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Iqaluit Nukkiksautiit Project

2025 Aquatic Environment Baseline Assessment



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References

Acronyms, Abbreviations, Definitions

cm	centimetre
CPUE	Catch Per Unit Effort
g	gram
GIS	Geographic Information System
ha	hectare
HHRA	Human Health Risk Assessment
HTAs	Hunters and Trappers Associations
INP	Iqaluit Nukkiksautiit Project
km	kilometre
LiDAR	Light Detection and Ranging
mm	millimeter
NL	Newfoundland and Labrador
NNC	The Nunavut Nukkiksautiit Corporation
NWT	Northwest Territories
UAV	Unmanned Aerial Vehicle

Introduction

The Nunavut Nukkiqsautiit Corporation (NNC) is advancing environmental baseline studies to support early planning for the Iqaluit Nukkiqsautiit Project (INP or the Project), a proposed ~30-megawatt hydroelectric development. As part of these efforts, Dillon Consulting Limited (Dillon) completed an aquatic-focused baseline program in August 2025 to improve understanding of existing freshwater conditions within the Kuugaluk River system; a major waterway located approximately 60 kilometres (km) northeast of Iqaluit, known locally as a “big river” or “big area of a river.” The program included surveys of areas upstream and downstream of the proposed waterpower facility, as well as key tributaries and potential access road corridors.

This 2025 Aquatic Environment Baseline Assessment summarizes the results of desktop data review, aerial and drone-based habitat assessments, and opportunistic fish sampling completed during the 2025 field season. Together, these components provide an initial characterization of the aquatic environment in the study area and help identify data gaps and priorities for more detailed field programs planned for 2026.

Historic information for the watershed is limited, with the most relevant data originating from the 2019 Chidliak Project baseline program. That dataset, combined with literature and publicly available species mapping, was reviewed to help identify potential fish species assemblages and inform preliminary habitat evaluations. Arctic char is the only species confirmed to occur within the Project area to date.

Fieldwork completed in 2025 included:

- Aerial and drone surveys of Unnamed Lake, its inflowing tributaries, and approximately 100 km of the Kuugaluk River system downstream of the proposed dam site;
- Habitat descriptions based on drone imagery used to evaluate channel morphology, substrate, wetted width, stream gradient, and dominant habitat types across river reaches and tributaries;
- Visual assessments along proposed access road alignments to characterize potential aquatic crossings; and
- Opportunistic fish sampling, conducted by local Indigenous community members, resulting in the collection of 28 Arctic char for biometric measurements and laboratory analyses.

The information presented in this report is descriptive and preliminary. It establishes a baseline understanding of aquatic habitats and fish presence within the watershed but does not evaluate potential project effects. Instead, these results will guide the design of the comprehensive aquatic baseline program planned for 2026, which will include water and sediment quality, benthic communities, fish population studies, habitat quantification, and aquatic health indicators.

This assessment reflects NNC's commitment to early data gathering, collaboration with community members, and the incorporation of local knowledge to support the responsible planning of the INP. Future seasons of study will build on this foundation to develop a more complete picture of aquatic conditions within the Project area.

2.0 Methodologies

2.1 Historic Data and Desktop Analysis

A desktop literature review was conducted in order to gain insight on the fish and fish habitat existing within the Project area. The review focused on summarizing information from publicly available sources, such as:

- Government publications;
- Available species mapping; and
- Previous environmental studies.

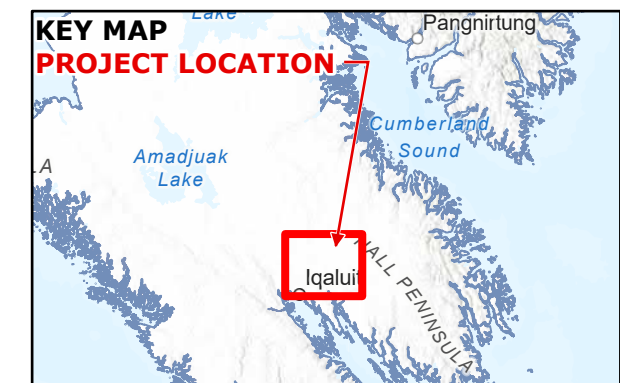
Existing literature was reviewed in order to determine possible fish species assemblages within the Project area, as well as to inform the basis of habitat descriptions and assessments of fish habitat suitability.

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2025 AQUATIC ENVIRONMENT BASELINE ASSESSMENT

PROJECT LOCATION

FIGURE 1

- Potential Acces Roads
- Main Reservoir



SCALE 1:250,000

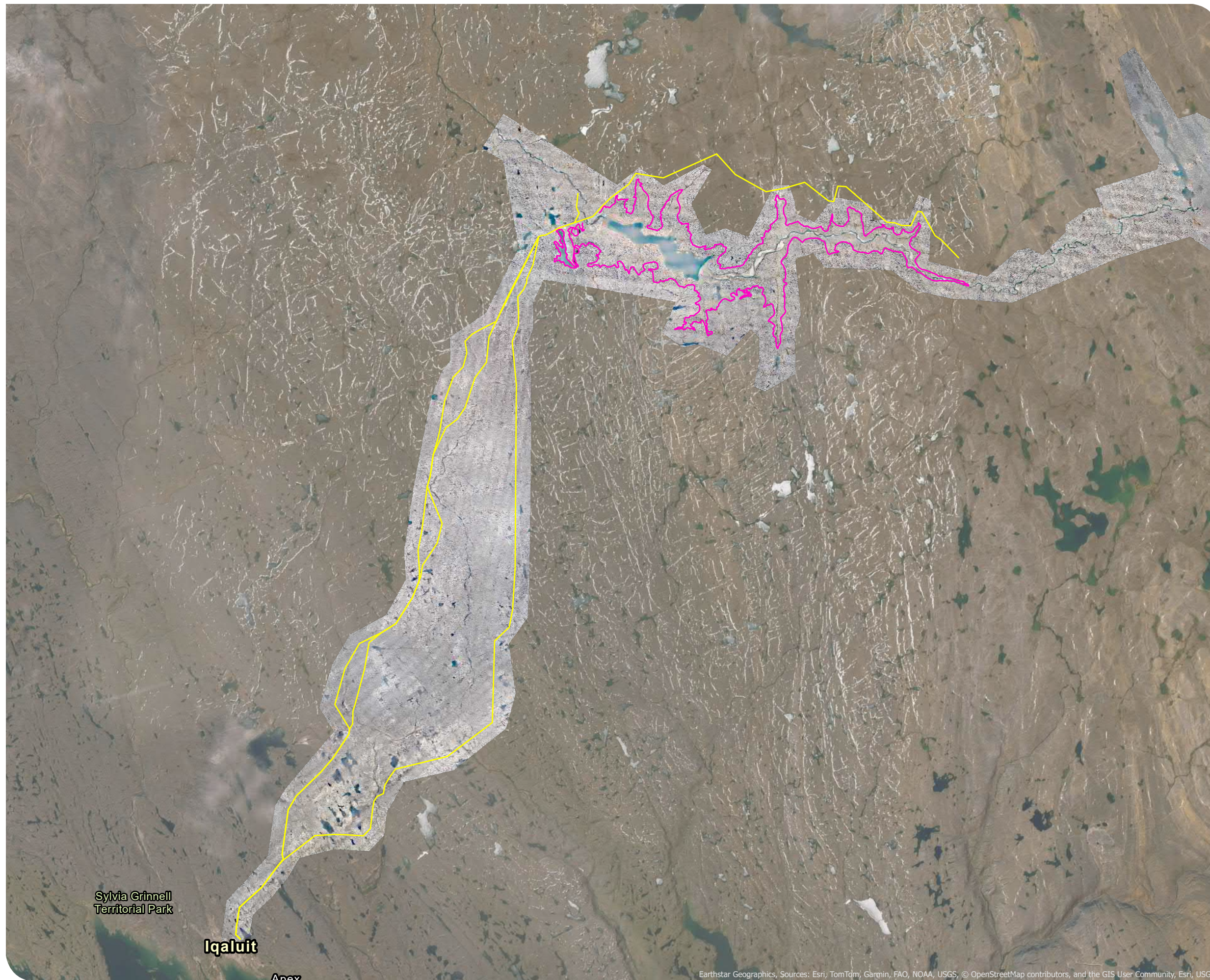


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2.2 2025 Field Surveys

2.2.1 Preliminary Habitat Descriptions

Aerial surveys were completed in August 2025, covering the Unnamed Lake shoreline and approximately 100 km of the Kuugaluk River system downstream of the proposed hydroelectric facility location. Additionally, drone imagery collected during extensive LiDAR surveys, completed by Arctic UAV in late July 2025 and, was analyzed to describe habitat within tributaries, upstream of the proposed reservoir, and at major river crossings along proposed access roads. This drone imagery was processed to a 30 cm resolution and then visually assessed to determine dominant habitat types and substrate as well as connectivity within the watershed. River width and stream gradient were estimated using GIS; however, stream gradient calculations were limited to areas where LiDAR data was available, specifically the reservoir perimeter and tributaries, upstream areas, and along the proposed access roads. With the 30 cm resolution, dominant substrate is characterized as fine, coarse and bedrock (**Table 1**).

