

Graphite Creek Project Aquatic Baseline Studies

2024 Report

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ACRONYMS AND ABBREVIATIONS

µm	micron
µS/cm	microsiemens per centimeter
%	percent
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AWC	Anadromous Waters Catalog
BAL	Brooks Applied Labs
°C	degrees Celsius
°F	degrees Fahrenheit
cm	centimeter
cm ²	square centimeter
cfs	cubic feet per second
CPUE	catch per unit effort
DC	direct current
DO	Dissolved oxygen
EHL	Alaska State Environmental Health Laboratory
ETOH	Ethanol
EPA	Environmental Protection Agency
EPT	Ephemeroptera, Plecoptera, & Trichoptera
FL	fork length
ft	foot/feet
ft ²	square foot
g	gram
GPS	Global Positioning Systems
HBI	Hilsenhoff Biotic Index
HCl	hydrochloric acid
Hg	Total mercury
HUC	Hydrologic Unit Code
Hz	hertz
in	inch
in ²	square inch
kg	kilogram
km	kilometer
MDL	measurement detection limit
MeHg	methylmercury
MRL	measurement reporting limit
m	meter
mi	mile
m ²	square meter

m ³ /s	cubic meter per second
mg	milligram
mm	millimeter
mL	milliliter
nm	nanometer
ng	nanogram
NHD	National Hydrology Dataset
NTU	nephelometric turbidity units
oz	ounce
pH	potential hydrogen
psu	practical salinity units
rkm	river kilometer
SOP	Standard Operating Procedure
SPC	specific conductivity
TL	total length
QA/QC	quality assurance/quality control

EXECUTIVE SUMMARY

To prepare for project planning and environmental evaluation, Graphite One initiated baseline aquatic sampling in the Graphite Creek project area in 2019, following initial Pacific salmon surveys in 2018. Sampling has occurred annually, excluding 2020 due to COVID-19 related precautions. Data collection aims to quantify the baseline condition and natural variability of aquatic ecosystems and water quality in and around the project area with the goal of identifying aquatic resources and documenting the health and productivity of project area drainages. The 2024 sampling season was the fifth year of aquatic baseline data collection, the third year of Imuruk Basin sampling, and the fourth year of efforts to determine Dolly Varden spawning areas. In 2024, aerial Pacific salmon surveys and sampling of new proposed road crossing sites and potential resident Dolly Varden populations in Mosquito Pass lakes were also completed.

Seven long-term biomonitoring sites were established in 2019, with two sites added in 2021 for a total of nine sites. Seven sites lie within areas potentially impacted by project-related activities and two are control sites located outside of likely project influence. All sites were sampled for water quality, periphyton standing crop, aquatic macroinvertebrates, and juvenile fish abundance and whole-body metal burdens.

Spring break-up occurred later than average in 2024, with ice clearing the Imuruk Basin in late June. Overall, 2024 was cooler and wetter than previous years of sampling. Stream temperatures were colder, and flows were above average at most sites. Periphyton standing crop was consistently highest at sites ORO 1, WIN 1, and USR 1 across years. Aquatic macroinvertebrate density was high in 2024 compared to previous years but taxa diversity and Ephemeroptera, Plecoptera, and Trichoptera (EPT) abundance was lower, possibly related to higher flows which may have favored non-EPT taxa. Graphite Creek sites (GLA 1 and 2) continue to have low-quality periphyton and invertebrate assemblages. Bivalves and sabellid worms of the genus *Manayunkia*, of which one species is an intermediate host to a salmonid parasite, increased in density at site COB T1, a tributary of the Cobblestone River.

A total of 178 fish from seven species were caught during 2,380 hours of minnow trapping and 1,661 meters (5,450 feet) of electrofishing during 2024 biomonitoring. Juvenile Dolly Varden were the most captured fish (38.2%) across years, followed by slimy sculpin (33.2%). Four of five Pacific salmon species were also caught. Age-0 and -1 juvenile coho salmon and Dolly Varden were captured within the study area, though in lower numbers in 2024, suggesting the importance of certain sites as rearing habitat. Heavy metals concentrations in juvenile Dolly Varden were similar to past years, with slight reductions in some metals. Metals concentrations in juvenile fish from the project area were either similar to or lower than concentrations at other mineralized areas in Alaska, except for selenium, which is higher in the Graphite Creek area and around the Seward Peninsula in general, including around the Red Dog Mine.

Imuruk Basin sampling was conducted in spring (June) and fall (August/September). Water temperatures were cold initially due to remaining ice in the basin at the start of sampling but warmed once the ice cleared. Like previous years, water temperatures were higher in spring compared to fall. Salinity was higher in fall when snowmelt drainage attenuated and higher at western sites in both seasons. Fyke nets and gill nets fished for 882.5 and 41.5 hours in 2024, respectively. In spring, 615 fish from 18 species

were captured and in fall, 884 fish from 17 species were captured. Longnose suckers were the most caught fish with threespine stickleback and saffron cod also caught in large numbers. Notably, threespine stickleback catch in 2024 was over 90% lower than previous years' catch.

Aerial Pacific salmon surveys in 2024 documented 4,045 live fish and 1,422 carcasses: a reduction from previous years. Counts have decreased each year, consistent with depressed salmon runs region-wide. Pink salmon continued to be the most abundant species observed. Aerial survey timing, particularly for pink salmon, was impacted by heavy rainfall, and may account for the lower number of live fish counted in 2024. The Cobblestone River had the most fish counted in aerial surveys, with its middle reaches supporting the highest counts for multiple species suggesting importance for spawning.

Additional road crossing sites were surveyed in 2024 along a new proposed alignment. Three Dolly Varden were captured at one site (C0032). Other sites did not have fish or adequate habitat to support fish. Combined 2021 and 2023–2024 sampling results and sites already listed in the Anadromous Waters Catalog dictate fish passage requirements for 15 total sites. Mosquito Pass Lake sampling efforts continued in 2024 and confirmed the presence of apparent lake resident Dolly Varden. Surveys for anadromous Dolly Varden spawners in 2024 captured 18 Dolly Varden in the Cobblestone River. The fish were smaller than previous years' averages, and most were females in a variety of reproductive states, from green to spent, suggesting active spawning took place in the Cobblestone River in mid-September.

The Graphite Creek area has varied aquatic habitats, including freshwater streams and a saltwater influenced basin which generally support the expected biodiversity of an arctic ecosystem. While Graphite Creek (GLA 1 and 2 sites) water quality has improved throughout the sampling record, no significant changes were recorded and no fish were caught in 2024. Overall, Imuruk Basin sampling, biomonitoring, and aerial Pacific salmon and Dolly Varden surveys produced catch numbers and ecosystem health metrics that were somewhat atypical compared to previous years of sampling largely due to cooler, wetter weather. However, the metrics reported here are not extreme and are important for documenting the range of natural variability in project area ecosystems.

1. INTRODUCTION

Graphite One (Alaska), Inc. (Graphite One) is planning for a National Environmental Policy Act (NEPA) evaluation and permitting of a potential flake graphite mining program known as the Graphite Creek project (the project). The project area is located on the Seward Peninsula in western Alaska, on the flanks of the Kigluaik Mountains south of Imuruk Basin, approximately 61 kilometers (km; 37.9 miles) north of Nome. Relatively few prior aquatic surveys have taken place near the project area. When baseline studies began in 2018, the Alaska Department of Fish and Game (ADF&G) Anadromous Waters Catalog (AWC) listed coho salmon (*Oncorhynchus kisutch*), chum salmon (*O. keta*) and/or pink salmon (*O. gorbuscha*) spawning and presence in five streams within the project area: Canyon Creek, Cobblestone River, Nome River, Sinuk River, and Windy Creek. Based on baseline studies conducted by Graphite One, the AWC now lists most streams flowing into Windy Cove as Pacific salmon habitat (Giefer and Graziano 2023).

In 2018, Graphite One retained Owl Ridge Natural Resource Consultants, Inc. to complete adult Pacific salmon surveys in project area drainages. A total of 25 streams and some of their tributaries, including the five previously identified in the AWC, were surveyed. Pink salmon were observed in 16 streams, of which 10 were not previously documented as pink salmon habitat in the AWC. The survey also documented Pacific salmon further upstream than AWC-listed extents in the Sinuk River, Windy Creek, and the Cobblestone River. The survey identified chum salmon in Canyon Creek, which were not previously documented. Dolly Varden (*Salvelinus malma*) were also identified in Fall Creek, alongside pink and chum salmon.

In 2019, Graphite One initiated an environmental baseline data collection program in anticipation of project planning, environmental evaluation, and potential permitting (Owl Ridge 2020). Data collection was designed to establish baseline conditions, including measures of the annual variability of aquatic communities and water quality and evaluation of the overall health and productivity of project area drainages. The sampling program included establishment of long-term biomonitoring sites, fish distribution sites, and continued aerial Pacific salmon surveys. A total of 398 fish from nine species were captured across five of the seven biomonitoring sites and all three fish distribution sites in 2019. Aerial Pacific salmon surveys found all five species of Pacific salmon in the Cobblestone River and at least one species of Pacific salmon in unnamed stream IMU 13.0, as well as within the mouths of smaller streams flowing into Imuruk Basin. Pacific salmon were observed in three additional streams than observed in 2018. Previously undocumented Pacific salmon species were also observed in 10 streams that were not identified as salmon-bearing streams from surveys in 2018. Sampling was not conducted in 2020 due to COVID-19 related precautions.

In 2021, Graphite One continued its full aquatic baseline data collection program for a second year (Owl Ridge 2022). Fish surveys of streams potentially affected by the proposed road corridor were also initiated in 2021 to determine fish presence at road crossing sites. Sampling was continued in 2022, and the program was expanded to include two additional biomonitoring sites, southern Imuruk Basin fish sampling, and surveys of Dolly Varden spawning areas. The 2023 field effort continued documenting aquatic baseline information, including road crossing assessments carried over from 2021.

Sampling in 2024 represents the fifth year of comprehensive aquatic baseline assessment work. The program has grown and evolved along with the Graphite Creek project. Goals for the 2024 sampling effort were to:

1. Continue to establish baseline conditions within and near the project area.
2. Survey Imuruk Basin in early and late summer to collect seasonal baseline water quality and fisheries information.
3. Conduct aerial surveys of rivers and creeks to identify Pacific salmon habitat use.
4. Conduct surveys of project area creeks and rivers to determine Dolly Varden spawning locations and timing.
5. Complete road crossing surveys to confirm fish presence at locations where potential road infrastructure will cross streams.
6. Sample 'Mosquito Pass Lake' and 'Shadow Lake' near the saddle of Mosquito Pass for potential resident Dolly Varden presence.

2. METHODS

2.1. Biomonitoring

A total of nine biomonitoring sites were sampled within the greater project area (Table 1; Figure 1) in July 2024. Seven of the nine sites could be impacted by proposed project-related activities, as their drainages are within or flow directly through the project boundary. The other two sites, Fall Creek to the west and Oro Grande Creek to the south, are outside of the project boundary and serve as reference sites.

Biomonitoring sites were selected to sample periphyton, aquatic macroinvertebrate (invertebrate), and fish communities, as well as establish and evaluate the current water quality conditions upstream, downstream, and in proximity to project activities. Sampling reaches are representative of surrounding habitats in each stream and, in addition to providing baseline data and variability estimates, are downstream of potential future impacts to aquatic resources to detect and monitor change as the project develops. Control sites are located outside of drainages potentially impacted by Graphite One activities. No direct anthropogenic disturbances affecting water quality or aquatic communities upstream or downstream of sites have been observed during sampling thus far.

Site names have a short site identification code and a longer site name description that includes the numbered stream name and the stream kilometer at which the biomonitoring site is located. Site names on named streams correspond to the stream name and order in relation to distance upstream from Imuruk Basin. Unnamed streams use codes derived by the Hydrologic Unit Code (HUC), followed by a number. For the Imuruk Basin area, the code is 'IMU'. Site names on tributaries correspond to the mainstem stream name and order of the tributary upstream from the confluence with the mainstem (Owl Ridge 2020).

The nine biomonitoring sites include:

- **IMU 16, Unnamed Creek:** This site is located within the proposed project boundary on an unnamed creek (IMU 16.0) that flows into Imuruk Basin. Aquatic habitat consists of a mix of pools, runs, and riffles over small gravel and coarse sand. The creek banks are stable, and the channel well defined. Riparian habitat consists of alpine tundra with isolated willow stands.
- **GLA 1, Glacier Canyon Creek:** This site is located within the proposed project boundary on the mainstem of Glacier Canyon Creek, known locally as Graphite Creek. GLA 1 flows into Imuruk Basin and is located approximately 2.0 km (1.2 miles) downstream from site GLA 2. The headwaters of the stream flow directly from the vicinity of the ore body and potential mining area. Dense alders and willows border and cover most sections of the stream. The stream has a slightly silver appearance from aluminum precipitate deposits on the channel bottom.
- **GLA 2, Glacier Canyon Creek:** This site is located within the proposed project boundary and is a tributary to Glacier Canyon Creek, known locally as Graphite Creek. GLA 2 is located approximately 2.0 km (1.2 miles) upstream from site GLA 1. The headwaters of the stream flow directly from the vicinity of the ore body and potential mining area. The stream has an orange appearance resulting from the iron precipitates and substrate staining. Aquatic habitat consists of relatively high gradient riffles and runs over large-sized gravel and small cobble, all coated with

precipitate. Riparian habitat consists of dense alder thickets bordering and mostly covering the stream.

- **COB 1, Mainstem Cobblestone River:** This site is located within the project boundary and on the mainstem Cobblestone River, which flows into Imuruk Basin. The Cobblestone River parallels a proposed road corridor with several potential crossings along its length. The Cobblestone River is the largest river in the area and the largest river sampled during biomonitoring. The aquatic habitat consists of large pools and riffles connected by runs flowing over gravel and coarse sand. Intermittent cobble and bedrock sections dominate the upper reaches. Portions of the river are channelized and constricted, while other sections span across a wide and braided floodplain. Riparian habitats consist of alpine tundra with willow and alder lining the stream banks.
- **COB T1, Unnamed tributary to the Cobblestone River:** This site is located within the project boundary and is a tributary to the Cobblestone River. The stream flows from a small and shallow headwater lake and is relatively low gradient with several ponded reaches. Aquatic habitats consist of deep, incised stream channels with undercut banks, while other sections are shallow and flow through dense aquatic vegetation. Stream substrates consist of small cobble mixed with gravel and sand. Riparian vegetation consists of aquatic sedge, alpine tundra, and occasional dense willow.
- **ORO 1, Oro Grande Creek:** Oro Grande Creek is located outside of the project boundary, south of the project area. Oro Grande is the largest tributary to the Cobblestone River. The site serves as a control site, and possibly a monitoring site, should modest project boundary changes occur. Aquatic habitats consist of large pools connected by fast moving riffles and runs. The stream substrate consists of large boulders and cobble with mixed gravel substrate. Riparian habitats consist of alpine tundra with willows and alders lining the stream bank.
- **FAL 1, Fall Creek:** Fall Creek is located west of the proposed project area and originates from Fall Lake. Fall Creek flows into Imuruk Basin and is located west of any potential mining activity but potentially within a road corridor previously under consideration, and therefore the site now serves as a control or possibly a road effects site should that alternate route return. Aquatic habitats consist mostly of fast riffles and runs, with pools and slower water limited to the lower portion of the creek. Substrates consist of large boulders and cobble in the upper reaches, and cobble and gravel in the lower reaches. Riparian vegetation consists mainly of alpine tundra and dense alder thickets lining the stream banks.
- **WIN 1, Windy Creek:** Windy Creek is located within the project area road corridor and is south of the Kigluaik Mountains. The biomonitoring site, WIN 1, is in the headwater area near Mosquito Pass downstream of a small, shallow alpine lake that is part of the Windy Creek drainage. The stream here is characterized by fast riffles with a cobble-boulder substrate. The creek channel is well defined, and the banks stable. The lower reaches of the creek have more pools and slower water. Riparian vegetation consists mostly of alpine tundra, with willow patches lining the stream banks.

- **USR 1, Upper Sinuk River:** The Sinuk River is located within the project area road corridor and is situated south of the Kigluaik Mountains. The biomonitoring site is in the headwaters of the Sinuk River and to the immediate south of Mosquito Pass. This portion of the river is characterized by braided channels with shallow riffles, and cobble and gravel substrate interspersed with large boulders. Portions of the river are channelized and constricted, while other sections span across a wide and braided floodplain. Occasional pools occur throughout the faster riffles. Intermittent cobble and boulder sections dominate the upper reaches. Riparian vegetation consists of alpine tundra and willow thickets that line the banks of the river.

2.1.1. Water Quality and Flow

2.1.1.1. Objectives

Evaluating water quality is foundational for assessing the health of aquatic ecosystems, as sub-optimal water quality parameters can reduce the ability of ecosystems to support aquatic life across all trophic levels (Kimmel & Argent 2009; Traister et al. 2013). Water quality parameters and stream velocity (flow) profile data were collected to establish baseline information on habitat quality and quantity, where water quality parameters assess habitat quality and flow profile data measure habitat quantity available for aquatic life. Certain parameters, such as potential hydrogen (pH) and specific conductance, can have a significant influence on in-stream community composition. Potential hydrogen, or pH, measures the acidity of a stream, with lower (more acidic) pH values tending to signify lower aquatic habitat quality. Specific conductance (SPC), or the electrical conductivity of a stream, varies with lithology, disturbance, and to a lesser extent, temperature and pH. These parameters also help identify processes, such as seeps, which may naturally lead to unsuitable habitat for aquatic life. Other parameters measured include water temperature, dissolved oxygen concentration, and turbidity, which measures the relative clarity of stream water. Stream flow measurements primarily serve to describe habitat quantity as the amount of underwater space available for aquatic life. Flow also directly affects other water quality parameters and is considered a ‘master variable’ by aquatic ecologists given its outsized role in defining abiotic and biotic characteristics of stream ecosystems (Hamid et al. 2019).

When monitored long-term, water quality parameters and stream flow measurements together can help identify changes in the chemical and physical characteristics of each stream over time, should they occur.

2.1.1.2. Field Methods

Water quality parameters were measured twice on consecutive days at each biomonitoring site. A calibrated YSI Pro Plus multiparameter water quality meter was used to measure stream temperature, SPC, dissolved oxygen, and pH, and a LaMotte 2020 benchtop turbidimeter measured turbidity. Stream velocity was measured using a Global Water Flow Probe, and velocity measurements were used to calculate discharge.

2.1.2. Periphyton Standing Crop

2.1.2.1. Objectives

Periphyton are attached microalgae of various taxa and are the primary producers and foundational trophic level of stream communities (Lamberti et al. 1989; Bunn et al. 2001). Periphyton are frequently

used as an indicator of early changes in conditions in aquatic communities as they are sensitive to changes in water quality and provide an index of lower trophic level aquatic productivity. Periphyton density is measured annually to describe project area stream standing crops and annual variability both before and after mining activity begins. Periphyton were collected during early summer from submerged cobble. Concentrations of chlorophyll-a, -b and -c were determined to estimate periphyton standing crop and to loosely describe the periphyton community.

2.1.2.2. Field Methods

Field methods for periphyton standing crop assessment followed the methods outlined in ADF&G Technical Report No. 17-09 (Bradley 2017). A total of ten periphyton samples were collected from each biomonitoring site. Each sample was taken from a flat rock submerged in riffles that measured larger than 25 square centimeters (cm^2 ; 3.9 inches² [in²]). Rocks that appeared to have been consistently submerged for at least a month prior to sampling were targeted. A 5 cm x 5 cm (2 x 2 inches [in]) section of rock was sampled. Periphyton were scrubbed off the area three times using a small brush and filtered through a 0.45-micron (μm ; 0.000018 in) glass fiber filter paper in a filter receptacle attached to a hand vacuum pump. All periphyton scrubbing materials were also washed into the filter receptacle. Water was then extracted from the periphyton sample, and a magnesium carbonate (MgCO_3) solution was added to prevent acidification and additional conversion of chlorophyll-a to phaeophytin. The glass fiber filter paper was placed in a dry, cool, light-proof location until frozen at the end of each sampling day. Samples remained frozen until they were analyzed in the laboratory.

2.1.2.3. Laboratory Methods

Prior to processing samples, a spectrophotometer was calibrated using spinach leaves. Each periphyton sample consisting of filter paper was cut into small pieces, placed in a 15 milliliter (mL; 0.51 ounces, or oz) centrifuge tube with 10 mL (0.34 oz) of spectrophotometric grade acetone, wrapped in tinfoil, and soaked overnight. After less than 24 hours, samples were spun in a centrifuge at 1600 revolutions per minute for 20 minutes. Samples were decanted into cuvettes and absorption values were read at 750 nanometers (nm), 664 nm, 647 nm, and 630 nm on a split beam spectrophotometer. Next, 0.08 mL (0.003 oz) of 0.1 normal hydrochloric acid (HCl) was added to each cuvette and allowed to sit in the dark for 90 seconds, then absorption values were read at 750 nm and 665 nm. Laboratory blanks and duplicate samples were used as quality control measures. Data were analyzed through the tri-chromatic equation to determine chlorophyll-a, -b, and -c concentrations. Phaeophytin was also calculated to correct for any conversion of chlorophyll-a in the samples.

2.1.3. Aquatic Macroinvertebrates

2.1.3.1. Objectives

Aquatic macroinvertebrates are the intermediate trophic level of stream communities and serve to transfer energy from primary producers (periphyton) to higher trophic levels like fish (Wallace & Webster 1996). Macroinvertebrates have varied life histories and tolerances of water chemistry parameters and can serve as bioindicators of short- and long-term changes in aquatic ecosystems, such as changes to water velocity, temperature, concentrations of metals, sediment loads, and other contaminants. Sampling objectives

include characterizing aquatic invertebrate communities and establishing baseline data which can be used to monitor and assess future changes.

2.1.3.2. Field Methods

A total of five samples per biomonitoring site were collected using a Hess sampler with a 0.09 m² (0.97 square feet, or ft²) sampling footprint. Samples were collected from shallow riffles at sites that appeared to have been submerged for at least a month prior to sampling and were representative of surrounding aquatic habitats within the stream reach. The Hess sampler was firmly placed onto the stream bottom and all substrate within the sampler was thoroughly rinsed or washed to collect all invertebrates. Once all materials were washed, the Hess sampler was removed, and contents were flushed out using ethanol (ETOH) into a labeled 500 mL (16.9 oz) Nalgene sample bottle. Most large organic or inorganic objects (i.e., rocks, sticks, leaves) were further rinsed and removed from the sample. Final ETOH concentrations in samples ranged from 70 to 80 percent.

2.1.3.3. Laboratory Methods

In the laboratory, each invertebrate sample was filtered through a 350 µm (0.014 in) mesh sieve and placed in a container filled with water. Invertebrates were hand-picked and sorted with a dissection microscope. Large samples were subsampled several times for accurate estimates. Invertebrates were then sorted, counted, and identified to the lowest taxonomic level possible (usually genus). Terrestrial invertebrates were recorded but excluded from analysis.

2.1.3.4. Macroinvertebrate Metrics

Several metrics were used to characterize invertebrate communities and make comparisons across sites. A brief description of these metrics is provided below.

Abundance - Number of invertebrates at a site, or by sample.

Density - Number of invertebrates per area sampled.

Total Taxa/Richness - The total number of unique taxa per site, excluding unidentified invertebrates.

Percent Ephemeroptera, Plecoptera, & Trichoptera (EPT) - The percentage of sample abundance comprised of orders Ephemeroptera, Plecoptera, and Trichoptera, as compared to the total sample abundance of class Insecta. This provides an estimate of the percent of the invertebrate community that is considered most sensitive to changes in water and habitat quality.

Percent Chironomidae - The percent of the site abundance comprised of the family Chironomidae. Members of the family Chironomidae exhibit a wide range of environmental tolerances and are often considered more tolerant of poor biotic conditions. A high proportion of this taxon at a sample site can suggest poorer habitat conditions as compared to sites with higher EPT ratios. However, Chironomidae can be abundant at high latitudes, and not necessarily indicative of compromised or contaminated habitats, but rather extreme environmental conditions in which more sensitive and longer-lived taxa cannot readily survive.

Percent Oligochaetes - The percent of the site abundance comprised of the class Oligochaeta. Oligochaetes are a broad class of hermaphroditic terrestrial and aquatic worms such as earthworms that

lack a specialized head. Oligochaetes are tolerant of poor water quality conditions, and the percentage of oligochaetes is often used as a bioindicator.

Shannon Index (H) - The Shannon Index is a diversity function that describes the evenness and richness of taxa at a location. The value of H increases as diversity increases. In general, higher values of H indicate high taxa diversity and better water and habitat quality, while values approaching 0 suggest a less diverse community and poorer habitat.

Simpson's Index (D) - Simpson's Index measures the evenness of a community at a location. The value of D is the probability that two randomly sampled individuals will be from two different classes. The lower the value, the better the water and habitat quality, while values approaching 1.0 suggest poorer habitat quality.

Hilsenhoff Biotic Index (HBI) – The Hilsenhoff Biotic Index estimates the tolerance of a community to pollutants in the water based on predetermined taxa-specific sensitivity thresholds. Values approaching 0 mean the taxa inhabiting the stream are sensitive to pollutants, while values approaching 10.0 indicate tolerance.

2.1.4. Fish Abundance and Distribution

2.1.4.1. Objectives

Fish abundance and distribution provide another metric of aquatic ecosystem health because fish can be sensitive to changes in lower trophic levels and water quality, thus, changes in fish communities may indicate change(s) in other parameters (Pilière et al. 2014). Fish habitat use and fish distribution were surveyed throughout and in proximity to the project area during the 2024 season. Sampling objectives were to identify and describe fish use of sampled drainages.

2.1.4.2. Field Methods

Fish were sampled at the nine biomonitoring sites (Table 1) using minnow traps and a backpack electrofishing unit.

A total of ten minnow traps were set at each biomonitoring site for approximately 24 hours. Minnow traps were baited with commercial salmon eggs wrapped in cheese cloth and suspended within the trap. After 24 hours, minnow traps were checked for fish and any fish found within the traps were counted, identified, measured to the nearest mm fork length (FL) or total length (TL) depending on species, and released back into the stream.

Backpack electrofishers were used to sample a reach approximately three times the bank full width, or a minimum of 91 meters (m; 300 ft). Electrofishing was conducted using a Smith-Root backpack electrofishing unit (Smith Root LR-24). Pulsed direct current (DC) was set to 300 to 500 volts at 40 to 50 Hertz (Hz) and adjusted as needed to effectively capture fish. A crew of two (one electrofisher with a dip net and one designated dipnetter) conducted the sampling. All fish captured within the surveyed reach were counted, identified, measured to the nearest mm FL or TL, and released. A subset of juvenile Dolly Varden captured was retained for laboratory analysis, as described in section 2.1.5 below.

2.1.5. Juvenile Dolly Varden Element Concentrations

2.1.5.1. Objectives

Heavy metals concentrations in fish tissue are related to water quality and can reflect metals concentrations in the surrounding environment (Weber Scannell and Ott 2001; Ott and Morris 2002; Ott and Morris 2004), thus, juvenile fish can act as a bio-indicator of possible pollution in study drainages. It is important to document heavy metals burdens in fish tissue at biomonitoring sites to establish a baseline for comparison in the unlikely event of elevated heavy metals loads in the future. However, fish must have a period of exposure to the conditions present at sample sites to reflect those conditions within their body tissues. Juvenile fish sampling for whole-body metal burdens analysis was conducted in mid-July to ensure adequate exposure of fish to sample stream conditions.

