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.

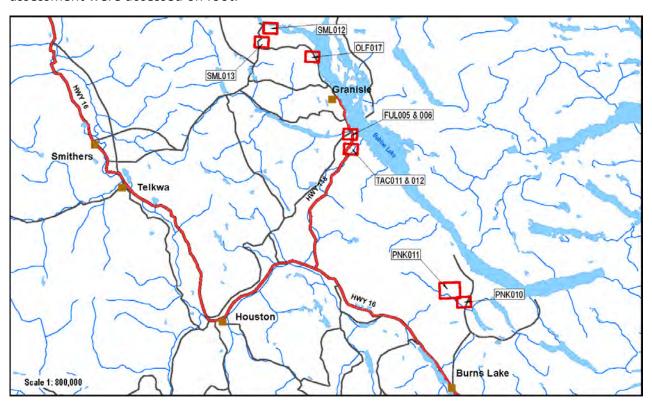


Figure 1: Location of Project Areas.

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 resampling 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	S 3	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.
	02020	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	S 3	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.
	11021	1	7	9	673069	6095295	S6	NA	23	1.55	0.3	NS	110	N	Confirmed non-fish bearing - see NFB report.
OLF017	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.
	480-559900	7	10	9	659239	6099038	NCD	NA	*	NVC	*	NS	110	N	Not a stream - see NFB report.
SML013	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)		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.
		2					S4	MG	4	~1.5	*	NS (DV RB)	230	N	Accessible to fish from reach 1.
SML012	48001	3	12	9	660764	6103034	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.
	42016	1	13	10	323366	6034727	NCD	NA	*	*	*	NS	110	N	Not a stream - see NFB report.
PNK011	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.
	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.
PNK010	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	S 6	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	С	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.
	11021	1	7	26-Jul- 21	S6	23	1.55	0.3	L	9.5	286	С	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.
OLF017	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	*	*	С	NS	*	*	*	No fish habitat - barely a stream owing to a steep slope, no instream cover present, shallow, and inaccessible to fish.
	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.
SML013	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	М	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	\$6	4	1.03	0.17	L	9.8	116	С	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		*	*	С	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.
	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.
PNK010	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

С	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 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, RPgw - riffle-pool with gravels and functioning LWD, SP – step-pool with boulders, SPbw – step-pool with boulders and functioning LWD, SPr – step-pool through bedrock StrmPatt (Stream pattern): IM – irregular meandering, IR – irregular wandering, ME – regular meandering, SI – sinuous, ST – straight, TM – tortuous meandering Confinmnt (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 – multichannels, 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 (ccoarsescale) 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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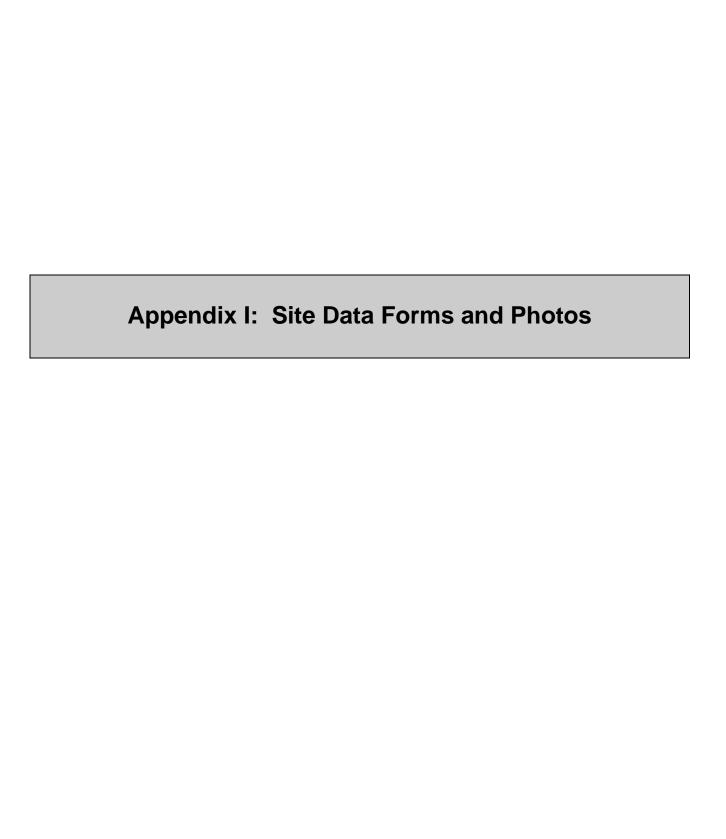


List of Appendices

Appendix I: Site Data Forms and Photos

Appendix II: Maps





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								(OVE	R								
Cov	erTotal	· Iswi	DLWD	вС	B DP	OV	IV		-									
	A	S	S		T T	D	N	Cano	py: 41	-70%	LW	/D Func	tion & I	Distr:	A/E	IV 1	ype: 1	1
	3 Shape			B Text				.B Ripar	ian Voc	otation	: 5	,	l B Din	rian V	egetatio	n Stage		IA
	•							-	_						•	_		
R	3 Shap	e: V		RB Text	ure: F			RB Ripar					кв кір	arıan v	egetatio	n Stag	9: N	IA
						(CHAI	NNEL	MOF	PHO	LOG	Υ						
Dom	Substra	ate:	G D9	5 (cm):	50	Morp	holog	y: RF	⊃ Str	m Patt:	SI	Confnr	nnt: C	O Co ı	upling:	CO I	slands	: 0
Subd	om Sub	ostr:	F I	D (cm):	6	Ва	ars: SI	DE DIAC	3			Disturb	ance In	dicator	s:			
								FE	ATUF	RES								
Feature	e H (m) L (n	n)						Comm	ent						1	ITM Z.I	E.N
	0.8	60	-	er the H	wy 118,	res. po	ol=0.6r	n deen -			ish. Le	nath hy	GPS in	let at				5077237
CV									IIIIpass							5 00	23371	JUI 1 Z J I
C۷	0.0		_	1 9.6825	-			пасор	ппразз	abio (0 i		rigar by	0, 0, 11	iorar		3 00	2337	3011231
CV			_		-				MPLI			ngar by	O1 O,	iot at		3 00	2337	3011231
			UTM	1 9.6825	23.6077	187.		S A	MPLI	NG					ation			
Meth	od	E	_	1 9.6825	-	187.	EF V	S A		NG	pulse	Traps	Nets		ation		h (m)	Hab
Meth	od	E	UTM sec	1 9.6825	23.6077 mp L (n	187.	EF V	S A	MPLI EF fre	NG	pulse				ation			
Meth	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A	MPLI EF fre	NG	pulse 2	Traps	Nets	Dur	ation			
Meth	od :	EI	UTM = sec 101	1 9.6825	23.6077 mp L (n	187.	EF V 40	S A /olt	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth Ef	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A /olt	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur	ation	Dept	h (m)	Hab
Meth Ef	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A /olt 0 mpled or	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth Ef	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A /olt 0 mpled or	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth Ef	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A /olt 0 mpled or	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth Ef	od :	EI	UTM = sec 101	1 9.6825 Sa	mp L (n	187.	EF V 40	S A /olt 0 mpled or	MPLI EF fre	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth EF Species NFC	s Stag	EI To	UTM	Sa Min L	mp L (n 40	Act	EF V 40	S A Yolt 0 mpled or R1.	MPLI EF fre 60 utlet poo	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth EF Species NFC	s Stag	EI To	UTM	Sa Min L	mp L (n 40	Act	EF V 40	S A /olt 0 mpled or	MPLI EF fre 60 utlet poo	N G	pulse 2	Traps	Nets g Comr	Dur		Dept	h (m)	Hab
Meth EF Species NFC	s Stag	ge To	otal #	Sa Min L	mp L (n 40	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle		Dept	h (m)	Hab ling d/s
Meth EF Species NFC	RHAB SHAB	EI To	esec 101 abunda 10-20m	Sa Min L	mp L (n 40 Max L	Act	EF V 40	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Species NFC Comm 1 Comm 2 Comm 3 Comm	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Int cover	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Meth EF Species NFC Comm 1 Comm 2 Comm 3	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Introduction of the state of the s	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Species NFC Comm 1 Comm 2 Comm 3 Comm 4	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Introduction of the state of the s	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Species NFC Comm 1 Comm 2 Comm 4 Comm	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Introduction of the state of the s	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Species NFC Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Introduction of the state of the s	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab ling d/s
Meth EF Species NFC Comm 1 Comm 2 Comm 4 Comm 5 Comm 6 Comm	RHAB SHAB vegeta OHAB	EI Ge To OK - - fair - tion. - none	estrear	Sa Min L Introduction of the state of the s	mp L (n 40 Max L with fair etches c	Act	EF V 40 t Sa in I	S A /olt 0 mpled or R1.	MPLI EF fre 60 utlet poo	NG EF	pulse 2 S	Traps Samplin	Nets g Comm RB in b	Dur nents ig outle	t pool. E	Dept	h (m)	Hab







