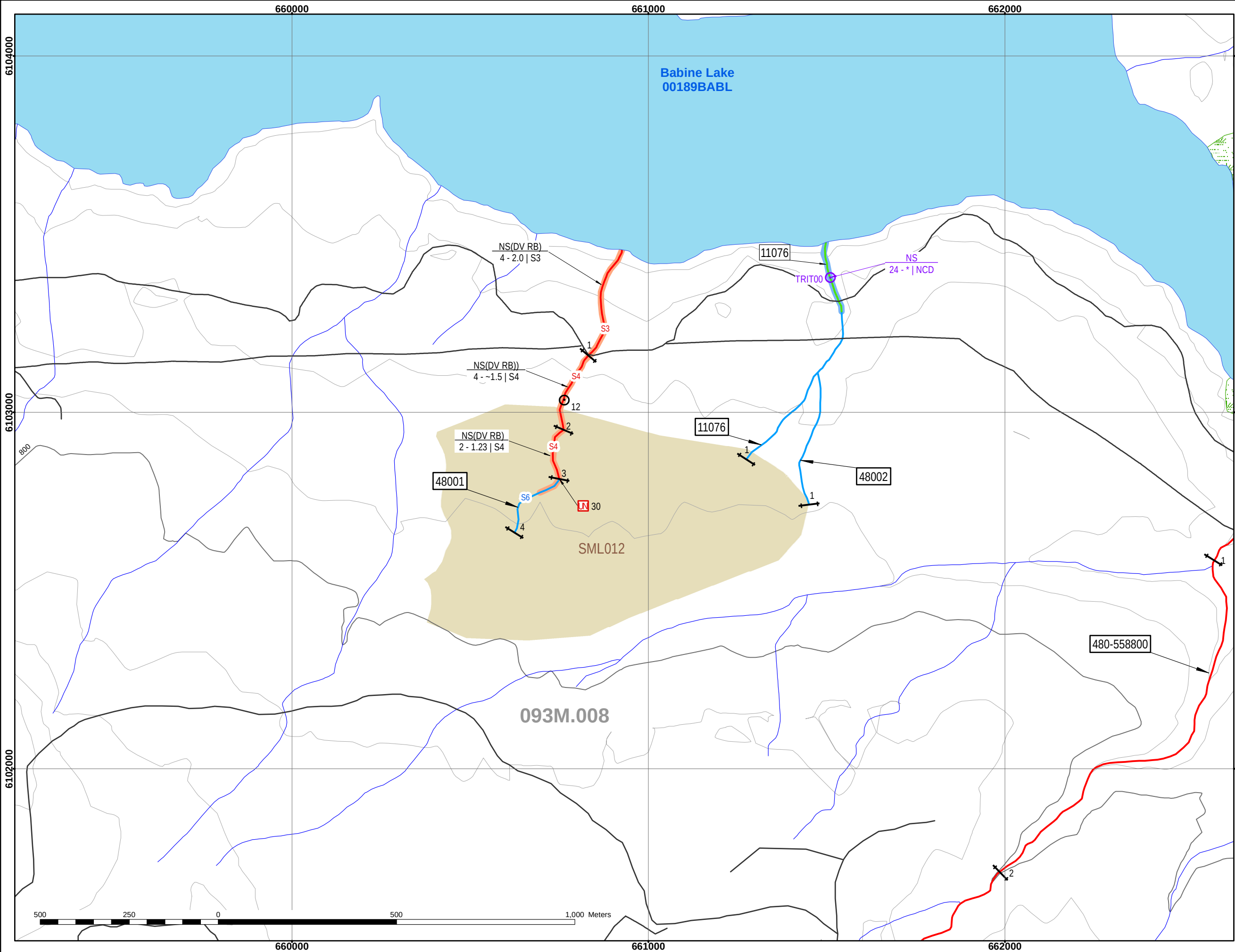


- C Cascades
- F Falls
- A Alluvial Fan
- C Culvert
- UC Underground Channel
- UN Undefined
- XW Sediment Wedge



- 01234ABCD Proposed Cutblock with ID
- 01234ABCD Lakes/Rivers with ID
- Wetlands