2.1.5.2. Field Methods

Fish sampling was conducted using a Smith-Root backpack electrofishing unit, model LR-24, using the same methods as previously described in section 2.1.4.2. Sampling at each site continued until an adequate sample set for laboratory analysis was collected, ideally 15 fish per site.

Minnow trapping was also used to collect fish for metals analysis. Minnow trapping methods are described above in section 2.1.4.2. Fish captured from minnow trapping were retained if they were the appropriate size and species for laboratory analysis.

Sample collection at each site targeted 15 individual Dolly Varden of approximately 10 grams (g) each, or adequate numbers to make 15 composite samples of 10 g each. Captured fish retained for laboratory analysis were identified, measured to the nearest millimeter, and weighed to the nearest gram. All other captured fish (e.g., fish of different species or that were too small) were identified, measured to the nearest mm FL or TL, and released at their capture location.

2.1.5.3. Laboratory Methods

Up to 15 individual or composite samples of Dolly Varden per site were submitted to Brooks Applied Labs to perform heavy metals analysis for a suite of 15 metals. The metals analyzed included aluminum (Al), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), mercury (Hg), methyl mercury (MeHg), manganese (Mn), nickel (Ni), lead (Pb), antimony (Sb), selenium (Se), and zinc (Zn). All total metals and total mercury (Hg) samples were digested via microwave with a mixture of concentrated nitric acid, hydrochloric acid, and hydrogen peroxide. Trace metals were analyzed using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). All samples for methylmercury (MeHg) analysis were extracted with a mixture of potassium hydroxide and methanol in accordance with Brooks Applied Labs standard operating procedures (SOPs). Extracts were then analyzed via cold vapor gas chromatography atomic fluorescence spectroscopy (CV-GC-AFS). To determine metals concentrations on a dry weight basis, samples were homogenized, and an aliquot of each sample was measured into a pre-weighed vessel and dried in an oven for at least 12 hours. The vessels were removed from the oven, weighed again, and the percentage of dried solid material was calculated. All Brooks Applied Labs accredited quality assurance/quality control (QA/QC) procedures were followed.

2.2. Imuruk Basin Fish Sampling

2.2.1. Objectives

Water quality and fish sampling of Imuruk Basin waters was integrated into the Graphite One aquatic baseline study program starting in 2022 to establish a baseline of water quality conditions and fish population assemblages using the basin. The basin is mostly fresh water, though it has saltwater influence from its connection to Port Clarence and the Bering Sea to the west via the deep and narrow Tuksuk Channel. Fish are diverse and abundant in Imuruk Basin, with both freshwater and brackish water species represented in its waters. Water quality assesses the suitability of aquatic habitat for fish species in the basin and compares habitat characteristics in different areas of the basin. Water quality data are key for monitoring basin conditions for potential changes due to upstream mining activities because changes in water quality parameters, such as pH and turbidity, can precipitate changes in fish populations.

Fish abundance, distribution, and habitat (water) quality were surveyed in Imuruk Basin, both within and near to the project area during the 2024 season. Sampling efforts were focused in Windy Cove, the southern shore of the basin, and around the mouth of the Cobblestone River where possible project-related impacts downstream from mining activities would be anticipated.

2.2.2. Field Methods

A total of 30 sites were sampled in Imuruk Basin in June and August 2024; four sites were sampled by fyke net, and an additional 26 sites were sampled using gill nets (Table 2; Figure 2). Both net types target fish moving along the shore of the basin. Fyke nets were placed in nearshore water deep enough to submerge the hoops with the open end of the net facing towards the shore. Fyke net wings were oriented at a 45-degree angle from the frame opening of the net and ran towards the shore. Fyke nets were set and checked approximately every 24 hours. The actual duration of each set was recorded to allow calculation of catch per unit effort (CPUE) as number of fish captured per 24-hour period.

Gill nets were stretched from the shoreline directly out into the water as water depths allowed. Net placement targeted habitats expected to be used by fish for feeding or movement between feedings areas. Gill nets were 40 m (131 ft) long, with six panels of variable mesh increasing in size from 2.5 to 9 centimeters (cm; 0.98 to 3.5 in). Extending from the beach, smaller mesh was placed near shore, and larger mesh was placed in deeper water to target larger fish. Gill nets were deployed for a 1–2-hour period. Fish captured in fyke and gill nets were identified, counted, measured to the nearest mm FL, and released. Water quality data were recorded at all fyke and gill net sampling locations to assess aquatic habitat. Methods for water quality data collection are described in section 2.1.1 above.

2.3. Aerial Pacific Salmon Surveys

2.3.1. Objectives

Aerial surveys were conducted to describe the extent and distribution of Pacific salmon species within and near the project area, with emphasis on surveying streams, such as the Cobblestone River, which are consistent producers of fish over time and/or intersect proposed project infrastructure. Surveys were timed to occur as close to the peak run timing of adult Pacific salmon species as possible and to most accurately determine salmon upstream extent in streams.

2.3.2. Field Methods

Pacific salmon distributions were documented while flying at low altitude (typically less than 61 m above ground level) and at ground speeds between 5 and 20 knots. Counts were recorded in discrete stream reaches of 0.5-mi (0.8 km) in length. Observers wore polarized glasses and confirmed uncertain observations on the ground to increase accuracy. Data were recorded independently by each observer and later averaged. Surveys were generally flown by ‘sidestepping’ upstream, with the helicopter perpendicular to the stream and both observers seated on the upriver side to best see fish. Each stream survey continued upstream until no adult salmon were observed for a reasonable distance (minimum 1 mile, or 1.6 km), a passage barrier (i.e., waterfall) was encountered, or habitat was insufficient to support fish (e.g., lack of water, steep cascading reaches). At least two consecutive passes at the upstream extent of fish presence were completed to confirm the presence or absence of fish. The location of upper limits of fish were recorded with a global positioning system (GPS) unit.

2.4. Dolly Varden Spawning Surveys

2.4.1. Objectives

Dolly Varden spawn during the fall in the Cobblestone River and likely several other streams within and near the project area. Sites along the Cobblestone River and its tributaries, in addition to Canyon Creek, located outside of the project boundary, were first surveyed aerially and then on the ground using angling techniques to sample spawning Dolly Varden. Other streams were sampled as time allowed and if potential Dolly Varden were spotted from the air. These data were used to evaluate Dolly Varden spawning condition and activity, as well as identify consistent spawning locations in the project area, particularly in the Cobblestone River where significant numbers of Dolly Varden and proposed road infrastructure might overlap.

2.4.2. Field Methods

Sampling in 2024 was conducted in late August and mid-September during the onset of the Dolly Varden spawning period. Two sampling efforts were conducted, the first from August 26 to 31 and the second from September 16 to 18. Ground-based sampling sites were selected based on observations of fish aggregations from aerial surveys and used rod-and-reel techniques to capture fish. Sampling events lasted up to 2 hours across 14 different sites (Table 3). All captured Dolly Varden were sexed, measured to the nearest mm FL, and assessed for spawning condition. Spawning condition was evaluated on the following criteria: fish in spawning condition were considered ‘ripe’, ‘green’ referred to pre-spawning condition, ‘spent’ referred to post-spawn condition, and a ‘non-spawner’ was (typically) an adult in a non-spawning year. All fish were released back into the stream at the site of capture.

2.5. Road Stream Crossing Surveys

2.5.1. Objectives

Stream surveys to detect fish presence were conducted along the proposed mine access road alignment in locations where the road would cross a stream. The route extends 18 miles (30 km), starting near Milepost 30 (kilometer post 48) on the Nome-Taylor Highway (Kougarok Road), going through Mosquito Pass to

the Cobblestone River, and terminating at the proposed mine site near Graphite Creek. Initial survey streams were selected using the National Hydrology Dataset (NHD) and verified in the field during sampling. All streams potentially crossed by roads proposed by the project were visually surveyed in prior years to determine fish use potential and passage requirements during design and construction. Assessment of fish presence and distribution will guide stream crossing design requirements for either bridge or culvert construction depending on fish species and life stages detected. Streams determined likely to provide fish habitat were sampled for fish presence in 2021 using a backpack electrofisher. However, catches were likely biased low by a significant precipitation event that caused considerable flooding in streams within the project area, resulting in high turbidity and water velocities. Streams where no fish were captured in 2021 were resurveyed in 2023 during lower flow conditions using the same methods employed in 2021. Streams already listed in the AWC were not sampled, as fish passage is already required. As a result of modifications to the proposed road alignment in 2024, additional road crossing sites required aerial reconnaissance, and in some cases, electrofishing sampling (Figure 3). Stream sampling for the updated road alignment was completed in August 2024, when juvenile and many adult fish species are typically at their maximum freshwater stream distribution.

2.5.2. Field Methods

Fish sampling was conducted using a backpack electrofisher unit and employed similar methods as described in section 2.1.4.2. Captured fish were counted, identified, and measured to the nearest mm FL or TL and released at the site of capture. Water quality measurements were recorded using a YSI meter, as described in section 2.1.1.2. Stream crossings that were determined unlikely to provide fish habitat were noted and photographs collected. Characteristics of streams deemed unlikely to be fish bearing included intermittent or discontinuous surface water flow and long sections of turbulent cascades down steep gradients.

2.6. Mosquito Pass Lakes Sampling

2.6.1. Objectives

The Mosquito Pass Lakes sampling effort assessed the presence of possible resident Dolly Varden populations in two lakes in the Mosquito Pass area: ‘Mosquito Pass Lake’ (64.94200°, -165.48100°), and ‘Shadow Lake’ (64.94300°, -165.45500°; Figure 3). Dolly Varden were captured in Mosquito Pass Lake during road crossing surveys in 2023, and were thought to be resident fish due to the limited water flow in the lake outlet which likely creates a passage barrier in all but the highest of flow conditions (Figure 4). The unique morphological characteristics of the Dolly Varden caught in 2023, including a stouter body and narrow caudal peduncle, further suggest an isolated Mosquito Pass Lake population of resident Dolly Varden (Figure 5). Shadow Lake has a small outlet connecting to the lower Mosquito Pass Lake, which may have been historically passable by fish. The steep gradient and low flow render fish presence in Shadow Lake unlikely. Sampling to determine the presence and characteristics of Dolly Varden in these waterbodies was initiated in August 2024.

2.6.2. Field Methods

Fyke nets were placed in both lakes near the outlets for a minimum of one 24-hr period, as this amount of time was sufficient in previous years to detect resident Dolly Varden in Fall Creek Lake near the Graphite

One project area (Owl Ridge 2020). Nets were set and checked every 24 hours, as weather conditions permitted. Set and check times were recorded to allow for CPUE calculations per 24-hour period. Nets were set perpendicular to the shore, with a centerline running to the water's edge, and two wings extending off at a 45-degree angle from the net frame towards the shore. All captured fish were identified, measured to the nearest mm FL, and released.

3. RESULTS AND DISCUSSION

3.1. Biomonitoring

Biomonitoring field sampling was conducted July 11–17, 2024. Sampling dates were slightly delayed in 2024 from previous years due to heavy precipitation in early July causing flooding at most biomonitoring sites. The nine biomonitoring sites were sampled for water quality and flow, periphyton standing crop, aquatic macroinvertebrates, fish distribution and abundance, and juvenile Dolly Varden whole-body metal burdens which are discussed in the following sections. Results from the 2024 program present findings from high flow conditions that, while different from the sampling conditions in previous years, are common in the area and are important for characterizing variability across years in study drainages.

3.1.1. Water Quality and Flow

Water quality data provide a basic measure of habitat quality and quantity in study drainages. The water quality parameters measured across the nine biomonitoring sites include water temperature, dissolved oxygen, conductivity, specific conductance, turbidity, potential hydrogen (pH), as well as stream flow as a measure of aquatic habitat quantity.

In 2024, water temperatures at biomonitoring sites ranged from 1.9°C (35.4°F) at GLA 1 to 12.9°C (55.2°F) at COB T1 (Table 4). While some streams are consistently cooler than others, temperature within streams also varies diurnally due to solar radiation. Rainfall events can drive changes in water temperature as well. For instance, the highest water temperature in 2024 was observed during late afternoon (17:33; Table 4) at COB T1 on 7/15/2024. COB T1 has consistently been among the warmest sites due to its shallow depths and headwater lake which is rapidly heated by solar radiation. Precipitation levels were above average in the study area this year and cooler weather was persistent, as evidenced by the late spring ice break-up on Imuruk Basin. Cooler weather and elevated rainfall, especially the rainfall event that occurred immediately prior to the sampling trip, resulted in colder stream water temperatures (Figure 6; Appendix A) across most sites compared to previous years. Across sites, the mean water temperature in 2024 was 5.4°C (41.7°F), colder than all previous years' (2019, 2021–2023) means across sites (range: 6.8–10.8°C; 44.2–51.4°F; Table 4). Within sites, stream water temperatures were colder in 2024 at all locations except GLA 1, where the maximum temperature of 6.6°C (43.9°F) was consistent with previous years' readings of 2.5–6.8°C (36.5°–44.2°F; Table 4; Figure 6).

Dissolved oxygen (DO) is inversely related to water temperature, whereby warmer water holds less DO. Dissolved oxygen ranged from 92.2 percent at COB T1 to 127.3 percent at IMU 16 in 2024. The lowest DO measurements of 92.2 and 100.1 percent, both at COB T1, coincided with the highest temperature measurements of 11.7°C and 12.9°C, respectively. The highest observed DO of 127.3 percent was measured at IMU 16 and coincided with a relatively cool water temperature of 4.5°C (40.1°F), though a DO of 127 percent is unusually high and may also be related to winds at the site on the day of sampling. Dissolved oxygen was higher in 2024 at all sites than the previous four years of sampling, consistent with the cooler water temperatures observed (Figure 6). Mean DO values across sites were 118.8 percent in 2024 and 97.2–104.9 percent during 2019 and 2021–2023 sampling (Table 4).

Specific conductance ranged from 64.7 $\mu\text{S}/\text{cm}$ at ORO 1 to 280.7 $\mu\text{S}/\text{cm}$ at GLA 1 in 2024 (Table 4). IMU 16 had high specific conductance with a maximum measurement of 274.7 $\mu\text{S}/\text{cm}$. Mean specific conductance across sites was slightly lower in 2024 at 165.1 $\mu\text{S}/\text{cm}$ compared to 175.3–248.9 $\mu\text{S}/\text{cm}$ across 2019 and 2021–2023 (Table 4). Within sites, specific conductance was slightly lower at most locations in 2024 compared to the previous four years of sampling (Figure 6), though within the range of values typical of streams in the area.

Turbidity values in 2024 were fairly low across sites, with a minimum of 0.03 NTU recorded at FAL 1 and IMU 16 (Table 4). Excluding Glacier Canyon Creek (Graphite Creek; GLA 1 and 2), turbidity values ranged between 0.03 and 0.95 NTU. A maximum turbidity of 123.3 NTU was recorded at GLA 1 on 7/14/2024, after heavy overnight rainfall raised flows above the typical range. Muddy, sediment-loaded waters were observed by samplers on-site that day, consistent with the high turbidity measurement. Such high turbidity is anomalous; turbidity values across sites and years are typically less than 10 NTU during low-precipitation sampling trips, however, GLA 1 and GLA 2 are consistently the most turbid (Figure 6; Appendix A). At GLA 1, the turbidity measurement the day before was 4.87 NTU (Table 4), which shows how quickly precipitation can affect in-stream conditions. Such variability also underscores the importance of monitoring to establish the natural range of conditions. There was no consistent trend of turbidity compared to previous sampling years; turbidity measurements were highly variable across sites and years based on environmental conditions (Figure 6).

Stream pH was highest at FAL 1 on 7/16/2024 at 7.20, followed by 7.18 at WIN 1 (Table 4). The lowest pH was 6.24 at GLA 1. GLA 2 was also relatively acidic, with an observed minimum pH of 6.44. While streams have a typical range of pH that varies based on stream water source (e.g., draining from acidic rock) and the surrounding biome, observed pH can also vary on shorter time scales based on weather, temperature change, or other factors. For instance, the maximum pH of 7.18 at WIN 1 was preceded by a slightly acidic pH of 6.78 the day before (Table 4). pH across sites in 2024 was comparable to previous years with a mean of 6.81 compared to 6.15–7.42 in 2019 and 2021–2023 (Table 4). Within sites, most pH values were slightly lower in 2024 compared to the previous four years, except for GLA 1 and GLA 2, where pH was slightly lower compared to 2023 but remained significantly above the four-year average (Figure 6).

Total streamflow volume, measured as discharge in cubic feet per second (cfs), has been highly variable across sites and years. Where data are available, results indicate that discharge in 2024 was greater than in 2022 and 2023 at all sites except USR 1, where 2024 and 2023 discharge were comparable, and 2022 discharge was significantly lower (Figure 7; Appendix B). Discharge was greatest in 2021 across most sites, especially at COB 1 with a total discharge of 699 cfs (19.8 cubic meters per second, or m^3/s) compared to 473 cfs (13.4 m^3/s) in 2024. Full discharge profiles for each biomonitoring site including incremental flow measurements can be found in Appendix B.

While variation among sites and years occurs for most water quality parameters, some generalizations about the sites may be made based on the five years of data (2019, 2021–2024) collected. COB 1 is situated in the middle reaches of the Cobblestone River, a large river system draining the Kigluaik Mountains. Consistent with being the largest drainage of the nine study sites, COB 1 has the highest streamflow of all the sites (> 200 cfs, or 5.7 m^3/s in all years; Figure 7) and cooler water temperatures than most sites (mean temperature = 7.2°C or 45°F; Figure 6). The waters of COB 1 are clear, as

evidenced by turbidity values consistently below 1.0 NTU across all years. These factors, combined with high dissolved oxygen (~100% or greater), low specific conductance (< 200 $\mu\text{S}/\text{cm}$), and pH near or above 7, make COB 1 highly suitable for aquatic life. COB T1, a small tributary of the Cobblestone River, had the second lowest streamflow across sites and years (behind IMU 16) at less than 7 cfs (0.20 m^3/s) and the warmest temperatures (mean temperature: 14.56 $^{\circ}\text{C}$ or 58.2 $^{\circ}\text{F}$; Figure 6). Dissolved oxygen has typically been below 100% at COB T1, while other water quality parameters were comparable to the 2019 and 2021–2024 average across sites. Despite somewhat lower dissolved oxygen values, none of the water quality parameters at COB T1 fell outside the range of suitability for aquatic life.

ORO 1 is the largest tributary to the Cobblestone River, located upstream of COB T1 and is approximately intermediate in size between COB 1 and COB T1 streams. The water quality parameters of ORO 1 are very similar to other mid-sized streams included in the set of biomonitoring sites, including FAL 1, USR 1, and WIN 1 (Figure 6). Observed total discharges were intermediate at these four sites for 2019 and 2021–2024, being less than COB 1 but greater than COB T1 and other small streams (GLA 1, GLA 2, and IMU 16) at 45–192 cfs (1.3–5.4 m^3/s ; Figure 7). Mean water temperatures were also intermediate at ORO 1, USR 1, WIN 1, and FAL 1 between small and large streams in the study (range: 7.49–8.47 $^{\circ}\text{C}$ or 45.5–47.2 $^{\circ}\text{F}$), while mean DO was similar across all nine biomonitoring sites (range: 104.2–108.5 percent) except COB T1 (87.3%). Specific conductance was comparable across the intermediate and large-sized streams alike, with mean values ranging from 82.5 to 143.8 $\mu\text{S}/\text{cm}$ across COB 1, FAL 1, ORO 1, USR 1, and WIN 1 (Figure 6; Appendix A). Turbidity (mean range: 0.22–0.39 NTU) and pH (mean range: 7.17–7.53) were also comparable across these five sites.

IMU 16, GLA 1, and GLA 2 are small streams that drain into Imuruk Basin and consistently have exhibited the least suitable water quality parameters over time. Discharge across all years (2019, 2021–2024) was low at these sites (< 9 cfs or 0.25 m^3/s ; Figure 7), as were mean temperatures (range: 4.13–5.31 $^{\circ}\text{C}$; 39.4–41.6 $^{\circ}\text{F}$). Mean DO was average (range: 106.9–107.8%) and specific conductance was high (range: 236.8–401.0 $\mu\text{S}/\text{cm}$). Mean turbidity and pH at IMU 16 were comparable to the larger streams in the study, while GLA 1 and GLA 2 have had consistently high turbidity (GLA 1 mean: 18.26 NTU, GLA 2 mean: 5.07 NTU; Figure 6) and low pH (GLA 1 mean: 5.65, GLA 2 mean: 5.79) from 2019 and 2021 to 2024. GLA 1 and GLA 2 are on Graphite Creek, which likely makes direct contact with mineral ore underground. As a result, Graphite Creek water is discolored and orange, likely contains iron salts, and has prevalent flocculant. Heavy precipitate and poor water quality, especially low pH, suggest that Graphite Creek is unable to support significant biological productivity. It is worth noting that water quality has, on average, trended toward improvement in Graphite Creek since 2019. In 2019, pH ranged from 4.65 to 4.92 and specific conductivity from 516.4 to 635.5 $\mu\text{S}/\text{cm}$ at sites GLA 1 and GLA 2. These parameters improved toward more neutral pH (range: 6.19–6.87) and lower specific conductivity (range: 194.7–333.4 $\mu\text{S}/\text{cm}$) in 2023 (Appendix A). In 2024, specific conductivity remained within the 2023 range, but pH decreased slightly, with a range of 6.24 to 6.45 at GLA 1 and GLA 2. Monitoring of GLA 1 and GLA 2 for possible signs of habitat improvement in the coming years will continue, but as of now, aquatic habitat in Graphite Creek is largely inhospitable to life.

3.1.2. Periphyton Standing Crop

Periphyton are attached, photosynthesizing microalgae which support stream biological communities as primary producers. Periphyton communities are assessed in project area drainages by determining

concentrations of chlorophyll-a, -b, and -c on underwater substrates, of which chlorophyll-a is the primary photosynthesizing pigment. Consistent with previous years, 2024 chlorophyll-a concentrations were slightly higher at sites located south of Mosquito Pass; the highest mean concentrations were 13.49 mg/m² at WIN 1 and 3.60 mg/m² at USR 1 (Table 5; Figure 8). Mean chlorophyll-a at other sites ranged from 1.27 mg/m² at IMU 16 to 3.49 mg/m² at ORO 1. Chlorophyll-a concentrations at sites GLA 1 and GLA 2 on Graphite Creek were too low to be detected. Non-detectable samples reduce the overall accuracy of results and the ability to characterize periphyton community composition, however, it can generally be assumed that sites with non-detectable samples are less productive. Despite the cooler, wetter weather throughout the study area, there was no discernible trend in 2024 chlorophyll-a concentrations by site compared to previous years. Some sites, like WIN 1 and IMU 16, had slightly above average chlorophyll-a concentrations compared to past years, while others were comparable or slightly lower (Figure 8).

Generally, periphyton standing crop communities, as indicated by chlorophyll concentrations, are negatively influenced by high water flow, high turbidity, extreme pH, dissolved metals, and extreme water temperatures. Across years (2019, 2021–2024), ORO 1, WIN 1, and USR 1 consistently had the highest chlorophyll concentrations (Table 5; Figure 8; Appendix C), indicating good water quality enabling high primary productivity which can support higher level aquatic life like macroinvertebrates and fish. Chlorophyll concentrations have mostly been non-detect or very low (> 1.6 mg/m²) at Graphite Creek sites GLA 1 and GLA 2, most likely due to the low pH and temperature, dissolved metals, and high turbidity of the stream, making the stream unproductive at the lowest trophic level. IMU 16 has also had consistently low chlorophyll-a concentrations ranging from 0.73 to 1.46 mg/m² (Table 5) and a few non-detectable samples in some years (Appendix C). Despite lower chlorophyll concentrations, sites COB 1, COB T1, and FAL 1 are comparably productive streams in terms of fish and aquatic macroinvertebrate assemblages to ORO 1, WIN 1, and USR 1 (Owl Ridge 2022, Owl Ridge 2023) and have adequate water quality (Appendix A). Mean chlorophyll-a was 2.87 mg/m² (range: 0.50–7.86 mg/m²) at COB 1, COB T1, and FAL 1 from 2019 to 2021–2024, compared to 7.7 mg/m² (range: 3.49–16.40 mg/m²) at ORO 1, WIN 1, and USR 1 (Table 5). The difference is likely attributable to unique site characteristics, for instance, higher average flow at COB 1 (Figure 7) may result in lower chlorophyll-a concentrations, while the bankside willows that shade and obscure COB T1's stream channel may reduce sunlight penetration and subsequent primary production in the water.

Chlorophyll-b and -c are accessory pigments to chlorophyll-a and may indicate unique periphyton assemblages, shadier stream channels with less light penetration, and/or poor water quality. Sites GLA 1, GLA 2, and IMU 16 have had the highest mean combined chlorophyll-b and -c proportions (0.38–0.55) for 2019 and 2021–2024 (Figure 9), likely because of their lower water quality. WIN 1 and USR 1 have higher water quality and greater concentrations of chlorophyll-a, but relatively high proportions of chlorophyll-b and -c over time as well, possibly indicative of unique algal species inhabiting the stream. The variability between sites in chlorophyll concentrations and proportions underscores the importance of monitoring additional stream metrics, such as water quality and aquatic macroinvertebrates, to assess stream health.

3.1.3. Aquatic Macroinvertebrates

As a result of varied life histories and tolerances to water quality, aquatic macroinvertebrate populations can serve as bio-indicators of short- and long-term change in aquatic ecosystems. In 2024, a total of

10,301 individual invertebrates were counted, more than in all previous years except 2021 (Table 6; Figure 10). The elevated counts of invertebrates in 2024 are the result of increased numbers of simuliids (family *Simuliidae*) at site COB T1 (Table 6, Table 7; Appendix D). Simuliids comprised 62.2% (n = 1,978) of the total invertebrate abundance at COB T1 in 2024, compared to 55.7% (n = 696) in 2023, 38.0% (n = 534) in 2022, 36.7% (n = 655) in 2021, and 17.2% (n = 488) in 2019 (Appendix D). The cause of increased simuliid abundance is unknown, but unique environmental conditions in 2024 may have facilitated population growth. For instance, increased flows and precipitation may have created more habitat at the site, creating more breeding areas for simuliids.

By site, COB T1 had the greatest abundance of invertebrates at 3,181 (density = 7,069 invertebrates/m²; 657.2 invertebrates/ft²), followed by USR 1 at 1,589 total invertebrates (density = 3,531 invertebrates/m²; 729.0 invertebrates/ft²), and WIN 1 at 1,523 total (density = 3,384 invertebrates/m²; 314.6 invertebrates/ft²; Table 6, Figure 10). Graphite Creek sites GLA 1 and GLA 2 had the fewest total invertebrates with 44 and 9 counted, respectively. High invertebrate density at COB T1, USR 1, and WIN 1 in 2024 largely aligns with previous years; COB T1 had a mean density of 4,472 invertebrates/m² (924.0 invertebrates/ft²) across all years from 2019 and 2021 to 2024 (range: 570–6,313 invertebrates/m²; 117.8–1,304.3 invertebrates/ft²; Figure 10) and has been among the highest three sites in terms of invertebrate density in all years of sampling. WIN 1 and USR 1 have been among the top three sites in three of four years sampled with means of 3,063 invertebrates/m² (627.3 invertebrates/ft²; range: 2,046–3,762 invertebrates/m² or 422.7–777.3 invertebrates/ft²) and 4,035 invertebrates/m² (833.7 invertebrates/ft²; range: 682–8,215 invertebrates/m² or 140.9–1,697.3 invertebrates/ft²), respectively. WIN 1 and USR 1 were not sampled in 2019. Across all years, GLA 1 and GLA 2 have consistently had the lowest invertebrate density with fewer than 150 invertebrates/m² (30.0 invertebrates/ft²) in all sampling years (Figure 10).