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c	ite:	-

							9 1	ITE F	REFE	RFN(`F							
	al Niama				14/04	100			\			0001	000		ГТ	Р	ipar	ion
Gazette		::				C: 480-	615800		1 4 . (,		p: 093L		Access:			Clas	
Local N					TWO	_			ach: 1, 2	-		ed Lg:1	700	Crew:	MJ			
UTM Z.E	. N :	672	319 60	97087	Metho	d: GP2	Sur	vey Dat	e: 202	1-07-25	Tim	e: 10:00) Aç	gency:	C016		S	3
							CHAI	NNEL								V	VATE	R
Mea	sureme	nt	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Ten	ıp:	9.8
Chann	el Widt	h (m):	4	4											4	рŀ	· -	6.9
Wette	d Widt	h (m):	2	1.5											1.75	Cor		146
Res.	Pool D	p (m):	0.29	0.26											0.28			-
Bankfı	ıll Dept	h (m):	0.4	0.4											0.4	Turbi	dity:	С
Chan.	Gradier	ıt (%):	10	11	8	8									9.25			
Flow S	tage:	L	Chan	nel Con	ditions:		Floo	od Sign	s: Non	е								
								C	OVE	R								
Cov	erTotal	: Isw	DLWD	вС	CB DP	ov	IV											
	Α	S	S	-	N N		N	Canop	y: 41	70%	LW	D Func	tion & I	Distr:	A/E	IV Typ	oe: N	1
	Shape	e: \	<u> </u>	B Textu	ure: F			3 Rinari	ian Veg	etation	: S		l B Rina	arian Ve	egetatio	Stage:	N.	Δ
	•							•					_		_	_		
KI	3 Shap	e: \		RB Text	ure: F				ian Veg				кв кір	arian v	egetatio	n Stage:	N.	A
						(CHAN	INEL	MOR	PHO	LOG	Y						
Dom	Substra	ite:	C D9	5 (cm):	400	Morp	hology	r: CF	Str	m Patt:	SI	Confnr	nnt: C	O Co ı	upling:	CO Isla	ands:	N
Subd	om Sul	str:	G	D (cm):	11	Ва	rs: SIE	DE DIAG	MID 3			Disturb	ance In	dicator	s: B20	2C2C3S	3	
								FE	ATUR	ES								
Feature	H (m) L (ı	n)						Commo	ent						UT	M Z.E	.N
	(/ - (-	,															
								S A	MPLI	NG								
Meth	od l	F	F sec	Sa	mn I (n	» T	FF V			_	oulse	Trans	Nets	Dur	ation	Depth	(m)	Hah
Meth		E	F sec	Sa	ımp L (n	1)	EF V		M P L I	_	pulse	Traps	Nets	Dur	ation	Depth ((m)	Hab
		E	F sec	Sa	mp L (n	1)	EF Vo			_	pulse	Traps	Nets	Dur	ation	Depth ((m)	Hab
NS	3				ımp L (n					_					ation	Depth ((m)	Hab
	3			Sa Min L		n) Act				_		Traps Samplin			ation	Depth ((m)	Hab
NS	3									_					ation	Depth ((m)	Hab
NS	3									_					ation	Depth ((m)	Hab
NS	3									_					ation	Depth ((m)	Hab
NS	3									_					ation	Depth ((m)	Hab
NS	3							olt		q EF					ation	Depth ((m)	Hab
Species	S Stag	e Te	otal #	Min L	Max L	Act		C O	EF fre	q EF	S	èamplin _i	g Comn	nents				
Species	S Stag	e Te	otal #	Min L	Max L	Act		C O	EF fre	q EF	S	èamplin _i	g Comn	nents		Depth (
Species Comm 1	RHAB	e Te	- no div	Min L ersity in	Max L channel	Act	ep pools	C O	M M E I	NTS	S S	Sampling	g Comr	nents	dges, rel		olent (creek.
Species Comm 1 Comm 2 Comm	RHAB SHAB tailouts Walked	- poor of see	- no div	Min L ersity in suitable wedge po	channel ~0.5 sq. ools.	Act	ep pools	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vid	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm	RHAB SHAB tailouts Walked	e To	- no diversity of the section	Min L ersity in suitable wedge pof bridge t	Max L channel ~0.5 sq. ools. to site U abine L.)	Act	ep pools	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm 4	RHAB SHAB tailouts Walked mouth Reach	e To	- no dividence - some : diment with the section e same	Min L ersity in suitable wedge pof bridge to from Ba all the w	channel ~0.5 sq. ools. to site U abine L.)	Act , no dee m grave TM and . e Triton	ep pools el pocke d/s to r	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm	RHAB SHAB tailouts Walked mouth Reach	- poor of see a stream is	- no dividence of the section of the same of the same of the saccess	ersity in suitable wedge po f bridge to from Ba all the w	channel ~0.5 sq. ools. to site U abine L.)	Act , no dee .m grave TM and . e Triton	ep pools el pocke d/s to r	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm	RHAB SHAB tailouts Walked mouth Reach	- poor of see a stream is	- no dividence - some : diment with the section e same	ersity in suitable wedge po f bridge to from Ba all the w	channel ~0.5 sq. ools. to site U abine L.)	Act , no dee .m grave TM and . e Triton	ep pools el pocke d/s to r	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5 Comm	RHAB SHAB tailouts Walked mouth Reach	- poor of see a stream is	- no dividence of the section of the same of the same of the saccess	ersity in suitable wedge po f bridge to from Ba all the w	channel ~0.5 sq. ools. to site U abine L.)	Act , no dee .m grave TM and . e Triton	ep pools el pocke d/s to r	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5 Comm 6 Comm	RHAB SHAB tailouts Walked mouth Reach	- poor of see a stream is	- no dividence of the section of the same of the same of the saccess	ersity in suitable wedge po f bridge to from Ba all the w	channel ~0.5 sq. ools. to site U abine L.)	Act , no dee .m grave TM and . e Triton	ep pools el pocke d/s to r	C O s, short	M M E I and sha	NTS	ols at the upper	Gampling The base and of r	g Comr	nents	dges, rel	atively vide for DV	olent o	creek.





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-	ItO:	
	ITE:	