- Abbreviations:**
- CAS Prickly sculpin
 - CC Sculpin (General)
 - CO Coho salmon
 - CT Cutthroat trout
 - DV Dolly Varden char
 - FINS FINS Consulting Ltd.
 - FSR Forest Service Road
 - KO Kokanee
 - MW Mountain whitefish
 - ND No Drainage
 - NFC No fish captured
 - NS Not Sampled
 - NVC No Visible Chnnel
 - RB Rainbow trout
 - SK Sockeye salmon
 - TRIT Triton Environmental Consultants Ltd.
 - TWC Temporary Watershed Code
 - WSC Watershed Code



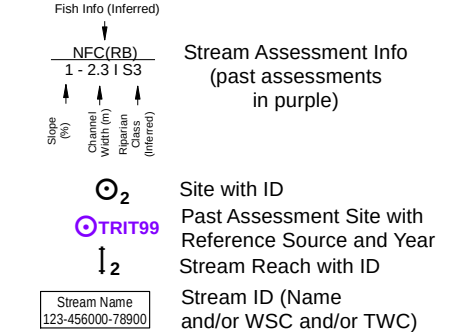
**2021 Fish Habitat Assessments
for Lake Babine Nations**

Proposed Block SML012
Scale 1:10,000
Projection: Transverse Mercator
Datum: NAD 83
Coordinates: UTM Zone 9
Field Survey: July 27 - 28, 2021

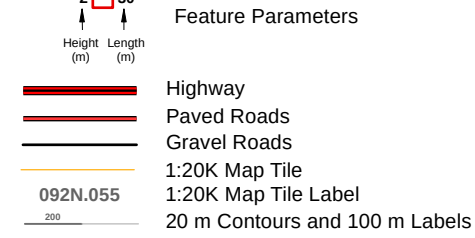
Inventory and Mapping by: **FINS**
CONSULTING LTD.

LEGEND

- S1 - S4** Fish Bearing with Riparian Class
- S5 - S6** Non-fish Bearing with Riparian Class
- NCD** No Watercourse
- - -** Other Streams
- Blue** Past Assessment
- Orange** Current Assessment



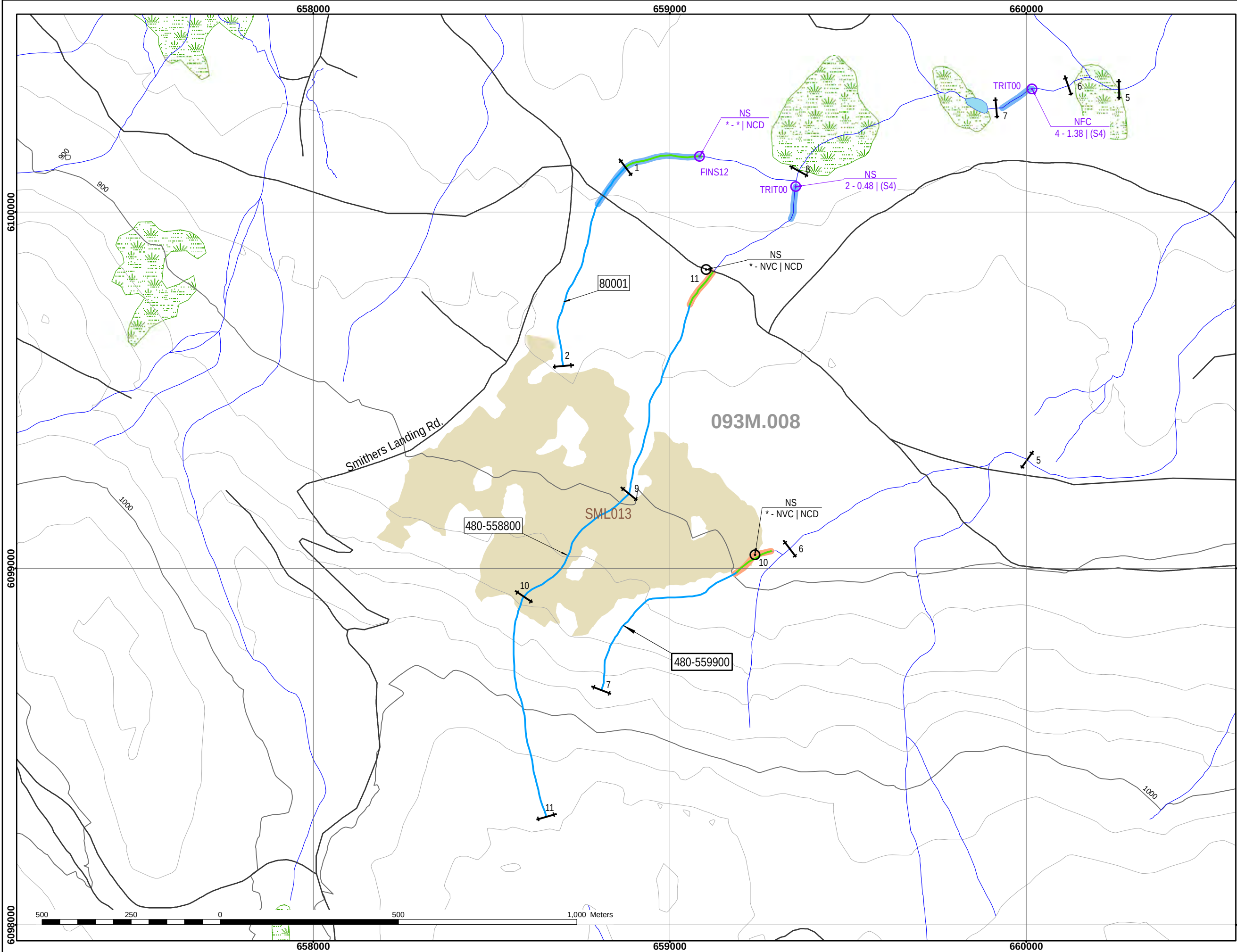
- C** Cascades
- F** Falls
- △** Alluvial Fan
- C** Culvert
- UC** Underground Channel
- UN** Undefined
- XW** Sediment Wedge