Table 1: Grain Size and Substrate Classification

Sediment Grouping	Approximate Size	Rationale
Fine	<30cm	No individual grains are discernible on drone image
Coarse	>30cm	Individual grains are easily discernible
Bedrock	-	Continuous bedrock

Figures 2 through 5 show the various locations that were visually assessed during aerial reconnaissance surveys and drone surveys.

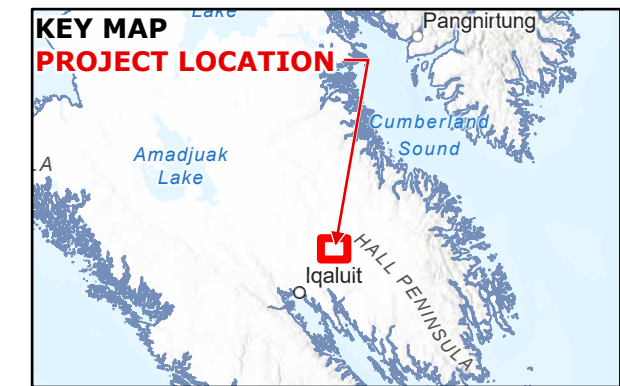
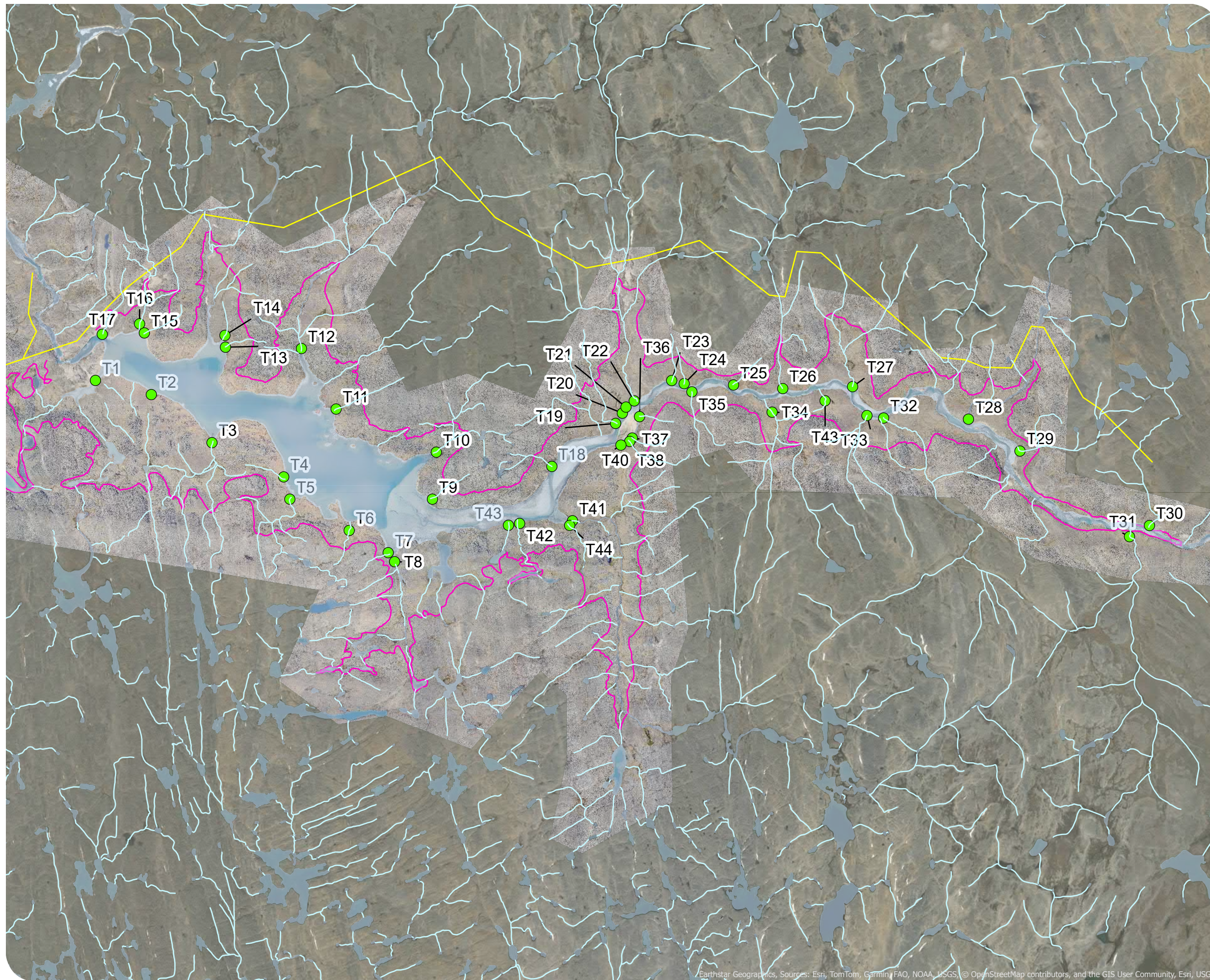
2.2.2 Opportunistic Fishing

Fish samples were collected by members of local communities during the week of September 3, 2025, using spin rods and lures. After capture, the fish were humanely euthanized and retained for sampling. Each fish was identified by species, and its length was recorded. The heads and tails were removed, bagged, and stored frozen. These samples were then sent to St. John's, NL, for processing and laboratory submission, which is currently ongoing.

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2025 AQUATIC ENVIRONMENT BASELINE ASSESSMENT

TRIBUTUARY LOCATIONS
FIGURE 2

- Aquatic Habitat Location
- Potential Access Roads
- Main Reservoir
- Watercourse
- Waterbody