							S	SITE	REFE	RENC	E						
Gazette	d Name	e:			WSO):					Ma	p: 093L	.080	Access:	FT	Ripa	rian
Local N	ame:				TWO	C : 620	01	Reac	h: 1	Ass		Lg: 2		Crew:	MJ	_	iss:
UTM Z.E	E.N: [9	9 682	444 60	74007	Metho	d: GP2	2 S u	rvey Dat	t e: 202			- 5 - ne: 9:25		gency:		NO	CD
								NNEL						,,.		WATI	
Mea	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann	el Wid	th (m):														pH:	
	ed Wid	· ,														Cond:	
	Pool D															Turbidity:	
Bankfu Chan.															6	raiblaity.	
Flow S		111 (70).		nol Con	ditions:		Flor	d Signs	<u>. </u>								
FIOW 3	nage.		Chan	nei Con	iuitions.		FIOC		COVE	D							
Cov	erTota	ı. lew	JI WD	в	СВ Г ДР	lov	11/	l	JUVE	K							
Cov	eriota	1: SW	LWD	В	JB DP	OV	IV	Cano	ру:		LW	/D Fund	tion &	Distr:		IV Type:	
	3 Shap	۵٠		B Text	ure.			l ₋B Ripar	ian Ven	etation			l B Rin	arian V	enetation	n Stage:	
	B Shap			RB Text				RB Ripar	·				•		•	n Stage:	
1	о опар		•	VD TOXE	uro.			NNEL		PHO			IXD IXIP	ariair v	getatio	otage.	
Dom	Substr	otor	DO)5 (cm):						m Patt:		Confn	mnti	Car	ıpling:	Islands	
				` '			oholog	Jy.	Su	III Fall.		Disturb				isianus	.
Suba	om Su	DSTF:		D (cm):		В	ars:		A T ! ! F	0		Disturb	ance in	alcator	S:		
F1	. 1117	<u> </u>	->					FE	ATUF							11784.7	- \
Feature	e H (m	n) L (r	n)						Comm	ent						UTM Z.	E.N
	·							0.4		N.O.						<u> </u>	
								5 A	MPLI	NG							
Meth	od	E	sec	Sa	ımp L (n	1)	EF \	-	EF fre		pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
Meth		E	sec	Sa	ımp L (n	n)	EF \	-			pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
		E	sec	Sa	ımp L (n	1)	EF \	-			pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
	8			Sa Min L	mp L (n	n) Ac		-				Traps Samplin			ation	Depth (m)	Hab
NS	8							-				•			ation	Depth (m)	Hab
NS	8							-				•			ation	Depth (m)	Hab
NS	8							-				•			ation	Depth (m)	Hab
NS	8							-				•			ation	Depth (m)	Hab
NS	8							Volt		q EF		•			ation	Depth (m)	Hab
Species	s Stag	ge To	otal #	Min L	Max L	Ac	t	C O	M M E I	NTS e scour,	and so	Samplin	g Comi	ments		Depth (m)	
Species Comm 1	s Stag	ge To	otal #	Min L ercourse	Max L with alte	Ac	t	CO	M M E I	NTS e scour,	and so	Samplin	g Comi	ments			
Species	s Stag	ge To	otal #	Min L	Max L with alte	Ac	t	C O	M M E I	NTS e scour,	and so	Samplin	g Comi	ments			
Species Comm 1 Comm	No fish No allu	n habita	at - water	Min L ercourse out, altho	Max L with alte	Ac Ac ernating w boul	g overladers a	C O and flows	M M E I	NTS e scour,	and so	Samplin	g Comi	ments			
Species Comm 1 Comm 2 Comm 3 Comm	No fish No allu	n habita	at - water nroughous per of	Min L ercourse out, altho	with alte	Ac	g overladers a	C O and flows nd large rossing.	M M E I	NTS e scour,	and so	Samplin	g Comi	verland isserved.	flow sect		
Species Comm 1 Comm 2 Comm 3	No fish No allu Not a s	n habitativium to stream moternals to	at - water nroughous per of d for ~1	Min L ercourse out, altho definition	with altebugh a feb.	Accernating who bould an old % for 15	g overladers a	C O and flows nd large rossing.	M M E I	NTS e scour, protrud	and so	Samplin Ome puo n the gro	g Comi	verland isserved.	flow sect	ions 10-20m l	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish No allu Not a s	n habita	at - water nroughor as per of d for ~1 the pare	Min L ercourse out, although the definition of the stream that the stream that the definition of the stream that th	with altebugh a fe	ernatingew boul	g overladers a	C O and flows nd large rossing.	M M E I s, surfac cobbles ence with	NTS e scour, protrud	and so	Samplin Ome puo n the gro	g Comi	wents	flow sect	ions 10-20m l	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm	No fish No allu Not a s	n habita	at - water nroughor as per of d for ~1 the pare	Min L ercourse out, although the definition of the stream that the stream that the definition of the stream that th	with altebugh a fe	ernatingew boul	g overladers a	C O and flows nd large rossing.	M M E I s, surfac cobbles ence with	NTS e scour, protrud	and so	Samplin Ome puo n the gro	g Comi	wents	flow sect	ions 10-20m l	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish No allu Not a s	n habita	at - water nroughor as per of d for ~1 the pare	Min L ercourse out, although the definition of the stream that the stream that the definition of the stream that th	with altebugh a fe	ernatingew boul	g overladers a	C O and flows nd large rossing.	M M E I s, surfac cobbles ence with	NTS e scour, protrud	and so	Samplin Ome puo n the gro	g Comi	wents	flow sect	ions 10-20m l	









Site: 7

							S	ITE	REFE	REN	CE						
Gazette	d Nam	e:			wsc):						p : 093L	.099	Access	: V4	Ripa	arian
Local N						: 1102	21	Read	:h: 1	Ass		Lg : 1		Crew:		-	ass:
UTM Z.I	_	9 673	069 60	95295	Method	d: GP2	2 Su	rvey Da	te: 202			e: 11:1		gency:		5	66
								NNEL						, .,		WAT	
Mea	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	9.5
	el Wid		1.2	1.2	1.5	1.5	1.8	2.1							1.55	pH:	6.9
	ed Wid	<u> </u>		0.6	0.4	0.2	0.7	1.6							0.77	Cond:	286
	Pool D														0.17		
	ull Dep			0.4	0.3										0.3	Turbidity	: C
	Gradie			21											23		
Flow S	tage:	L	Chani	nel Con	ditions:		Flo	ood Sigr									
								(COVE	R							
Cov			D LWD		CB DP	_	IV	Cano	py: 71-	-90%	LW	/D Fund	tion &	Distr:	F/E	IV Type:	М
	Α	S	Т		N N	D	N										
LI	3 Shap	e: V	' L	.B Text	ure: G	С	L	.B Ripar	ian Veg	etation	: 8	3	LB Rip	arian Ve	egetation	n Stage:	NA
R	B Shap	e: V	F	RB Text	ure: G	С	F	RB Ripai	rian Veg	etation	: 8	3	RB Rip	arian V	egetatio	n Stage:	NA
						(CHAI	NNEL	MOR	PHO	LOG	Υ					
Dom	Substr	ate:	G D9	5 (cm):	40	Morp	holog	y: C	P Str	m Patt:	ST	Confn	mnt: C	O Cou	upling:	CO Island	s: N
Subd	om Su	bstr:	C I	D (cm):	20	Ва	ırs: N					Disturb	ance In	dicator	s: C1		
								FE	ATUR	RES							
Feature	e H (m	n) L (r	n)						Commo	ent						UTM Z.	.E.N
								S A	MPLI	NG							
Meth	nod	E	F sec	Sa	ımp L (m	1)	EF V		MPLI EF fre		pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
Meth		E	F sec	Sa	mp L (m	1)	EF V				pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
N:	3		F sec	Sa								•			ation	Depth (m)	Hab
	3			Sa Min L	mp L (m	n) Act						Traps Samplin			ation	Depth (m)	Hab
N:	3											•			ation	Depth (m)	Hab
N:	3											•			ation	Depth (m)	Hab
N:	3											•			ation	Depth (m)	Hab
N:	3											•			ation	Depth (m)	Hab
N:	3							/olt		eq EF		•			ation	Depth (m)	Hab
Species	S Stat	ge To	otal #	Min L	Max L	Act		C O	EF fre	eq EF	5	àamplin	g Comi	ments			
N:	s Stag	ge To	otal #	Min L o stream	Max L	Act		C O	EF fre	eq EF	5	àamplin	g Comi	ments		Depth (m)	
Species	s Stag	n habita	otal #	Min L p stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			
Species Comm 1 Comm	No fish small p	n habita	otal #	Min L D stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			
Species Comm 1 Comm 2 Comm	No fish small p	n habita	at - steepund over	Min L D stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			
Species Comm 1 Comm 2 Comm 3	No fish small p	n habita	at - steepund over	Min L D stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm	No fish small p	n habita	at - steepund over	Min L D stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish small p	n habita	at - steepund over	Min L D stream r 100m l	Max L	Act	im cov	C O er, no ch	EF fre	eq EF	5	àamplin	g Comi	ments			