- 01234ABCD** Proposed Cutblock with ID
- 01234ABCD** Lakes/Rivers with ID
- Wetlands**

Abbreviations:

- CAS Prickly sculpin
- CC Sculpin (General)
- CO Coho salmon
- CT Cutthroat trout
- DV Dolly Varden char
- FINS FINS Consulting Ltd.
- FSR Forest Service Road
- KO Kokanee
- MW Mountain whitefish
- ND No Drainage
- NFC No fish captured
- NS Not Sampled
- NVC No Visible Chnnel
- RB Rainbow trout
- SK Sockeye salmon
- TRIT Triton Environmental Consultants Ltd.
- TWC Temporary Watershed Code
- WSC Watershed Code



2021 Fish Habitat Assessments for Lake Babine Nations

Proposed Block SML013

Scale 1:10,000

Projection: Transverse Mercator
Datum: NAD 83
Coordinates: UTM Zone 9
Field Survey: July 27, 2021

Inventory and Mapping by:

LEGEND

S1 - S4

S5 - S6

NCD

No Watercourse

Other Streams

Past Assessment

Current Assessment

Fish Bearing with Riparian Class

Non-fish Bearing with Riparian Class

NCD

No Watercourse

Other Streams

Past Assessment

Current Assessment

Fish Info (Inferred)

NFC(RB)

1 - 2.3 | S3

Slope (%)

Channel Width (m)

Riparian Class (Inferred)

Stream Assessment Info (past assessments in purple)

Site with ID

Past Assessment Site with Reference Source and Year

Stream Reach with ID

Stream Name

123-456000-78900

Stream ID (Name and/or WSC and/or TWC)

Cascades

Falls

Alluvial Fan

Height (m)

Length (m)