Despite the higher abundance of invertebrates in study drainages in 2024, total taxa richness was below average. In 2024, 59 unique taxa were found across all sites compared to 62 in 2023, 64 in 2022, 67 in 2021, and 49 in 2019 (Table 6). Low taxa richness in 2019 was probably due to fewer sites being sampled (n = 7) compared to subsequent years (n = 9). While somewhat lower than previous years, total taxa richness in 2024 remains within the range of natural variability for the study area. By site, richness was greatest at COB 1 (n = 22 species) and WIN 1 (n = 21 species) and lowest at GLA 1 (n = 6 species) and GLA 2 (n = 3 species; Table 6), largely consistent with previous years where COB 1 had the highest or second highest taxa diversity across all years (mean = 19.4, range: 16–22). WIN 1 had the highest taxa diversity in 2021 (n = 21) but has been somewhat more variable in other years sampled (range: 15–21). IMU 16 has also had high taxa diversity in some years, being the most diverse site in 2019 and 2023 with 18 unique species. GLA 1 and GLA 2 consistently had eight or fewer species in any given year.

Diversity of Ephemeroptera, Plecoptera, and Trichoptera (EPT) species across sites was 22 unique taxa in 2024 compared to 24 in 2023 and 29 in 2022, but comparable to the overall trend across all sampling years 2019 and 2021–2024 (range: 22–29 species; Table 6). However, total abundance of EPT taxa was low compared to previous sampling years; in 2024, EPT taxa made up 9.82 percent of all Insecta taxa on average, compared to 11.7–18.5 percent during 2019 and 2021–2023 sampling. EPT taxa are extremely important bioindicators of stream health, as they provide food for higher trophic levels and can be highly sensitive to changing water quality. The elevated stream discharge across most biomonitoring sites in 2024 (Figure 7) may explain lower EPT abundance, wherein stronger water flows prior to and during

sampling washed EPT taxa away from study sites. Elevated stream flows in 2021 coupled with the second lowest mean percent EPT taxa (11.7 percent; Table 6) are further evidence that high stream flows may have reduced EPT presence in the study area. High flows have been shown to reduce EPT abundance in other regions (Suhalia et al. 2011; Schmitt et al. 2016).

By site, FAL 1 (29.2 percent) and IMU 16 (18.7 percent) had the highest percentages of EPT taxa relative to other sites in 2024 (Figure 11). GLA 1 and GLA 2 had the least with 2.5 and zero percent, respectively (Table 6). IMU 16 has had the highest percent of EPT in all prior years except 2019 (range: 18.7–50.2 percent 2019, 2021–2024) while FAL 1 has generally been low compared to other sites prior to 2024 (range: 3.2–23.6 percent from 2019 and 2021 to 2023). Invertebrate assemblages at the Graphite Creek sites GLA 1 and GLA 2 have consisted of less than 12 percent EPT taxa across all years sampled. Stoneflies (Plecoptera) made up a small percentage (2.5%) of total taxa at GLA 1 in 2024, which represents an improvement in total EPT relative to the average of 1.7 percent 2021–2023, but a decline from the high of seven percent EPT in 2023 and 11 percent in 2019. No EPT were detected in GLA 2 in 2024, a decline from approximately seven percent EPT detected at the site in 2023. EPT had not been detected at GLA 2 prior to 2023 (Figure 11).

Chironomids made up 57.6 percent on average of invertebrates in the class Insecta in 2024 (range: 8.5–97.2 percent across sites; Table 6), in line with the averages of previous years (range: 48.7–58.5 percent). The percent of chironomids out of the family Diptera, the predominant Insecta family across sites, was 67.8% on average, consistent with the averages over previous years (range: 62.8–68.7 percent). Chironomids are thought to be more tolerant of poor water quality compared to EPT taxa, however, chironomid presence may also result from harsher environmental conditions and shorter growing seasons typical of arctic systems like those in the Graphite One study area. Percent chironomids at biomonitoring sites at Red Dog Mine in 2023 ranged from 13 to 94, with eight out of 10 sites having percent chironomids greater than 50 (Clawson 2024), lending support to the hypothesis that chironomid abundance is related to harsh arctic environmental conditions more than or comparably to poor water quality.

The mean Shannon Index (H) of 0.48 and Simpson's Index (D) of 1.42 in 2024 align with previous years' values (H range: 0.47–0.6, D range: 1.38–1.61; Table 6), suggesting that community diversity and evenness have remained consistent over time. The Hilsenhoff Biotic Index, which estimates the tolerance of an invertebrate community to organic pollutants, has ranged from an average of 5.04 across sites in 2021 to 5.74 in 2023. HBI in 2024 across sites averaged 5.54, within the range of previous years. Mid-level HBI indicates that the invertebrate assemblages in the study area are at least somewhat tolerant of organic pollutants present in streams.

Characterizing aquatic macroinvertebrate assemblages is multifaceted and several metrics must be considered in tandem to draw conclusions about community characteristics due to the natural density patchiness and high variability of species composition. Abundance, or density, total taxa diversity, and EPT metrics are all important measures of mid-trophic-level stream productivity and stream health by extension, but these metrics vary in order among sites and years in the study area, whereby the site with the highest diversity does not necessarily have the highest EPT count, for instance. COB T1, WIN 1, and USR 1 have had the most abundant invertebrate populations from 2019 and 2021 to 2024, while COB 1 has had the most taxa diversity, and IMU 16 the highest proportions of EPT taxa. These results

demonstrate that it is essential to characterize invertebrate populations using multiple metrics, and that most sites in the Graphite One study area, inclusive of USR 1, WIN 1, ORO 1, COB 1, COB T1, IMU 16, and FAL 1, have adequate habitat conditions to support invertebrate populations over time, with some natural variability from year to year. Sites GLA 1 and GLA 2 on Graphite Creek consistently have low invertebrate density and taxa diversity, and few or no EPT taxa in most years (Figure 10, Figure 11) and are unable to support healthy macroinvertebrate assemblages. Other metrics, such as percent Chironomidae and Shannon and Simpson's Index, are more challenging to interpret given lack of scientific literature establishing baseline values for arctic regions. However, these metrics remain useful for an aquatic baseline study in that a significant deviation from one year to the next would indicate change in the study drainages. So far, such deviations have not occurred.

3.1.3.1. Unique taxa

Several uncommon invertebrate taxa were detected at Graphite One biomonitoring sites in 2024, including bivalves (order Bivalvia) and sabellid worms of the genus *Manayunkia* (order Polychaeta; Table 6). Bivalves were found at sites COB T1 and USR 1 in 2024 and comprised 0.31 percent of the total taxa at each site. This is approximately average compared to detections during 2019–2023 sampling in which 0.09 to 0.71 percent of the total taxa were bivalves across sites. Bivalves have most commonly been detected at site COB T1 over the years, with 2–19 individuals counted, or a percent composition of 0.11–0.71 across years 2019 and 2021–2024 (Table 7; Appendix D). Bivalves have been detected once at site COB 1 in 2019 with a percent composition of 0.13 ($n = 1$) and once at WIN 1 in 2021 with a percent composition of 0.07 ($n = 1$). Bivalves were detected for the first time at USR 1 in 2024 with a percent composition of 0.31 ($n = 5$) out of all invertebrate taxa at the site this year (Table 6). In prior years, bivalve species observed have been part of the family Sphaeriidae or Pisidiidae and either the genus *Pisidium* or genus-level identification has not been possible (Appendix D). In 2024 for the first time, bivalves of the genus *Sphaerium* were detected at USR 1 ($n = 5$; Table 7). The reasons for the appearance of this genus at this site are unknown but continued monitoring of the site in future years will help to elucidate patterns. The continued presence of bivalves at COB T1 indicate that this site has a distinct community of freshwater invertebrates, likely the result of lacustrine habitats at its headwaters producing unique water quality and temperature regimes compared to other sites.

Sabellid worms of the genus *Manayunkia* (order Polychaeta; Table 6) were again detected at site COB T1 in 2024. One species of this genus, *Manayunkia speciosa*, can be an intermediate host to the metazoan parasite *Ceratonova shasta* (Meyers et al. 2019). This organism parasitizes several freshwater and anadromous salmonid species and is widespread in the Pacific Northwest and British Columbia (ADF&G 2023). It has been detected in several drainages in Southcentral and Interior Alaska, though outward signs of infection were absent in host fish. Worms of the genus *Manayunkia* have been detected at COB 1 in 2022 ($n = 1$), ORO 1 in 2023 ($n = 1$), and in increasing numbers in COB T1 with 48 counted in 2022, 66 in 2023, and 412 in 2024 (Appendix D). It will be important to continue documenting invertebrate assemblages at this site and monitoring fish for signs of infection in the coming years given the exponential increase in sabellid *Manayunkia* worms suddenly observed in 2024.

3.1.4. Fish Abundance and Distribution

Fish occupy the highest trophic level in stream communities and can indicate changes in lower trophic levels and water quality parameters. In 2024, a total of 178 fish from seven species were captured across the nine biomonitoring sites (Table 8, Table 9). Sampling effort totaled 2,380 hours of minnow trapping and 1,661 meters (5,449 ft) of electrofishing. The most abundant fish species captured was Dolly Varden, accounting for 38.2% of the total catch, followed by slimy sculpin (33.1%). Other species captured in 2024 included chum salmon (*Oncorhynchus keta*; 15.7%), coho salmon (*O. kisutch*; 5.1%), pink salmon (*O. gorbuscha*; 3.4%), sockeye salmon (*O. nerka*; 2.2%), and Alaska blackfish (*Dallia pectoralis*; 2.2%; Table 8).

Across both fishing methods (electrofishing and minnow traps), total catch was highest at COB 1 in 2024, with 42 fish across five species captured (Table 8, Table 9; Figure 12). Catch was second highest at COB T1, where 27 fish of four species were captured, and third highest at ORO 1, where 25 fish of 3 species were captured. A total of 24, 23, 22, and 15 fish were caught at FAL 1, IMU 16, USR 1, and WIN 1, respectively, while no fish were caught at either GLA 1 or GLA 2 in 2024 (Table 8, Table 9; Figure 12).

Electrofishing catch per unit effort (CPUE) in 2024 was lower at all sites than the mean electrofishing CPUE across all years (2019, 2021–2024), except for FAL 1, where 2024 CPUE (8.2 fish per 100 m or 328 ft) was less than in 2023 (16.87 fish/100 m or 328 ft) but higher than the 2019/2021–2024 average of 6.98 (Table 9). Minnow trap CPUE in 2024 was higher than in 2023 at all sites except USR 1 and GLA 2. The 2024 minnow trap catch rates were lower than mean catch rates from 2019 through 2021–2024 at all sites except for IMU 16, where 4.71 fish per 24-hr period were caught in 2024 compared to 2.26 on average over the last five years of sampling (Table 9). Catch rates vary by fishing method, environmental conditions, and site-specific characteristics. For instance, COB T1 consistently has high minnow trap catch per unit effort compared to COB 1, where electrofishing catches more fish (Table 9; Figure 12). COB 1 is much larger and has higher and more variable flow, thus, successful minnow trap placement is more challenging compared to COB T1. Furthermore, many of the fish typically caught at COB 1 are juvenile salmon of a size class too small for minnow trap retention (< 50mm FL). Electrofishing may have proved less effective in 2024 across sites compared to 2023 due to recent flooding of streams displacing fish from habitat used during normal base flow conditions. Using catch data from both electrofishing and minnow traps more accurately describes fish use across the nine biomonitoring sites, as each method contributes important data, but neither is comprehensive. Species diversity has fluctuated across years but has increased from 2021 to 2024. Total species observed ranged from five in 2021, four in 2022, eight in 2023, to seven in 2024 (species diversity was lower and not comparable in 2019 due to two fewer sites being sampled). Slimy sculpin, Dolly Varden, coho and pink salmon have been caught in all years. Additional species caught more in recent years include Arctic grayling, Alaska blackfish, ninespine stickleback, and chum salmon.

Across all sites and years, mean catch rates were highest at COB 1 using electrofishing with a CPUE of 20.44 fish per 100 m (328 ft; range: 7.65–38.95 fish/100 m or 328 ft) and at COB T1 using minnow traps with a CPUE of 32.3 fish per 24-hour period (range: 15.89–94.68 fish/24-hr period; Table 9; Figure 12). Mean catch rates were slightly lower at FAL 1, IMU 16, ORO 1, USR 1, and WIN 1, where electrofishing CPUE averages ranged from 6.58 fish/100 m (328 ft) at WIN 1 to 13.58 fish/100 m (328 ft) at ORO 1 from 2019 and 2021 to 2024, and minnow trap CPUE ranged from 2.26 fish/24-hr period at IMU 16 to

10.57 fish/24-hr period at ORO 1 (Table 9). Consistent with their less suitable water quality parameters, GLA 1 and GLA 2 had the lowest electrofishing and minnow trap CPUE across all sites and years, with a mean CPUE of 0.00 at GLA 1 for both methods and 0.00 fish/100 m (328 ft; electrofishing) and 0.2 fish/24-hr period (minnow trap) at GLA 2 (Table 9).

All fish captured were either resident species that rarely reach large sizes, such as Alaska Blackfish and slimy sculpin, or were juveniles of anadromous species like Pacific salmon and Dolly Varden that rely on drainages of the study area for different portions of their life histories, especially for rearing after birth. Juvenile Dolly Varden and coho salmon have been caught in the largest numbers consistently from 2019 and 2021 to 2024, relative to other anadromous species. Dolly Varden and coho salmon overall length ranges in 2024 were comparable to previous years, albeit with smaller numbers of coho salmon caught (Figure 13). Comparisons of length frequency distributions for these two species (Figure 13) suggest that multiple age classes use study area drainages in most years for Dolly Varden and some years for coho salmon.

Based on comparisons of length frequency distributions, age-0 Dolly Varden have typically measured 50 mm in fork length (FL) or less, with elevated catches of these fish in 2019, 2023, and 2024 (Figure 13). Dolly Varden measuring around 60–80 mm FL were most likely age-1 fish and have been caught in all years. Based on the estimated size-at-age thresholds (< 50 mm for age-0 fish and 60–80 mm for age-1), eight age-0 and 19 age-1 Dolly Varden were caught in 2024 across sites (Figure 13), which was less than the average of 11 age-0 (range: 6–18) and 28 age-1 fish (range: 24–41) captured in previous years. The smaller numbers of age-0 and age-1 fish are likely an artifact of lower electrofishing CPUE across sites and species in 2024, rather than a change in the Dolly Varden population, as most Dolly Varden (68%) have been caught using electrofishing rather than minnow traps over the years. Dolly Varden age class distribution (relative proportions of each class) remained similar to previous years (Figure 13). The continued presence of age-0 fish indicates that successful spawning occurs each year in study drainages. FAL 1 had the highest numbers of age-0 fish with a mean of 3.6 caught 2021–2024 (range: 0–8), followed by ORO 1 with a mean of 2.6 fish (range: 0–7) from 2019 and 2021 to 2024. IMU 16 had age-0 fish in 2021 (n = 3) and 2022 (n = 3), but none have been caught at this site in the previous two years of sampling.

Coho salmon total abundance and size distribution have been more variable. Fish measuring less than 51 mm FL, especially in 2023 (n = 29), were likely age-0 fish and fish measuring 80–100 mm in 2019 (n = 29) and 2021 (n = 28) were likely age-1 individuals (Figure 13). Insufficient coho salmon were caught in 2024 to draw conclusions about age class presence. However, approximately equal numbers of coho salmon have been caught by electrofishing methods (47%) as by minnow traps over the years, so the reduction in total coho salmon catch is likely not attributable to reduced efficacy of a particular sampling method, but rather a decrease in the coho salmon population at study sites in 2024. The high relative catches of age-1 fish in 2019 and 2021 are indicative of spawning success two years prior and the brief, one-year peak in age-0 catch in 2023 (n = 29) likely indicates higher spawning success the previous fall and successful overwinter offspring survival. Differences in age class proportions between years may be the result of interannual variability in population abundance, and possibly intra-population age class abundance as well. Coho salmon in Alaska spend at least 1–2 years rearing in freshwater before migrating to the ocean (Lang et al. 2006) and are known to vary in freshwater outmigration age in other regions (Jones et al. 2021), it is therefore possible that recent years (2022–2024) have had higher proportions of

fish migrating to the ocean after one year in freshwater (age-0 fish), resulting in lower observations of age-1 coho salmon. From 2019 and 2021 to 2024, all age-0 fish have been captured at COB 1 and 90 percent of age-1 fish have been captured at COB T1, suggesting that the Cobblestone River provides spawning habitat for coho salmon whose offspring move into smaller tributaries like COB T1 for rearing and feeding, as is typical behavior for the species (Ebersole et al. 2006; Lang et al. 2006).

3.1.5. Juvenile Dolly Varden Element Concentrations

Heavy metal concentrations in juvenile fish tissue can reflect those of the surrounding environment and may indicate possible pollution in a study drainage. A total of 49 juvenile Dolly Varden samples were analyzed for heavy metals burdens in 2024. Brooks Applied Labs (BAL) conducted all laboratory analyses and the full results including quality assurance and quality control results are provided in Appendix E. Results are reported on a dry weight basis. Analytical results that were below detection limits were excluded from analysis. Results are reported for seven of the nine biomonitoring sites, as no juvenile Dolly Varden were captured at either Graphite Creek site (GLA 1 or GLA 2). Heavy metals analyzed include aluminum (Al), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), mercury (Hg), methyl mercury (MeHg), manganese (Mn), nickel (Ni), lead (Pb), antimony (Sb), selenium (Se), and zinc (Zn; Table 10; Appendix E).

Aluminum (Al) concentrations have been above detection limits in all years and at all sites (Appendix E). Mean concentrations in 2024 ranged from 13.5 mg/kg at FAL 1 to 126.2 mg/kg at ORO 1 (Table 10) and were below average at most sites compared to previous years (Figure 14). Al was especially low at FAL 1 and WIN 1 in 2024 relative to 2019 and 2021–2024 values; FAL 1 had a mean of 13.5 mg/kg in 2024 compared to 57.1 mg/kg across 2019 and 2021–2024 (range: 13.5–109.9 mg/kg) and WIN 1 had a mean of 39.5 mg/kg in 2024 compared to the 141.9 mg/kg mean concentration across 2019 and 2021–2024 (range: 39.5–229.4 mg/kg). Al varied among sites and years; WIN 1 had the highest mean concentration across all sampling years compared to other sites but did not have the highest concentration in every year. Across sites, Al was highest in 2019 compared to other years with a range of 99.5 mg/kg at ORO 1 to 169.0 mg/kg at COB T1 (Table 10).

Arsenic (As) has been detectable in more than 99 percent of all samples across sites and years (Appendix E). Arsenic was lowest at 0.074 mg/kg at IMU 16 and highest at 0.282 mg/kg at COB 1 in 2024 and was marginally above the 2019/2021–2024 average at most sites (Table 10; Figure 14). COB T1 had the greatest increase in mean As in 2024 at 0.126 mg/kg compared to 0.095 mg/kg averaged across 2019 and 2021–2024 (range: 0.062–0.126 mg/kg). COB 1 generally had the highest As concentrations with a mean of 0.197 mg/kg across years (range: 0.094–0.282 mg/kg). At COB 1, As was substantially higher in 2019, 2023, and 2024 compared to other sites and comparable in other years (Figure 14). As has been consistently low at COB T1 with a mean of 0.095 (range: 0.062–0.126 mg/kg) and at IMU 16 with a mean of 0.103 mg/kg (range: 0.074–0.132 mg/kg).

All barium (Ba) samples have been detectable across sites and years (Appendix E). Ba concentrations ranged from a low of 1.73 mg/kg at FAL 1 to a high of 3.50 mg/kg at WIN 1 in 2024 and were below average at all sites relative to the multiyear average (Table 10; Figure 1). Ba has been highest at ORO 1 and WIN 1 on average and within most years relative to other sites, with means of 4.04 mg/kg across 2019 and 2021 to 2024 (range: 3.43–5.17 mg/kg) and 4.26 mg/kg (range: 3.32–5.18 mg/kg), respectively.

COB T1 had the second lowest Ba concentration in 2024 at 1.95 mg/kg and has been the lowest on average, with a mean Ba concentration of 2.04 mg/kg 2019 and 2021 to 2024 (range: 1.12–3.02 mg/kg). Ba has notably decreased each year at ORO 1 and USR 1, from 5.17 mg/kg in 2019 to 3.47 mg/kg at ORO 1 and from 5.18 mg/kg in 2021 to 3.50 mg/kg in 2024 at USR 1 (Figure 14).

Beryllium (Be) concentrations have mostly been non-detectable (Appendix E). Only ORO 1 had a detectable sample in 2024 measuring 0.037 mg/kg (Table 10), which was high relative to most other detections in past years at ORO 1 and at other sites (Figure 14). Be was highest on average at COB 1 from 2019 and 2021 to 2024, though this is based on a single detectable year in 2023 with a concentration of 0.032 mg/kg. USR 1 and WIN 1 have been more consistently detectable, with combined 2019 and 2021–2024 means of 0.027 and 0.029 mg/kg, respectively (range: 0.019–0.036 mg/kg). FAL 1 had the lowest Be with a mean concentration of 0.007 mg/kg in 2021. Across all sites and years, Be has remained below 0.04 mg/kg.

Cadmium (Cd) concentrations have been above detection limits across all sites and years (Appendix E). Cd was lowest at COB T1 at 0.057 mg/kg and highest at 0.832 mg/kg at USR 1 in 2024 (Table 10). Cd was variable, but unexceptional in 2024, being higher at some sites and lower at others compared to previous years (Figure 14). USR 1 samples have consistently had the highest concentrations of Cd across all years, with a 2019 and 2021–2024 mean of 1.421 mg/kg (range: 0.832–2.047 mg/kg) compared to averages below 0.800 mg/kg at all other sites. COB T1 had the lowest Cd both within years and on average at 0.080 mg/kg across 2019 and 2021–2024 (range: 0.033–0.185 mg/kg).

Chromium (Cr) concentrations have mostly been above detection limits after 2021. Most Cr concentrations were too low to be detected in 2019 and 2021 (Appendix E). Concentrations in 2024 ranged from a low of 0.404 mg/kg at USR 1 to a high of 0.765 mg/kg at WIN 1 (Table 10) and were average compared to previous years (Figure 14). WIN 1 consistently had the highest mean and within-year Cr concentrations compared to other sites, with a mean of 0.877 mg/kg across 2019 and 2021–2024 (range: 0.671–1.250 mg/kg). The exception was in 2023 when IMU 16 had the highest mean concentration at 1.060 mg/kg compared to other sites. Cr concentrations at IMU 16 have been highly variable over the years. USR 1 had the lowest Cr concentrations on average, at 0.442 mg/kg from 2019 and 2021 to 2024 (range: 0.364–0.515 mg/kg).

Copper (Cu) concentrations have been above detection limits across all years and sites (Appendix E). Mean values in 2024 ranged from 2.72 mg/kg at IMU 16 to 3.95 mg/kg at COB 1 (Table 10). Cu concentrations in 2024 were slightly lower than averages across 2019 and 2021–2024 (Figure 14). IMU 16 in particular had a somewhat lower mean Cu concentration (2.72 mg/kg) when compared with previous years means (4.29, 3.54, 3.66 mg/kg). Across all years, USR 1 had the highest average concentration (3.83 mg/kg) while COB T1 had the lowest (3.05 mg/kg).

Iron (Fe) concentrations have been above detection limits across all years and sites (Appendix E). In 2024, the highest mean concentration was 449.51 mg/kg at COB T1, lower than its 2022 and 2019 means, but higher than 2023 and 2021 mean values (Table 10). The lowest mean Fe concentration was observed at FAL 1 (73.08 mg/kg) in 2024. This low concentration was a reduction from previous years at the site, where average concentrations have ranged from 108.46 to 219.48 mg/kg. Across all years, these average trends held true; COB T1 had the highest average concentration (465.3 mg/kg) between 2019 and 2024, while FAL 1 had the lowest mean at 138.42 mg/kg.

All Mercury (Hg) concentrations have been above detection limits across sites and years (Appendix E). In 2024, COB T1 had the greatest mean Hg concentration at 0.173 mg/kg while IMU 16 had the lowest (0.051 mg/kg; Table 10). These concentrations were greater than 2023, but lower than all other years' averages. Compared with other sites, IMU 16 had the lowest average concentration across all years (0.070 mg/kg), while COB T1 had the highest (0.195 mg/kg).

All methyl mercury (MeHg) concentrations have been above detection limits across sites and years (Appendix E). In 2024, IMU 16 had the lowest average MeHg concentration (48.75 ng/g) while COB T1 had the highest (159.36 ng/g; Table 10). This trend is consistent across the multiyear (2019, 2021–2024) mean concentrations as well, with IMU 16 at 72.41 ng/g and COB T1 at 176.50 ng/g. Most sites have variable concentrations with IMU 16 and ORO 1 trending towards lower mean concentrations and others like USR 1 and WIN 1 trending towards higher mean concentrations.

Manganese (Mn) concentrations have been above detection limits across all sites and years (Appendix E). Mean concentrations in 2024 ranged from 4.07 mg/kg at FAL 1 to 16.79 mg/kg at COB T1. In comparison across all years, COB T1 had the highest mean concentration (19.78 mg/kg) while IMU 16 had the lowest (7.43 mg/kg; Table 10). Sites FAL 1 and ORO 1 have mean concentrations that have trended downward over time, while other sites have more variation across years.

Over 85 percent of Nickel (Ni) concentrations have been above detection limits across sites from 2019 and 2021 to 2024 (Appendix E). In 2024, the highest mean concentration was at COB 1 (0.542 mg/kg) while the lowest was at FAL 1 (0.284 mg/kg). Mean concentrations were within normal variation across sites. Across all years of sampling (2019, 2021–2024) USR 1 had the highest mean concentration at 0.663 mg/kg (range: 0.374–0.790 mg/kg) and COB T1 had the lowest at 0.351 mg/kg (range: 0.077–0.608; Table 10). At some sites including USR 1, ORO 1, and IMU 16, mean concentrations have trended downward over the years.

Approximately 75 percent of samples had detectable concentrations of Lead (Pb) across sites during 2019 and 2021–2024 sampling (Appendix E). The highest and lowest mean concentrations in 2024 were 0.133 mg/kg at ORO 1 and 0.013 mg/kg at USR 1 and IMU 16. Across all years IMU 16 had the lowest mean concentration (0.027 mg/kg) while ORO 1 had the greatest mean concentration (0.080 mg/kg; Table 10). Overall, Pb concentrations were variable, though somewhat lower than 2023 mean values, except for COB T1 where it increased from 0.037 mg/kg to 0.048 mg/kg from 2023 to 2024.

Only about 20 percent of Antimony (Sb) concentrations have been detectable across sites and years (Appendix E). Of those above detection limits, mean concentrations of Sb ranged from 0.008 mg/kg at USR 1 to 0.757 mg/kg at ORO 1 in 2024 (Table 10). ORO 1 was anomalous with a single sample having an Sb concentration of 5.24 mg/kg (Figure 14; Appendix E). Sb concentrations in juvenile fish tissues have always been < 0.1 mg/kg at all sites in all years, including the other samples at ORO 1 in 2024. It is unknown why the single observation of Sb was so high at ORO 1 in 2024. Sb will be monitored continually in subsequent years in the event other anomalies occur. Apart from observations at ORO 1, the highest mean concentration of Sb across 2019 and 2021–2024 occurred at FAL 1 (0.029 mg/kg; Table 10). Mean Sb concentrations from 2019 and 2021 to 2024 were lowest at COB 1, IMU 16, WIN 1, and typically ORO 1 excluding the 2024 outlier with a range of 0.010–0.013 mg/kg.