Site:	8

							S	ITE I	REFE	RENG	E						
Gazette	d Nam	e:			WS):					Ma	p: 093L	.099	Access:	V4	Ripa	arian
Local N	ame:				TW	: 110	20	Read	:h: 1	Ass	essed	Lg : 1	00	Crew:	MJ		ass:
UTM Z.E	E.N: 5	9 672	981 609	95695	Metho	d: GP	2 S u	rvey Dat	te: 202			e: 12:30		gency:	C016	1	IA
							СНА	NNEL								WAT	ER
Mea	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann		` '														pH:	
	ed Wid	. ,														Cond:	
Bankfu	Ill Den															Turbidity	' :
Chan.																_	
Flow S	tage:		Chann	el Con	ditions:	ND	Flo	od Sign	s:					1			
									COVE	R							
Cov	erTota	I: SW	DLWD	В (CB DP	ΟV	IV	_						.		D./ T	
	Canopy: LWD Function & Distr: IV Type:																
LE	3 Shap	e:	LI	B Text	ure:		L	.B Ripar	ian Veg	etation	:		LB Ripa	arian Ve	egetation	n Stage:	
RI	B Shap	e:	R	B Text	ure:		F	RB Ripar	rian Veg	etation	:		RB Rip	arian Ve	egetatio	n Stage:	
							СНА	NNEL	MOR	PHO	LOG	Y					
Dom	Substr	ate:	D95	(cm):		Mor	pholog	ıy:	Str	m Patt:		Confnr	nnt:	Cou	ıpling:	Island	s:
Subd	om Su	bstr:	D	(cm):		В	ars:					Disturb	ance In	dicator	s:		
								FE	ATUF	RES							
Feature	e H (m	n) L (r	n)						Comm	ent						UTM Z	.E.N
								S A	MPLI	-							_
Meth		E	sec	Sa	ımp L (n	1)	EF \	/olt	EF fre	q EF	pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
NS)																
Species	s Stag	ne To	otal # N	/lin L	Max L	Ac	+				9	amplin	a Comr	nents			
Орсою	Jolay	90 10	, tai		IIIUX L	1						ampini	9 001111				
								2.0	NA NA E I	LT C							
								0.0	MMEI	4 I 2							1
							, .		. ==								
Comm 1	No fish	n habita	it - no wa	tercou	rse of ar	y kind	found a	at indicat	ed TRIN	/I location	on or 50	m up a	nd dowr	n the roa	ad.		
1 Comm			t - no wa ken - noth				found a	at indicat	ed TRIN	/I location	n or 50	m up a	nd dowi	n the roa	ad.		
Comm 2							found a	at indicat	ed TRIN	/ location	n or 50	m up a	nd dowi	n the roa	ad.		
Comm 3 Comm							found a	at indicat	red TRIN	/ location	on or 50	m up a	nd dowi	n the roa	ad.		
Comm 2 Comm 3 Comm 4 Comm							found a	at indicat	ed TRIN	/I location	on or 50	m up a	nd dowi	n the roa	ad.		
Comm 3 Comm 4 Comm 5							found a	at indicat	ed TRIN	/ location	on or 50	m up a	nd dow	n the roa	ad.		
Comm 3 Comm 4 Comm 5 Comm 6							found a	at indicat	ed TRIN	/ location	on or 50	m up a	nd dow	n the roa	ad.		
Comm 3 Comm 4 Comm 5 Comm							found a	at indicat	ed TRIN	/ location	on or 50	m up a	nd down	n the roa	ad.		

Site:	9

							S	ITE	REFE	RENC	E							
Gazette		WS	WSC: Map: 093L.099 Access: V4								: V4	Riparian						
Local Name:						TWC: 11019 Reach:					•						Class:	
UTM Z.E.N: 9 672567 6096559				96559		Method: GP2 Survey Date: 2021-07-26 Time: 13:15 Agency: C016								S	6			
CHANNEL												WATE						
Maa		m4	1	2	3	4	5	6	7	0	9	10	11	12	Aven		-K	
	sureme el Widt		0.5	1	0.5	0.6	0.9	0.7	<i>'</i>	8	9	10	''	12	Avg: 0.7	Temp:		
	d Widt		0.1	0.7	0.4	0.6	0.4	0.3							0.42	pH:		
	Pool D	` ′	0												0	Cond:		
	ıll Dept		0.1	0.07	0.1										0.09	Turbidity: C		
Chan.	Gradier	t (%):	26	22											24			
Flow Stage: L Channel Conditions: Flood Signs: None																		
	COVER																	
Cov	CoverTotal: SWD LWD B CB DP OV IV Canopy: 71-90% LWD Function & Distr: F/E IV Type: M																	
	Α	S	Т	T	N N	D	Ν	Cano	ру: / 1	-90%	LVV	D Func	tion & i	JISTI :	F/E	IV Type:	VI	
LE	3 Shape	: V	L	.B Text	ure: F	GB	LI	B Ripar	ian Veg	etation	: S		LB Ripa	arian Ve	egetation	Stage:	١A	
RE	3 Shape	e: V	F	B Text	ure: F	GB	R	B Ripar	ian Veg	etation	: S		RB Rip	arian V	egetatio	n Stage:	۱A	
	-						CHAN	INEL	MOR	PHO	LOG	Y	-		_			
Dom :	Substra	ite:	G D9	5 (cm):	35	Mori	ohology	v: CI	⊃ Str	m Patt:	SI	Confn	nnt: C	O Cou	ıplina:	CO Islands	: N	
	om Sub			D (cm):			ars: N	,. 0.	O	att.		Disturb				oo lolallac		
Subu	oiii Sur	Su.	ا d	o (ciii).	0		215. IN		A T ! ! F			Distuib	ance m	uicatoi	3 .			
	1	1	<u> </u>					FE	ATUF									
Feature	H (m	L (m	1)						Comm	ent						UTM Z.	E.N	
		+	+															
								SΔ	MPLI	NG								
Meth	od I	FF	sec	l Sa	mp L (n	2)	EF V		EF fre		oulse	Traps	Nets	Dur	ation	Depth (m)	Hab	
NS			300	- 00	p = (i	'		OIL		<u> </u>	Juise	παρσ	14013	Dui	ation	Deptii (iii)	Hab	
Species	Stag	е То	tal #	Min L	Max L	Ac	t	<u> </u>	į.		s	amplin	g Comr	nents				
•	_ ~											•						
		+																
								CO	MMEI	NTS								
					am owir		steep slo				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	
		w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	
Comm 2	flow no	w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	
Comm 2 Comm 3 Comm	flow no	w, likel	y will dr	y in a fe			steep sk				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	
Comm 3 Comm 4 Comm	flow no	w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible :	to fish a	nd unusa	able by fish; tr	ickle	
Comm 2 Comm 3 Comm 4	flow no	w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible ·	to fish a	nd unusa	able by fish; tr	ickle	
Comm 3 Comm 4 Comm 5 Comm 6	flow no	w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	
Comm 3 Comm 4 Comm 5 Comm	flow no	w, likel	y will dr	y in a fe			steep slo				shallov	v, inacc	essible	to fish a	nd unusa	able by fish; tr	ickle	





Site:	10

							S	ITE	REFE	REN	CE							
Gazette	d Nam	e:			WS	C: 48	D-55990	0			Ма	p : 093N	1.008	Access	: FT	R	ipaı	rian
Local Na	ame:				TW	C:		Read	h: 7	Ass	sessed	Lg : 1	10	Crew:	MJ		Ċla	
UTM Z.E	.N: (9 659	239 6	099038	Metho	d : GF	2 S u	rvey Da	te: 202			ie: 12:3		gency:			NC	D
		<u> </u>	<u> </u>					NNEL						<u> </u>		V	VATE	R
Meas	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Ten	np:	
Channe	el Wid	th (m):														рŀ	I:	
	d Wid															Cor		
	Pool D															Turbi		
Bankfu Chan. (-															
Flow S		(70)		nnel Con	ditions	NV	. Flo	od Sigr				1						
11000	age.		Ona		iuitions		- 110		COVE	R								
Cov	orTota	ı. İsw	DLWD	о в о	CB DF	ov	l IV	·		K								
000	Ci i Ota	. 011			<u> </u>	+ ••	+**	Cano	ру:		LW	/D Fund	tion &	Distr:		IV Ty	e:	
LB	Shap	e:		LB Text	ure:			B Ripar	ian Vec	etation	:		LB Rip	arian V	egetatio	n Stage:		
	3 Shap			RB Text	ure:			B Ripai	_				-		egetatio	_		
	- O.I.G.							NNEL		RPHO					-90			
Dom 9	Substr	ate.	D	95 (cm):		Moi	pholog			m Patt:		Confn	mnt·	Col	upling:	Isl	ands	
	om Su			D (cm):			ars:	y .	O.	iii i dii.		Disturb				101	unuo	
Jubu	Jili Su	Dour.		D (Cili).			ais.		ATUF) E Q		Distuib	ance n	idicator	J.			
Feature	H (m	n) L (i	m)						Comm							117	M Z.E	: N
reature	11 (11	1) L (I	"",						Commi	CIIL						1	VI Z.E	
								S A	MPL	NG								
Meth	od	E	F sec	Sa	amp L (r	n)	EF V	'olt	EF fre	q EF	pulse	Traps	Nets	Dur	ation	Depth	(m)	Hab
NS	5																	
Species	Sta	ge T	otal #	Min L	Max L	A	et					Samplin	g Com	ments				
	1																	
								CO	MME	NTS								
Comm 1	No fish	n habit	at - sog	gy swale	with oc	casion	al puddl	es and s	surface	scour; n	o alluvi	um, no s	scour to	minera	l soil - no	t a strean	٦.	
Comm																		
2 Comm																		
3 Camm																		
Comm 4																		
Comm 5																		
Comm 6																		
Comm																		
7 Comm																		
8																		