Culvert

Underground Channel

Undefined

Sediment Wedge

Feature Parameters

Highway

Paved Roads

Gravel Roads

1:20K Map Tile

1:20K Map Tile Label

200

20 m Contours and 100 m Labels

01234ABCD

01234ABCD

Wetlands

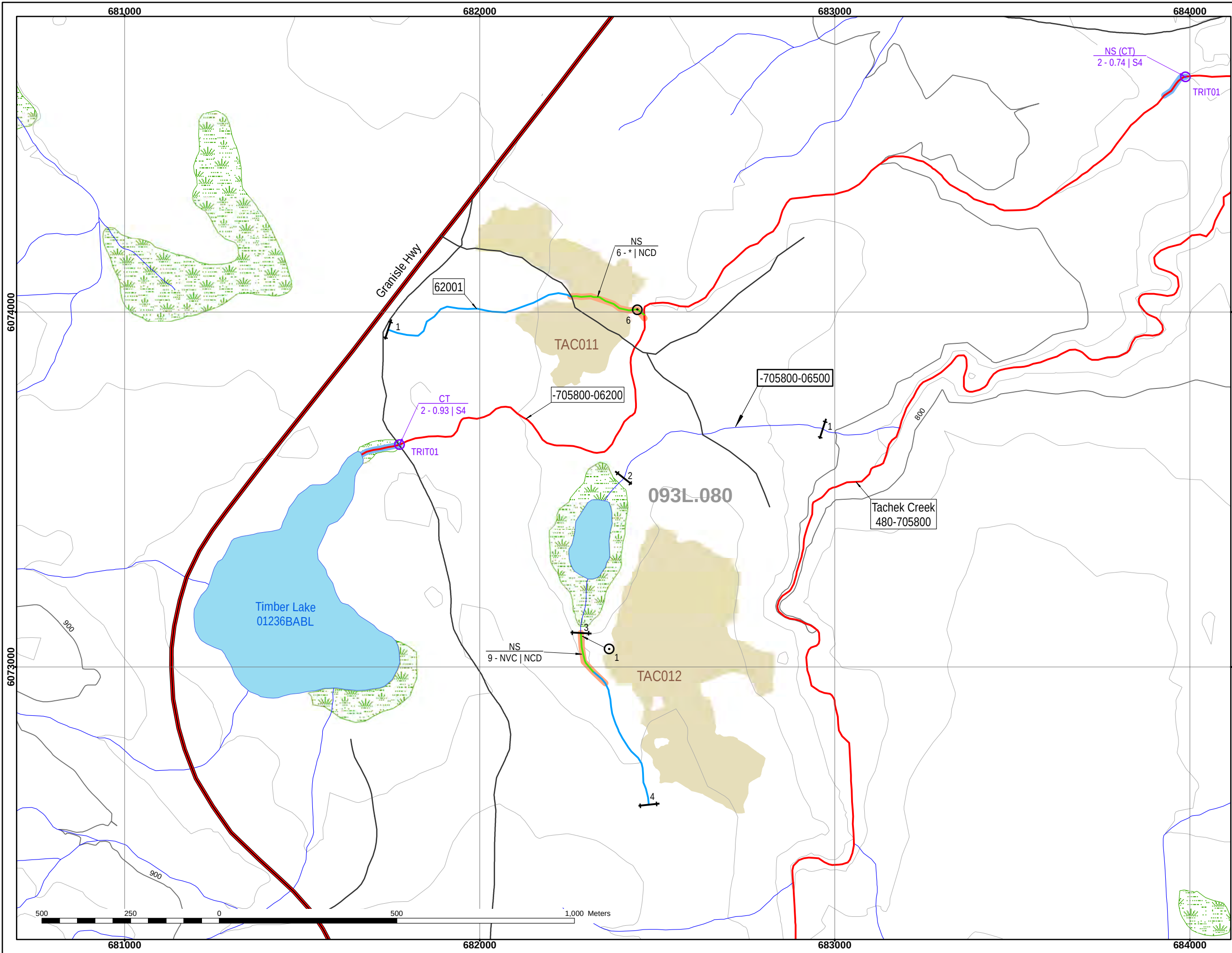
Proposed Cutblock with ID

Lakes/Rivers with ID

Wetlands

Abbreviations:

CAS	Prickly sculpin
CC	Sculpin (General)
CO	Coho salmon
CT	Cutthroat trout
DV	Dolly Varden char
FINS	FINS Consulting Ltd.
FSR	Forest Service Road
KO	Kokanee
MW	Mountain whitefish
ND	No Drainage
NFC	No fish captured
NS	Not Sampled
NVC	No Visible Chnnel
RB	Rainbow trout
SK	Sockeye salmon
TRIT	Triton Environmental Consultants Ltd.
TWC	Temporary Watershed Code
WSC	Watershed Code



2021 Fish Habitat Assessments for Lake Babine Nations

Proposed Blocks TAC011 and 012

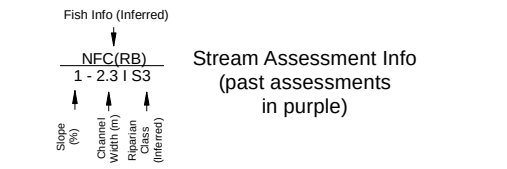
Scale 1:10,000

Projection: Transverse Mercator
Datum: NAD 83
Coordinates: UTM Zone 9
Field Survey: July 23 & 26, 2021