All Selenium (Se) concentrations have been above detection limits across sites and years (Appendix E). The mean concentrations in 2024 ranged from a high of 7.25 mg/kg at USR 1 to a low of 3.37 mg/kg at FAL 1 (Table 10). USR 1 consistently had high mean concentrations across years (range: 7.3–7.9 mg/kg). Only IMU 16 had higher concentrations with means of 9.1 mg/kg and 11.2 recorded in 2021 and 2023 respectively (Table 10). As such, USR 1 had the highest multiyear mean concentration (8.37 mg/kg; Table 10). In contrast, COB T1 had the lowest multiyear mean concentration at 3.76 mg/kg.

Zinc (Zn) concentrations have been detectable across all sites and years (Appendix E). Zn ranged from 88.2 mg/kg at IMU 16 to 151.9 mg/kg at ORO 1 in 2024 (Table 10). Zn concentrations across sites were comparable to previous years' mean concentrations apart from IMU 16, where the mean of 88.2 mg/kg in 2024 was substantially lower than the multiyear mean of 119.8 mg/kg (2019, 2021–2024 range: 127.2–153.0 mg/kg). USR 1 and ORO 1 had the highest concentrations within and across years with mean values of 154.0 and 153.5 mg/kg, respectively. Zn at USR 1 in 2024 was comparable to 2022 and 2023 values but lower than the high of 190.6 mg/kg in 2021. At ORO 1, Zn concentrations have been decreasing each year (Figure 14). COB 1 had the lowest mean concentration of Zn across 2019 and 2021 to 2024 at 114.3 mg/kg.

In general, metals concentrations in juvenile Dolly Varden tissue in 2024 were comparable to previous years or slightly lower, in the case of Al, Ba, Cu, and Se. Noteworthy site-specific results in 2024 include the high Sb outlier at ORO 1 and lower concentrations of Se and Zn at IMU 16 (Figure 14), though none of the results yet reported indicate significant change to project area aquatic ecosystems. These analytes should continue to be monitored in subsequent years for potential future changes. Compared to other sites in 2024, ORO 1 and COB T1 had the highest mean concentrations for four of the 16 metals analyzed, followed by COB 1 (n = 3) and USR 1 and WIN 1 (n = 2). COB T1 consistently had the greatest number of analytes with the highest concentrations relative to other sites across most years; in 2023, WIN 1 and COB T1 had the highest mean concentrations for four analytes and in 2022, COB T1 alone had the highest concentrations for five analytes. WIN 1 and USR 1 had the highest concentrations for four analytes in 2021, and in 2019, COB 1 (n = 6) and COB T1 (n = 5) had the largest count of analytes with high concentrations. That COB T1 is rich in certain heavy metals relative to other sites, especially iron (Fe), mercury (Hg), methyl mercury (MeHg), manganese (Mn), and antimony (Sb; Figure 14) may be reflective of COB T1's unique site characteristics, particularly its proximity to mineral ore bodies and the low flow rates through the stream (Figure 7) which may allow metals to persist for longer periods.

Metals concentrations from 2019 and 2021 to 2024 at Graphite One biomonitoring sites were either similar to or slightly lower than metals concentrations at mine sites in other parts of the state. For instance, cadmium (Cd) concentrations at Tulsequah Chief Mine, Pebble Prospect, Red Dog Mine, Greens Creek Mine, and Kensington Mine from studies during 2001–2015 ranged from less than 0.01 to 1.2 mg/kg and were comparable to the mean Cd concentrations of 0.08–1.4 mg/kg at Graphite One 2019/2021–2024 (Legere and Timothy 2016; Table 10). Mercury (Hg) at those same mine sites ranged from 0.03 to 0.31 mg/kg compared to 0.07–0.20 mg/kg at Graphite One. Metals concentrations that were slightly lower included aluminum (Al; 100–2,500 mg/kg at Kensington Mine, 9–240 mg/kg at Graphite One), arsenic (As; 0.8–1.5 mg/kg at Tulsequah Chief Mine, 0.09–0.19 at Graphite One), chromium (Cr; 3–7 mg/kg at Pebble Prospect and Kensington Mines, < 1 mg/kg at Graphite One), copper (Cu; 5–25 mg/kg at all other mines, 3–3.6 mg/kg at Graphite One), and nickel (Ni; 2–9 mg/kg at Pebble Prospect and Kensington Mine, < 1 mg/kg at Graphite One). Selenium (Se) was the only metal present in

significantly higher proportions at Graphite One compared to other mines, where Se ranged from 1 to 7.5 mg/kg at Tulsequah Chief, Pebble Prospect, Red Dog, Greens Creek, and Kensington mines and 3.8–8.4 mg/kg at Graphite One, largely attributable to the elevated concentrations of Se present in fish at IMU 16 (Figure 14).

3.2. Imuruk Basin Fish Sampling

Imuruk Basin sampling trips are conducted annually in June and late August to comparatively document basin conditions and fish presence during the spring and fall. Salinity is typically lower in the basin in June due to snowmelt drainage and fish species abundance varies seasonally as well, possibly related to changes in water quality parameters throughout the open water season. In 2024, Imuruk Basin sampling trips took place June 20–27 and August 22–September 1. June sampling occurred slightly later than planned due to late ice break-up on the basin.

Along the southern shore where sampling occurred, salinity in 2024 reached a high of 0.86 psu (practical salinity units) in late August (Table 11). For reference, ocean water is typically around 35 psu. Fish populations were diverse and varied seasonally; threespine stickleback (*Gasterosteus aculeatus*) were present in June, though in much lower numbers compared to previous years, while saffron cod were relatively more abundant by late August/September sampling (Figure 15). Longnose suckers (*Catostomus catostomus*) were the most abundant species captured in 2024 and were present in large numbers during both spring and fall sampling periods. Longnose suckers have a wide distribution throughout the basin (Figure 16), while other species are more limited likely due to their differing life histories and environmental tolerances. For instance, the more brackish water species saffron cod and threespine stickleback were only found in the western basin waters in 2024, where salinity is higher.

3.2.1. Spring Sampling

The spring Imuruk Basin sampling effort took place June 20–27, with three fyke nets fishing continuously throughout the period, as well as shorter duration gill net sets. Spring ice breakup on the basin occurred late in June in 2024, with ice sheets remaining in Windy Cove during the first two days of sampling. Fyke nets were placed in the same locations as in 2023; one on the north side of Windy Cove, one at the southernmost point of the basin, and one near the mouth of the Cobblestone River (Table 2; Figure 2). Similar to prior years, the fyke net at site IMB FN 3 had to be moved after a few days due to a drop in water depth. It was reset at IMB FN 4, on the east side of the spit at the mouth of the Cobblestone River on June 23. It fished at that location for the remainder of the sampling period.

Water quality was recorded at each site, both at net set and subsequent checks (Table 11). In June, water temperatures increased throughout the sampling period, with some variation between sites. IMB FN 2 warmed significantly over the first few days of sampling, from 3.6°C (38.5°F) on June 20, to 14.3°C (57.7°F) on June 23 (Table 11; Figure 17). The cold temperatures at IMB FN 2 at the start of sampling were related to lingering ice on the water's surface near the site. Last year, IMB FN 3 had lower initial temperatures at the start of sampling compared to other sites at 5.3°C (41.5°F). This year's temperatures ranged from 7.6°C (45.7°F) to 11.7°C (53.1°F) at IMB FN 3 before the net was moved to IMB FN 4, where temperatures ranged from 9.3°C (48.7°F) to 13.7°C (56.7°F). At IMB FN 1, the temperature ranged from 9.6°C (49.3°F) to 15.3°C (59.5°F). Across sites, water temperatures ranged from 3.6°C (38.5°F) to 15.3°C (59.5°F) during June sampling and were similar to the 2023 range of 5.3°C (41.5°F) to

15.9°C (60.6°F) at fyke net sites. Temperatures in 2022 were comparatively warmer at 7.2–17.2°C (45.0–63.0°F; Figure 18).

Salinity values in June averaged 0.18 psu (range: 0.04–0.33 psu) across sites (Figure 19). Salinity values are typically highest at more western-oriented sites, like IMB FN 1 and 2, than those near the mouth of the Cobblestone River, as the western sites are closer to the Tuksuk Channel which connects to the ocean (Table 12, Figure 2). IMB FN 1 typically has the highest salinities compared to other sites (Table 12), but in 2024 IMB FN 2 reached the highest maximum salinity at 0.33 psu (range: 0.08–0.33 psu). The highest salinity at IMB FN 1 was 0.31 psu (range: 0.23–0.31 psu). Salinity was low on the eastern side of the basin, at 0.04–0.09 psu at IMB FN 3 and 0.05–0.10 at IMB FN 4 (Table 11). Salinity values in June were comparable to 2023 but lower than in 2022 at all sites, especially at IMB FN 1 where 2022 salinity averaged 0.59 psu (Table 12).

Turbidity varies less by site and is more influenced by wind speed and direction, as well as water levels. During June 2024, readings were between 2 and 6.7 NTU across sites (Table 11). Turbidity varied most at IMB FN 2, trending upwards for much of the sampling period from 2 to 6.4 NTU, before dropping again. At a mean turbidity of 4.08 NTU across sites in 2024, turbidity values were comparable to 2023 values (mean = 4.15 NTU, range: 0.76–8.69 NTU) but lower and less variable than in 2022 (mean = 6.5 NTU, range: 0.01–16.15 NTU).

Fish sampling effort in June 2024 amounted to 501.5 fyke net fishing hours and 32.7 gill net hours. Total fish catch across both sampling methods was 860 fish of 18 species in 2024 (Table 13). In 2023, 3,989 fish of 20 species were captured and in 2022, 2,739 fish of 17 species were captured. The precipitous decline in 2024 total catch is largely attributable to the decrease in threespine stickleback numbers. Threespine stickleback made up 76.8% (n = 3,065) of the June catch in 2023 and 83.6% (n = 2,290) in 2022, but only 16.4% (n = 141) in 2024 (Figure 20). While the definitive cause of depressed threespine stickleback populations cannot be identified, it is possible that the below-average water temperature and salinity throughout Imuruk Basin in 2024 may have played a role. Research on threespine stickleback populations in northern Europe and British Columbia has revealed that lower water temperature and salinity can result in lower threespine stickleback growth rates and survival, especially for populations that are adapted to specific environmental conditions (Olin et al. 2022; Gibbons et al. 2017; DeFaveri & Merilä 2014). A similar effect could have occurred in Imuruk Basin in 2024. Lower threespine stickleback catch may also be due more simply to interannual population variability, natural patchiness in the species' distribution, or differing distribution within the basin due to variable winds, water movement, and/or habitat suitability related to cooler 2024 weather causing threespine stickleback to move to other areas in the basin. Continuing to monitor fish species use of the basin is important to better understand the natural range of variability in threespine stickleback and other fish populations. Longnose suckers were the only species more abundant than threespine stickleback at 34.7% of the total catch (Figure 20). Northern pike (*Esox lucius*), humpback whitefish (*Coregonus pidschian*), least cisco (*Coregonus sardinella*) and rainbow smelt (*Osmerus mordax*) also comprised larger percentages of the total catch in 2024. Pink salmon, slimy sculpin, and sockeye salmon were not captured in June 2024 but were captured in June 2023.

June fyke net sampling effort was slightly higher in 2024 (501.5 hours) compared to 2023 (476.2 hours) and 2022 (471.9 hours). Fyke net sampling yielded 615 fish from 18 species (Table 13), which was less

than the 3,758 fish and 1,217 fish in 2023 and 2022, respectively (Figure 15) and attributable to the lower threespine stickleback abundance discussed previously. By site, CPUE in June was highest at IMB FN 4 (36.6 fish per 24-hours), followed by IMB FN 2 (34.4), IMB FN 1 (27.6) and IMB FN 3 (13.9). IMB FN 1 had 15 species total, compared with 17 species last year and 192 fish captured (Table 13; Figure 21, Figure 22). IMB FN 2 had 236 fish from 14 distinct species observed this year. IMB FN 3 and IMB FN 4 both had 8 distinct species, partially explained by reduced fishing time due to the net reset. Overall catch totaled 44 fish at IMB FN 3 and 143 fish at IMB FN 4. Threespine stickleback, longnose suckers, ninespine stickleback, Dolly Varden, pond smelt, and rainbow smelt were caught at all four sites in June. Starry flounder (*Platichthys stellatus*) and northern pike were only captured in the western part of the basin, at IMB FN 1 and IMB FN 2. Burbot (*Lota lota*) were exclusively caught at these two sites as well, while in 2023, they were only captured at IMB FN 4. As in years past, saffron cod and Pacific herring (*Clupea pallasii*) were only captured at IMB FN 1 in June. In contrast, Arctic grayling (*Thymallus arcticus*) were captured only at IMB FN 3, as they are freshwater dependent (Figure 21).

The gillnetting effort in June 2024 totaled 32.7 hours and took place across 25 sites between and near the fyke net locations, an increase from 18 sets completed in June 2023 and 22 in June 2022 (Table 2; Figure 23). A total of 245 fish were captured across 12 species during June gill net sampling. In June 2023, 231 fish were captured and in June 2022, 302 were captured. The sites with highest total catch were IMB GN 4-18 (n = 25), IMB GN 4 (n = 24), and IMB GN 4-21 (n = 19). The greatest diversity among gillnets was four species per site, observed at IMB GN 4, IMB GN 4-4, 4-7, 4-8, 4-9, 4-10, and 4-18 (Figure 23). Like 2023, most fish caught were longnose suckers, accounting for 87 individuals, whereas in 2022 northern pike were the most abundant at 105 individuals caught. Other species caught by gillnet in 2024 included northern pike at 52 fish, humpback whitefish at 40 fish, and least cisco at 33 fish. Fewer than 20 individuals each of broad whitefish (*Coregonus nasus*), Dolly Varden, Pacific herring, rainbow smelt, starry flounder, and threespine stickleback were also caught in 2024.

3.2.2. Fall Sampling

The fall Imuruk Basin sampling effort took place August 22–September 1, 2024, about a week before the timing of sampling in 2023 and 2022 (Figure 18). Three fyke nets fished continuously for 7 days and gill nets were set for 1–2-hour periods as time allowed. Fyke nets were placed in the same locations as in June, however, IMB FN 4 was not set because samplers were able to maintain the net at IMB FN 3 throughout the duration of sampling.

Water quality parameters were recorded at net set and checks (Table 11). Temperatures were between 6.9°C (44.4°F) and 10°C (50°F) across all fyke net sites, reflecting the cooling temperatures of early fall. IMB FN 1 had slightly higher temperatures (range: 7.8–10°C/46.0–50°F) compared to other sites throughout the sampling period, and temperatures trended colder towards the Cobblestone River, with IMB FN 3 having a lower temperature range (6.9–8.1°C/ 44.4–46.6°F; Figure 17). The minimum temperature in August 2023 was lower at 5.3°C (41.5°F), but temperatures were otherwise comparable to 2024. Temperatures were relatively warmer in 2022 (7.2–12.5°C/45.0–54.5°F) despite the later sampling dates (Figure 18).

Imuruk Basin salinity was greater in August and early September compared to June, with a mean of 0.41 psu across sites (range: 0.06–0.86 psu; Table 11; Figure 19), consistent with declining freshwater

snowmelt from area rivers at that time of year. Salinity in the basin was higher at sites nearer to the Tuksuk Channel in the west; IMB FN 1 salinity ranged from 0.73 to 0.86 psu and IMB FN 2 ranged from 0.36 to 0.45 psu (Table 11; Figure 19). IMB FN 3 is near the mouth of the Cobblestone River and the water was fresher as a result, with a salinity range of 0.06–0.14 psu. Overall, salinity values in fall 2024 were comparable to 2023 but lower than in 2022 at all sites, especially at IMB FN 1 where 2022 salinity averaged 3.19 psu (Table 12).

Turbidity was higher and more variable across sites compared to June, with a mean of 9.4 NTU (range: 0.0–17.7 NTU; Table 11), possibly related to a combination of wind, weather, and water level factors. The highest single turbidity value was 17.7 NTU, recorded at IMB FN 2 on August 31. This value was substantially lower than the 2023 maximum of 220.3, though consistent with other values recorded in 2023. The minimum turbidity recorded in 2024 was 0.0 NTU at IMB FN 3. Values were highly variable at that site, as a value of 17.0 NTU was also recorded there during the same period. IMB FN 2 was similarly variable with values between 0.91 and 17.7 NTU. The IMB FN 1 turbidity ranged from 6.37 to 16.7 NTU, with overall greater turbidity and less variability than other sites. Overall, 2024 turbidity was lower and less variable than in 2023 (mean = 23.4 NTU, range: 1.73–220.3 NTU) and higher than in 2022 but similarly variable (mean = 4.60 NTU, range: 0.7–15.5).

Fall fish sampling effort amounted to 499.1 fyke net fishing hours and 8.8 gill net hours. Total fish catch across both sampling methods was 940 fish in 2024 (Table 13), compared to 1,498 fish in 2023 and 1,449 fish in 2022. Eighteen unique species were caught each year (Figure 15). Lower total catch during fall sampling in 2024 compared to previous years is attributable to lower catch of saffron cod and threespine stickleback. During fall 2024, 265 saffron cod and 6 threespine stickleback were caught across fyke net sites, compared to 524 saffron cod and 153 threespine stickleback in 2023, and in 2022, 930 saffron cod and 64 threespine stickleback. The reasons for the decline are unknown as water quality conditions were not anomalous, but it is possible the decline is simply the result of natural interannual variability in population size or species distributions within the basin, whereby cooler, wetter 2024 weather could have altered water movements or habitat suitability in the basin away from their normal state and shifted fish populations to other areas. Additional monitoring in future years will help to further define patterns. Across fyke net and gill net sampling, longnose suckers were the most caught fish in 2024 at 39% of the total catch ($n = 365$), followed by saffron cod (28.8%; $n = 265$) and pond smelt (8.9%; $n = 84$; Figure 20). Catch of saffron cod increased significantly relative to spring sampling. Bering cisco (*Coregonus laurettae*) may be appearing in higher numbers in the basin; in 2024, four Bering cisco were caught (Figure 21) and in 2023, two were caught. No Bering cisco have been caught in the basin during studies prior to 2023, or during June sampling, suggesting Bering Cisco presence may be seasonal.

Fyke net effort totaled 499.1 hours in August and early September 2024, more than the 454.2 hours and 436.7 hours fished in fall 2023 and 2022, respectively. The total fall fyke net catch was 884 fish across 17 species (Table 13) compared to 1,408 fish in 2023 and 1,347 in 2022. The most abundant species overall during fall fyke net sampling was longnose suckers with 361 individuals caught, followed by saffron cod ($n = 265$), whereas in 2023 and 2022 saffron cod were the most abundant species. Catch of saffron cod increased in the fall relative to June sampling, consistent with previous years (Figure 15). Pond smelt were caught in relatively high numbers in 2024 ($n = 84$), a slight increase over previous years (Figure 15). Other species which accounted for 4–6 percent ($n \leq 40$) of the catch during 2024 fall fyke net sampling included humpback whitefish, least cisco, and fourhorn sculpin (*Myoxocephalus quadricornis*).

By site, 2024 CPUE was greatest at IMB FN 2 at 58.2 fish per 24-hour set. CPUE at IMB FN 1 was 46.8 fish per 24 hours, and 22.3 fish per 24 hours at IMB FN 3 (Table 13; Figure 21, Figure 22). Saffron cod, threespine stickleback, starry flounder, Northern pike, and humpback whitefish were mainly caught at the western sites; IMB FN 1 and IMB FN 2 (Figure 16). Round whitefish (*Prosopium cylindraceum*) were caught for the second year at IMB FN 2 and IMB FN 3. Species composition was diverse with 12 to 14 species observed at each site. Spatial distribution of fish may, in part, be linked to salinity concentrations within the basin.

During 2024 fall sampling, total gillnet fishing effort was 8.8 hours over 7 sets around the basin, compared to seven and 10 sets in 2023 and 2022, respectively. A total of 56 fish from 10 unique species were captured. CPUE was greatest at IMB GN 4, with a CPUE of 16.4 fish per hour, somewhat lower than the maximum of 18.6 fish per hour during September 2023 gill net sampling (Table 13; Figure 24). IMB GN 3-13 and IMB GN 4-19 had the next highest CPUEs of 7.6 and 7.5 fish per hour, respectively. As in previous years, humpback whitefish were the most abundant species ($n = 29$), with 49 individuals captured in 2023 and 22 in 2022. Least cisco ($n = 9$) and longnose suckers ($n = 5$) were the next most captured, again consistent with 2023 and 2022. Bering cisco were captured at IMB GN 4-4 and 4-7, marking the second year of recorded presence in Imuruk Basin.

3.3. Aerial Pacific Salmon Surveys

The 2024 aerial surveys marked the fourth year of aerial surveys in the Graphite One project area. Multiple aerial survey programs were conducted in 2019, 2021, and 2023 (Table 14), while no surveys were conducted in 2020 or 2022. A program refers to a series of aerial surveys conducted on project area streams within a defined time period, usually several days to a week. A total of three aerial survey programs were flown in 2024: one in mid-August, one in late August, and one in mid-September, as well as a singular survey of the Cobblestone River on July 17 in which 330 pink salmon were counted within the first six miles (9.7 km) of the river.

The timing of aerial survey programs is based on each Pacific salmon species' run timing within the region (Figure 25). Pink salmon typically appear in rivers around Imuruk Basin in late July and early August. A summer run of chum salmon occurs in late July or early August but fall-run chum salmon are more commonly observed in September. Sockeye salmon and coho salmon appear in the fall beginning in late August. Dolly Varden may be observed at any time but are usually most abundant beginning in early September when anadromous conspecifics return to riverine spawning and overwintering grounds. If present, Chinook salmon are observable in August, however, no Chinook salmon have been observed in any project area streams since 2019 (Appendix F).

The first 2024 program was conducted August 12–16 (mid-August) to target pink salmon and Dolly Varden, the second August 26–31 (late August) to potentially target all salmon species and Dolly Varden, and the third September 17–18 (mid-September) to target coho salmon, sockeye salmon, and Dolly Varden. The first program was planned for early August to align with previous years but was ultimately postponed until mid-August due to heavy rainfall in the area. Thus, counts of fish may differ from what would be expected under typical conditions. The uppermost documented stream extents for Pacific salmon refer to counts of live fish, although on a few occasions carcasses have been observed above the furthest upstream extent, meaning that live fish had been present upstream of where currently observed.

For instance, across all years surveyed, live pink salmon have not been observed past river mile 25 (river kilometer (rkm) 40.2) of Headwaters Canyon Creek, although a pink salmon carcass was identified at mile 27 (rkm 43.5) of that river in 2021. IMU 11.0, IMU 12.0, IMU 13.0, and IMU 17.0 surveys also have documented a carcass less than one mile (1.6 km) above the upstream extent of live fish in past years. In 2024, a pink salmon carcass was observed at river mile 17 (rkm 27.4) of Headwaters Canyon Creek, six miles (9.7 km) above the furthest extent of live fish.

3.3.1. Mid-August Aerial Survey

The first aerial survey program of the 2024 season was conducted between August 12 and 16. A total of 4,749 fish were recorded, representing 87% of the total fish seen this season—3,750 of which were live, and 999 were carcasses. Pink salmon made up most of the fish observed with 4,698 individuals counted (3,701 live fish and 997 carcasses; Table 15; Figure 26). Aerial surveys have not been conducted in past years during mid-August, so only loose comparisons may be made. Counts of total fish in 2019 and 2021 were 216,328 and 7,555, respectively, for surveys conducted in early August, and most of the fish counted were pink salmon. Aerial surveys were not conducted in August of 2023. The lower counts, as well as the greater proportion of carcasses to live fish and survey timing in 2024 suggest that the pink salmon run was attenuating by the time of observation.

Aside from pink salmon, live counts of other species observed in mid-August 2024 included chum salmon ($n = 3$), sockeye salmon ($n = 11$), arctic grayling ($n = 15$), and Dolly Varden ($n = 20$; Table 16). In early August of 2021, only chum salmon were observed ($n = 183$) in addition to pink salmon and in 2019, Chinook salmon ($n = 6$), chum salmon ($n = 2,658$), coho salmon ($n = 162$), sockeye salmon ($n = 98$), and Dolly Varden ($n = 100$) were observed (Figure 25; Appendix F).

Anadromous fish (i.e., not Arctic grayling) were observed in the Cobblestone River, Fall Creek, Headwaters Canyon Creek, IMU 12.0, Oro Grande Creek, Pond Creek, Upper Sinuk River, and the White River in 2024. Within the Cobblestone River, only pink salmon were observed, and live individuals were dispersed regularly throughout the river up to mile 11.5 (rkm 18.5), lower than in previous years (Figure 25, Figure 26). In early August of 2021, live pink salmon were concentrated within the first mile (rkm 1.6) and miles 10–15 (rkm 16.1–24.1), chum salmon were observed between river miles 11 and 17 (rkm 17.7–27.4) and Dolly Varden from miles 5 to 13.5 (rkm 8.0–21.7). In 2019, pink, chum, and coho salmon were continuously dispersed up to river mile 18.5 (rkm 29.7), sockeye salmon were observed between miles 10.5 and 16.5 (rkm 16.9–26.6), and Dolly Varden were concentrated at mile 11.5 (rkm 18.5; Figure 25; Appendix F).

3.3.2. Late August Aerial Survey

The second aerial survey program of the 2024 season was conducted from August 26 to August 31, with a total count of 98 live fish and 423 carcasses. These numbers were lower than those observed during all previous years; 1,309 total fish (live and carcasses) were recorded in 2023 from September 4–7, in 2021 (September 4–6), 4,104 fish were recorded, and in 2019 (September 1) 23,203 fish were recorded (Appendix F). This discrepancy may be partially explained by the earlier timing of this year's survey program, which was situated somewhat between typical peak run timing for targeted Pacific salmon species. This is evidenced by the high percentage of pink salmon carcasses observed (Table 15), and lower counts of coho salmon (Table 16). Pink salmon accounted for 446 of the total fish counted in 2024

(23 live pink salmon and 423 carcasses), and live counts of other species were 53 coho salmon, 10 Arctic grayling, 6 chum salmon, 5 sockeye salmon, and 1 Dolly Varden. In 2023, no live pink salmon were observed during early September surveys, but live chum salmon (n = 941), sockeye salmon (n = 25), coho salmon (n = 170), and Dolly Varden (n = 173) were observed. In 2021, live chum salmon (n = 31), coho salmon (n = 77), sockeye salmon (n = 7), and Dolly Varden (n = 3) were observed, and in 2019, live pink salmon (n = 7), chum salmon (n = 20), coho salmon (n = 701), and sockeye salmon (n = 162) were observed (Appendix F).

Anadromous fish were observed in Windy Creek, the Cobblestone River, Pond Creek, Fall Creek, and Headwaters Canyon Creek in 2024. Most live fish were observed between miles 7 and 12 (rkm 11.2–19.3) of the Cobblestone River and consisted of coho salmon, sockeye salmon, and Dolly Varden (Table 16; Figure 25, Figure 27, Figure 28, Figure 29). On the final day of the program (August 31) a new group of 30 coho salmon was observed at river mile 1 (rkm 1.6). Species distributions were more variable in the Cobblestone River in years past; in 2023, live chum salmon were concentrated within the first river mile (rkm 1.6), coho salmon were distributed between miles 9 (rkm 14.5) and 18 (rkm 28.9), sockeye salmon were in the lower-middle reaches of the river (miles 3.5–10, rkm 5.6–16), and Dolly Varden were continually dispersed throughout up to river mile 18 (rkm 30; Figure 25; Appendix F). In 2021, most live fish (chum, coho, and sockeye salmon) were observed between miles 9 and 14 (rkm 14.5–22.5), and in 2019, coho salmon were evenly dispersed in the river up to mile 13 (rkm 20.9), while chum and sockeye salmon were only recorded between miles 4 and 14 (rkm 6.4–22.5).