Site:	11

							S	ITE	REFE	RENG	E						
Gazette	d Name) :			wso	: 480	-55880	0			Ма	p: 093N	1.008	Access:	: V4	Ripa	rian
Local Na	ame:				TWO	: :		Read	: h : 9	Ass	essed	Lg: 1	10	Crew:	MJ	Cla	ss:
UTM Z.E	.N: 5	659	102 609	9838	Method	d: GP:	2 Su	rvey Da	te: 202	1-07-27	Tim	e: 13:4:	5 A g	gency:	C016	NO	CD
							СНА	NNEL								WATE	ER .
Mea	sureme	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann	el Widt	h (m):														pH:	
	d Widt	- ' '														Cond:	
Res. Bankfu	Pool D															Turbidity:	
Chan.																	
Flow S		. (/	Chann	el Con	ditions:	NVC	Flo	od Sigr	ns:	I		I					
	90.								COVE	R							
Cov	erTota	ı: İswı	DLWD	в (CB DP	OV	IV										
	0. 10.0	0111			J. J.	1		Cano	ру:		LW	D Func	tion & I	Distr:		IV Type:	
LE	3 Shap	e:	LE	3 Text	ure:			.B Ripar	ian Veg	etation			LB Ripa	arian Ve	egetatio	n Stage:	
	3 Shap		RI	3 Text	ure:			RB Ripaı	_				-		_	n Stage:	
								NNEL		PHO							
Dom :	Substr	ate:	D95	(cm):		Mor	pholog	v:	Str	m Patt:		Confn	nnt:	Cou	upling:	Islands	:
	om Sul			(cm):			ars:	,	-			Disturb					-
Jubu	J Gu.			(3,				FF	ATUF	PFS		Diotal D		uiouio.	<u>. </u>		
Feature	H (m) L (n) I					• •	Comm							UTM Z.	FN
Toutare	, ,,,,,,,	, <u> </u>	.,													J 1	
								S A	MPLI	NG							
Meth	od	EF	sec	Sa	ımp L (m	1)	EF V	olt o	EF fre	eq EF	pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
NS	3																
			T		T		ī										
Species	Stag	ge To	tal# N	lin L	Max L	Ac	t					Samplin	g Comr	nents			
	+	+															
								СО	MMEI	NTS							
									IVI IVI L I								
					s surfac				l puddle:							ınd devil's clul	o); no
1 Comm									l puddle:							ınd devil's clul	o); no
Comm 2									l puddle:							ınd devil's club	o); no
1 Comm 2									l puddle:							nd devil's club	o); no
Comm 3 Comm 4									l puddle:							nd devil's club	o); no
Comm 3 Comm 4 Comm 5									l puddle:							nd devil's club	5); no
Comm 3 Comm 4 Comm 5 Comm 6									l puddle:							nd devil's clut	5); no
Comm 3 Comm 4 Comm 5 Comm									l puddle:							nd devil's club	5); no





S	ite:	12

						S	ITE	REFE	REN	CE						
Gazette	d Name	٠-		WS	~.						p : 093N	1 008	Access	· \/ <u>/</u>	Rip	arian
					o. C: 480	11	Po	ach: 1	1 - 4 - 4		ed Lg:					ass:
Local N			T	7							_					
UTM Z.I	E.N: S	660764	6103034	Metho	d: GP2	2 Su	rvey Da	te : 202	1-07-27	' Tim	i e: 14:3	0 A	gency:	C016	S	4/S6
						CHA	NNEL								WA	TER
Mea	sureme	ent	1 2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	10.1
Chann	el Widt	h (m): 1	.2 1.2	1.3	1.1	1.2	1.4							1.23	pH:	7.4
Wette	ed Widt	h (m): 1	.2 1.1	1.2	1.1	1	1.3							1.15	Cond:	58
	Pool D	F ()	11 0.12											0.12		
Bankf	ull Dept	h (m): 0	.3 0.2	0.2										0.23	Turbidit	y: L
Chan.	Gradie	nt (%):	2 2											2		
Flow S	tage:	M CI	nannel Co	nditions		Flo	od Sigr	ns: Nor	ne							
								COVE	R							
Cov	erTota	: SWD LV	WDI B	CB DF	ov	IV										
	A		T N	S N	D	N	Cano	py: 41	-70%	LW	/D Func	tion &	Distr:	F/E	IV Type:	N
<u> </u>							- -:	,		_			,		•	
	3 Shap		LB Tex	ture: F			.B Ripar					_		egetatio	_	NA
R	B Shap	e: V	RB Tex	ture: F		F	RB Ripa	rian Veç	getation	n: S	3	RB Rip	arian V	egetatio	n Stage:	NA
						CHAI	NNEL	MOF	RPHO	LOG	Υ					
Dom	Substra	ate: F	D95 (cm)	: 1	Mori	holog	v: L	C Sti	rm Patt	: IR	Confni	nnt: U	IN Co	upling:	DC Island	ds: 0
Subd	om Sul	ostr: G	D (cm)			ars: N	,				Disturb					
Jubu	oni Sui	JSII. G	D (CIII)	. 0.1		213. IV					Distuib	ance n	luicatoi	ъ.		
							FE	ATUF	RES							
Feature	e H (m) L (m)						Comm							UTM	
UN		30 I	mpassable	combina	ation of	underg	round c	hannel a	and ove	rland flo	ows for 3	80 m			9 660750	6102813
																1
							S A	MPL	ING							
Meth	od	EF se	c S	amp L (r	n)	EF V	olt/	EF fre	eq EF	pulse	Traps	Nets	Dur	ration	Depth (m)) Hab
N:	S															
Species	Stag	je Total	# Min L	Max L	Ac	t				5	Samplin	g Com	ments			
							CO	MME	NTS							
Comm 1	RHAB	- fair - prov	vided by ur	dercut ba	anks, S	WD an	d shallov	w pools	in R2 a	md R3.						
Comm	SHAB	- none - 95	5% fines in	bed. OH.	AB - no	ne - no	deep po	ools.								
2	147 11		. 5.1		, .										16.1	
Comm 3		the stream		oine L n	o barrie	ers; tas	t stream	, howev	er many	/ CODDIE	es create	e pocke	ts of cal	m water a	and fish cou	id easily
Comm 4			hen indica vith 80% fir				s with sp	arse bo	ulder d/	s in R1	; channe	el ~2m,	slope 15	5-17%; in	R2 channe	~1.5m
Comm 5	Past 9	Om u/s fror	n site becc	mes flat	with fine	es in ch	nannel (F	R3).								
Comm 6	Transit	ion S4/S6	at the barr	ier; streai	m beco	mes tin	y u/s - 0	.4m cha	nnel wi	dth and	0.1m ba	ankful d	epth.			
Comm 7																
Comm																
1 _ *	l															







							S	ITE	REFE	RENC	E						
Gazette	d Name	ə:			WS	D:					Ma	p: 093K	.042	Access	: FT	Ripa	rian
Local N	ame:				TW	C : 420	16	Read	:h: 1	Ass	essed	Lg : 1	10	Crew:	MJ	-	ass:
UTM Z.I	E.N: 1	0 3233	866 603	34727	Metho	d: GP	2 Sur	vey Da	t e : 202			e: 10:1:		gency:		N	CD
	<u> </u>							NNEL						<u> </u>		WAT	ER
Mea	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chanr	nel Widt	h (m):														pH:	
	ed Widt															Cond:	
	Pool D															Turbidity	
	ull Dept Gradie															rurbiuity	•
		it (70).	01	-10	.1141			! 0'	<u> </u>								
Flow S	stage:		Chann	iel Con	ditions		FIO	od Sign		_							
		LOVE	lı wol	- T		1 01/	T 137 1	(COVE	R							
Cov	/erTota	I: SWD	LWD	ВС	CB DF	OV	IV	Cano	ру:		LW	D Func	tion & l	Distr:		IV Type:	
LI	B Shap	e:	L	B Text	ure:			B Ripar	ian Veg	etation	:		LB Ripa	arian Ve	egetation	n Stage:	
	B Shap		R	B Text	ure:			_	ian Veg				-		egetatio	_	
		••	• •					INEL		PHO					-9	σ	
Dom	Substr	ato.	DQF	5 (cm):			phology			m Patt:	= =	Confnr	mnt:	Col	upling:	Island	·
	lom Sul) (cm):			ars:	y -	Oti	m i att.		Disturb				isiana	
Subu	om Su	JSII.		(Cili).			ai 5.		ATUF			Distuib	ance m	uicatoi	3 .		
Continu	a I II /m) <i> (m</i>	\					FE		=						UTM Z	EN
Feature	e H (m) L (m)						Comm	ent						UIMZ	E.N
								S A	MPLI	NG							
Meth	nod	EF	sec	Sa	ımp L (r	n)	EF V	olt	EF fre	q EF	oulse	Traps	Nets	Dur	ation	Depth (m)	Hab
N:	S				• •					1				-		,	
					May I	Ι										1	
Specie	s Stag	ge To	tal #	Min L	Max L	Ac	t				S	amplin	g Comi	nents		•	
Specie	s Stag	ge To	tal# I	Min L	Wax L	AC	t				S	amplin	g Comi	nents		•	
Specie	s Sta	ge To	tal # I	Min L	IVIAX L	Ac	t				S	amplin	g Comi	nents			
Specie	s Stag	ge To	tal # I	Win L	IVIAX L	Ac	t				S	amplin	g Comi	nents			
Specie	s Stag	ge To	tal# I	Min L	Wax L	Ac	t				S	amplin	g Comi	nents			
Specie	s Stag	ge To	tal#!	Min L	Wax L	Ac	t	СО	MMEI	NTS	\$	amplin	g Comi	nents			
Comm															~10m wi	ide swale.	
Comm 1	No fish	n habita	- contin	nuous s	scoured	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1	No fish	n habitan	- contir	nuous s	scoured	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1 Comm 2 Comm	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1 Comm 2 Comm 4 Comm	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1 Comm 3 Comm 4 Comm 5 Comm	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1 Comm 3 Comm 4 Comm 5 Comm 6	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	
Comm 1 Comm 3 Comm 4 Comm 5 Comm	No fish	n habitan	- contir	nuous s	scoured nel bed	channe	I within	30% slo	pe for ~	50m, th					~10m wi	ide swale.	