Inventory and Mapping by: 

LEGEND

- S1 - S4 Fish Bearing with Riparian Class
- S5 - S6 Non-fish Bearing with Riparian Class
- NCD No Watercourse
- Other Streams
- Past Assessment
- Current Assessment



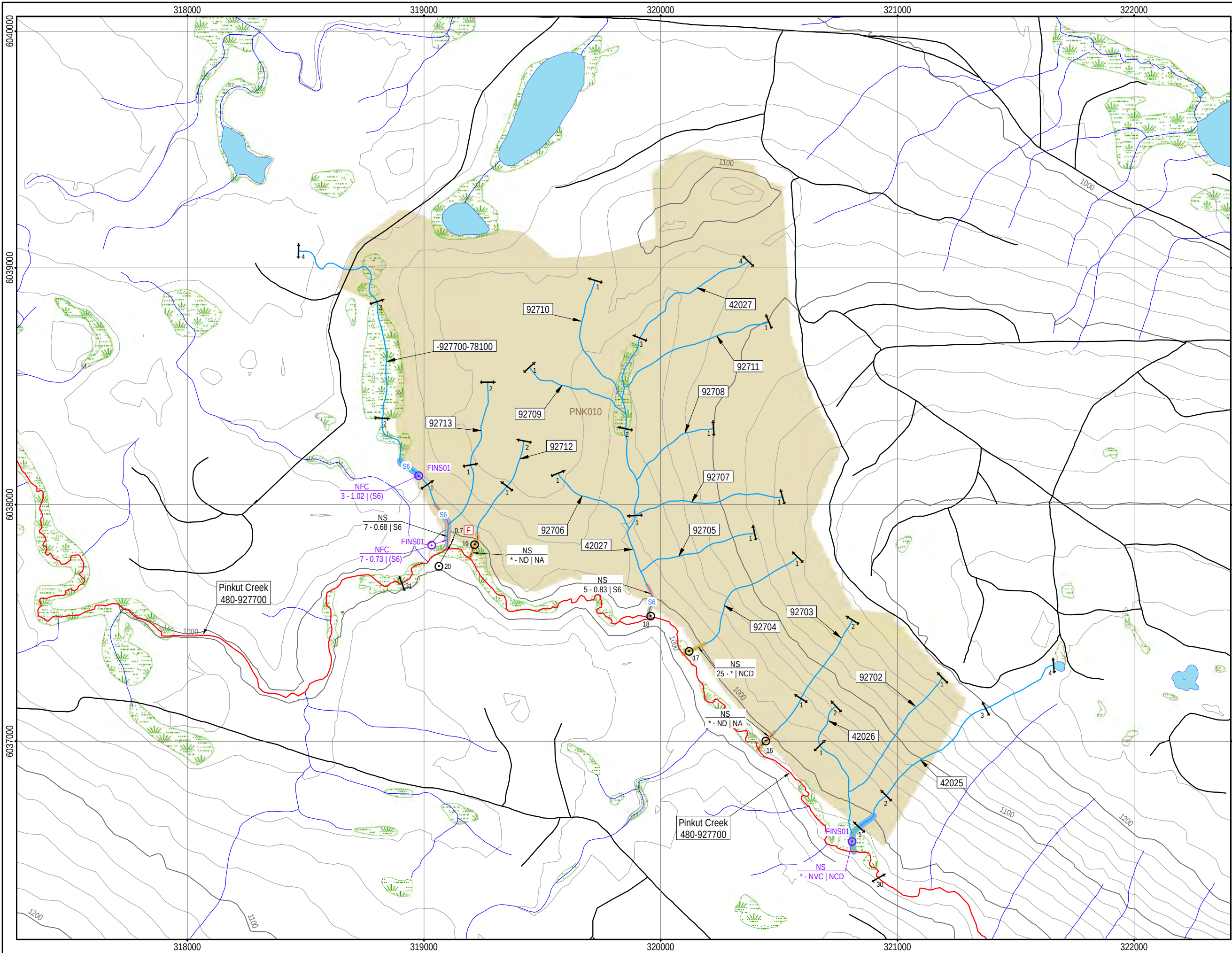
- Site with ID
- Past Assessment Site with Reference Source and Year
- Stream Reach with ID
- Stream ID (Name and/or WSC and/or TWC)