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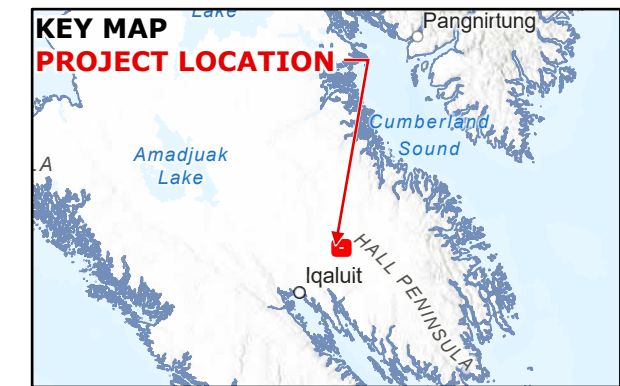
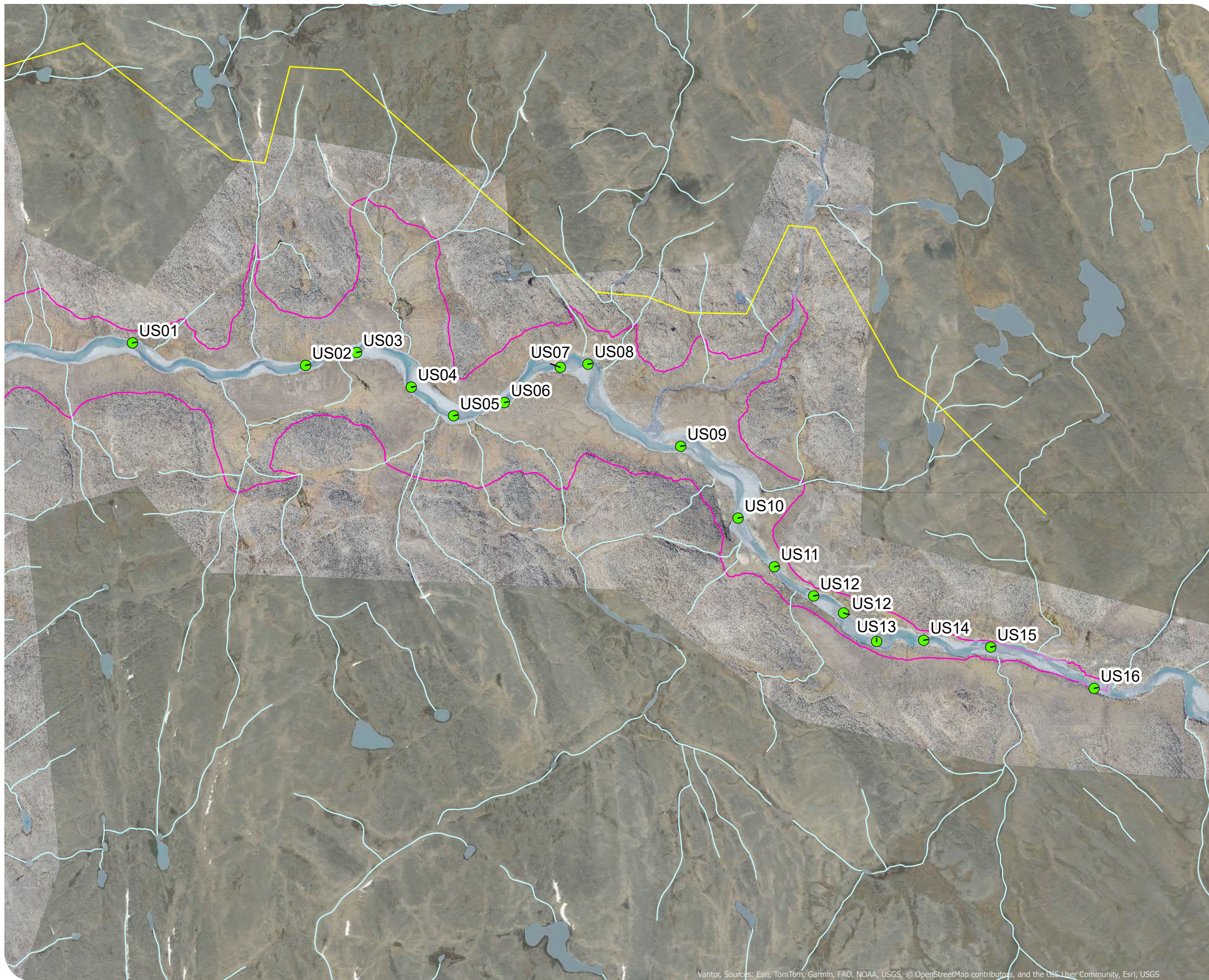
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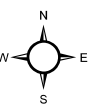
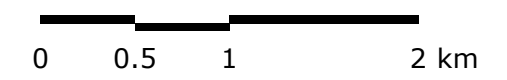
UPSTREAM LOCATIONS

FIGURE 3

- Aquatic Habitat Location
- Potential Access Roads
- Main Reservoir
- Watercourse
- Waterbody



SCALE 1:40,000



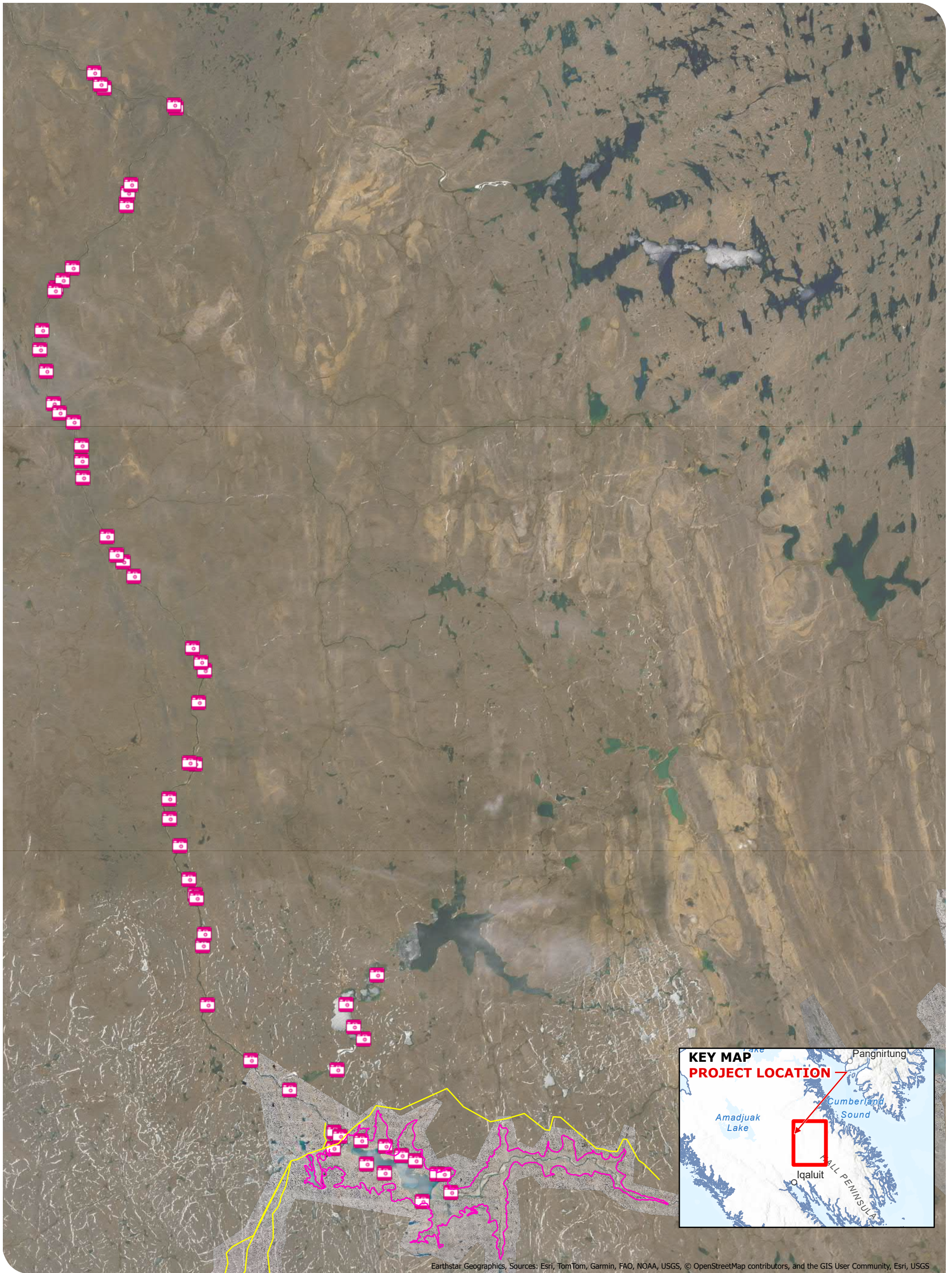
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2025 AQUATIC ENVIRONMENT
BASELINE ASSEMENT