3.3.3. Mid-September Aerial Survey

The final aerial survey of the 2024 season was conducted on September 17 and 18. A total of 197 live fish were counted, but no carcasses were observed. The majority of the fish counted were coho salmon at 106 individuals, most of which (n = 62) were found in the Cobblestone River between river miles 7 and 16 (rkm 11.3 and 25.7; Figure 25, Figure 27). Additionally, 51 Dolly Varden, 20 arctic grayling, 14 sockeye salmon, and 6 chum salmon (Figure 30) were observed primarily in the Cobblestone River and in smaller numbers in other basin-area streams. Anadromous fish were observed in the Cobblestone River, Upper Sinuk River, Pond Creek, Headwaters Canyon Creek, and Fall Creek.

Previous years' programs have been conducted in late September; on September 27 and 28 in both 2023 and 2021. Mid/late September surveys did not occur in 2019. In late September 2023, 610 total fish were observed, 179 of which were coho salmon, 144 were Dolly Varden, and 200 were longnose suckers in a school at the mouth of the Cobblestone River. Live coho salmon and Dolly Varden were continuously dispersed in the Cobblestone River through river mile 14. In 2021, 775 total fish were observed, 489 of which were coho salmon and 126 were Dolly Varden. Live fish in the Cobblestone River in 2021 were found between river miles 7 and 15 (rkm 11.3 and 24.1), similar to 2024. It is possible that counts of salmon were comparatively lower in mid-September 2024 because the run of coho salmon may not have peaked by the timing of the survey program.

3.3.4. Summary of Aerial Survey Observations

A total of 27 streams and 329 stream miles (529 km) were surveyed in 2024 (Figure 31). Live counts totaled 3,928 Pacific salmon, 72 Dolly Varden, and 45 Arctic grayling, and 1,422 Pacific salmon carcasses were counted, compared to 9,196 live anadromous fish (Pacific salmon and Dolly Varden) in

2023, 11,638 in 2021, and 128,116 in 2019 (Table 14). Consistent with previous years, pink salmon were the most abundant species observed, comprising 93% of the live fish observed across all three programs in 2024. Significant numbers of carcasses were observed this year relative to the number of live fish, primarily due to variation in the timing of the programs whereby some surveys most likely missed the peak run timing of several salmon species, especially the mid-August program. This was the result of abnormally high rainfall in 2024 causing streams to flood and requiring certain surveys to be delayed. As such, 2024 survey results are important for characterizing variability in naturally occurring conditions and salmon abundance within and around the project area.

Across all survey years, the most productive rivers include the Cobblestone River, Headwaters Canyon Creek, Pond Creek, Fall Creek, IMU 12.0, and occasionally Glacier Creek. Headwaters Canyon Creek had the highest count of live anadromous fish in 2024 with 1,627 individuals counted. The Cobblestone River was the second most productive with 1,570 live anadromous fish. In past years, the Cobblestone River has been the most productive in terms of the number of live fish counted, while Headwaters Canyon Creek has been more variable. In 2023, 6,787 live anadromous fish were recorded in the Cobblestone River and 1,386 were recorded in Fall Creek as the second most productive. Headwaters Canyon Creek was the fourth most productive with 228 fish. In 2021, the Cobblestone River recorded 8,207 live anadromous fish and Pond Creek secondarily recorded 2,451, while only 87 were counted in Headwaters Canyon Creek. In 2019, the Cobblestone River recorded 114,101 fish and Glacier Creek secondarily recorded 6,631. Headwaters Canyon Creek was not surveyed in 2019 (Appendix F).

Consistent with previous years, fish presence and abundance in area streams in 2024 varied by species and survey timing. Live pink salmon were observed in large numbers in Headwaters Canyon Creek ($n = 1,527$), the Cobblestone River ($n = 1,412$), and to a lesser extent in Pond Creek ($n = 456$) during the mid-August aerial survey program (Table 15). Large counts of carcasses alongside the live fish indicate that pink salmon abundance was probably greater prior to surveys being conducted. By late August, the dominant fish species was beginning to shift to coho salmon. A total of 53 live coho salmon were counted at that time; 35 in the Cobblestone River, 14 in Headwaters Canyon Creek, and four in Fall Creek (Table 16). Chum salmon were observed in small numbers across all three survey periods, though were more abundant in late August and mid-September. Chum salmon were only present in the Cobblestone River and Headwaters Canyon Creek. Sockeye salmon were also present during all three periods in the Cobblestone River and Headwaters Canyon Creek, with the highest counts occurring during the mid-September program ($n = 14$).

Dolly Varden were present in all three periods and were observed in Headwaters Canyon Creek, the Cobblestone River, Oro Grande Creek, Pond Creek, Upper Sinuk River, White River, and Windy Creek. They were most abundant during the mid-September program at 51 live individuals counted. Across all three programs, Dolly Varden were most abundant in the Cobblestone River ($n = 35$) relative to other streams (Table 16). Chinook salmon were only counted in 2019 in the Cobblestone River and IMU 13.0 but continue to be absent in surveyed streams in 2024. Seventeen of the surveyed streams in 2024 had no live or dead fish observed, including Glacier Canyon Creek (also known as ‘Graphite Creek’) and most of the shorter, unnamed streams flowing directly into Imuruk Basin, such as IMU 10.0, IMU 11.0, IMU 13.0, and IMU 14.0. Most streams that were devoid of fish in 2024, especially Glacier Canyon Creek (i.e., Graphite Creek), have consistently lacked fish across all years surveyed (Figure 32; Appendix F).

Streams have been widely used by Pacific salmon species in the project area (Figure 32). However, after four years of conducting aerial surveys in the project area, certain stream reaches are beginning to emerge as consistently important habitat for Pacific salmon relative to others. Coho salmon have been observed in large numbers in river miles 1 (rkm 1.6) and 10–12 (rkm 16.1–19.3) of the Cobblestone River during 2019 and 2021–2024 surveys (Appendix F, Appendix G). Sockeye salmon have heavily utilized the middle reaches of the Cobblestone River at miles 7 (rkm 11.3), 12 (rkm 19.3), and 16 (rkm 25.7). Chum salmon are consistently observed at river miles 0.5 (rkm 0.8) and 10 (rkm 16.1) of the Cobblestone River and the lower reaches of IMU 12.0 are important in some years as well. Finally, pink salmon are frequently observed throughout most of the Cobblestone River across years in river miles 1 (rkm 1.6), 5 (rkm 8), 6–8 (9.7–16.1 rkm), and 9–17 (14.5–27.5 rkm), with especially heavy occupancy of river mile 10 (rkm 16.1; Appendix G). Glacier Creek did not contain pink salmon in 2024, but its first two miles (3.2 km) have recorded large counts of pink salmon in years past.

Overall counts of anadromous fish in 2024 were the lowest out of the four years of aerial surveys conducted thus far (Table 14). This is due, in part, to weather delays altering the timing of aerial survey programs such that surveyors could not consistently observe fish during the peak of the run for each species. Low numbers in 2024 may also be attributable to somewhat depressed salmon runs throughout the region. Fisheries catches of all five species of Pacific salmon were significantly below 2023 catch levels and the 10-year average in the Norton Sound area (Clark and Henslee 2024). Pink and coho salmon were generally able to meet escapement goals in Norton Sound area streams but Chinook and chum salmon did not. Fewer data are available for sockeye salmon.

3.4. Dolly Varden Spawning Surveys

Dolly Varden are an important subsistence food and sport fishing resource and are known to occupy habitat in the Graphite One project area. Based on prior observations, fish spawning evaluations, and capture of age-0 fish, Dolly Varden spawn in September in multiple project area streams, including the Cobblestone River, an unnamed tributary near COB 1, and Oro Grande Creek. During the 2024 sampling effort, angling surveys for Dolly Varden were conducted in late August and mid-September, with most fishing effort concentrated along the Cobblestone River. A total of 18 Dolly Varden were captured during 2024 surveys (Table 17), compared to 58 in 2023, 11 in 2022, and 19 in 2021 (Appendix H).

Unlike 2023, where males had greater size on average, in 2024, female Dolly Varden had a greater average fork length of 474 mm (range: 320–630 mm), compared to the male average of 435 mm (range: 334–515). Dolly Varden caught in 2024 were smaller than in years past, where 2021–2023 female Dolly Varden were 517 mm on average (range: 330–612) and males were 568 mm on average (range: 440–650 mm; Table 17; Figure 33; Appendix H). The reason for the smaller average size of Dolly Varden in 2024 is not clear, but it may be the result of interannual variation in Dolly Varden populations.

Late August surveys in 2024 captured a total of six Dolly Varden, four of which were captured in Imuruk Basin in gill nets and fyke nets (Table 17), indicating that sea run Dolly Varden were still making their way into freshwater systems at the beginning of fall. Detection of these individuals in the basin in 2024 can, in part, be explained by the earlier timing of this year's fall sampling trip towards the end of August, as early September sampling in previous years detected fewer or no Dolly Varden in the basin. Of the fish captured in the basin, two were caught at IMB FN 2, one at IMB FN 1, and one at IMB GN 3-13 (Figure

2). These sites are in Windy Cove on the southern shore of Imuruk Basin, somewhat far from the mouth of the Cobblestone River. Two of the fish were green females, one was a ripe female in poor condition, and the other was a ripe male (Table 17). Additionally, two Dolly Varden were caught using angling methods in late August. One was a spent female caught at COB AN 14, and one was a non-spawning male caught at COB AN 7 (Table 17; Figure 1).

Twelve Dolly Varden of varied reproductive states were captured in mid-September, along with several coho salmon. COB AN 11 was the most productive angling site with six Dolly Varden captured, followed by COB AN 10 near the COB 1 biomonitoring site, where four Dolly Varden were captured (Table 17). Five of the twelve Dolly Varden captured were non-spawners: four females and one male (Table 17). Other spawning states included one green female, one ripe male, two ripe females, two spent females and one spent male.

Dolly Varden spawning condition varies throughout September. As their gametes approach maturity, the fish transition from preparing to spawn (green), to ready to spawn (ripe), and finally spawned out (spent) once reproduction has taken place. Tracking this progression in fish caught throughout September helps to define the spawning season from pre-spawning states, to spawning, and finally, recovery and wintering (Figure 34). The gradient of spawning states during both sampling periods in 2024, especially the overlapping presence of ripe and spent fish, suggests spawning was on-going at the time of sampling and likely continued later into September. Indeed, in years past, sampling has typically occurred later in September and combined data across all years of surveys (2021–2024) shows the highest relative proportion of spent fish at the end of September (Figure 34), most of which were captured in the Cobblestone River (Table 18). Furthermore, surveyors in 2023 observed active spawning occurring at mile 10 of the Cobblestone River around site COB AN 5 on September 27 and 28 (Figure 1; Owl Ridge 2024), suggesting that the middle reaches of the Cobblestone River are important spawning habitat for Dolly Varden in the project area. Cobblestone River spawn timing may differ from other rivers flowing into Imuruk Basin, such as Headwaters Canyon Creek (HCC), where several spent fish were caught in early September 2021 (Table 18; Appendix H). The ripe Dolly Varden captured in Imuruk Basin in late August 2024 were not near the Cobblestone River and may have been seeking out spawning habitat in another stream. Additional sampling efforts in future years will help elucidate variation in spawn timing by location.

3.5. Road Stream Crossing Surveys

All streams potentially crossed by project roads were surveyed in 2021, 2023, and 2024 to determine fish presence used to guide passage requirements during road design and construction (Table 19). Surveys consisted of a combination of aerial observations and on-the-ground sampling with a backpack electrofisher to detect fish presence. Sites that were surveyed on the ground using a backpack electrofisher are shown in Figure 3, while the complete list of sites surveyed including via aerial observation are listed in Table 19. Surveys were conducted over multiple years to account for changes in proposed road alignments and to resample select crossings to verify fish presence.

Road crossing surveys in 2024 were conducted in late summer from August 12 to 15, when juvenile fish are typically at or near their maximum distribution. Of the 19 crossings evaluated in 2024, most had insufficient flow or were dry and therefore not sampled (Table 19; Figure 3). The crossings C0011,

C0018, C0032, C0035, C0037, C0038, and C0039 were determined to potentially provide fish habitat and were sampled on the ground. Fish were only captured at site C0032, which included three Dolly Varden (Figure 3). Crossing sites which lacked fish in 2024 and in previous years were most likely either inhospitable to fish due to poor water quality or were inaccessible due to insufficient flow or steep topographical gradients below the site. For instance, the crossing C0011_prev sampled in 2021 had a pH of 4.4 and visible aluminum precipitate in the stream (Table 19), likely precluding any fish habitation.

Across all years (2021, 2023, 2024), a total of 61 stream crossing sites have been surveyed, eight of which contained fish and six of which contained anadromous species (Table 19). Another seven proposed crossing sites are listed in the Anadromous Waters Catalog (AWC), making for a total of 15 sites with fish passage requirements and 13 with anadromous fish passage requirements along all proposed road alignments (Table 19).

3.6. Mosquito Pass Lakes Sampling

Fish sampling for Dolly Varden in Mosquito Pass Lake and Shadow Lake (Figure 3) was conducted in 2024 to confirm the presence of resident Dolly Varden. The stream outlet at Mosquito Pass Lake was first sampled in 2023 using electrofishing sampling methods described in section 2.1.4.2. One fish was captured during the 2023 sampling effort and was thought to be a possible resident of the lake given low flow in the outlet creating a likely passage barrier (Figure 4) and given the unique morphological characteristics of the fish, including a stout body and narrow caudal peduncle, which might indicate genetic isolation (Figure 5).

In 2024, a fyke net fished for two 24-hour periods (47.5 hours) from August 12 to 14 in Mosquito Pass Lake near the lake outlet. The net was only checked once at the end of the fishing period, as poor weather precluded access to the site for a 24-hour check. A total of 17 Dolly Varden were captured in the Mosquito Pass Lake fyke net, measuring 71–164 mm in fork length (Table 20). Like the outlet fish captured in 2023, the 2024 Mosquito Pass Lake Dolly Varden had unique morphological traits relative to Dolly Varden captured in other Graphite One project area locations (Figure 5), suggesting that Mosquito Pass Lake Dolly Varden do not interact with other Dolly Varden populations due to their topographical isolation. Population isolation would also suggest that, despite their small size, many of the Dolly Varden captured in Mosquito Pass Lake are probably adults which do not reach larger sizes due to food limitations. The fyke net placed in Shadow Lake in 2024 was fished for 55 hours from August 12 to August 14 and was also not checked at the 24-hour mark due to weather. No fish were caught in Shadow Lake. Additional sampling in subsequent years will help describe the population structure and genetic composition to help establish baseline data used for future monitoring.

3.7. Arctic Grayling Summary

While no targeted sampling has been done, arctic grayling have been observed during all years of sampling across biomonitoring, Imuruk Basin sampling, and Dolly Varden spawning surveys. They are also frequently observed throughout project area streams during aerial surveys. Over all years, 55 grayling have been captured and recorded during sampling efforts. Most of these fish have been caught in 2023 and 2024. Documented fish range from juveniles caught during fish metals sampling to adults captured during angling for Dolly Varden. Juveniles were primarily captured at COB T1 and COB 1. Adults have been captured and observed in the middle reaches of the Cobblestone River and in Imuruk Basin near the

river mouth. Substantial numbers have also been captured in Headwaters Canyon Creek during Dolly Varden fishing. Adult grayling in the project area are large and have excellent body condition as shown in Figure 35.

4. CONCLUSIONS

The 2024 aquatic baseline sampling program in and around the Graphite One project area continued to build upon data collected over the past five years and included biomonitoring sampling (water quality, periphyton standing crop, aquatic macroinvertebrates, fish sampling, and juvenile fish heavy metals burden analysis), Imuruk Basin water quality and fish sampling, aerial Pacific salmon surveys, Dolly Varden spawning surveys, additional road crossing stream surveys, and Mosquito Pass Lakes sampling. The summer sampling season was characterized by cooler air temperatures and higher precipitation relative to previous years, and the effects of these conditions are evident in 2024 sampling results.

Streams sampled during biomonitoring were cool and most had above average stream flows due to heavy precipitation preceding the trip. Stream periphyton assemblages were variable and consistent with previous years, where sites south of Mosquito Pass continued to have the highest primary production and sites on Graphite Creek the lowest. Macroinvertebrate populations were more abundant but less diverse, and Ephemeroptera, Plecoptera, and Trichoptera (EPT) taxa were less abundant, possibly due to environmental conditions like high flows favoring non-EPT taxa. Graphite Creek sites continued to be unproductive in terms of invertebrate abundance and richness. Unique bivalve and potentially parasite-hosting sabellid worm taxa increased in a tributary site to the Cobblestone River and should continue to be monitored in the coming years. Elevated streamflow likely contributed to lower fish catch at biomonitoring sites in 2024 relative to previous years, as higher flows may have displaced fish from typical habitats. Dolly Varden continued to be the most common species captured. Slimy sculpin, Alaska blackfish, burbot, and juvenile salmon were also caught, consistent with previous years. Dolly Varden and coho salmon spawn and rear in study area drainages, as evidenced by catch of age-0 and age-1 fish in all years for Dolly Varden and some years for coho salmon, albeit with lower total numbers in 2024. Juvenile Dolly Varden heavy metal burdens were largely similar to prior years with reductions in a few metals, especially at site IMU 16. Metals concentrations at Graphite One were comparable or slightly lower than concentrations at other mines in Alaska, except for selenium, which is generally elevated in the region and at Graphite One.

Imuruk Basin waters were colder and less saline during 2024 sampling relative to previous years because of cooler, wetter weather and late basin ice-out in June. Possibly due to the water conditions, fish catch was lower in both spring and fall sampling in the basin in 2024, mostly attributable to lower catch of threespine stickleback. Longnose suckers and saffron cod were the most abundant and widely caught species in the basin in 2024, largely consistent with previous years' catch. Bering Cisco have been caught in the basin each of the last two years during August sampling ($n = 4$ in 2024, $n = 2$ in 2023), while none were caught during June in any of the three years of sampling.

The 2024 aerial surveys recorded the lowest counts of Pacific salmon and Dolly Varden across all years surveyed, although pink salmon carcass counts were higher than in 2023. Weather delays may have contributed to lower counts in 2024, whereby some surveys missed the peak run timing of pink salmon, resulting in higher carcass counts. Lower aerial fish counts during surveys may also be related to depressed salmon runs throughout the Norton Sound region in 2024. Aerial survey results for 2019 and

2021–2024 demonstrate that the middle reaches of the Cobblestone River are consistently important habitat for spawning Pacific salmon and Dolly Varden.

Dolly Varden captured in spawning surveys were fewer and smaller in size in 2024 compared to previous years. Most fish were captured during mid-September sampling and included ripe and spent individuals, indicating that spawning was on-going at the time of sampling.

Road crossing stream surveys in 2024 continued to document potential fish-bearing habitat at stream intersections along the proposed mine access road alignment. Combined sampling results from 2021, 2023, and 2024 across 61 potential road crossing locations documented fish presence at eight sites; six of which had anadromous fish present. Seven sites not sampled for fish were already listed in the Anadromous Waters Catalog, making for 15 total sites with fish passage requirements and 13 with anadromous fish passage requirements.

Finally, two lakes in Mosquito Pass were sampled in 2024 for possible resident Dolly Varden. Dolly Varden were captured in one lake (‘Mosquito Pass Lake’) near where a single Dolly Varden was captured in 2023. The outlet stream of Mosquito Pass Lake is steep with low flow and is likely a passage barrier, and the fish captured in the lake were morphologically distinct from other fish captured in the project area. Therefore, the lake population is most likely isolated from the anadromous population further downstream in the Cobblestone River.

Across five years of aquatic baseline studies (2019, 2021–2024), the Cobblestone River is the most productive river in terms of fish catch and aerial salmon counts. The middle reaches of the Cobblestone River are important spawning habitat for Pacific salmon and Dolly Varden; ripe and spent Dolly Varden have been caught each year during spawning surveys and Dolly Varden have been observed actively spawning around river mile 10. COB T1, a tributary of the Cobblestone River, has the highest fish species diversity and provides important rearing habitat for juvenile coho salmon. Graphite Creek, while somewhat improved in habitat quality since 2019, continues to have low water quality and sparse aquatic life. Spawning adult Pacific salmon are absent in Graphite Creek and in many of the shorter streams flowing directly into Imuruk Basin year after year. Headwaters Canyon Creek, Fall Creek, and Pond Creek in the northwestern part of Imuruk Basin are consistently productive over time, with counts of adult pink salmon every year and other salmon species in most years.

Imuruk Basin fish distribution reflects water quality in the basin each year, with brackish water species like starry flounder and Pacific herring occupying habitat in the western part of the basin where salinity is higher. Despite the lower catch in 2024, fish species continue to be diverse throughout the basin, indicating that Imuruk Basin provides important habitat for a variety of fish species during the open water season.

Overall, sampling efforts indicate that, except for Graphite Creek, conditions in project area streams, lakes, and Imuruk Basin support expectedly diverse and productive aquatic communities consistent with their geographic location and physio-chemical characteristics. The 2024 sampling results were somewhat atypical relative to 2019 and 2021–2023 sampling, with generally cooler water temperatures, lower salinity, higher flows, and lower fish catch and counts across sites and sampling programs. Taken together, 2024 sampling results are an important piece of the aquatic baseline story as they contribute to

understanding the range of natural variability in Graphite One project area aquatic ecosystems. These data can be used in the future to detect and quantify changes to aquatic ecosystems, should they occur.

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TABLES

Table 1. Biomonitoring sampling locations, Graphite One, 2024.

Site	2024			2023			2022			2021		
	Dates Sampled	Latitude (NAD83)	Longitude (NAD83)	Dates Sampled	Latitude (NAD83)	Longitude (NAD83)	Dates Sampled	Latitude (NAD83)	Longitude (NAD83)	Dates Sampled	Latitude (NAD83)	Longitude (NAD83)
COB 1	Jul 13-14	65.062967	-165.47294	Jul 5-6 Jul-30	65.062967 --	-165.47294 --	Jul 7-8	65.06297	-165.47294	Jul 5-7	65.0631	-165.473
COB T1	Jul 13-14	65.061888	-165.48374	Jul 3-4 Jul-30	65.061889 --	-165.48372 --	Jul 7-8	65.06189	-165.48372	Jul 6-8 Aug 3	65.06188 --	-165.484 --
FAL 1	Jul 11-12	65.062959	165.83849	Jul 4-5 Jul-31	65.041797 65.078916	-165.84608 -165.82433	Jul 6-7	65.04180	-165.84608	Jul 3-4 Aug 2	65.041797 --	-165.84608 --
GLA 1	Jul 13-14	65.052174	-165.60444	Jul 6-7	65.052176	-165.60442	Jul 6-7	65.05218	-165.60442	Jul 5-6	65.05073	-165.572
GLA 2	Jul 16- 17	65.04756	-165.56173	Jul 6-7	65.04756	-165.56173	Jul 10-11	65.04756	-165.56173	Jul 4-5	65.05508	-165.618
IMU 16	Jul 11-12	65.04414	-165.636	Jul 5-6 Jul-31	65.04414 --	-165.636 --	Jul 6-7	65.04414	-165.63600	Jul 3-4 Aug 2	65.04414 --	-165.636 --
ORO 1	Jul 12-13	64.996694	-165.54911	Jul-4 Jul-30	64.996694 65.00946	-165.54911 -165.49975	Jul 8-9	64.99669	-165.54911	Jul 7-8 Aug 1	64.997356 --	-165.54056 --
USR 1	Jul 13-15	64.88104	-165.38693	Jul 1-2 Jul-31	64.88104 --	-165.38693 --	Jul 9-10	64.88104	-165.38693	Jul 8-9 Aug 1	64.88104 --	-165.38693 --
WIN 1	Jul 15-16	64.908327	-165.45127	Jul 2-3 Jul-31	64.90931 --	-165.44275 --	Jul 9-10	64.90931	-165.44275	Jul 8-9	64.90931	-165.44275

Table 2. Imuruk Basin fyke and gill net fishing locations, Graphite One, 2024.

Site ¹	Dates Fished		Latitude	Longitude
	June	August/September		
IMB FN 1	June 20-27	Aug 25- Sep 1	65.072092	-165.7265
IMB FN 2	June 20-27	Aug 25- Sep 1	65.047203	-165.6616
IMB FN 3	June 20-27	Aug 25- Sep 1	65.141848	-165.4545
IMB FN 4	June 20-27	Aug 25- Sep 1	65.141906	-165.4525
IMB GN 3-13		August 26	65.049	-165.679
IMB GN 4-16	June 25		65.116832	-165.4829
IMB GN 4-10	June 22		65.061807	-165.737
IMB GN 4	June 25	August 27	65.072721	-165.7257
IMB GN 4-19	June 26	August 25	65.110764	-165.516
IMB GN 4-21	June 26	August 25	65.077997	-165.5979
IMB GN 4-4	June 21	August 25	65.059542	-165.6469
IMB GN 4-11	June 22		65.063785	-165.738
IMB GN 2-1	June 23		65.141449	-165.4526
IMB GN 4-2	June 20		65.102269	-165.5557
IMB GN 4-3	June 21		65.069156	-165.7326
IMB GN 3-11	June 21		65.066471	-165.7336
IMB GN 4-5	June 21		65.059996	-165.646
IMB GN 4-6	June 21		65.145071	-165.4469
IMB GN 4-7	June 21	August 26	65.144355	-165.4515
IMB GN 4-9	June 22		65.071933	-165.7271
IMB GN 4-12	June 23		65.089194	-165.5808
IMB GN 4-13	June 23		65.088027	-165.5823
IMB GN 4-14	June 24		65.067412	-165.6261
IMB GN 4-15	June 24		65.065769	-165.6303
IMB GN 4-17	June 25		65.050116	-165.654
IMB GN 4-18	June 25		65.053502	-165.6537
IMB GN 4-8	June 22		65.128092	-165.4515
IMB GN 4-1	June 20		65.055227	-165.7305
IMB GN 4-20	June 26		65.111794	-165.5116
IMB GN 4-22	June 26		65.052937	-165.7228

¹FN = fyke net, GN = gill net

Table 3. Dolly Varden fall fishing locations, Graphite One, 2024.

Site¹	Dates Fished	Latitude	Longitude
COB AN 2	Aug 27	65.05601	-165.47420
COB AN 3	Aug 30	65.05043	-165.48137
COB AN 4	Sept 16, Sept 18	65.04121	-165.47525
COB AN 5	Sep 18	65.04325	-165.47104
COB AN 7	Aug 31	65.05985	-165.47619
COB AN 10	Sept 16, Sept 17, Sept 18	65.06273	-165.47283
COB AN 11	Aug 27, Sept 17, Sept 18	65.04934	-165.47711
COB AN 13	Aug 28, Sept 18	65.06956	-165.46441
COB AN 14	Aug 31	65.04759	-165.47354
COB AN 15	Aug 31	65.03543	-165.47711
COB AN 16	Aug 28	65.06482	-165.48740
HCC AN 5	Aug 29	65.09654	-165.97689
HCC AN 6	Sep 18	64.96279	-165.94897
PON AN 7	Aug 29	65.06251	-165.76444
IMB GN3-13 ²	Aug 26	65.04900	-165.67900
IMB FN1 ³	Aug 29	65.07209	-165.72654
IMB FN2	Aug 29, Aug 31	65.04720	-165.66160

¹AN sites refer to locations where rod and reel capture methods were used.