- Cascades
- Falls
- Alluvial Fan
- Culvert
- Underground Channel
- Undefined
- Sediment Wedge

- Feature Parameters
- Height (m)
 - Length (m)
- Highway
 - Paved Roads
 - Gravel Roads
 - 1:20K Map Tile
 - 1:20K Map Tile Label
 - 20 m Contours and 100 m Labels

- 01234ABCD Proposed Cutblock with ID
- 01234ABCD Lakes/Rivers with ID
- Wetlands

- Abbreviations:
- CAS Prickly sculpin
 - CC Sculpin (General)
 - CO Coho salmon
 - CT Cutthroat trout
 - DV Dolly Varden char
 - FINS FINS Consulting Ltd.
 - FSR Forest Service Road
 - KO Kokanee
 - MW Mountain whitefish
 - ND No Drainage
 - NFC No fish captured
 - NS Not Sampled
 - NVC No Visible Chnnel
 - RB Rainbow trout
 - SK Sockeye salmon
 - TRIT Triton Environmental Consultants Ltd.
 - TWC Temporary Watershed Code
 - WSC Watershed Code



2021 Fish Habitat Assessments for Lake Babine Nations

Proposed Block PNK010

Scale 1:15,000

Projection: Transverse Mercator

Datum: NAD 83

Coordinates: UTM Zone 10

Field Survey: August 12 - 13, 2021

Inventory and Mapping by:

LEGEND

S1 - S4

Fish Bearing with Riparian Class

S5 - S6

Non-fish Bearing with Riparian Class

NCD

No Watercourse

Other Streams

Past Assessment

Current Assessment

Fish Info (Inferred)

NFC(RB)

1 - 2.3 | S3

Slope (%)

Channel Width (m)

Riparian Class (Inferred)

Stream Assessment Info (past assessments in purple)

Site with ID

Past Assessment Site with Reference Source and Year

Stream Reach with ID

Stream Name

123-456000-78900

Cascades

Falls

Alluvial Fan

Culvert

Underground Channel

Undefined

Sediment Wedge

Feature Parameters

Height (m)

Length (m)

Highway

Paved Roads

Gravel Roads

1:20K Map Tile

1:20K Map Tile Label

20 m Contours and 100 m Labels

Proposed Cutblock with ID

Lakes/Rivers with ID

Wetlands

Abbreviations:

CAS

Prickly sculpin

CC

Sculpin (General)

CO

Coho salmon

CT

Cutthroat trout

DV

Dolly Varden char

FINS

FINS Consulting Ltd.