**DOWNSTREAM SURVEY
EXTENTS**

FIGURE 4

-  Photo
-  Main Reservoir
-  Potential Acces Roads

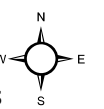


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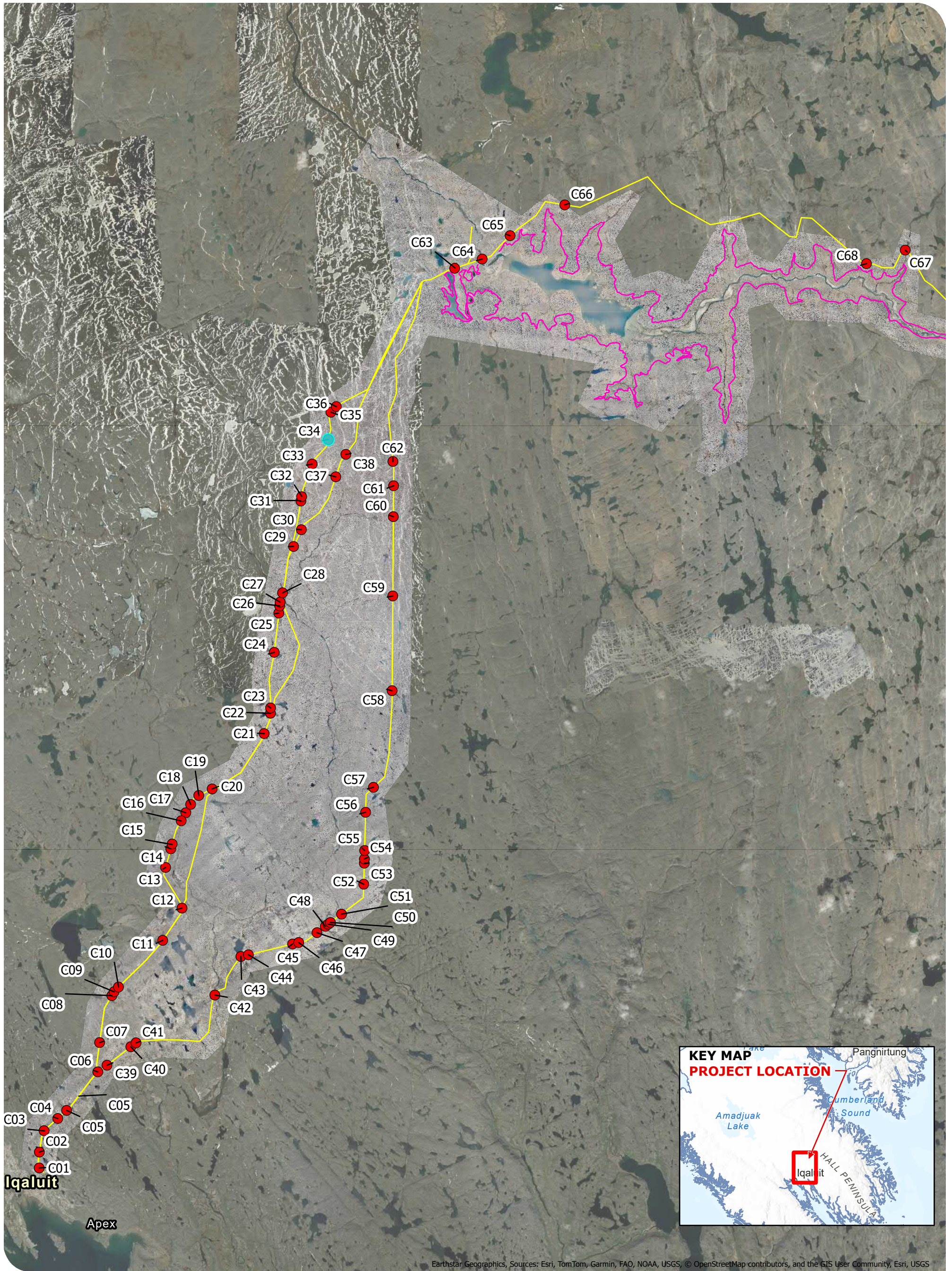
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0 3.5 7 Kilometers



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2025 AQUATIC ENVIRONMENT
BASELINE ASSEMENT

ACCESS ROAD CROSSINGS

FIGURE 5

- Access Road Habitat
- Potential Acces Roads
- Waterbody
- Main Reservoir

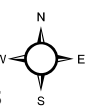


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SCALE 1:190,000

0 2.25 4.5 Kilometers



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3.0 Results

3.1 Historic Data and Desktop Analysis

There is currently limited readily accessible published studies for fish species presence and aquatic habitats within the Kuugaluk River system; However, Evans *et al.* (2002) has listed several species as present throughout various regions of Nunavut and Northwest Territories (NWT). Of all the species potentially present (**Table 2**), Arctic char (*Salvelinus alpinus*) is the only confirmed species within the Kuugaluk River system. Arctic char were captured immediately downstream of proposed reservoir during the 2025 monitoring program (see **Section 3.2.2**) and upstream of the proposed reservoir, approximately 48 km east, in 2019 by Golder (2020, **Figure 6**). Sampling in 2019 was completed as a part of the Environmental Assessment for the Chidliak Mine, which was near the headwaters of the Kuugaluk River watershed.

Table 2: Common Freshwater Fishes Found Throughout Nunavut and NWT

Common Name	Scientific Name	Region Present ¹
Arctic Char	<i>Salvelinus alpinus</i>	Eastern Arctic Island, East Arctic
Arctic Grayling	<i>Thymallus arcticus</i>	East Arctic
Burbot	<i>Lota lota</i>	East Arctic
Lake Chub	<i>Couesius plumbeus</i>	East Arctic
Lake Cisco	<i>Coregonus artedi</i>	East Arctic
Lake Trout	<i>Salvelinus namaycush</i>	East Arctic
Lake Whitefish	<i>Coregonus clupeaformis</i>	East Arctic
Least Cisco	<i>Coregonus sardinella</i>	Eastern Arctic Island, East Arctic
Longnose Sucker	<i>Catostomus catostomus</i>	East Arctic
Ninespine Stickleback	<i>Pungitius pungitius</i>	Eastern Arctic Island, East Arctic
Northern Pike	<i>Esox lucius</i>	East Arctic
Round Whitefish	<i>Prosopium cylindraceum</i>	East Arctic
Slimy Sculpin	<i>Cottus cognatus</i>	East Arctic
Spoonhead Sculpin	<i>Cottus ricei</i>	East Arctic
Threespine Stickeback	<i>Gasterosteus aculeatus</i>	Eastern Arctic Island, East Arctic
Trout Perch	<i>Perciosis omiscomaycus</i>	East Arctic
White Sucker	<i>Catostomus commersoni</i>	East Arctic

¹Region as per Evans et al. (2002).

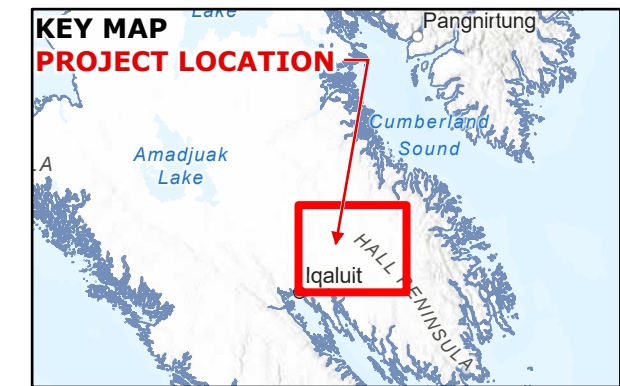
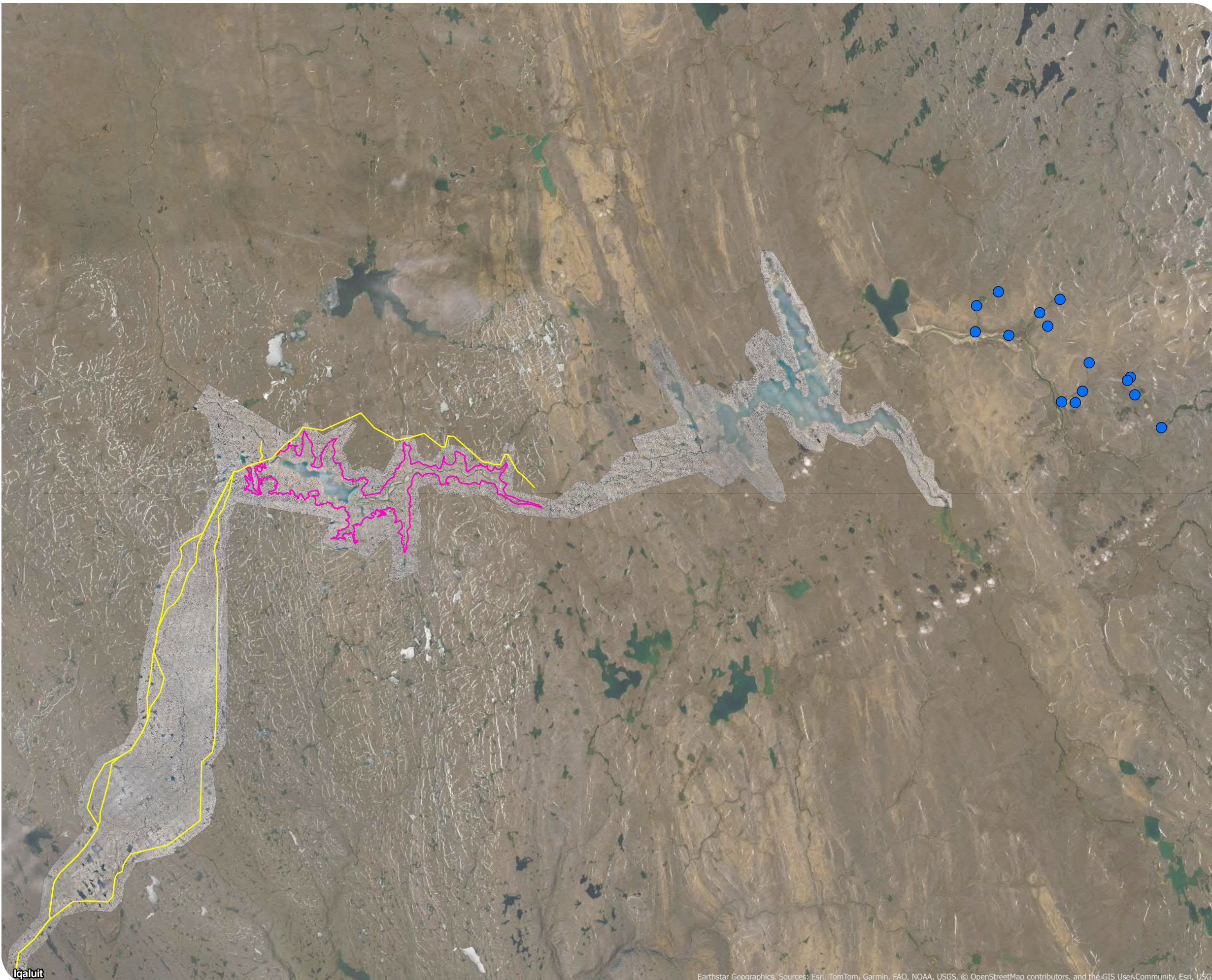
Fish and fish habitat surveys were completed in 2019, for the Chidliak Project by Golder (2020). During this sampling program, Arctic Char was the only species that was captured (**Table 3**). Sampling was completed using a combination of index electrofishing, without the use of barrier nets, and hoop nets.