Site:	14
Site:	14

							S	ITE I	REFE	REN	E							
Gazette	d Name) :			wsc	:					Ма	p : 093K	.042	Access	FT		Ripa	rian
Local N	ame:				TWC	: 4201	7	Rea	ach: 1.1	, 1.2		sed Lg:	000	Crew:			Ċla	
UTM Z.I	E.N: 1	0 3230	071 603	34973	Method	1: GP2	Sur	vev Dat	e: 202	1-07-29	Tim	ne: 11:0		gency:			S4/	S6
								NNEL			-		•	,,			WATE	
Mea	sureme	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:		Temp:	9.8
	el Widt		1.1	1	1.1	1	1	1	,	U	3	10	11	14	1.03	1	•	
	ed Widt		1.1	0.9	0.9	1	1	0.9							0.97		pH:	6.7
	Pool D	` '	0.09	0.11	0.11	0.19									0.13		Cond:	116
Bankf	ull Dept	h (m):	0.2	0.2	0.1										0.17	Tu	rbidity:	С
Chan.	Gradie	nt (%):	4	4											4			
Flow S	tage:	L	Chann	nel Con	ditions:		Floo	od Sign	s: Non	е								
								(OVE	R								
Cov	erTota	: SWE	LWD	ВС	CB DP	٥٧	IV	C	44	700/		/D F	4! 0 1	D:-4	-/-	N/	T	
	М	S	Т	N	T N	D	Ν	Cano	oy: 41	·70%	LVV	/D Func	tion & i	DISTI:	F/E	IV	Type: 1	V
L	3 Shap	e: V	L	B Textu	ure: FC	3	Lſ	B Ripar	ian Veg	etation	: S	6	LB Rip	arian Ve	egetatio	n Stag	je: N	IA
R	B Shap	e: S	R	B Text	ure: FC	3	R	B Ripar	ian Veg	etation	: S	8	RB Rip	arian V	egetatio	n Stag	je: N	lΑ
						(INEL		РНО								
Dom	Substra	ate:	G D9 !	5 (cm):	10	Morr	hology	/: RI		m Patt:			nnt; F	C Cou	upling:	CO	Islands	: 0
	om Sul) (cm):		•	ırs: N	, .				Disturb						•
Jube	Om ou.	JSu .) (Giii).	0		I 3. IN	5.5	ATUR			Distuis	ance in	uicaic.	3.			
F - at	111/11	· I . /	\					FL								T		
Featur	_ `		1)		to fir!				Comm	ent							UTM Z.I	
LIC	I 0.7	5	Imna	anabla	TO TICK											110 3	2207116	202/073
UC	0.7	5	Impa	ssable	to fish											10 3	23071	6034973
UC	0.7	5	Impa	ssable	to fish			SA	MPII	NG						10 3	23071	6034973
						A T	EE V		M P L I		موالم	Trans	Note	Dur	ation			
Meti	nod		Impa = sec		imp L (m	1)	EF Vo		M P L I		pulse	Traps	Nets	Dur	ation		23071 (oth (m)	6034973 Hab
	nod					1)	EF Vo				pulse	Traps	Nets	Dur	ation			
Metl N:	nod S	EF	sec			a) Act						•			ation			
Meti	nod S	EF	sec	Sa	mp L (m							Traps Samplin			ation			
Metl N:	nod S	EF	sec	Sa	mp L (m							•			ation			
Metl N:	nod S	EF	sec	Sa	mp L (m							•			ation			
Metl N:	nod S	EF	sec	Sa	mp L (m							•			ation			
Metl N:	nod S	EF	sec	Sa	mp L (m			olt	EF fre	q EF		•			ation			
Metl N:	nod S	EF	sec	Sa	mp L (m			olt		q EF		•			ation			
Metl N:	nod S	EF To To To To To To To To To To To To To	F sec	Sa Min L	mp L (m	Act		c o	EF fre	q EF	S	àamplin	g Com	ments		Dep	oth (m)	Hab
Metl N: Specie	s Stag	ge To	stal # I	Min L	mp L (m	Act	and ha	C O	M M E I	q EF	s i; chanr	Samplin	g Comr	ments	d instrea	Dep	er for an	Hab
Mettl N: Specie Comm 1 Comm 2 Comm	No fish condition	EF in habitations. ssible to	stal # I	Min L m is ext	Max L	Act	and ha	C O	M M E I	q EF	s i; chanr	Samplin	g Comr	ments	d instrea	Dep	er for an	Hab
Specie Comm 1 Comm 2 Comm 3 Comm	No fish condition Inacce	EF ge To habita ons. ssible to take	e a photo	Min L m is extom Pink o of bar	Max L tremaly s	Act	and har	C O s nothin	M M E I	NTS er to fish	s; channalluvial	Samplin nel lacks	g Comr	ments	d instrea	Dep	er for an	Hab
Specie Comm 1 Comm 2 Comm 3 Comm 4	No fish condition Inacce Unable	EF in habitations. ssible to take to take in is mis	e a photomapped	Min L m is ext om Pink o of bar	mp L (m Max L tremaly s ut C. d/t	Act hallow underg ense ve	and har	C O s nothin	M M E I g to offe	NTS er to fish	i; chanr alluvial	Samplin nel lacks fan with	g Comi	ments	d instrea	Dep	er for an	Hab
Specie Comm 1 Comm 2 Comm 3 Comm	No fish condition Inacce Unable	EF in habitations. ssible to take to take in is mis	e a photomapped	Min L m is ext om Pink o of bar	Max L tremaly s ut C. d/t	Act hallow underg ense ve	and har	C O s nothin	M M E I g to offe	NTS er to fish	i; chanr alluvial	Samplin nel lacks fan with	g Comi	ments	d instrea	Dep	er for an	Hab
Specie Comm 1 Comm 2 Comm 3 Comm 4 Comm	No fish condition Inacce Unable	EF in habitations. ssible to take to take in is mis	e a photomapped	Min L m is ext om Pink o of bar	mp L (m Max L tremaly s ut C. d/t	Act hallow underg ense ve	and har	C O s nothin	M M E I g to offe	NTS er to fish	i; chanr alluvial	Samplin nel lacks fan with	g Comi	ments	d instrea	Dep	er for an	Hab
Specie Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish condition Inacce Unable	EF in habitations. ssible to take to take in is mis	e a photomapped	Min L m is ext om Pink o of bar	mp L (m Max L tremaly s ut C. d/t	Act hallow underg ense ve	and har	C O s nothin	M M E I g to offe	NTS er to fish	i; chanr alluvial	Samplin nel lacks fan with	g Comi	ments	d instrea	Dep	er for an	Hab