FSR

Forest Service Road

KO

Kokanee

MW

Mountain whitefish

ND

No Drainage

NFC

No fish Captured

NS

Not Sampled

NVC

No Visible Chnnel

RB

Rainbow trout

SK

Sockeye salmon

TRIT

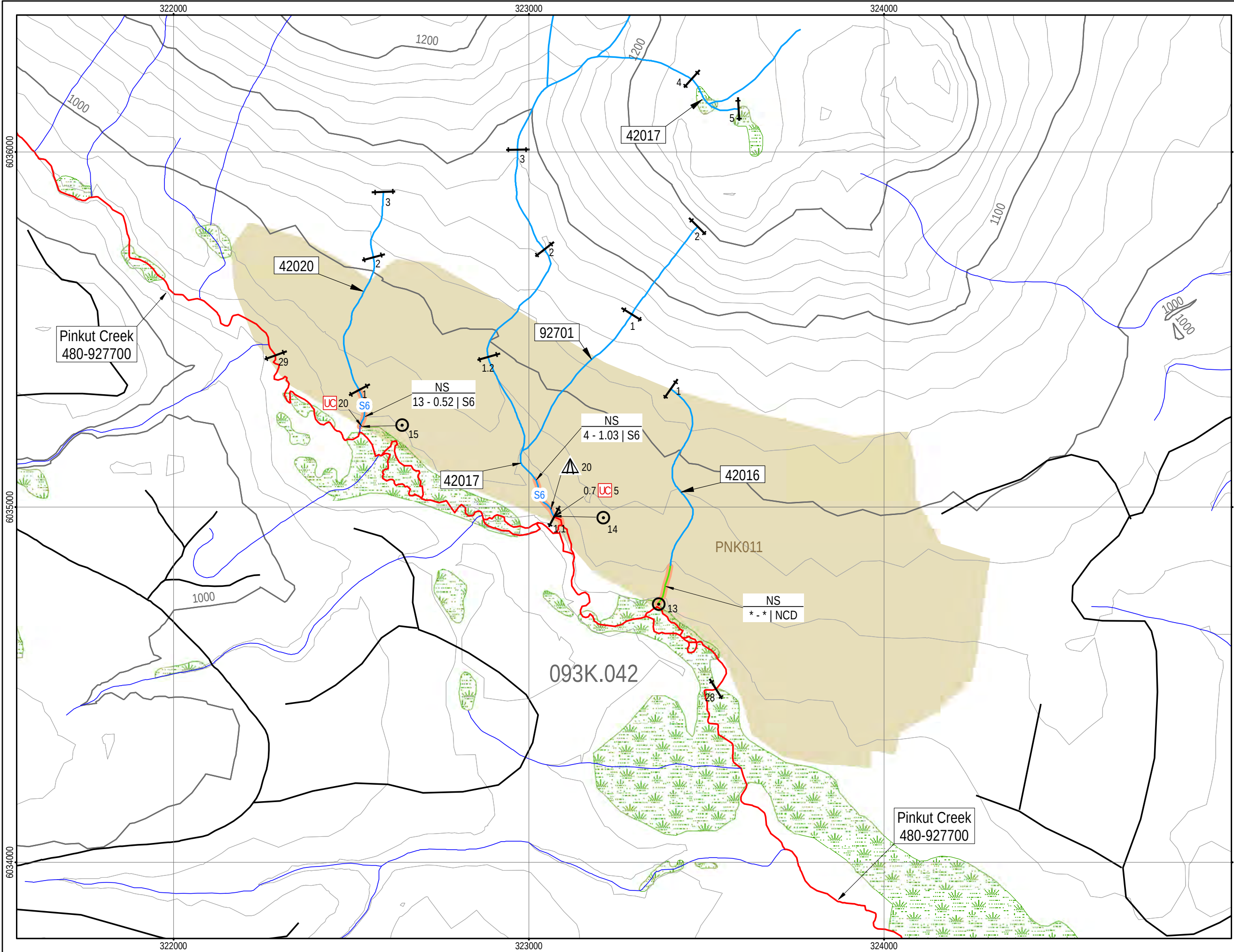
Triton Environmental Consultants Ltd.

TWC

Temporary Watershed Code

WSC

Watershed Code



2021 Fish Habitat Assessments
for Lake Babine Nations



Proposed Block PNK011

Scale 1:10,000

Projection: Transverse Mercator

Datum: NAD 83

Coordinates: UTM Zone 10

Field Survey: July 29, 2021

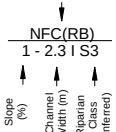
Inventory and Mapping by:



LEGEND

- S1 - S4 Fish Bearing with Riparian Class
- S5 - S6 Non-fish Bearing with Riparian Class
- NCD
- No Watercourse
- Other Streams
- Past Assessment
- Current Assessment

Fish Info (Inferred)



Stream Assessment Info
(past assessments
in purple)

Site with ID

Past Assessment Site with
Reference Source and Year
Stream Reach with ID

Stream Name

123-456000-78900

Stream ID (Name
and/or WSC and/or TWC)

Cascades

Falls

Alluvial Fan

Culvert

Underground Channel

Undefined

Sediment Wedge

Feature Parameters

Height (m)

Length (m)

Highway

Paved Roads

Gravel Roads

1:20K Map Tile

1:20K Map Tile Label

20 m Contours and 100 m Labels

Proposed Cutblock with ID

Lakes/Rivers with ID

Wetlands

Abbreviations:

CAS	Prickly sculpin
CC	Sculpin (General)
CO	Coho salmon
CT	Cutthroat trout
DV	Dolly Varden char
FINS	FINS Consulting Ltd.
FSR	Forest Service Road
KO	Kokanee
MW	Mountain whitefish
ND	No Drainage
NFC	No fish Captured
NS	Not Sampled
NVC	No Visible Chnnel
RB	Rainbow trout
SK	Sockeye salmon
TRIT	Triton Environmental Consultants Ltd.
TWC	Temporary Watershed Code
WSC	Watershed Code