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CHIDLIAK DATA

FIGURE 6

- Childliak Data Points
- Potential Acces Roads
- Main Reservoir



SCALE 1:350,000



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Table 3: Summary of Total Catch and Catch Per Unit Effort (CPUE) Recorded in 2019

Sample Location	Total Catch	Total Biomass (g)	Abundance CPUE (fish/300 seconds)	Biomass CPUE (grams/300 seconds)
6-1-DS	15	138.0	10.1	93.2
6-1-DS-E	0	0.0	0.0	0.0
6-1-MD	31	343.0	15.6	172.9
6-1-US	6	66.0	3.6	39.2
6-2-DS-W	4	35.0	3.6	31.3
6-2g	3	33.0	2.5	27.7
6-2-MD	13	344.0	8.0	212.8
6-2-US	9	137.0	4.9	74.7
7-1a	0	0.0	0.0	0.0
7-1-DS	5	44.0	3.6	32.1
7-1-MD	5	138.0	3.6	99.0
7-1-US	0	0.0	0.0	0.0
7-1-US-j	1	3.5	1.0	3.3
7-2-DS	5	45.3	2.8	25.2
7-2i	1	96.0	0.3	24.2
7-2-MS	2	21.0	0.6	6.3
7-2-US	0	0.0	0.0	0.0
Total	100	1,443.9	3.2	46.7

All of the Arctic char that were sampled in 2019 were juveniles, with the largest individual fish being 200mm in length. Froese & Pauly (2025) have found length and maturity for Arctic char on Baffin Island to range from 350 to 500mm (**Figure 7**).

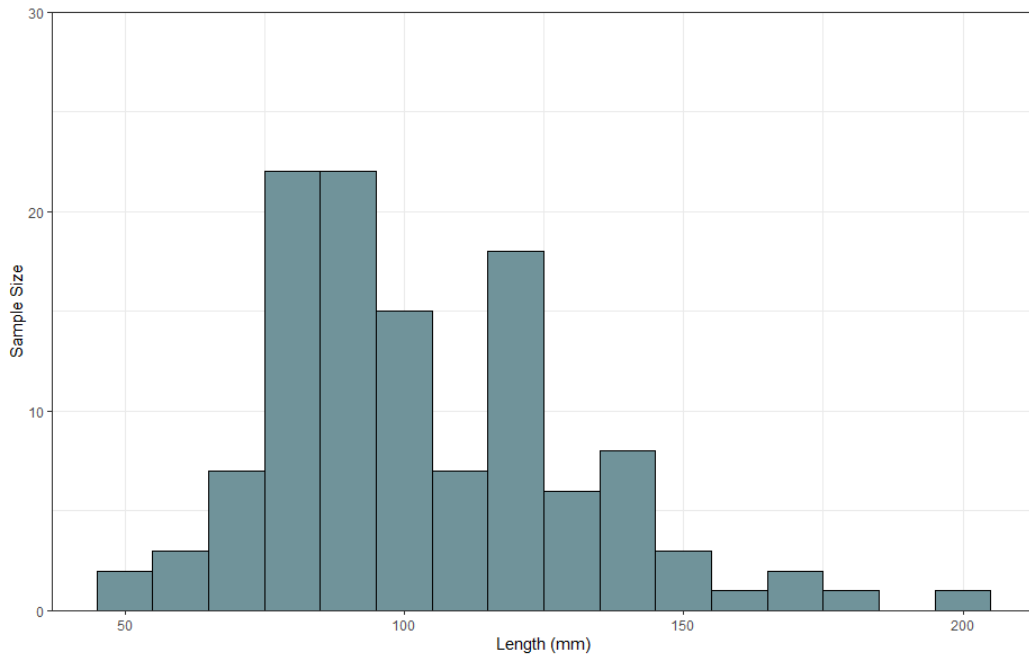


Figure 7: Length Distributions for Arctic Char Captured Upstream of the Project Area in 2019

Preliminary habitat assessments were completed to determine the overall habitat quality for Arctic char, using habitat preferences presented by Evans *et al.* (2002; **Table 4**). Additional assessment will be undertaken following more extensive fishing surveys to confirm presence of other species. Fish habitat assessments are based on visual assessments and should be considered preliminary. Detailed habitat surveys will be undertaken during the proposed 2026 field program to further define the habitat present and quality.

Table 4: Habitat Preferences for Arctic Char (Evans et al. 2002)

Category	Spawning	Young-of-Year	Juvenile	Adult
Depth				
0-20cm	H	H	H	-
21-60cm	H	H	H	-
61-100cm	H	H	H	-
101-200cm	H	-	-	-
>200cm	H	-	-	-
Substrate				
Bedrock	-	-	-	-
Boulder	-	-	-	-
Rubble	H	-	-	-

Category	Spawning	Young-of-Year	Juvenile	Adult
Cobble	M	-	-	-
Gravel	H	H	H	-
Sand	M	-	-	-
Silt/Clay	-	-	-	-
Hand-pan	-	-	-	-
Detritus (muck)	-	-	-	-
Flow Regime				
Pool	H	H	H	-
Run	H	-	-	-
Riffle	H	-	-	-
Rapid	-	-	-	-

Legend

H	High Suitability
M	Medium Suitability
L	Low Suitability
-	Not Suitable/No documented preferences

3.2 2025 Field Surveys

3.2.1 Preliminary Habitat Descriptions

3.2.1.1 Unnamed Lake Shoreline

The proposed reservoir covers a surface area of approximately 1,111 ha. The bathymetry of the reservoir is currently unknown, and the waterbody flows in a northwest direction (**Figure 8**). The Kuugaluk River system upstream of the proposed reservoir is the primary source; along with other large unnamed tributaries, it forms notable deltas where it enters the reservoir. The shoreline is characterized by coarse, rocky material, primarily rubble and boulder. However, shallow gravel and cobble bars are present, particularly near the northeastern shoreline. The littoral zone consists largely of fine substrate, creating suitable spawning habitat for Arctic char.