S	ite	1	5

Gazetted Name: WSC: Map: 093K.042 Access: FT	
·	Riparian
Local Name: TWC: 42020 Reach: 1 Assessed Lg: 110 Crew: MJ	Class:
UTM Z.E.N: 10 322530 6035227 Method: GP2 Survey Date: 2021-07-29 Time: 12:30 Agency: C016	S6
CHANNEL	
	WATER
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 0.5	рп:
Wetted Width (m): 0.3 0.5 0.5 0.5 0.2 0.1 0.3	Cond·
Res. Pool Dp (m): 0.07 0.08 0.08 0.08 0.08 0.09 0.01 0.11 0.12 0.12	T
Bankfull Depth (m): 0.1 0.1 0.2 0.1	<u> </u>
	<u>'</u>
Flow Stage: L Channel Conditions: Flood Signs: None	
C O V E R	
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 N N N N N N N N N N N	iv Type. N
LB Shape: U LB Texture: FGC LB Riparian Vegetation: C LB Riparian Vegeta	tion Stage: MF
RB Shape: U RB Texture: FGC RB Riparian Vegetation: C RB Riparian Vegeta	tion Stage: MF
CHANNEL MORPHOLOGY	
Dom Substrate: C D95 (cm): 30 Morphology: CP Strm Patt: SI Confinmnt: 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	Jopan (m) Hab
Species Stage Total # Min I Max I Act	
Species Stage Total # Min L Max L Act Sampling Comments	
Species Stage Total # Min L Max L Act Sampling Comments	
Species Stage Total # Min L Max L Act Sampling Comments	
Species Stage Total # Min L Max L Act Sampling Comments	
Species Stage Total # Min L Max L Act Sampling Comments	
COMMENTS	
	nouth.
COMMENTS Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from n	
C O M M E N T S Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from n	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from no 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections.	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from no 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections.	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from n 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections.	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from no 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections. Comm 4 Comm 4	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from no 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections. Comm 4	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from n 1 Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Incised channel upslope past underground sections. Comm 1 Comm 2 Comm 4 Comm 5 Comm 6 Comm	
Comm No fish habitat - tiny and shallow trickle with flow barely 1cm deep, gradient rises rapidly with 24% ~50m from no 1 Comm Several underground flow sections near mouth with rising gradient make the stream inaccessible to RB from Pi 2 Comm Incised channel upslope past underground sections. Comm 4 Comm 5 Comm 5	







Site:	16
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							S	ITE	REFE	RENC	CE						
Gazette	d Name	ə:			WS):					Ма	p: 093K	.042	Access	: FT	Ripa	rian
Local N	ame:				TW	: 927	03	Read	h: 1	Ass	essed	Lg: 1	00	Crew:	MJ	Cla	iss:
UTM Z.E	E.N: 1	0 320	444 6	6037002	Metho	d: GP2	2 Sur	vey Da	t e: 202	1-12-08	Tim	e: 9:45	A	gency:	C016	N	ΙΑ
							CHA	NNEL								WATI	ER
Mea	surem	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann	el Widt	h (m):														pH:	
	ed Widt															Cond:	
	Pool D															Turbidity:	:
Chan.																•	
Flow Stage: Channel Conditions: ND Flood Signs:																	
C O V E R																	
Cov	erTota	ı: İsw	ollwi	ΙВΙ	CB DP	Ιον	IV										
-	CoverTotal: SWD LWD B CB DP OV IV Canopy: LWD Function & Distr: IV Type:																
LB Shape: LB Texture: LB Riparian Vegetation: LB Riparian Vegetation St														n Stage:			
RB Shape: RB Texture: LB Riparian Vegetation: LB Riparian Vegetation Stage: RB Shape: RB Texture: RB Riparian Vegetation: RB Riparian Vegetation Stage:																	
RB Shape: RB Texture: RB Riparian Vegetation: RB Riparian Vegetation Stage: CHANNEL MORPHOLOGY																	
Dom	Dom Substrate: D95 (cm): Morphology: Strm Patt: Confinmnt: Coupling: Islands:																
															-		
Subdom Substr: D (cm): Bars: Disturbance Indicators: FEATURES																	
Feature																	
routure	Feature H (m) L (m) Comment UTM Z.E.N																
								S A	MPLI	NG							
Meth	od	Е	Fsec	S	amp L (n	1)	EF V	olt	EF fre	eq EF	pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
NS	6																
				1	1		T										
Species	Stag	ge To	otal #	Min L	Max L	Ac	t					Samplin	g Comi	ments			
		-															
								СО	MME	NTS							
					irse of ar cone - n					IM loca	tion. Se	arched	for any	kind of	flows bet	ween Pinkut (C. and
Comm 2	No pho	otos tal	ken - n	othing to	photogra	aph.											
Comm 3																	
Comm																	
4 Comm																	
5 Comm																	
6																	
Comm 7																	

ς	ite:	1	7
	ILE.		•

							S	ITE I	REFE	REN	E						
Gazette	d Name	e:			WSO):					Ma	p : 093K	042 <i>i</i>	Access	: FT	Ripa	rian
Local Na	ame:				TW	: 927	'04	Reac	h: 1	Δος		Lg: 1		Crew:		-	iss:
UTM Z.E		0 320	120 60	137381				rvey Dat				-9 . ie: 10:3		gency:		NI	CD
OTIVI Z.E	IN. [·	0 020	120 00	307 30 1	MELITO	J. GF		NNEL		1-12-00	11111	ie. 10.3	U A	gency.	COTO	WATE	
		<u> </u>								T 0		1 40	T 44	1 40			EK
	suremo		1	0.3	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann	el Wid	• •		0.3	0.5	0.5	0.2								0.32	pH:	
	Pool D	• •		0.2	0.5	0.5	0.2								0.22	Cond:	
Bankfu																Turbidity:	
	Chan. Gradient (%): 25 25																
Flow S		. ,		nel Con	ditions:		Flo	od Sign	e.	I			<u>I</u>	ı			
11011 0	ruge.		Onan						OVE	D							
Cov	orToto	ı. lew	DLWD	ВІ	св Гре	Lov	IV	•	JOVL	IX							
Cov	eriota	1: 300	LWD	В	OB DP	ov	IV	Cano	oy:		LW	/D Fund	tion &	Distr:		IV Type:	
<u> </u>																<u> </u>	
	3 Shap		-	LB Text				.B Ripar	_				-		egetatio	_	
RI	B Shap	e:	I	RB Text	ure:		F	RB Ripar	ian Veg	jetation	:		RB Rip	arian V	egetatio	n Stage:	
							CHA	NNEL	MOF	PHO	LOG	Υ					
Dom :	Substr	ate:	DS	95 (cm):		Mor	pholog	y:	Str	m Patt:		Confn	mnt:	Co	upling:	Islands	s:
Subdom Substr: D (cm): Bars: Disturbance Indicators:																	
Subdom Substr: D (cm): Bars: Disturbance indicators:																	
Feature	l H (m) <i>(</i> r	n) I						Comm							UTM Z.	FN
Teature	, ,,,,,,	·/ - (·	,						00111111	CIIL						011112.	
								S A	MPLI	NG						<u> </u>	
Meth	hod	F	F sec	Sa	ımp L (n	ı I	EF V		EF fre		pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
NS			300	+	p _ (ii	''				·4 -·	Juise	паро	11013		411011	Doptii (iii)	Hub
Species	Stag	ae To	otal #	Min L	Max L	Ac	t					Samplin	g Comi	ments		•	
													<u> </u>				
								CO	MME	NTS							
Comm 1	No fish	n habita	at - wate	ercourse	dissipat	es at s	ite UTM	1 ~25m a	way fro	m Pinku	ıt C.						
	Chann	elized	for ~70ı	m, then i	uphill is a	a meltv	vater ru	noff; tinv	and ste	ep; orio	inates	in a sma	all catch	ment ar	ea.		
2				,				. , . ,		-1, - 3							
Comm 3																	
Comm																	
4 Comm																	
5																	
Comm 6																	
Comm 7																	
1 1																	