²IMB GN 3-13 was a gillnet set where Dolly Varden were captured.

³IMB FN1 and IMB FN2 were fyke net sets where Dolly Varden were captured.

Table 4. Water quality measurements taken during biomonitoring sampling, Graphite One, 2024.

Site	Location	Date / Time	Water Temperature (°C)	Dissolved Oxygen Percent Saturation	Specific Conductance (µS/cm)	Turbidity (NTU)	pH
<u>Biomonitoring Sites</u>							
Cobblestone River and Tributaries							
COB 1	Cobblestone River	7/13/24 11:46	5.1	122.2	88.9	0.95	7.09
COB 1	Cobblestone River	7/14/24 7:59	4.5	119.8	99.4	--	7.11
COB T1	Unnamed	7/14/24 10:49	11.7	92.2	243.3	0.26	6.99
COB T1	Unnamed	7/15/24 17:33	12.9	100.1	246.4	--	7.01
Fall Creek							
FAL 1	Fall Creek	7/11/24 8:26	5.3	127.0	97.4	0.03	6.96
FAL 1	Fall Creek	7/12/24 7:47	4.1	123.6	84.5	0.03	7.20
Imuruk Basin Streams							
GLA 1	Unnamed	7/13/24 16:25	6.6	121.0	280.7	4.87	6.24
GLA 1	Unnamed	7/14/24 17:35	4.0	122.3	242.7	123.30	6.30
GLA 2	Glacier Canyon Creek	7/16/24 8:06	2.1	121.4	234.4	3.20	6.45
GLA 2	Glacier Canyon Creek	7/17/24 8:30	1.9	124.6	247.6	3.30	6.44
IMU 16	Unnamed	7/11/24 15:28	5.1	116.9	269.2	--	7.01
IMU 16	Unnamed	7/12/24 17:40	4.5	127.3	274.7	0.03	6.69
Oro Grande Creek							
ORO 1	Oro Grande Creek	7/12/24 11:29	4.6	120.4	64.7	--	6.52
ORO 1	Oro Grande Creek	7/13/24 8:27	4.3	122.8	66.4	--	6.61
Sinuk River							
USR 1	Upper Sinuk River	7/13/24 9:45	5.7	120.3	91.3	0.17	6.92
USR 1	Upper Sinuk River	7/15/24 8:09	5.0	113.2	126.3	0.40	7.11
Windy Creek							
WIN 1	Windy Creek	7/15/24 12:45	4.2	123.2	99.5	--	6.78
WIN 1	Windy Creek	7/16/24 10:54	4.9	119.7	113.9	0.05	7.18
Mean across sites		2024	5.4	118.8	165.1	11.38	6.81
		2023	7.0	104.9	175.3	1.18	7.13
		2022	10.8	97.2	222.7	0.78	7.42
		2021	6.8	98.4	248.9	1.73	7.04
		2019	8.8	102.0	266	2.02	6.15
<u>Road Crossing Sites</u>							
Cobblestone River and Tributaries							
C0018	Cobblestone River	8/14/24 16:40	5.1	102.1	67.2	0.12	6.55
C0032	Cobblestone River	8/15/24 15:46	2.9	107.5	111.3	0.05	7.56
C0035	Cobblestone River	8/12/24 9:53	1.3	85.0	326.5	0.32	7.46
C0037	Cobblestone River	8/14/24 8:50	4.2	105.3	443.5	4.16	7.03
C0038	Cobblestone River	8/14/24 11:29	8.1	96.3	206	3.93	7.35
C0039	Cobblestone River	8/14/24 10:32	3.5	103.9	645	2.13	7.06
Windy Creek							
C0011	Windy Creek	8/12/24 15:46	5.8	112.2	63.9	0.00	6.76

Table 5. Periphyton standing crop chlorophyll -a concentrations (mg/m²), Graphite One, 2024.

Site	2019			2021			2022			2023			2024		
	Mean	Min/Max	Standard Error	Mean	Min/Max	Standard Error	Mean	Min/Max	Standard Error	Mean	Min/Max	Standard Error	Mean	Min/Max	Standard Error
COB 1	2.79	0.96/5.02	0.49	6.45	1.71/15.38	1.07	1.4	0.43/3.2	0.36	2	0/4.27	0.42	1.33	0.85/2.24	0.24
COB T1	0.97	0.43/1.71	0.15	3.01	0.75/5.66	0.53	1.01	0.21/1.71	0.14	1.35	0.53/2.88	0.23	1.29	0.64/2.03	0.2
FAL 1	0.5	0.43/0.75	0.04	7.58	0.53/21.79	3.11	7.86	2.03/20.93	1.98	3.73	0.53/7.26	0.63	1.75	0.64/3.52	0.34
GLA 1	1.58	0.53/3.84	0.38	0.21	0.11/0.32	0.05	0.21	0.21/0.21	0	--	--	--	--	--	--
GLA 2	--	--	--	0.35	0.11/0.75	0.08	--	--	--	--	--	--	--	--	--
IMU 16	0.73	0.43/1.28	0.11	1.13	0.32/2.99	0.22	1.46	0.32/4.7	0.44	0.78	0.53/1.07	0.08	1.27	0.53/2.67	0.27
ORO 1	8.94	2.67/19.65	2.04	16.37	5.02/33.43	3	11.9	0.43/57.99	5.65	4.69	1.07/9.83	0.99	3.49	0.43/7.16	0.82
USR 1	--	--	--	6.12	1.28/17.3	1.57	3.95	0.64/10.15	0.93	10.02	0.85/43.47	4.5	3.6	0.96/7.37	0.67
WIN 1	--	--	--	11.42	2.14/32.25	3.38	2.39	0/7.48	0.71	4.04	1.82/5.87	0.42	13.4	4.06/59.27	5.87

Table 6. Macroinvertebrate bioassessment statistics summary across biomonitoring sites with means from all years (2019, 2021–2024), Graphite One, 2024.

Metrics											All Sites Combined				
	COB 1	COB T1	FAL 1	GLA 1	GLA 2	IMU 16	ORO 1	USR 1	WIN 1	2024	2023	2022	2021	2019	
											Mean				
Abundance ¹	590	3,181	800	44	9	1,288	1,277	1,589	1,523	10,301	6,733	9,561	11,813	5,709	
Density	1,311.11	7,068.89	1,777.78	97.78	20.00	2,862.22	2,837.78	3,531.11	3,384.44	2,543.46	1,665.93	2,360.74	2,916.79	1,812.38	
#Taxa ²	22	12	20	6	3	18	12	14	21	59	62	64	67	49	
#EPT ³ Taxa ²	11	6	13	1	0	10	7	6	16	22	24	29	22	22	
% EPT Taxa	50.00	50.00	65.00	16.67	0.00	55.56	58.33	42.86	76.19	46.07	54.97	52.08	50.36	47.67	
% EPT	17.34	8.57	29.21	2.50	0.00	18.68	1.68	2.62	7.81	9.82	13.73	17.25	11.70	18.51	
%Chironomidae	69.11	8.49	59.37	15.00	16.67	67.81	97.24	93.70	91.07	57.61	58.50	48.74	56.21	53.33	
%Chironomidae/Diptera	83.61	9.29	84.04	35.29	20.00	83.39	98.90	96.45	98.79	67.75	68.69	62.78	63.80	63.09	
Diversity Indices															
Shannon (H)	0.61	0.35	0.78	0.89	0.45	0.62	0.10	0.15	0.33	0.48	0.47	0.60	0.50	0.53	
Simpson (D)	1.43	1.19	1.81	2.19	1.38	1.47	1.03	1.06	1.17	1.42	1.38	1.61	1.49	1.52	
Biotic Indices															
HBI ⁴	4.90	5.88	5.08	4.88	6.00	5.49	5.94	5.91	5.76	5.54	5.74	5.65	5.04	5.45	
% Composition by Class										Mean %					
Annelida	29.49	19.14	15.88	4.55	11.11	35.17	11.90	7.05	5.65	15.55	11.87	10.22	11.42	23.02	
Arachnida	1.86	0.03	3.00	--	--	0.47	1.33	1.07	0.20	1.14	3.07	2.49	2.70	2.96	
Chordata	0.17	0.03	--	--	--	--	--	--	--	0.10	0.18	--	--	--	
Collembola	0.34	0.03	--	4.55	--	--	0.08	0.06	0.07	0.85	1.69	0.11	1.09	7.55	
Insecta	62.54	77.77	78.75	90.91	66.67	58.62	79.40	83.95	88.25	76.32	83.95	86.73	82.32	61.56	
Nematoda	2.37	0.50	1.38	--	11.11	4.81	6.81	4.47	5.65	4.64	1.03	1.59	1.99	2.44	
Platyhelminthes	3.22	0.09	0.25	--	--	0.08	0.08	0.88	--	0.77	0.35	1.28	0.25	0.43	
Copepoda	--	0.09	--	--	--	--	--	0.44	--	0.27	0.22	0.64	1.34	0.32	
Crustacea	--	0.75	0.63	--	--	0.85	0.39	1.70	0.20	0.75	1.11	1.06	2.26	0.04	
Mollusca	--	1.54	0.13	--	11.11	--	--	0.38	--	3.29	1.39	6.82	3.23	0.40	
Nematomorpha	--	--	--	--	--	--	--	--	--	--	--	--	0.11	--	
% Composition by Order										Mean %					
Acarina	1.86	0.03	3.00	--	--	0.47	1.33	1.07	0.20	1.14	3.07	2.49	2.69	--	
Diptera	51.69	71.05	55.63	38.64	55.56	47.67	78.07	81.56	81.35	62.36	72.36	67.72	64.13	47.87	
Ephemeroptera	4.24	5.63	17.50	--	--	7.53	0.55	1.32	5.12	5.98	7.74	13.20	7.95	14.08	
Oligochaeta	29.49	6.19	15.88	4.55	11.11	35.17	11.90	7.05	5.65	14.11	11.21	9.72	11.25	--	
Pisces	0.17	0.03	--	--	--	--	--	--	--	0.10	0.18	--	--	--	
Plecoptera	6.10	0.44	5.38	2.27	--	2.87	0.78	0.88	1.12	2.48	3.69	3.04	2.08	2.79	
Poduromorpha	0.17	--	--	2.27	--	--	--	0.06	--	0.84	2.06	0.09	--	--	
Trichoptera	0.51	0.60	0.13	--	--	0.54	--	--	0.66	0.49	0.34	0.82	0.73	1.80	

Table 6. Macroinvertebrate bioassessment statistics summary across biomonitoring sites with means from all years (2019, 2021–2024), Graphite One, 2024.

Metrics											All Sites Combined				
	COB 1	COB T1	FAL 1	GLA 1	GLA 2	IMU 16	ORO 1	USR 1	WIN 1	2024	2023	2022	2021	2019	
Amphipoda	--	0.03	--	--	--	--	--	--	--	0.03	0.16	1.28	0.50	--	
Bivalvia	--	0.31	--	--	--	--	--	0.31	--	0.31	0.16	0.71	0.09	0.40	
Calanoida	--	0.06	--	--	--	--	--	--	--	0.06	--	--	1.79	--	
Cyclopoida	--	0.03	--	--	--	--	--	0.31	--	0.17	0.36	0.07	0.03	--	
Gastropoda	--	1.23	0.13	--	11.11	--	--	0.06	--	3.13	1.31	6.11	6.27	--	
Lepidoptera	--	0.03	--	2.27	--	--	--	--	--	1.15	--	--	--	--	
Ostracoda	--	0.72	0.63	--	--	0.85	0.39	1.64	0.20	0.74	1.25	0.62	2.17	--	
Polychaeta	--	12.95	--	--	--	--	--	--	--	12.95	2.67	1.75	1.34	23.02	
Symphyleona	--	0.03	--	2.27	--	--	--	--	--	1.15	0.16	0.08	1.02	--	
Coleoptera	--	--	0.13	--	--	--	--	--	--	0.13	--	0.07	--	2.64	
Cladocera	--	--	--	--	--	--	--	0.06	--	0.06	0.08	1.35	--	0.04	
Harpacticoida	--	--	--	--	--	--	--	0.13	--	0.13	0.08	0.62	0.43	--	
Entomobryomorpha	--	--	--	--	--	--	--	--	0.07	0.07	0.14	0.09	--	--	
Hymenoptera	--	--	--	--	--	--	--	--	--	--	0.10	2.06	0.07	--	
Homoptera	--	--	--	--	--	--	--	--	--	--	--	0.00	--	--	
Isotomidae	--	--	--	--	--	--	--	--	--	--	--	0.33	--	--	
Scorpaeniformes	--	--	--	--	--	--	--	--	--	--	--	0.06	0.05	0.92	
Hemiptera	--	--	--	--	--	--	--	--	--	--	--	--	18.94	--	
Thysanoptera	--	--	--	--	--	--	--	--	--	--	--	--	1.00	--	
Unidentifiable	5.76	0.63	1.63	47.73	22.22	4.89	6.97	5.54	5.65	11.22	1.74	6.47	5.72	34.47	

¹Sum total instead of mean indicated in 2019, 2021–2024 columns.

²Total unique taxa by site. The 2019, 2021–2024 mean columns give the total unique taxa in each year.

³EPT = Ephemeroptera, Plecoptera, Trichoptera.

⁴Hilsenhoff biotic index.

Table 7. Total invertebrate count list, Graphite One, 2024.

Class	Order	Family	Genus	Total
Annelida	Oligochaeta	--	--	1,304
Annelida	Polychaeta	Sabellidae	Manayunkia	412
Arachnida	Acarina	mite	--	46
Arachnida	Acarina	--	--	33
Chordata	Pisces	Cottidae	--	2
Collembola	Entomobryomorpha	Entomobryidae	--	1
Collembola	Poduromorpha	Poduridae	--	3
Collembola	Symphyleona	Sminthuridae	--	2
Collembola	--	--	--	2
Copepoda	Calanoida	--	--	2
Copepoda	Cyclopoida	--	--	6
Copepoda	Harpacticoida	--	--	2
Crustacea	Amphipoda	Gammaridae	--	1
Crustacea	Cladocera	--	--	1
Crustacea	Ostracoda	--	--	73
Insecta	Coleoptera	--	--	1
Insecta	Diptera	Ceratopogonidae	--	26
Insecta	Diptera	Chironomidae	--	4,818
Insecta	Diptera	Empididae	Chelifera	108
Insecta	Diptera	Empididae	Clinocera	2
Insecta	Diptera	Empididae	--	25
Insecta	Diptera	Simuliidae	--	2,054
Insecta	Diptera	Tipulidae	Dicranota	7
Insecta	Diptera	Tipulidae	Hexatoma	9
Insecta	Diptera	Tipulidae	Ormosia	6
Insecta	Diptera	Tipulidae	Tipula	24
Insecta	Diptera	Tipulidae	--	3
Insecta	Diptera	--	--	96
Insecta	Ephemeroptera	Ameletidae	Ameletus	11
Insecta	Ephemeroptera	Baetidae	Acentrella	8
Insecta	Ephemeroptera	Baetidae	Baetis	89
Insecta	Ephemeroptera	Baetidae	--	167
Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	7
Insecta	Ephemeroptera	Ephemerellidae	--	3
Insecta	Ephemeroptera	Heptageniidae	Cinygmula	190
Insecta	Ephemeroptera	Heptageniidae	Epeorus	27
Insecta	Ephemeroptera	Heptageniidae	--	4
Insecta	Ephemeroptera	--	--	41
Insecta	Lepidoptera	--	--	2
Insecta	Plecoptera	Chloroperlidae	Suwallia	35
Insecta	Plecoptera	Chloroperlidae	Sweltsa	22
Insecta	Plecoptera	Chloroperlidae	--	51
Insecta	Plecoptera	Nemouridae	Podmosta	12
Insecta	Plecoptera	Nemouridae	Zapada	16
Insecta	Plecoptera	Nemouridae	--	11
Insecta	Plecoptera	Perlodidae	Isoperla	1
Insecta	Plecoptera	--	--	24
Insecta	Trichoptera	Brachycentridae	Brachycentrus	10
Insecta	Trichoptera	Brachycentridae	--	19

Table 7. Total invertebrate count list, Graphite One, 2024.

Class	Order	Family	Genus	Total
Insecta	Trichoptera	Limnephilidae	--	2
Insecta	Trichoptera	--	--	9
Insecta	--	--	--	26
Mollusca	Bivalvia	Pisidiidae	--	10
Mollusca	Bivalvia	Sphaeridae	Sphaerium	5
Mollusca	Gastropoda	Lymnaeidae	--	1
Mollusca	Gastropoda	Valvatidae	--	36
Mollusca	Gastropoda	--	--	5
Nematoda	--	--	--	348
Platyhelminthes	--	--	--	40

Table 8. Fish catch by species and sampling site for biomonitoring and road crossing surveys, Graphite One, 2024.

Site	Date Sampled	Method	Slimy Sculpin	Coho Salmon	Dolly Varden	Pink Salmon	Chum Salmon	Sockeye Salmon	Alaska Blackfish	Total
<u>A. Biomonitoring Sites</u>										
COB 1	7/14/24, 8/15/24	Electrofishing	2	0	3	6	26	3	0	40
	7/13/24	Minnow Trap	1	0	0	0	0	1	0	2
COB T1	7/14/24, 8/15/24	Electrofishing	0	3	3	0	0	0	1	7
	7/14/24	Minnow Trap	2	6	9	0	0	0	3	20
FAL 1	7/11/24, 8/14/24	Electrofishing	11	0	9	0	0	0	0	20
	7/11/24	Minnow Trap	2	0	2	0	0	0	0	4
USR 1	7/15/24, 8/15/24	Electrofishing	8	0	11	0	0	0	0	19
	7/13/24	Minnow Trap	3	0	0	0	0	0	0	3
IMU 16	7/11/24, 8/14/24	Electrofishing	15	0	3	0	0	0	0	18
	7/11/24	Minnow Trap	5	0	0	0	0	0	0	5
ORO 1	7/12/24, 8/15/24	Electrofishing	5	0	15	0	2	0	0	22
	7/12/24	Minnow Trap	1	0	2	0	0	0	0	3
WIN 1	7/15/24, 8/12/24	Electrofishing	2	0	7	0	0	0	0	9
	7/15/24	Minnow Trap	2	0	4	0	0	0	0	6
GLA 1	7/13/24	Electrofishing	0	0	0	0	0	0	0	0
	7/13/24	Minnow Trap	0	0	0	0	0	0	0	0
GLA 2	7/16/24, 8/13/24	Electrofishing	0	0	0	0	0	0	0	0
	7/16/24	Minnow Trap	0	0	0	0	0	0	0	0
Total			59	9	68	6	28	4	4	178
<u>B. Road Crossing Sites</u>										
C0018	8/14/24	Electrofishing	0	0	0	0	0	0	0	0
C0032	8/15/24	Electrofishing	0	0	3	0	0	0	0	3
C0035	8/12/24	Electrofishing	0	0	0	0	0	0	0	0
C0037	8/14/24	Electrofishing	0	0	0	0	0	0	0	0
C0038	8/14/24	Electrofishing	0	0	0	0	0	0	0	0
C0039	8/14/24	Electrofishing	0	0	0	0	0	0	0	0
C0011	8/12/24	Electrofishing	0	0	0	0	0	0	0	0
Total			0	0	3	0	0	0	0	3

Table 9. Catch-per-unit-effort (CPUE) at biomonitoring sites 2019, 2021–2024, Graphite One, 2024.

Site	Method ¹	2024 Total Catch	2024 CPUE	2023 CPUE	2022 CPUE	2021 CPUE	2019 CPUE	Mean CPUE
								2019, 2021–2024
<u>Biomonitoring Sites</u>								
COB 1	EF	40	14.58	38.95	8.86	7.65	32.14	20.44
	MT	2	2.3	0.93	3.60	3.03	7.50	3.47
COB T1	EF	7	3.83	7.29	2.73	8.50	24.93	9.46
	MT	20	15.89	12.97	16.82	21.02	94.68	32.28
FAL 1	EF	20	8.2	16.87	3.64	1.95	4.26	6.98
	MT	4	4.23	4.17	13.71	8.38	16.80	9.46
IMU 16	EF	18	6.56	17.22	10.93	16.20	6.56	11.49
	MT	5	4.71	0	4.49	0.96	1.14	2.26
ORO 1	EF	22	12.03	15.17	2.87	5.87	31.94	13.58
	MT	3	3.41	1.02	8.18	25.60	14.62	10.57
USR 1	EF	19	5.42	17.63	21.87	6.73	--	12.91
	MT	3	1.58	8.32	19.02	2.74	--	7.92
WIN 1	EF	9	5.9	8.75	10.82	0.84	--	6.58
	MT	6	6.43	1.86	17.07	4.30	--	7.42
GLA 1	EF	0	0	0	0	0	0	0.00
	MT	0	0	0	0	0	--	0.00
GLA 2	EF	0	0	0	0	0	0	0.00
	MT	0	0	1.05	0	0	--	0.26
Total		178						

¹EF = Electrofishing; CPUE measured in fish per 100 m; MT = Minnow trap; CPUE measured in fish per 24-hour period.

Table 10. Juvenile Dolly Varden whole-body metals concentrations in the Graphite One project area, organized by analyte. All units are in mg/kg with the exception of MeHg measured in ng/g, Graphite One, 2024.

Analyte ¹	Site	N	2024					Mean				
			Mean	Median	Min	Max	SD	All years				
								(2019–2024)	2023	2022	2021	2019
%TS	COB 1	3	23.217	23.770	20.710	25.170	2.281	22.710	22.257	20.720	22.290	25.065
%TS	COB T1	11	24.226	22.790	20.930	29.410	3.103	24.100	24.578	21.092	25.613	24.988
%TS	FAL 1	4	22.718	23.035	19.830	24.970	2.595	22.421	20.416	20.100	24.845	24.026
%TS	IMU 16	1	21.560	21.560	21.560	21.560	--	22.159	20.720	22.475	23.880	--
%TS	ORO 1	14	23.131	23.150	22.050	24.350	0.759	21.751	22.141	19.960	21.781	21.743
%TS	USR 1	8	22.456	22.300	21.150	23.880	0.855	22.039	21.877	21.127	22.695	--
%TS	WIN 1	7	21.636	21.710	19.580	22.810	1.210	21.513	20.527	21.452	22.437	--
Al	COB 1	3	114.867	82.700	79.900	182.000	58.156	100.530	138.100	34.500	53.100	162.083
Al	COB T1	11	77.980	32.700	6.250	388.000	112.038	78.933	94.926	44.972	7.797	168.991
Al	FAL 1	4	13.475	13.030	3.240	24.600	9.235	57.107	45.763	81.290	109.863	35.143
Al	IMU 16	2	52.050	52.050	37.400	66.700	20.718	80.161	92.000	93.700	82.895	--
Al	ORO 1	14	126.248	36.500	7.620	895.000	239.388	92.094	86.539	106.500	41.694	99.491
Al	USR 1	8	21.913	25.300	8.700	34.100	8.988	52.348	50.515	49.610	87.355	--
Al	WIN 1	7	39.500	37.600	14.900	70.900	21.596	141.932	229.371	102.458	196.400	--
As	COB 1	3	0.282	0.221	0.204	0.422	0.121	0.197	0.247	0.111	0.094	0.250
As	COB T1	11	0.126	0.139	0.055	0.220	0.054	0.095	0.077	0.086	0.062	0.123
As	FAL 1	4	0.150	0.158	0.117	0.166	0.022	0.154	0.124	0.160	0.208	0.127
As	IMU 16	2	0.074	0.074	0.046	0.102	0.040	0.103	0.086	0.122	0.132	--
As	ORO 1	14	0.119	0.110	0.071	0.227	0.043	0.115	0.091	0.106	0.115	0.142
As	USR 1	8	0.147	0.141	0.118	0.214	0.029	0.140	0.159	0.113	0.142	--
As	WIN 1	7	0.178	0.189	0.135	0.210	0.026	0.153	0.137	0.131	0.166	--
Ba	COB 1	3	2.473	2.530	2.330	2.560	0.125	2.675	2.705	2.180	1.490	4.526
Ba	COB T1	11	1.945	1.770	0.790	5.110	1.273	2.041	2.104	2.010	1.125	3.020
Ba	FAL 1	4	1.737	1.640	0.987	2.680	0.798	2.776	2.613	3.272	3.774	2.484
Ba	IMU 16	2	2.664	2.664	0.867	4.460	2.541	3.498	2.975	4.845	3.507	--
Ba	ORO 1	14	3.476	2.510	1.240	10.700	2.483	4.043	3.439	3.998	4.128	5.175
Ba	USR 1	8	1.986	1.685	1.080	3.920	0.930	3.124	2.711	2.829	4.971	--
Ba	WIN 1	7	3.497	3.390	2.050	5.460	1.169	4.262	5.050	3.326	5.177	--
Be	COB 1	--	--	--	--	--	--	0.032	0.032	--	--	--
Be	COB T1	--	--	--	--	--	--	--	--	--	--	--
Be	FAL 1	--	--	--	--	--	--	0.007	--	--	0.007	--
Be	IMU 16	--	--	--	--	--	--	0.011	--	--	0.011	--
Be	ORO 1	1	0.037	0.037	0.037	0.037	--	0.027	0.036	--	0.008	--
Be	USR 1	--	--	--	--	--	--	0.027	0.019	0.025	0.036	--

Table 10. Juvenile Dolly Varden whole-body metals concentrations in the Graphite One project area, organized by analyte. All units are in mg/kg with the exception of MeHg measured in ng/g, Graphite One, 2024.