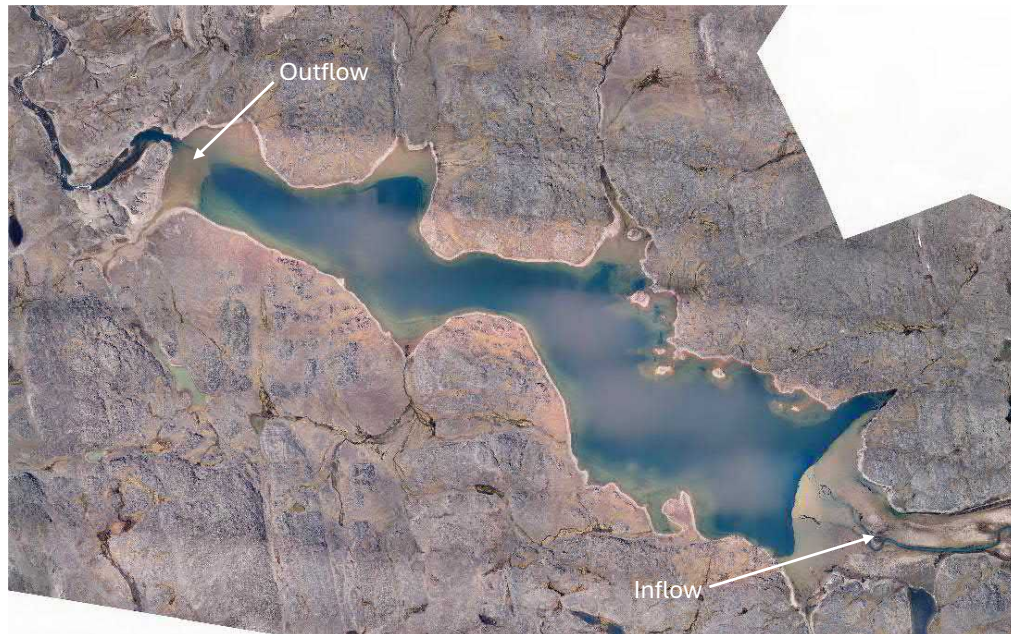


Figure 8: Drone Imagery of Unnamed Lake, August 2025

3.2.1.2 Proposed Reservoir Inflow

The formation of the proposed reservoir due to flooding for the proposed project is expected to inundate approximately 20km of the Kuugaluk River system upstream of the existing inflow confluence, changing the riverine habitat to lacustrine. The majority of the habitat present within the Kuugaluk River system above Unnamed Lake was dominated by run morphology with fine substrates (**Figure 9, A and B**). At the time of the drone surveys, the wetted width was an average of 60-120m, with channel widths often exceeding 200 m. There were 16 areas of riffle, cascades and rapids along the river (**Figure 9, C and D**), with the first approximately 8 km upriver of proposed reservoir. A single small chute was identified, where the river narrowed from 120m to 30m, with bedrock being prominent. Based on the suitability presented by Evans *et al.* (2002), there is habitat present in proposed reservoir Inflow that would be suitable for all life stage of Arctic char.



Figure 9: Representative Habitat in Kuugaluk River Above Proposed Reservoir; A) Kuugaluk River at Confluence with Proposed Reservoir, B) Run Habitat, C) Riffle and Cascade, D) Riffle and Small Chute

3.2.1.3 Proposed Reservoir Tributaries

A total of 45 tributaries were assessed using drone imagery collected in August 2025 (Table 5, Figure 2). Overall, the most dominant habitat present along the tributaries was riffle, with coarse substrate being the most dominant. Width and stream gradient varied throughout the tributaries (Table 5). Overall, many of the tributaries appeared to be intermittent, with poorly defined channels and heavy braiding. Many of the tributaries may be seasonal but could be passable and maintain suitable fish habitat during freshet.

Table 5: Habitat Measurements for Tributaries Flowing into Proposed Reservoir

Tributary Number	Dominant Habitat	Dominant Substrate	Estimated Width (m)	Estimated Gradient (%)
T1	Run	Fine	23	<1
T2	Intermittent	Coarse	-	7
T3	Intermittent	Coarse	8	3
T4	Intermittent	Coarse	8	3
T5	Intermittent	Coarse	8	3
T6	Intermittent	Coarse	-	4
T7	Intermittent	Coarse	14	10
T8	Riffle	Coarse	8	3
T9	Intermittent	Coarse	12	4
T10	Riffle	Coarse	4	3
T11	Riffle	Coarse	2	1
T12	Riffle	Coarse	16	2
T13	Intermittent	Fine	1	1
T14	Riffle	Fine	3	1
T15	Riffle	Coarse	3	4
T16	Riffle	Coarse	8	3
T17	Run	Fine	3	10
T18	Riffle	Coarse	9	7
T19	Riffle	Coarse	3	3
T20	Run	Fine	8	6
T21	Run	Fine	8	6
T22	Run	Fine	11	1
T23	Run	Fine	6	7
T24	Intermittent	Fine	3	5
T25	Riffle	Coarse	4	4
T26	Riffle	Coarse	23	3
T27	Riffle	Coarse	9	3
T28	Riffle	Coarse	36	4
T29	Riffle	Fine	27	3
T30	Riffle	Coarse	12	7
T31	Riffle	Fine	22	3
T32	Riffle	Coarse	17	1
T33	Riffle	Coarse	4	<1
T34	Riffle	Coarse	20	2
T35	Intermittent	Fine	40	2
T36	Intermittent	Fine	12	5
T37	Riffle	Fine	11	5
T38	Riffle	Fine	26	5

Tributary Number	Dominant Habitat	Dominant Substrate	Estimated Width (m)	Estimated Gradient (%)
T39	Riffle	Fine	10	2
T40	Riffle	Fine	18	3
T41	Riffle	Fine	10	3
T42	Intermittent	Fine	1	2
T43	Intermittent	Fine	<1	3
T44	Riffle	Coarse	5	3
T45	Riffle	Coarse	16	2

3.2.1.4

Kuugaluk River Downstream of Proposed Reservoir

Aerial surveys covered the downstream area approximately 100km from the outflow of proposed reservoir. Visual surveys were completed for 34 individual points. Overall, rapids was the most common channel morphology assessed, with boulder being the most prevalent substrate (Table 6). In addition to rapids, pool, run and riffle channel morphology were also observed (Figure 10). On average, the Kuugaluk River system downstream of the Reservoir was estimated to be 115m wide, ranging from 60 to 235m. Based on the suitabilities presented by Evans et al. (2002), there is habitat present in proposed reservoir downstream of proposed reservoir that would be suitable for all life stages of Arctic char.

Table 6: Habitat Information from Kuugaluk River Downstream of Proposed Reservoir

Distance Downstream (km)	Dominant Channel Morphology	Dominant Substrate	Estimated Width (m)
6.1	Run	Gravel	67
10.1	Pool	Gravel	155
16.0	Run	Gravel	112
20.8	Rapid	Boulder	128
21.7	Rapid	Bedrock	235
24.3	Run	Gravel	230
24.7	Riffle	Rubble	134
26.3	Riffle	Rubble	92
29.2	Rapid	Boulder	128
31.6	Riffle	Cobble	141
33.2	Run	Cobble	136
37.0	Run	Cobble	182
42.2	Riffle	Boulder	113
44.7	Rapid	Boulder	88
45.5	Rapid	Boulder	88
46.7	Rapid	Boulder	108

Distance Downstream (km)	Dominant Channel Morphology	Dominant Substrate	Estimated Width (m)
54.2	Rapid	Boulder	94
55.7	Run	Boulder	112
56.5	Rapid	Boulder	103
58.3	Run	Gravel	76
63.1	Run	Sand	103
64.5	Rapid	Boulder	106
65.6	Rapid	Boulder	106
67.5	Rapid	Boulder	99
68.7	Rapid	Boulder	109
72.4	Rapid	Boulder	110
74.2	Run	Gravel	101
76.0	Run	Cobble	160
79.3	Rapid	Boulder	60
80.3	Riffle	Boulder	79
87.1	Riffle	Boulder	82
96.6	Run	Boulder	101
104.2	Riffle	Boulder	65

Note:

Habitat and substrate descriptions are representative of the survey location only, and do not indicate habitat between survey points.