Site:	18
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	SITE REFERENCE Gazetted Name: WSC: Map: 093K.042 Access: FT Riparian																
Gazette	d Nam	e:			WSC	:					Ма	p: 093K	.042	Access:	: FT	Ripar	ian
Local N	Name: TWC: 42027 Reach: 1 Assessed Lg: 150 Crew: MJ														Clas		
		Λ 3·	19958 60	137520				vov Dat	e: 202			-g. ie: 11:1:				Se	•
UTIVI Z.I	N. <u>L'</u>	0 3	19900 0	001029	Method			-		1-12-00	11111	ie: II:II	U AÇ	gency:	C016		
			_	•				NNEL				•	-	•		WATE	₹
	surem		1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
	el Wid	•	,	0.8	0.7	0.9	1.1	0.7							0.83	pH:	
	ed Wid	_ `	,	0	0	0	0	0							0	Cond:	
	Bankfull Depth (m): 0.2 0.3 0.2 0.3 0.2 0.3 0.2 0.3 0.2																
	Chan. Gradient (%): 4 4 6 4.67																
				1 -					<u> </u>						4.07		
Flow S	Flow Stage: DRY Channel Conditions: Flood Signs: None																
	COVER																
Cov	CoverTotal: SWD LWD B CB DP OV IV																
	N N N N N N N N N N N N N N N N N N N																
LI	LB Shape: U LB Texture: FC LB Riparian Vegetation: C LB Riparian Vegetation Stage: MF																
R	B Shap	e:	V	RB Text	ure: F0		R	B Ripar	ian Veg	etation	: 0	;	RB Rip	arian V	egetatio	n Stage: MI	F
	•							INEL		РНО			'				
Dom	Substr	ato:	G D 9	95 (cm):	25		ohology			m Patt:			mnt: O	C C 01	upling:	PC Islands:	NI
				` ,		•	•	y. Cr	- 311	III Fall.	IK					re islands.	IN
Subd	om Su	bstr:	С	D (cm):	4	Ва	ars: N					Disturb	ance In	dicator	s:		
								FE	ATUR	ES							
Feature	e H (m	1) L	(m)						Comm	ent						UTM Z.E	.N
SAMPLING																	
SAMPLING																	
Meth	od		EF sec	Sa	ımp L (m	1)	EF V		EF fre		pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
Meth			EF sec	Sa	ımp L (m	1)	EF V				pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
			EF sec	Sa	ımp L (m	n)	EF V				pulse	Traps	Nets	Dur	ation	Depth (m)	Hab
	3		EF sec	Sa Min L	mp L (m	Act						Traps Samplin			ation	Depth (m)	Hab
NS	3					1						•			ation	Depth (m)	Hab
NS	3					1						•			ation	Depth (m)	Hab
NS	3					1						•			ation	Depth (m)	Hab
NS	3					1						•			ation	Depth (m)	Hab
NS	3					1						•			ation	Depth (m)	Hab
NS	3					1		olt		q EF		•			ation	Depth (m)	Hab
NS	s Stag	ge n hab	Total #	Min L	Max L	Act	t	c o	EF fre	q EF		àamplin	g Comi	ments		Depth (m)	Hab
Species	No fish occasi	ge hab	Total #	Min L sonal flov	Max L	Act	t	C O	M M E I	NTS establis	hed ter	Samplin	g Comi	ments over de	veloping		
Species Comm 1 Comm 2 Comm	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	
Species Comm 1 Comm 2 Comm 3	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	
Species Comm 1 Comm 2 Comm 3	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5 Comm 6	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	
Species Comm 1 Comm 2 Comm 3 Comm 4 Comm 5	No fish occasi Watere enablin	n habbonal ed lik	Total #	Min L sonal flor 6 weeks sh use.	Max L ws for a vafter snc	Activery showmelt	ort perio	C O od indica	M M E I ated by	NTS establis	hed ter	Samplin restrial r	g Common mosses	over de	veloping	soil layer and	







Site: 1	9
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							s	ITE	REFE	REN	E						
Gazette	d Name	ə:			WS	D:					Ма	p: 093K	.042	Access	: FT	Ripa	rian
Local N	ame:				TW	C : 927	12	Read	:h: 1	Ass	essed	Lg : 1	00	Crew:	MJ		iss:
UTM Z.E	E.N: 1	0 319	214	6037831	Metho	d: GP:	2 Sur	vey Da	te: 202			e: 9:50		gency:	C016	N	Α
					1		СНА	NNEL								WAT	ER
Mea	sureme	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:	
Chann	el Widt	h (m):														pH:	
	ed Widt	. ,	_													Cond:	
	Pool D		_													Turbidity	
Chan. Gradient (%):																	
Flow Stage: Channel Conditions: ND Flood Signs:																	
C O V E R																	
Cov	erTota	ı. İsw	nlı w	DIBI	CB DP	lov	IV	`	30 V L	1							
CoverTotal: SWD LWD B CB DP OV IV Canopy: LWD Function & Distr: IV Type:																	
LB Shape: LB Texture: LB Riparian Vegetation: LB Riparian Vegetation S														n Stage:			
														_			
RB Shape: RB Texture: RB Riparian Vegetation: RB Riparian Vegetation Stage: CHANNEL MORPHOLOGY																	
Dom	CHANNEL MORPHOLOGY Dom Substrate: D95 (cm): Morphology: Strm Patt: Confinmnt: Coupling: Islands:															···	
3														ioiaira			
Feature	FEATURES Feature H (m) L (m) Comment UTM Z.E.N																
Feature H (m) L (m) Comment UTM Z.E.																	
								S A	MPL	NG							
Meth	od	Е	F sec	S	amp L (n	n)	EF V	olt	EF fre	eq EF	oulse	Traps	Nets	Dur	ation	Depth (m)	Hab
NS	6																
				<u> </u>	1												
Species	Stag	ge T	otal #	Min L	Max L	Ac	t					Samplin	g Comi	ments			
		-															
		\dashv			1	1											
								СО	MME	NTS							
Comm 1	No fish	habita	at - no	watercou	urse of ar	y kind	found a	t indicat	ed TRIN	/I location	n or 50) m radiı	IS.				
Comm 2	No pho	otos ta	ken - r	nothing to	photogra	aph.											
Comm 3																	
Comm																	
4 Comm																	
5 Comm																	
6																	
Comm 7					_										_		

Site	20

							5	SITE	REFE	REN	SITE REFERENCE													
Gazette	d Name	٠-			WSO	• 480	n_0277(00-78100				p: 093K	042	٨٠٠٩٩	. FT	Rin	arian							
		·.					J-9211(•					ass:							
Local N					TW	<i>;</i> :		Read	:h: 1	Ass	sessed	Lg : 2	20	Crew:	MJ									
UTM Z.I	E.N: 1	0 3191	114 60	37833	Metho	d: GP	2 S u	ırvey Da	te : 202	1-08-13	Tim	e: 10:1	0 A	gency:	C016		S 6							
							CHA	NNEL								WA	ΓER							
Mea	sureme	ent	1	2	3	4	5	6	7	8	9	10	11	12	Avg:	Temp:								
Chann	el Widt	h (m):	0.6	0.7	0.7	0.5	0.6	1							0.68	pH:								
Wette	ed Widt	h (m):	0	0	0	0	0	0							0	•								
Res.	Pool D	p (m):	0												0	Cond:								
	ull Dept		0.2	0.2	0.2										0.2	Turbidit	y:							
Chan.	Gradie	nt (%):	10	4	6	6									6.5									
Chan. Gradient (%): 10 4 6 6 6.5 Flow Stage: DRY Channel Conditions: Flood Signs: None																								
11011	COVER																							
Cov	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 N N N N N N N N N N N																							
LI	LB Shape: U LB Texture: FC LB Riparian Vegetation: C LB Riparian Vegetation Stage: MF																							
R															MF									
	RB Shape: U RB Texture: FC RB Riparian Vegetation: C RB Riparian Vegetation Stage: MF																							
	CHANNEL MORPHOLOGY																							
Dom	Dom Substrate: G D95 (cm): 25 Morphology: CP Strm Patt: IR Confnmnt: FC Coupling: PC Islands: N																							
Subd	om Sul	ostr:	C I	D (cm):	4	В	ars: N					Disturb	ance Ir	dicator	rs:									
								FE	ATUF	RES														
Feature	FEATURES Feature H (m) L (m) Comment UTM Z.E.N																							
F	0.7	, - (-	assable	no pool	3m u	/s from	Pinkut C								10 319114								
<u> </u>			шрс	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	110 pool	, on a	0 110111	T IIIICAC C	. oldo ol	iaiiioi.						10 01011	0007.000							
		<u> </u>						9.1	MPLI	NG														
84-41				10		. T						T	Maria			David (m)	I 11-1							
Meth		EF	sec	Sa	ımp L (n	1)	EF \	voit	EF fre	eq EF	pulse	Traps	Nets	Dur	ration	Depth (m)	Hab							
NS	5									-														
<u></u>					T == =																			
Species	s Stag	je To	tal#	Min L	Max L	Ac	t					Samplin	g Com	ments										
	-					-																		
	-					-																		
								СО	MME	NTS														
Comm 1	No fish	habita	t - seas	onal str	eam, ina	ccessi	ble fror	m Pinkut	C. for se	easonal	use by	RB d/t	small fa	lls barrie	er.									
Comm 2	No per	ennial h	nabitat ı	u/s to su	upport ar	y isola	ated fisl	h popula	tion.															
Comm	No fish	captur	ed durii	ng the fi	rst visit i	n 2001																		
3 Comm	15% sl	one for	10m w	ith 0.7m	sten ov	er 20c	m cobb	oles 3m fi	rom moi	ıth: the	hase of	the ster	n situate	ed 0.2m	ahove th	e high wate	r mark							
4				able to f		01 200	111 0000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1011111100	, ti io	D000 01	1110 010	Johnan	JG 0.ZIII	above ti	e riigir wate	mark							
Comm 5																								
Comm 6																								
Comm 7																								
Comm																								







Appendix II: Maps