Analyte ¹	Site	N	2024					Mean				
			Mean	Median	Min	Max	SD	All years (2019–2024)	2023	2022	2021	2019
Be	WIN 1	--	--	--	--	--	--	0.029	0.036	0.029	0.022	--
Cd	COB 1	3	0.611	0.568	0.196	1.070	0.439	0.372	0.442	0.183	0.115	0.508
Cd	COB T1	11	0.057	0.051	0.019	0.097	0.030	0.080	0.072	0.185	0.033	0.057
Cd	FAL 1	4	0.125	0.082	0.065	0.270	0.097	0.258	0.216	0.187	0.486	0.277
Cd	IMU 16	2	0.382	0.382	0.352	0.412	0.042	0.767	1.287	0.717	0.684	--
Cd	ORO 1	14	0.390	0.289	0.213	0.974	0.219	0.585	0.531	0.517	1.075	0.413
Cd	USR 1	8	0.832	0.710	0.526	1.300	0.272	1.421	2.047	1.448	1.358	--
Cd	WIN 1	7	0.456	0.499	0.210	0.566	0.128	0.482	0.744	0.396	0.331	--
Cr	COB 1	3	0.722	0.736	0.321	1.110	0.395	0.539	0.694	--	0.218	0.520
Cr	COB T1	10	0.565	0.485	0.295	1.120	0.277	0.631	0.559	0.575	--	0.824
Cr	FAL 1	4	0.452	0.430	0.260	0.689	0.209	0.494	0.562	0.504	0.457	--
Cr	IMU 16	2	0.513	0.513	0.470	0.555	0.060	0.666	1.060	0.714	0.376	--
Cr	ORO 1	14	0.704	0.581	0.243	1.830	0.432	0.560	0.610	0.540	0.182	0.762
Cr	USR 1	8	0.404	0.380	0.230	0.750	0.169	0.442	0.485	0.515	0.364	--
Cr	WIN 1	7	0.765	0.645	0.445	1.320	0.294	0.877	0.820	0.671	1.250	--
Cu	COB 1	3	3.957	3.740	3.180	4.950	0.905	3.274	3.645	2.480	2.530	3.758
Cu	COB T1	11	3.253	3.070	2.240	4.630	0.935	3.050	2.848	3.011	2.633	3.506
Cu	FAL 1	4	3.223	3.145	3.000	3.600	0.286	3.549	3.447	3.721	3.981	3.371
Cu	IMU 16	2	2.715	2.715	1.480	3.950	1.747	3.550	4.290	3.535	3.659	--
Cu	ORO 1	14	2.836	2.740	2.210	4.120	0.476	3.237	3.109	3.153	3.716	3.373
Cu	USR 1	8	3.586	3.545	3.240	4.050	0.283	3.831	3.819	3.916	4.005	--
Cu	WIN 1	7	3.456	3.510	2.860	3.960	0.363	3.601	3.563	3.835	3.550	--
Fe	COB 1	3	189.667	160.000	143.000	266.000	66.651	180.123	199.667	106.000	97.400	307.883
Fe	COB T1	11	449.509	293.000	74.300	1830.000	513.031	465.307	440.340	464.667	104.667	867.355
Fe	FAL 1	4	73.075	74.050	62.200	82.000	8.166	138.423	129.243	161.860	219.475	108.460
Fe	IMU 16	2	106.000	106.000	68.000	144.000	53.740	157.402	171.000	164.500	188.107	--
Fe	ORO 1	14	210.821	103.500	46.000	1040.000	258.585	182.736	176.079	177.975	117.388	231.415
Fe	USR 1	8	103.750	106.500	82.300	118.000	13.791	158.727	159.087	164.136	207.936	--
Fe	WIN 1	7	131.671	127.000	87.800	173.000	34.892	234.257	291.082	200.175	314.100	--
Hg	COB 1	3	0.093	0.062	0.061	0.157	0.055	0.130	0.090	0.138	0.200	0.127
Hg	COB T1	11	0.173	0.152	0.119	0.306	0.060	0.195	0.147	0.175	0.229	0.253
Hg	FAL 1	4	0.078	0.074	0.053	0.111	0.028	0.104	0.118	0.146	0.074	0.104
Hg	IMU 16	2	0.051	0.051	0.015	0.088	0.052	0.070	0.061	0.083	0.087	--
Hg	ORO 1	14	0.085	0.085	0.066	0.115	0.014	0.099	0.102	0.106	0.106	0.097

Table 10. Juvenile Dolly Varden whole-body metals concentrations in the Graphite One project area, organized by analyte. All units are in mg/kg with the exception of MeHg measured in ng/g, Graphite One, 2024.

Analyte ¹	Site	N	2024					Mean				
			Mean	Median	Min	Max	SD	All years (2019–2024)	2023	2022	2021	2019
Hg	USR 1	8	0.094	0.090	0.063	0.145	0.025	0.097	0.100	0.089	0.105	--
Hg	WIN 1	7	0.092	0.087	0.064	0.143	0.025	0.095	0.100	0.090	0.096	--
MeHg	COB 1	3	102.600	67.400	66.400	174.000	61.836	132.007	100.900	136.000	216.000	104.533
MeHg	COB T1	11	159.364	147.000	99.200	271.000	60.597	176.502	125.520	167.444	174.000	256.182
MeHg	FAL 1	4	84.925	79.050	58.600	123.000	28.511	96.390	118.871	134.350	63.875	79.927
MeHg	IMU 16	2	48.750	48.750	15.100	82.400	47.588	72.410	57.750	81.900	101.240	--
MeHg	ORO 1	14	82.700	81.100	60.200	119.000	15.557	94.247	109.957	97.125	90.544	90.908
MeHg	USR 1	8	98.488	96.150	61.100	160.000	30.394	91.407	94.347	80.650	92.145	--
MeHg	WIN 1	7	96.771	94.700	65.300	150.000	27.077	87.125	95.236	76.592	79.900	--
Mn	COB 1	3	6.943	6.440	4.400	9.990	2.829	13.829	9.708	5.490	3.860	43.145
Mn	COB T1	11	16.789	8.550	6.880	49.400	16.040	19.783	34.186	15.021	6.850	26.070
Mn	FAL 1	4	4.065	4.175	3.400	4.510	0.540	7.857	7.624	8.642	12.976	5.977
Mn	IMU 16	2	5.620	5.620	3.060	8.180	3.620	7.433	9.155	5.875	9.083	--
Mn	ORO 1	14	8.366	6.995	2.490	27.100	5.872	12.012	11.208	13.785	12.634	14.065
Mn	USR 1	8	9.545	8.560	7.070	18.400	3.697	13.024	15.055	12.801	14.694	--
Mn	WIN 1	7	5.556	5.100	4.740	6.600	0.770	9.240	12.214	9.199	9.990	--
Ni	COB 1	3	0.542	0.409	0.315	0.901	0.315	0.490	0.648	0.281	0.253	0.726
Ni	COB T1	9	0.370	0.357	0.142	0.808	0.211	0.351	0.341	0.357	0.077	0.608
Ni	FAL 1	3	0.284	0.278	0.261	0.312	0.026	0.496	1.044	0.508	0.479	0.163
Ni	IMU 16	2	0.322	0.322	0.270	0.373	0.073	0.605	0.703	0.519	0.877	--
Ni	ORO 1	14	0.392	0.318	0.183	1.240	0.274	0.499	0.471	0.636	0.473	0.523
Ni	USR 1	8	0.374	0.360	0.272	0.587	0.096	0.663	0.790	0.704	0.784	--
Ni	WIN 1	7	0.400	0.360	0.286	0.525	0.091	0.578	0.805	0.619	0.486	--
Pb	COB 1	3	0.054	0.042	0.035	0.085	0.027	0.060	0.058	0.033	0.040	0.115
Pb	COB T1	8	0.048	0.031	0.016	0.140	0.042	0.047	0.037	0.033	0.008	0.109
Pb	FAL 1	4	0.021	0.022	0.011	0.029	0.008	0.049	0.026	0.056	0.088	0.053
Pb	IMU 16	2	0.015	0.015	0.013	0.017	0.003	0.027	0.026	0.034	0.032	--
Pb	ORO 1	14	0.133	0.030	0.010	0.858	0.256	0.080	0.046	0.082	0.034	0.105
Pb	USR 1	6	0.013	0.013	0.011	0.015	0.002	0.027	0.024	0.029	0.043	--
Pb	WIN 1	7	0.025	0.024	0.014	0.045	0.011	0.069	0.108	0.056	0.087	--
Sb	COB 1	1	0.017	0.017	0.017	0.017	--	0.011	0.006	--	--	--
Sb	COB T1	3	0.046	0.046	0.006	0.085	0.040	0.023	0.008	0.016	--	--
Sb	FAL 1	1	0.087	0.087	0.087	0.087	--	0.029	0.014	0.010	0.005	--
Sb	IMU 16	2	0.012	0.012	0.010	0.013	0.002	0.011	0.007	0.016	--	--

Table 10. Juvenile Dolly Varden whole-body metals concentrations in the Graphite One project area, organized by analyte. All units are in mg/kg with the exception of MeHg measured in ng/g, Graphite One, 2024.

Analyte ¹	Site	N	2024					Mean				
			Mean	Median	Min	Max	SD	All years (2019–2024)	2023	2022	2021	2019
Sb	ORO 1	7	0.757	0.009	0.008	5.240	1.977	0.194	0.007	0.006	0.005	--
Sb	USR 1	2	0.008	0.008	0.007	0.009	0.001	0.013	0.025	0.009	0.009	--
Sb	WIN 1	1	0.010	0.010	0.010	0.010	--	0.010	0.011	0.010	0.010	--
Se	COB 1	3	4.600	4.490	4.320	4.990	0.348	4.151	5.058	3.900	2.400	4.795
Se	COB T1	11	3.449	3.410	2.590	4.010	0.465	3.760	2.950	4.460	3.313	4.625
Se	FAL 1	4	3.370	3.620	2.180	4.060	0.821	4.695	4.521	4.656	6.113	4.814
Se	IMU 16	2	5.415	5.415	3.120	7.710	3.246	8.370	11.200	7.755	9.111	--
Se	ORO 1	14	4.695	4.875	3.240	6.040	0.843	5.195	5.107	6.030	5.199	4.944
Se	USR 1	8	7.251	7.425	6.270	8.300	0.737	7.529	7.985	7.556	7.326	--
Se	WIN 1	7	5.097	4.950	4.640	5.840	0.463	5.257	5.889	5.351	4.690	--
Zn	COB 1	3	129.000	108.000	105.000	174.000	39.000	114.267	115.667	120.000	81.100	125.567
Zn	COB T1	11	124.364	126.000	101.000	152.000	16.108	123.422	107.760	121.278	133.800	129.909
Zn	FAL 1	4	126.750	128.500	106.000	144.000	18.679	135.991	131.857	141.200	153.000	127.147
Zn	IMU 16	2	88.200	88.200	42.400	134.000	64.771	119.817	136.500	114.500	140.067	--
Zn	ORO 1	14	151.936	131.000	95.800	321.000	73.306	153.487	132.214	145.000	174.363	163.923
Zn	USR 1	8	145.750	142.500	132.000	164.000	11.949	153.992	149.867	129.714	190.636	--
Zn	WIN 1	7	129.714	130.000	106.000	156.000	16.028	131.547	137.973	124.167	134.333	--

¹%TS=Percent Total Solids, Al=Aluminum, As=Arsenic, Ba=Barium, Be=Beryllium, Cd=Cadmium, Cr=Chromium, Cu=Copper, Fe=Iron, Hg=Mercury, meHg=Methyl Mercury, Mn=Manganese, Ni=Nickel, Pb=Lead, Sb=Antimony, Se=Selenium, and Zn=Zinc.

Table 11. Water quality data collected during the summer Imuruk Basin fish sampling surveys, Graphite One, 2024.

Site	Date and Time	Water	Dissolved	Specific	Salinity	Turbidity	pH
		Temperature (°C)	Oxygen Percent Saturation	Conductivity (µS/cm)			
Fyke Net Sites							
IMB FN 3	6/20/2024 8:40	10.1	100.2	178.2	0.08	5.25	7.4
IMB FN 1	6/20/2024 9:50	9.6	106.5	480.6	0.23	5.35	7.33
IMB FN 2	6/20/2024 11:00	3.6	110.6	157	0.08	2	6.4
IMB FN 3	6/21/2024 8:07	11.7	117.6	196.4	0.09	3.9	7.44
IMB FN 2	6/21/2024 8:45	8.9	124.4	423.6	0.21	3.17	7.13
IMB FN 1	6/21/2024 9:35	11.9	125.6	511.8	0.25	4.8	7.21
IMB FN 3	6/22/2024 8:00	11.3	119	134	0.07	6.7	7.48
IMB FN 2	6/22/2024 11:04	14.3	125	543	0.26	3.75	7.68
IMB FN 1	6/22/2024 11:40	13.5	125.9	540.2	0.26	5.4	7.51
IMB FN 2	6/23/2024 10:10	13.4	120	566.4	0.28	5.47	7.84
IMB FN 1	6/23/2024 11:20	11.6	124.1	490.4	0.24	2.63	7.81
IMB FN 3	6/23/2024 12:30	7.6	129	77.1	0.04	4.47	6.78
IMB FN 4	6/23/2024 13:05	9.3	127.4	96.5	0.05	4.43	7.19
IMB FN 2	6/24/2024 10:42	14	116	615.6	0.3	6.4	7.73
IMB FN 1	6/24/2024 11:55	12.5	127.8	468.7	0.23	2.33	7.93
IMB FN 4	6/24/2024 13:00	12	123	153.4	0.07	4.7	7.39
IMB FN 2	6/25/2024 7:32	14.2	117.3	674	0.33	3.9	7.95
IMB FN 1	6/25/2024 8:50	11.2	124.5	475.9	0.23	2.33	7.95
IMB FN 4	6/25/2024 11:10	13.7	119.9	212.8	0.1	3	7.62
IMB FN 2	6/26/2024 7:39	15	123.2	644	0.32	2.93	8.05
IMB FN 1	6/26/2024 8:28	14.7	119.8	575	0.28	3.2	7.9
IMB FN 4	6/26/2024 12:30	13.6	121.4	115.5	0.05	5.4	7.41
IMB FN 2	6/27/2024 7:30	14.2	123.2	681	0.26	4.63	7.7
IMB FN 1	6/27/2024 9:00	15.3	110	632	0.31	4.2	7.87
IMB FN 4	6/27/2024 10:42	12.4	121.9	136.8	0.06	1.9	7.08
IMB FN 1	8/25/2024 9:13	7.8	96.6	1693	0.86	8.73	7.95
IMB FN 2	8/25/2024 10:45	7	100.4	908	0.45	15	7.53
IMB FN 3	8/25/2024 12:45	7.3	104.5	191.6	0.09	0	7.77
IMB FN 1	8/26/2024 8:44	8.5	98.3	1500	0.76	16.67	8
IMB FN 2	8/26/2024 9:39	7.3	100.4	736.9	0.36	14.3	7.55
IMB FN 3	8/26/2024 12:04	6.9	105	173.3	0.08	17	7.92
IMB FN 1	8/27/2024 9:40	8.5	100.2	1560	0.79	13.9	7.89
IMB FN 2	8/27/2024 11:40	7	101.2	565.3	0.27	0.91	7.48
IMB FN 3	8/27/2024 13:30	7.7	107.5	134.8	0.06	--	7.52
IMB FN 1	8/28/2024 9:03	9.6	99.4	1648	0.84	--	8.11
IMB FN 2	8/28/2024 10:44	8.9	103	765	0.37	--	7.65
IMB FN 3	8/28/2024 12:20	7.6	106.2	136.2	0.06	--	7.59
IMB FN 1	8/29/2024 8:37	10	100.3	1611	0.82	6.37	8.1
IMB FN 2	8/29/2024 9:54	9.2	104.1	573.8	0.28	13.37	7.2
IMB FN 3	8/29/2024 11:33	8.1	106.3	143.9	0.07	2.33	7.8
IMB FN 1	8/30/2024 8:51	9	96.7	1494	0.75	6.58	7.95
IMB FN 2	8/30/2024 10:32	8.6	103.3	774	0.38	7.29	7.69
IMB FN 3	8/30/2024 12:02	8	113	149.1	0.07	0.67	8.15
IMB FN 1	8/31/2024 9:18	8.4	98.3	1443	0.73	12.05	7.96
IMB FN 2	8/31/2024 10:21	7.9	102.8	741.5	0.36	17.67	7.51
IMB FN 3	8/31/2024 11:36	7.4	110.7	178.2	0.09	8.97	8.01

Table 11. Water quality data collected during the summer Imuruk Basin fish sampling surveys, Graphite One, 2024.

Site	Date and Time	Water	Dissolved	Specific	Salinity	Turbidity	pH
		Temperature (°C)	Oxygen Percent Saturation	Conductivity (µS/cm)			
IMB FN 1	9/1/2024 8:52	8.4	96	1465	0.74	8.83	7.92
IMB FN 2	9/1/2024 10:15	8	105.1	708.8	0.35	13.6	7.55
IMB FN 3	9/1/2024 11:58	7.9	107.6	300.1	0.14	4	7.99
<u>Gill Net Sites</u>							
IMB GN 4-1	6/20/2024 11:55	8.5	113.6	266.3	0.13	3.23	6.93
IMB GN 4-2	6/20/2024 14:22	10.8	110.9	698	0.34	8.7	7.38
IMB GN 4-3	6/21/2024 10:48	12.3	123	517.1	0.25	5.1	7.32
IMB GN 3-11	6/21/2024 10:48	12.3	123	517.1	0.25	5.1	7.32
IMB GN 4-4	6/21/2024 13:10	12.5	125	641	0.31	4.17	7.6
IMB GN 4-5	6/21/2024 13:10	12.5	125	641	0.31	4.17	7.6
IMB GN 4-6	6/21/2024 16:21	14.6	119.8	213.5	0.1	4.3	7.93
IMB GN 4-7	6/21/2024 17:33	15.3	130.4	183.4	0.09	3.87	7.7
IMB GN 4-8	6/22/2024 8:57	15.4	106.4	253.7	0.12	11.5	7.4
IMB GN 4-9	6/22/2024 13:45	11.4	133.3	605.7	0.3	6.3	8.24
IMB GN 4-10	6/22/2024 15:52	14.8	134.2	506.2	0.25	3.83	8.01
IMB GN 4-11	6/22/2024 16:32	5.5	134.5	90.8	0.05	3.57	7.2
IMB GN 2-1	6/23/2024 13:05	9.3	127.4	96.5	0.05	4.43	7.19
IMB GN 4-13	6/23/2024 15:40	17.5	124	641	0.31	4.5	7.63
IMB GN 4-12	6/23/2024 15:48	17.5	134.8	597	0.29	5.5	8.08
IMB GN 4-14	6/24/2024 15:05	17	132.4	690	0.34	3.8	8.34
IMB GN 4-15	6/24/2024 15:35	17.2	128.6	686	0.34	4.6	8.26
IMB GN 4	6/25/2024 8:40	12.8	118.5	595	0.29	9.1	7.67
IMB GN 4-16	6/25/2024 11:55	14.3	115.3	689	0.32	6.83	7.72
IMB GN 4-17	6/25/2024 14:42	13.8	129.9	504.5	0.26	3.37	7.37
IMB GN 4-18	6/25/2024 15:18	16.4	123.3	689	0.34	3.2	7.88
IMB GN 4-19	6/26/2024 9:41	13.7	120.3	636	0.31	8.3	7.77
IMB GN 4-20	6/26/2024 10:10	15.1	118.7	670	0.33	4	7.88
IMB GN 4-21	6/26/2024 13:53	15.8	126.2	673	0.33	3.26	7.93
IMB GN 4-22	6/26/2024 16:00	18.4	115.8	653	0.32	14.67	7.09
IMB GN 4-19	8/25/2024 14:25	7.2	110.9	217.2	0.1	8.7	8.11
IMB GN 4-21	8/25/2024 16:51	8.8	105.1	807	0.4	34.7	7.71
IMB GN 4-4	8/25/2024 18:34	8.9	112.2	1304	0.65	15.67	8.13
IMB GN 4-7	8/26/2024 11:40	6	107.5	146	0.07	12.67	7.68
IMB GN 4-16	8/26/2024 13:45	7.2	106.6	172.1	0.08	16.97	7.72
IMB GN 3-13	8/26/2024 15:49	7.8	101.9	745	0.37	27.3	7.27
IMB GN 4	8/27/2024 9:25	8.6	99	1598	0.81	20.4	7.87

Table 12. Mean salinity at each site by sampling period, Graphite One, 2024.

Site	Year	August/September	
		June Salinity (psu)	Salinity (psu)
IMB FN 1	2022	0.59	3.19
	2023	0.33	0.82
	2024	0.25	0.79
	Site mean	0.39	1.60
IMB FN 2	2022	0.42	1.05
	2023	0.27	0.34
	2024	0.26	0.35
	Site mean	0.31	0.58
IMB FN 3	2022	0.08	1.46
	2023	0.06	0.08
	2024	0.07	0.08
	Site mean	0.07	0.54
IMB FN 4	2022	0.19	0.55
	2023	0.11	0.10
	2024	0.07	--
	Site mean	0.12	0.32

Table 13. Imuruk Basin catch diversity (# of species), total catch, and catch per unit effort (CPUE; fish per 24 hours for fyke nets, fish per hour for gill nets) by sampling period, site, and method, Graphite One, 2024.

Sampling Period	Site¹	Diversity	Total Catch	CPUE
June	IMB FN 1	15	192	27.6
	IMB FN 2	14	236	34.4
	IMB FN 3	8	44	13.9
	IMB FN 4	8	143	36.6
	IMB GN 2-1	2	3	2.7
	IMB GN 3-11	4	8	5.7
	IMB GN 4	4	24	17.1
	IMB GN 4-1	3	5	4.2
	IMB GN 4-10	4	11	7.9
	IMB GN 4-11	3	8	4.2
	IMB GN 4-12	3	9	6.9
	IMB GN 4-13	3	5	3.8
	IMB GN 4-14	3	6	3.8
	IMB GN 4-15	2	6	4.6
	IMB GN 4-16	2	5	3.1
	IMB GN 4-17	3	8	5.7
	IMB GN 4-18	4	25	17.9
	IMB GN 4-19	2	5	3.8
	IMB GN 4-2	3	4	3.6
	IMB GN 4-20	2	7	5.8
	IMB GN 4-21	3	19	15.8
	IMB GN 4-22	3	12	9.2
	IMB GN 4-3	3	9	6.4
	IMB GN 4-4	4	11	9.2
	IMB GN 4-5	1	5	4.5
	IMB GN 4-6	2	3	2
	IMB GN 4-7	4	16	10.7
	IMB GN 4-8	4	17	10.6
	IMB GN 4-9	4	14	10.8
	Total²		18	860
August/ September	IMB FN 1	14	326	46.8
	IMB FN 2	12	405	58.2
	IMB FN 3	12	153	22.3
	IMB GN 3-13	5	13	7.6
	IMB GN 4	4	18	16.4
	IMB GN 4-16	1	2	1.5
	IMB GN 4-19	5	9	7.5
	IMB GN 4-21	3	3	3
	IMB GN 4-4	6	9	7.5
	IMB GN 4-7	2	2	1.5
	Total²		18	940
	Mosquito Pass Lake	1	17	8.6
	Shadow Lake	--	0	0

¹ FN=Fyke Net, GN=Gill Net.

²Total diversity is not a direct sum of the diversity column, but rather, a sum of the unique number of species across sites.

Table 14. Aerial salmon survey observation totals by year, species, and life stage, Graphite One, 2024.

Survey Summary		2019	2021	2023	2024
Number of aerial surveys flown		2	4	3	3
Number of streams surveyed		17	21	23	27
Total fish counted (live only)		128,116	11,638	9,196	4,000

Species Targeted	Life stage				
Pink salmon	Live	124,209	9,974	7,333	3,724
Pink salmon	Carcass	110,099	4,143	194	1,420
Chum salmon	Live	2,678	219	1,125	15
Chum salmon	Carcass	1,266	0	8	2
Coho salmon	Live	863	566	349	159
Coho salmon	Carcass	0	0	1	0
Sockeye salmon	Live	260	7	43	30
Sockeye salmon	Carcass	0	0	0	0
Chinook Salmon	Live	6	0	0	0
Chinook Salmon	Carcass	0	0	0	0
Dolly Varden	Live	100	872	346	72
Dolly Varden	Carcass	0	0	0	0

Table 15. Pink salmon upstream extent by survey time and stream reach, Graphite One, 2024.

Stream	Live				Carcass			
	Upstream Extent (mi)	Mid August	Late August	Mid September	Mid August	Late August	Mid September	Total
Cobblestone River	11.5	1,412	1	0	54	93	0	1,560
Fall Creek	1	242	20	0	27	52	0	341
GLA 1.0	--	0	0	0	0	0	0	0
GLA 1.130	--	--	--	0	--	--	0	0
Glacier Creek	--	0	0	0	0	0	0	0
Headwaters Canyon Creek	17	1,527	1	0	852	264	0	2,644
IMU 10.0	--	--	0	0	--	0	0	0
IMU 11.0	--	--	0	0	--	0	0	0
IMU 12.0	0	40	0	0	24	2	0	66
IMU 13.0	--	--	0	0	--	0	0	0
IMU 14.0	--	--	0	0	--	0	0	0
IMU 15.0	--	--	0	0	--	0	0	0
IMU 16.0	--	--	0	0	--	0	0	0
IMU 17.0	--	--	0	0	--	0	0	0
IMU 19.0	--	--	0	0	--	0	0	0
IMU 21.0A	--	--	0	0	--	0	0	0
IMU 21.0B	--	--	0	0	--	0	0	0
IMU 6.0	--	0	0	0	0	0	0	0
IMU 8.0	--	0	0	0	0	0	0	0
IMU 9.0	--	0	0	0	0	0	0	0
Oro Grande Creek	--	0	0	0	0	0	0	0
Pond Creek	3	456	1	0	40	12	0	509
Pond Creek Trib	--	--	0	0	--	0	0	0
Upper Sinuk River	--	0	0	0	0	0	0	0
White River	3	24	0	0	0	0	0	24
Windy Creek	--	0	0	0	0	0	0	0
Total	--	3,701	23	0	997	423	0	5,144

Table 16. Upstream extent for salmon species by stream and survey timing, Graphite One, 2024.

Stream	Chum salmon				Sockeye salmon				Coho salmon				Dolly Varden				Total
	Upstream Extent (mi)	Mid August	Late August	Mid September	Upstream Extent (mi)	Mid August	Late August	Mid September	Upstream Extent (mi)	Mid August	Late August	Mid September	Upstream Extent (mi)	Mid August	Late August	Mid September	
Cobblestone River	10	0	6	6	12	0	4	9	16	0	35	62	16.5	0	0	35	157
Fall Creek	--	0	0	0	--	0	0	0	0.5	0	4	5	--	0	0	0	9
GLA 1.0	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
GLA 1.130	--	--	--	0	--	--	--	0	--	--	--	0	--	--	--	0	0
Glacier Creek	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
Headwaters Canyon Creek	25	3	0	0	25.5	11	1	5	25.5	0	14	36	23.5	14	0	15	99
IMU 10.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 11.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 12.0	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
IMU 13.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 14.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 15.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 16.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 17.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 19.0	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 21.0A	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 21.0B	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
IMU 6.0	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
IMU 8.0	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
IMU 9.0	--	0	0	0	--	0	0	0	--	0	0	0	--	0	0	0	0
Oro Grande Creek	--	0	0	0	--	0	0	0	--	0	0	0	4.5	1	0	0	1
Pond Creek	--	0	0	0	--	0	0	0	--	0	0	0	2.5	0	0	1	1
Pond Creek Trib	--	--	0	0	--	--	0	0	--	--	0	0	--	--	0	0	0
Upper Sinuk River	--	0	0	0	--	0	0	0	3.5	0	0	3	0	4	0	0	7
White River	--	0	0	0	--	0	0	0	--	0	0	0	4	1	0	0	1
Windy Creek	--	0	0	0	--	0	0	0	--	0	0	0	0	0	1	0	1
Totals		3	6	6		11	5	14		0	53	106		20	1	51	276

Table 17. Length, sex, maturity state, and location caught for Dolly Varden sampled during fall 2024 spawning studies, Graphite One, 2024.

Site	Latitude	Longitude	Date	Length (mm)	Sex	Maturity
IMB GN 3-13	65.049000	-165.679000	8/26/2024	334	M	Ripe
IMB FN1	65.072092	-165.726540	8/29/2024	430	F	Green
IMB FN2	65.047203	-165.661602	8/29/2024	452	F	Green
IMB FN2	65.047203	-165.661602	8/31/2024	320	F	Ripe
COB AN 14	65.047593	-165.473562	8/31/2024	620	F	Spent
COB AN 7	65.059700	-165.475591	8/31/2024	460	M	Non-spawner
COB AN 4	65.041211	-165.475279	9/16/2024	490	F	Non-spawner
COB AN 10	65.062733	-165.472859	9/16/2024	630	F	Green
COB AN 10	65.062733	-165.472859	9/17/2024	440	M	Non-spawner
COB AN 11	65.049345	-165.477134	9/17/2024	355	F	Non-spawner
COB AN 11	65.049343	-165.477134	9/17/2024	430	M	Spent
COB AN 11	65.049343	-165.477134	9/17/2024	490	F	Non-spawner
COB AN 11	65.049343	-165.477134	9/17/2024	515	M	Ripe
COB AN 11	65.049343	-165.477134	9/17/2024	370	F	Non-spawner
COB AN 4	65.041211	-165.475279	9/18/2024	560	F	Spent
COB AN 10	65.062733	-165.472859	9/18/2024	480	F	Spent
COB AN 10	65.062733	-165.472859	9/18/2024	540	F	Ripe
COB AN 11	65.049343	-165.477134	9/18/2024	430	F	Ripe

Table 18. The number of Dolly Varden of each sex and maturity state sampled during spawning season surveys at all sites sampled 2021–2024, Graphite One, 2024.