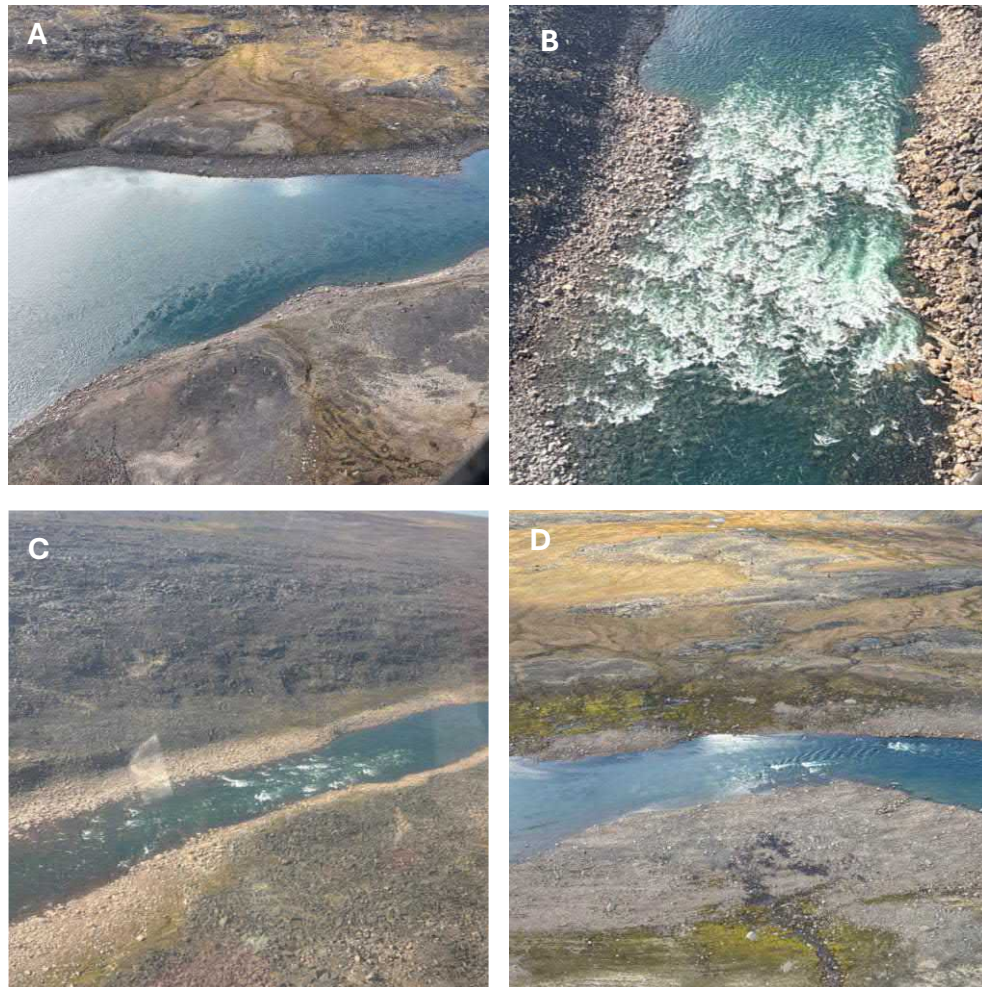


Figure 10: Examples of the Different Channel Morphology Observed in the Kuugaluk River Downstream of Proposed Reservoir. A) Pool, B) Rapid, C) Riffle, D) Run

Potential Barriers

Throughout the aerial surveys, the only potential barriers to upstream fish movement that were identified were the two chutes located immediately downstream of proposed reservoir (**Table 7; Figure 11**). The presence of Arctic char (see **Section 3.2.2**) upstream of the chutes indicates that they may only pose seasonal or partial barriers to upstream migration. Each chute was almost entirely bedrock, and had overall gradients of 4% and 5%, respectively. Over the entirety of each chute (**Figure 11**), there were two notable steep sections, with a flatter section connecting them. Maximum measure gradients were 17% in Chute 1 and 11% in Chute 2.

Table 7: Summary of Chute Measurements Downstream of Unnamed Lake

Chute ID	Width (m)	Length (m)	Overall Gradient (%)	Maximum Gradient (%)	Dominant Substrate
Chute #1	23	191	17	4	Bedrock
Chute #2	18	402	11	5	Bedrock

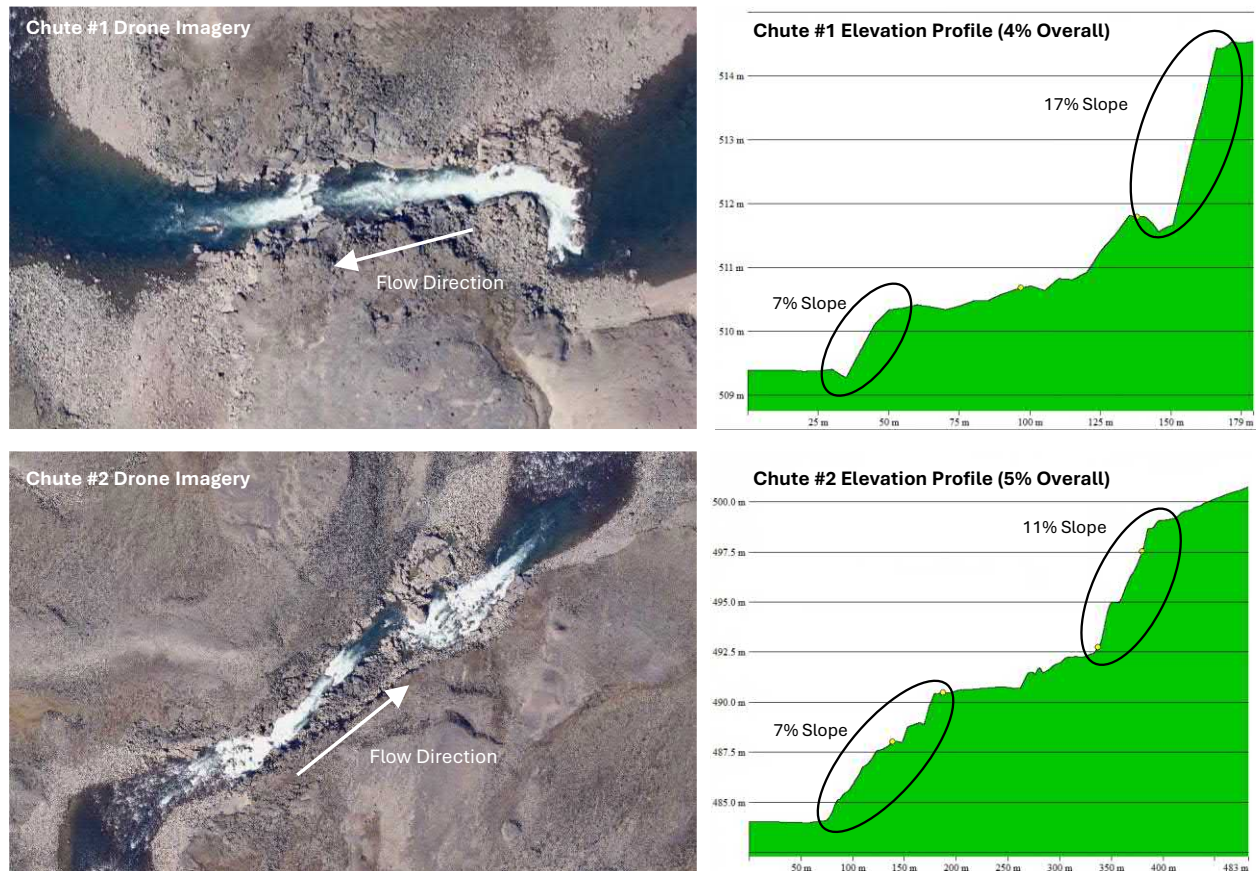


Figure 11: Upper and Lower Chutes Found Immediately Downstream of Proposed Reservoir (Image from Drone Surveys Completed on late August, 2025)

3.2.1.5 Access road Crossings

A total of 59 stream and river crossings were assessed across three proposed access road alignments using drone imagery collected in August 2025. Intermittent flow, with coarse substrate was the predominant habitat, indicating the seasonality of the watercourses in the area, which are likely fed by snow melt. Width and stream gradient varied throughout the crossings (**Table 8**). There were instances of large riverbeds, which were completely dry, again showing the seasonality of the watercourse within the area. Large dry channels have been included in **Table 8**; however, locations lacking a clearly defined channel were excluded. Based on the suitability presented by Evans *et al.* (2002), there is limited suitable Arctic char habitat present in the access road crossing, and the habitat that is present is isolated to select streams.

Table 8: Habitat Information from Access Road Crossings

Crossing Number	Dominant Channel Morphology	Dominant Substrate	Estimated Width (m)	Estimated Gradient (%)
C01	Intermittent	Fine	20	4
C02	Pool	Bedrock	8	1
C03	Run	Bedrock	15	2
C07	Intermittent	Fine	2	3
C08	Intermittent	Fine	2	2
C09	Pool	Fine	21	8
C11	Intermittent	Fine	3	6
C12	Riffle	Coarse	32	10
C13	Pool	Coarse	35	2
C16	Riffle	Bedrock	36	7
C18	Intermittent	Fine	2	2
C21	Intermittent	Fine	9	0
C22	Flat	Fine	33	7
C23	Intermittent	Coarse	12	5
C24	Intermittent	Coarse	8	5
C25	Intermittent	Coarse	17	2
C26	Flat	Fine	13	4
C27	Intermittent	Fine	8	3
C28	Riffle	Coarse	48	2
C29	Riffle	Coarse	10	2
C30	Flat	Coarse	9	2
C31	Flat	Coarse	24	1
C32	Intermittent	Coarse	10	<1
C33	Intermittent	Fine	6	1
C34	Snowpack	Coarse	6	9
C35	Dry ¹	Coarse	54	4
C36	Dry ¹	Coarse	58	4
C37	Intermittent	Coarse	8	1
C38	Dry ¹	Coarse	58	6
C39	Intermittent	Fine	12	4
C40	Flat	Fine	4	3
C41	Pool	Fine	90	3
C42	Run	Fine	185	2
C43	Intermittent	Fine	19	5
C44	Flat	Fine	1	1
C45	Pool	Coarse	43	2
C46	Intermittent	Fine	27	15

Crossing Number	Dominant Channel Morphology	Dominant Substrate	Estimated Width (m)	Estimated Gradient (%)
C47	Pool	Fine	25	3
C48	Flat	Fine	91	5
C49	Flat	Fine	3	5
C50	Pool	Fine	65	3
C51	Intermittent	Coarse	9	<1
C52	Riffle	Coarse	9	5
C53	Pond	Bedrock	48	2
C54	Intermittent	Coarse	5	2
C55	Pond	Fine	61	6
C56	Pool	Coarse	21	2
C57	Riffle	Coarse	9	4
C58	Riffle	Coarse	5	3
C59	Intermittent	Coarse	2	3
C60	Intermittent	Coarse	40	3
C61	Intermittent	Coarse	9	5
C62	Chute	Bedrock	7	9
C63	Pond	- ²	127	3
C64	Run	Coarse	60	<1
C65	Pool	Coarse	11	4
C66	Intermittent	Bedrock	4	2
C67	Riffle	Coarse	20	1
C68	Intermittent	Coarse	14	4

¹Clear river channel observed, however it was dry at time of surveys.

²Pond was very turbid on drone imagery, dominant substrate is.

3.2.2 Opportunistic Fishing

A total of 28 Arctic char were captured in the river immediately downstream of the chute at the proposed dam location. The majority of the fish captured in 2025 were likely adults, which, according to Froese and Pauly (2025), typically range between 350-500 mm on Baffin Island. Nine individuals captured were less than 350 mm in length, while a single individual exceeded 500 mm. Using data collected in 2019 from the Childiak Project, located upstream within the same watershed (Golder Associates Ltd., 2020), weight estimates were calculated using a length-weight regression. A summary of lengths and approximate weights is presented in **Table 9**, while length distributions are shown in **Figure 12**.

Table 9: Summary of Arctic Char Biometrics, 2025

Sample Size	Length (mm)		Weight (g)	
	Mean	Range	Mean	Range
28	374	279-610	298.7	139.0-970.2

1. Weights are estimated based on length-weight regression using fish collected during the Chidliak Baseline program. Note that fish sampled in 2019 significantly smaller than those sampled in 2025.

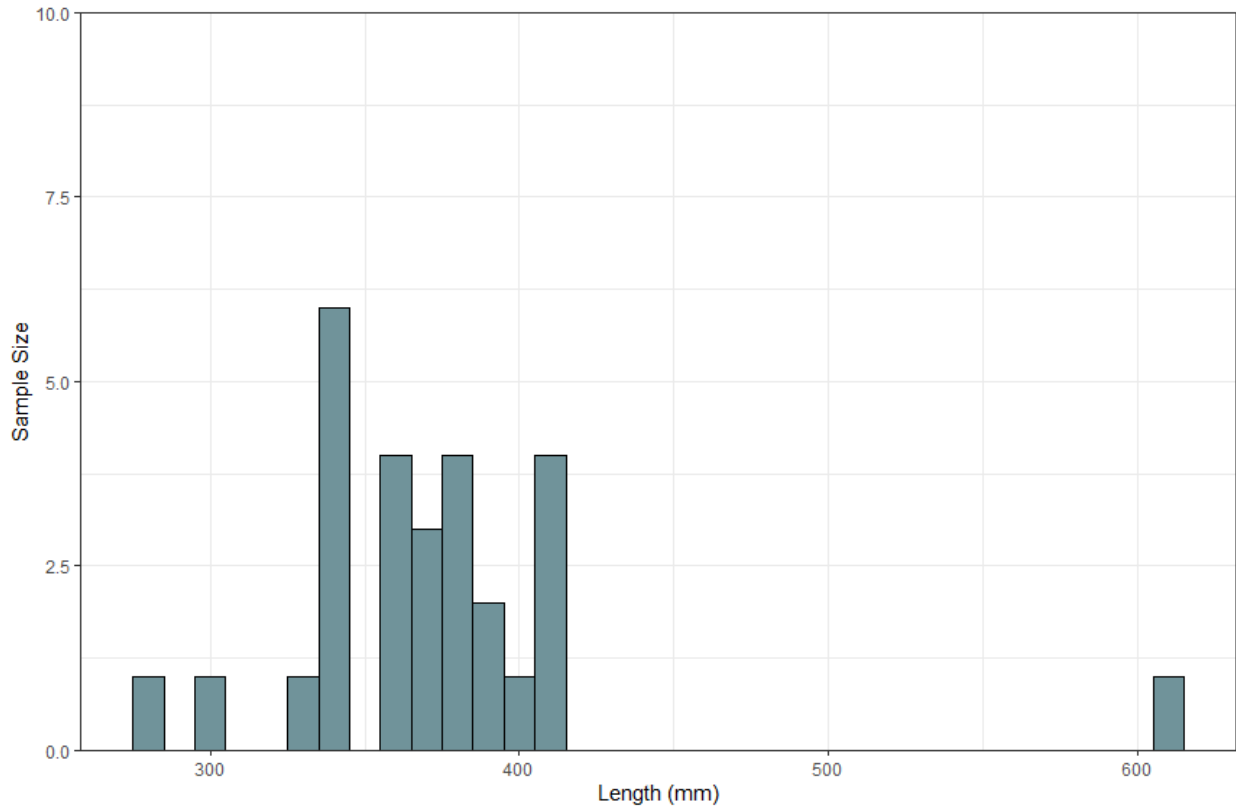


Figure 12: Length Distribution of Arctic Char Sampled in 2025

4.0

Future Monitoring Activities

As mentioned, samples were collected by Indigenous community members in September 2025. Samples were sent to St. John's, NL, for processing, with the aim of collecting samples for total mercury, stable isotope signatures and age and growth. This sample processing is ongoing, and information will be presented to NNC as an addendum to this report once laboratory data is received. Data is anticipated for early 2026.

Samples of Arctic char are also being collected from the marine environment by members of the community of Pangnirtung; the downstream commercial fishery associated with the Kuugaluk River watershed. These samples will again be sent to St. John's for processing and will undergo the same analysis as samples collected in 2025. Depending on the size of the fish captured, a subset will be sampled for methylmercury, selenium and poly unsaturated fats, all parameters which are incorporated into the Human Health Risk Assessment (HHRA).

A full aquatics baseline program is also being planned for the 2026 field season. This program is being designed to collect baseline information on numerous aspects of the freshwater environment, including:

- Water and sediment quality;
- Fish habitat characterization and quantification;
- Plankton communities;
- Benthic macroinvertebrate communities;
- Fish assemblages and abundance;
- Fish health, including trophic feeding level, growth rates and condition; and
- Mercury bioaccumulation.

Details of the 2026 field program will be finalized with a collaborative approach with local communities and HTAs.

5.0

Limitations

The data presented in this Aquatic Environment Baseline Assessment reflects a preliminary, high-level characterization of the Kuugaluk River system. The following limitations should be considered when interpreting the results of the 2025 field program:

1. A significant portion of the habitat characterization was derived from aerial surveys (helicopter reconnaissance and dedicated drone surveys). While these methods provide excellent spatial coverage and connectivity data, they present specific limitations:
 - 1.1. Analysis is limited by image resolution, which dictates the level of precision for estimating substrate coverage and can impact wetted width estimates;
 - 1.2. Analysis is constrained by image resolution, which dictates the level of precision for estimating substrate coverage and can impact wetted width estimates; and
 - 1.3. The data presented here has not yet been ground truthed. Specific areas identified in this report will be targeted for validation during the proposed 2026 baseline monitoring program.
2. Visual surveys were completed once and collected images of the conditions at the time of surveys only. With the limited temporal coverage, there was no seasonal or annual variability assessed from a fish species presence perspective. Conditions were also observed under a single hydrological condition. When completing the analysis for many of the small tributaries and access road crossings, they were dry at the time of survey, however it is anticipated they hold water during certain seasons;
3. Opportunistic fishing was completed in a single location near the camp site, and was only completed using angling techniques, using spin-rods and lures. This method is biased towards larger predatory species, such as adult Arctic char, and does not capture smaller forage fish, juveniles, or benthic species. Additional sampling techniques are required to confirm full fish species assemblages; and
4. This preliminary assessment was completed without input from local communities. Consequently, local concerns may not be fully addressed, and Traditional Ecological Knowledge (TEK) has not yet been incorporated.

The intention of the 2025 field program was to collect reconnaissance level information to help inform the proposed 2026 baseline monitoring program. The results presented within this report should be considered preliminary, and are subject to change following a detailed Fish and Fish Habitat field program.

6.0

Closure

We trust that you will find the information presented within this report satisfactory. Should you have any questions or concerns, please do not hesitate to contact us at your convenience.

Sincerely,

Dillon Consulting Limited

Prepared by

Reviewed by

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