Year	River	Site	Latitude	Longitude	Period ¹	Sex	Maturity	Count
2021	Headwaters Canyon Creek	HCC AN 3	64.93155	-165.91370	Early September	Female	Non-spawner	3
2021	Headwaters Canyon Creek	HCC AN 3	64.93155	-165.91370	Early September	Female	Green	3
2021	Headwaters Canyon Creek	HCC AN 3	64.93155	-165.91370	Early September	Female	Spent	3
2021	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Female	Non-spawner	2
2021	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Female	Spent	1
2021	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Male	Non-spawner	1
2021	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Male	Green	3
2022	Cobblestone River	COB AN 2	65.05601	-165.47420	Early September	Female	Spent	1
2022	Cobblestone River	COB AN 3	65.05043	-165.48137	Early September	Female	Green	1
2022	Cobblestone River	COB AN 3	65.05043	-165.48137	Early September	Female	Ripe	1
2022	Cobblestone River	COB AN 3	65.05043	-165.48137	Early September	Female	Spent	3
2022	Cobblestone River	COB AN 3	65.05043	-165.48137	Early September	Male	Green	1
2022	Cobblestone River	COB AN 5	65.04325	-165.47104	Early September	Female	Spent	4
2023	Cobblestone River	COB 1	65.06297	-165.47294	Early September	Female	Ripe	1
2023	Cobblestone River	COB 1	65.06297	-165.47294	Early September	Male	Ripe	1
2023	Cobblestone River	COB AN 10	65.06273	-165.47283	Late September	Female	Non-spawner	1
2023	Cobblestone River	COB AN 10	65.06273	-165.47283	Late September	Female	Spent	1
2023	Cobblestone River	COB AN 11	65.04934	-165.47711	Late September	Female	Non-spawner	4
2023	Cobblestone River	COB AN 11	65.04934	-165.47711	Late September	Female	Spent	8
2023	Cobblestone River	COB AN 12	65.02964	-165.48345	Late September	Female	Non-spawner	2
2023	Cobblestone River	COB AN 12	65.02964	-165.48345	Late September	Female	Spent	8
2023	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Female	Non-spawner	1
2023	Cobblestone River	COB AN 4	65.04121	-165.47525	Early September	Female	Spent	1
2023	Cobblestone River	COB AN 4	65.04121	-165.47525	Late September	Female	Spent	1
2023	Cobblestone River	COB AN 5	65.04325	-165.47104	Late September	Female	Non-spawner	2
2023	Cobblestone River	COB AN 5	65.04325	-165.47104	Late September	Female	Spent	16
2023	Cobblestone River	COB AN 5	65.04325	-165.47104	Late September	Male	Non-spawner	2
2023	Cobblestone River	COB AN 5	65.04325	-165.47104	Late September	Male	Ripe	1
2023	Cobblestone River	COB AN 5	65.04325	-165.47104	Late September	Male	Spent	2
2023	Cobblestone River	COB AN 7	65.05985	-165.47619	Early September	Female	Green	2
2023	Cobblestone River	COB AN 7	65.05985	-165.47619	Early September	Female	Ripe	2
2023	Cobblestone River	COB AN 7	65.05985	-165.47619	Early September	Female	Spent	1
2024	Imuruk Basin	IMB GN 3-13	65.04900	-165.67900	Early September	Male	Ripe	1
2024	Imuruk Basin	IMB FN 1	65.07209	-165.72654	Early September	Female	Green	1
2024	Imuruk Basin	IMB FN 2	65.04720	-165.66160	Early September	Female	Green	1
2024	Imuruk Basin	IMB FN 2	65.04720	-165.66160	Early September	Female	Ripe	1
2024	Cobblestone River	COB AN 14	65.04759	-165.47356	Early September	Female	Spent	1
2024	Cobblestone River	COB AN 7	65.05970	-165.47559	Early September	Male	Non-spawner	1
2024	Cobblestone River	COB AN 4	65.04121	-165.47528	Late September	Female	Non-spawner	1
2024	Cobblestone River	COB AN 10	65.06273	-165.47286	Late September	Female	Green	1
2024	Cobblestone River	COB AN 10	65.06273	-165.47286	Late September	Male	Non-spawner	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Female	Non-spawner	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Male	Spent	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Female	Non-spawner	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Male	Ripe	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Female	Non-spawner	1
2024	Cobblestone River	COB AN 4	65.04121	-165.47528	Late September	Female	Spent	1
2024	Cobblestone River	COB AN 10	65.06273	-165.47286	Late September	Female	Spent	1
2024	Cobblestone River	COB AN 10	65.06273	-165.47286	Late September	Female	Ripe	1
2024	Cobblestone River	COB AN 11	65.04934	-165.47713	Late September	Female	Ripe	1

¹ Early September refers to sampling dates before September 11.

Table 19. Sites sampled for fish habitat and presence along the proposed Graphite One road alignment, sorted in order of ascending latitude, Graphite One, 2024.

Site ^{1,2}	Latitude	Longitude	Years sampled	Species caught ³	Anadromous fish caught	Anadromous Waters Catalog (AWC) number	Notes
C0001	64.869672	-165.264008	2021	--	No	333-10-11250	Listed in AWC; no need to sample.
Nome River Bridge	64.869824	-165.265165	2021	--	No	333-10-11250	Listed in AWC; no need to sample.
C0002	64.870528	-165.270359	2021	NONE	No		Sampled as part of C0003 because it is part of the same floodplain.
C0003	64.870599	-165.270883	2021	SLSC, CHAR, COHO	Yes		
Buffalo Creek Bridge	64.872061	-165.28984	2021, 2023	NONE	No		
C0004_prev	64.877555	-165.335292	2021	--	No		Not sampled; not enough flow.
C0006	64.878329	-165.342566	2021, 2024	--	No		Not sampled; not enough flow.
C0005	64.878403	-165.341633	2021, 2024	--	No		Not sampled; not enough flow.
Sinuk River Bridge	64.884368	-165.380333	2021	SLSC, CHAR	Yes		
C0007	64.886857	-165.42906	2021	--	No		Sampled as part of C0008.
C0008	64.887554	-165.430179	2021	CHAR	Yes		C0007 was sampled as part of C0008. They are part of the same floodplain.
C0010_prev	64.89685	-165.437225	2021	--	No		Not sampled; not enough flow.
C0010	64.896979	-165.446509	2024	--	No		Channel is slough of Windy Creek.
C0011_prev	64.90211	-165.436951	2021	--	No		Only sampled water quality. Aluminum precipitate in stream.
C0012_prev	64.904742	-165.436816	2021	--	No		Not sampled; not enough flow.
C0011	64.908327	-165.451274	2024	NONE	No		
C0013_prev	64.909117	-165.438754	2021, 2023	SLSC	No		Not sampled; not enough flow in 2021. Revisited in 2023 at higher flow conditions.
C0014_prev	64.909396	-165.444534	2021	--	No		Not sampled; not enough flow.
Windy Creek Bridge	64.90943	-165.441871	2021	SLSC	No		
C0012	64.920334	-165.459705	2024	--	No		Not sampled; not enough flow.
C0013	64.920668	-165.459957	2024	--	No		Not sampled; not enough flow.
C0015_prev	64.92072	-165.457896	2021	--	No		Not sampled; not enough flow.
C0014	64.923692	-165.462238	2021, 2024	--	No		Not sampled; not enough flow.
C0015	64.935444	-165.476691	2024	--	No		Small pond, outlet may have below ground flow. Fish unlikely.
C0016	64.940589	-165.476674	2024	--	No		Not sampled; not enough flow.
C0017_prev	64.940954	-165.484425	2021	--	No		Not sampled; not enough flow.
C0017	64.942869	-165.478383	2024	--	No		Not sampled; no visible flow.
C0018	64.943742	-165.478526	2024	NONE	No		
C0018_prev	64.944951	-165.481589	2021, 2023	CHAR	Yes		
C0019	64.961581	-165.479735	2021, 2023	NONE	No		
C0020	64.964262	-165.482423	2021	--	No		Not sampled; not enough flow.

Table 19. Sites sampled for fish habitat and presence along the proposed Graphite One road alignment, sorted in order of ascending latitude, Graphite One, 2024.

Site ^{1,2}	Latitude	Longitude	Years sampled	Species caught ³	Anadromous fish caught	Anadromous Waters Catalog (AWC) number	Notes
C0021	64.96761	-165.487774	2021, 2023	NONE	No		Very high water gradient and flow. Rock cascades (small waterfalls). Sampled as part of C0022.
C0022	64.968237	-165.488598	2021, 2023	NONE	No		Very high gradient and flow, rocky cascades and high flow. Site C0021 was sampled as part of site C0022.
C0023	64.970731	-165.489969	2021	--	No		Not sampled; not enough flow.
C0024	64.974126	-165.490532	2021	--	No		Not sampled; not visible flow.
C0025	64.978338	-165.490996	2021	--	No		Not sampled; no visible flow.
C0026	64.981336	-165.490901	2021	--	No		Not sampled; not enough flow.
C0027	64.984666	-165.490772	2021	--	No		Not sampled; no visible flow.
Osburn Creek Bridge	64.992587	-165.48977	2021	CHAR, SLSC	Yes		
C0028_prev	64.996189	-165.489228	2021	--	No		Not sampled; no visible flow.
C0029_prev	65.006454	-165.489193	2021	--	No		Not sampled; gradient too high.
C0030_prev	65.00828	-165.48867	2021	--	No		Not sampled; no visible flow.
Cobblestone River Bridge	65.012926	-165.489871	2021	--	No	332-00-10270	Listed in AWC; no need to sample.
C0031_prev	65.013608	-165.492563	2021	--	No	332-00-10270	Listed in AWC; no need to sample.
C0031	65.013758	-165.486971	2024	--	No		Not sampled; no visible flow, very steep gradient.
C0032_prev	65.014502	-165.496129	2021	--	No	332-00-10270	Listed in AWC; no need to sample.
C0033_prev	65.014857	-165.497545	2021	--	No	332-00-10270	Listed in AWC; no need to sample.
C0034_prev	65.015366	-165.49911	2021	--	No	332-00-10270	Listed in AWC; no need to sample.
C0032	65.016808	-165.486675	2024	CHAR	Yes		
C0035_prev	65.018441	-165.499453	2021	--	No		Not sampled; not enough flow.
C0033	65.020464	-165.486113	2024	--	No		Not sampled; no visible flow.
C0034	65.021438	-165.484847	2024	--	No		Not sampled; no visible flow.
C0036_prev	65.025402	-165.495169	2021	--	No		Not sampled; not enough flow.
C0035	65.02718	-165.480012	2024	NONE	No		
C0037_prev	65.031214	-165.496034	2021	--	No		Not sampled; not enough flow.
C0038_prev	65.033142	-165.496673	2021	--	No		Not sampled; not enough flow.
C0037	65.033972	-165.484699	2024	NONE	No		
C0039	65.04179	-165.50512	2021, 2024	NONE	No		
C0038	65.042668	-165.49167	2024	NONE	No		
C0040_prev	65.043921	-165.521762	2021	--	No		Not sampled; no visible flow.
C0041_prev	65.044061	-165.523033	2021	--	No		Not sampled; no visible flow.

Table 19. Sites sampled for fish habitat and presence along the proposed Graphite One road alignment, sorted in order of ascending latitude, Graphite One, 2024.

Site^{1,2}	Latitude	Longitude	Years sampled	Species caught³	Anadromous fish caught	Anadromous Waters Catalog (AWC) number	Notes
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¹ Road alignment stream intersections will be crossed with either a bridge or a culvert. Culvert crossings start with "C" and are followed by four numbers. Bridge crossings have "bridge" in the name.

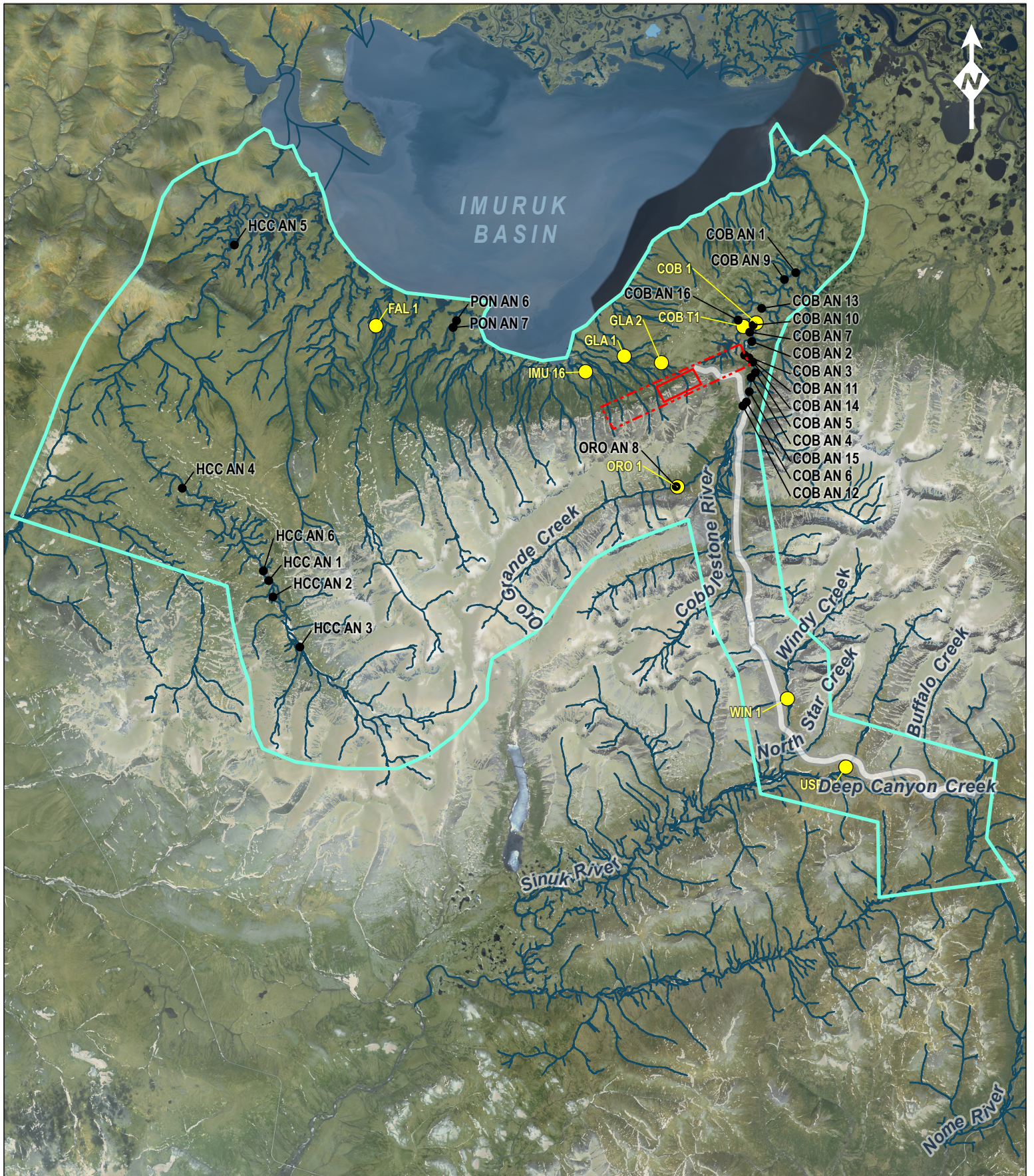
² The proposed road alignment route was changed in 2024 but the same site names were used for the new alignment. To avoid confusion, site names from the previous road alignment for sites that changed location have been renamed with the "_prev" suffix.

³ SLSC = Slimy sculpin, CHAR = Dolly Varden, COHO = Coho salmon.

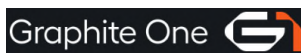
Table 20. Total Mosquito Pass Lake Dolly Varden catch quantity and length, Graphite One, 2024.

Site	Date	Species	Length (mm)
Mosquito Pass Lake			
64.943349°, -165.480917	8/14/2024	Dolly Varden	113
	8/14/2024	Dolly Varden	126
	8/14/2024	Dolly Varden	224
	8/14/2024	Dolly Varden	141
	8/14/2024	Dolly Varden	164
	8/14/2024	Dolly Varden	158
	8/14/2024	Dolly Varden	124
	8/14/2024	Dolly Varden	120
	8/14/2024	Dolly Varden	120
	8/14/2024	Dolly Varden	104
	8/14/2024	Dolly Varden	115
	8/14/2024	Dolly Varden	108
	8/14/2024	Dolly Varden	91
	8/14/2024	Dolly Varden	84
	8/14/2024	Dolly Varden	71
8/14/2024	Dolly Varden	119	
8/14/2024	Dolly Varden	107	
Shadow Lake			
64.943308°, -165.455769	8/14/2024	No Fish Caught	

FIGURES



- 2024 Study Area
- Biomonitoring Sampling Location
- Rod and Reel Sampling Location
- Proposed Mosquito Pass Access Road
- Indicated Resource Area
- Inferred Resource Area



2024 AQUATIC BASELINE STUDIES

BIOMONITORING AND ROD AND REEL SAMPLING SITES

GRAPHITE ONE

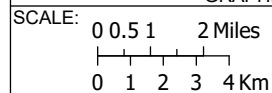
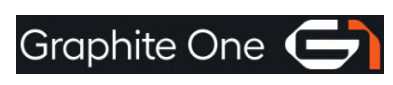


FIGURE:

1



- | | |
|----------------------|--------------------------------------|
| Sample Method | Resource Area |
| ■ Fyke Net | ▭ Indicated Resource Area |
| ■ Gill Net | ▭ Inferred Resource Area |
| | ▬ Proposed Mosquito Pass Access Road |



2024 AQUATIC BASELINE STUDIES

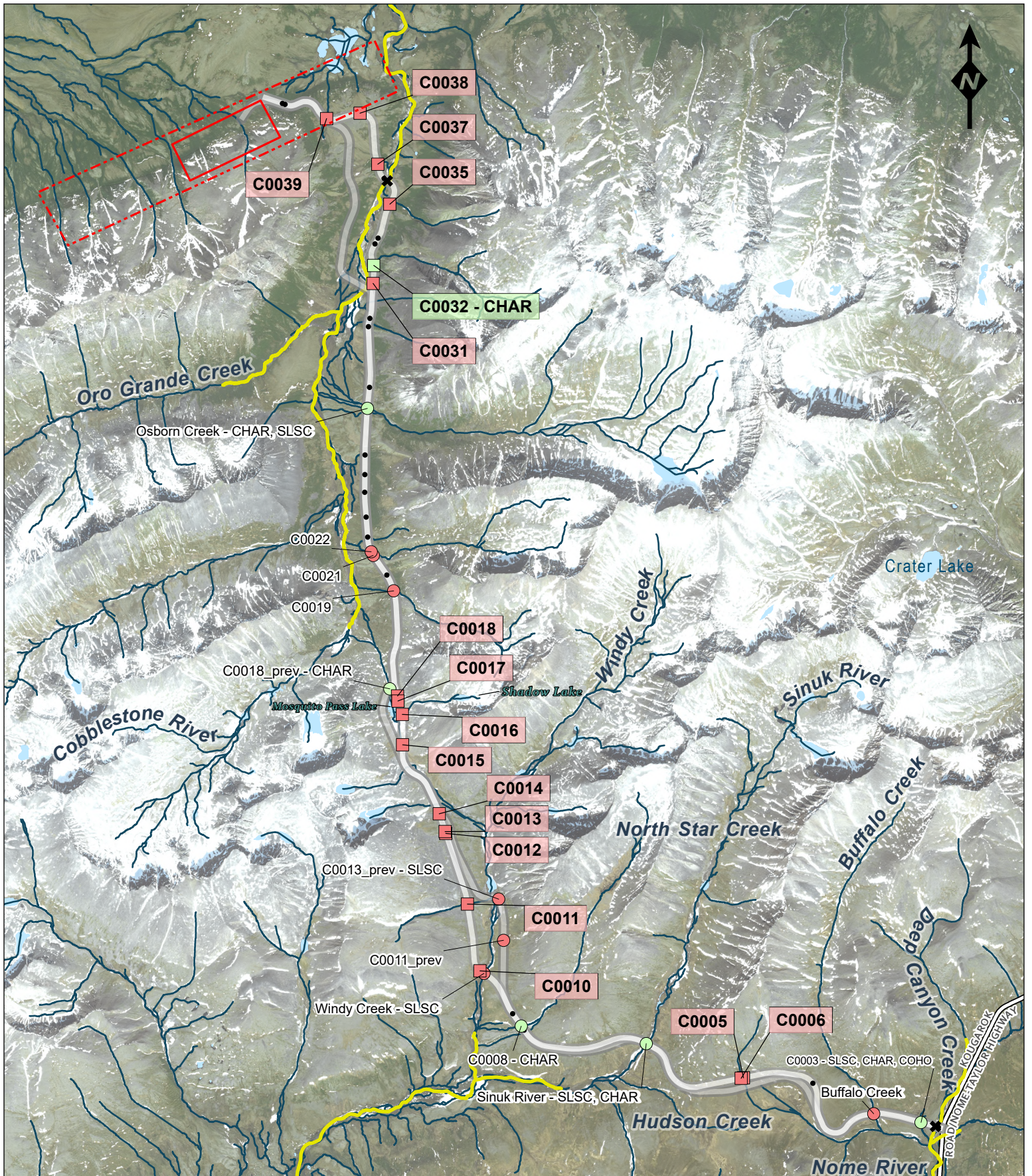
IMURUK BASIN SURVEY SITES

GRAPHITE ONE

SCALE: 0 0.25 0.5 1 Miles / 0 0.25 0.5 1 Km

FIGURE: **2**

GRA078 aprx, 1/22/2025 1:52 PM, R02



Anadromous Fish Caught

- No
- Yes

Pre-2024 Sampling Locations - Anadromous

- No
- Yes

Stream Crossings

- Culvert
- ✕ Bridge

Resource Area

- Indicated Resource Area
- Inferred Resource Area
- Proposed Mosquito Pass Access Road
- Pre-2024 Mosquito Pass Access Road
- Anadromous Waters



2024 AQUATIC BASELINE STUDIES

ROAD-STREAM CROSSING SAMPLING LOCATIONS

GRAPHITE ONE

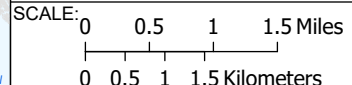


FIGURE:

3

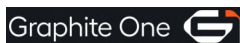


Figure 4. Outlet streams draining Mosquito Pass Lake a) and Shadow Lake b) in Mosquito Pass. The Shadow Lake outlet stream drops off sharply at the right-hand edge of the photo, Graphite One, 2024.

a)



b)



Figure 5. Adult resident Dolly Varden captured in 2023 in the Mosquito Pass Lake outlet a), a typical stream-caught juvenile Dolly Varden sampled at FAL 1 in 2022 b), and a representative adult Dolly Varden captured in Mosquito Pass Lake during 2024 fyke net sampling c), Graphite One, 2024.

a)



b)



c)



Figure 6. Water quality measured at biomonitoring sites sampled in 2019 and 2021–2024, Graphite One, 2024.

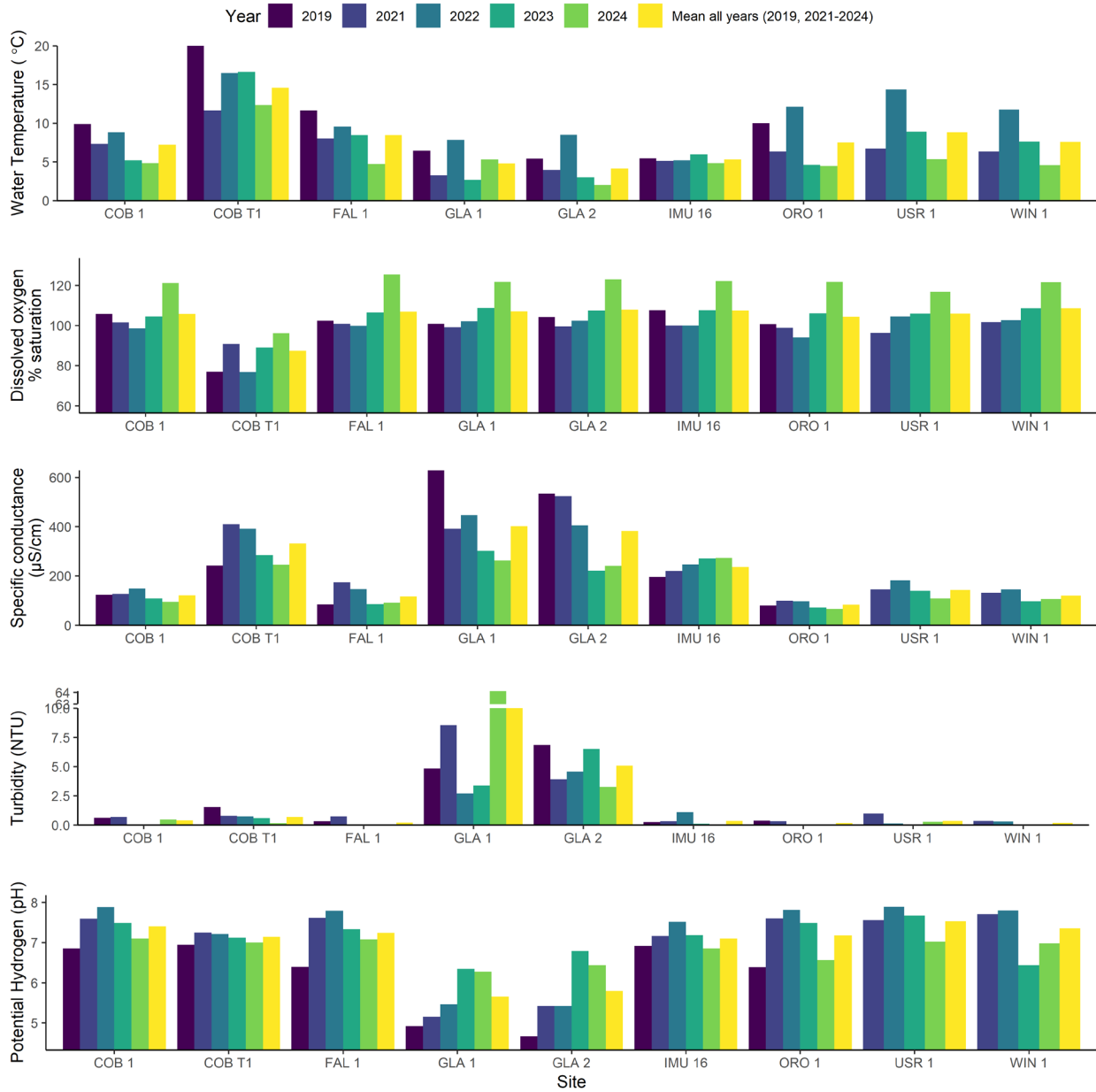


Figure 7. Total streamflow volume, or discharge, at biomonitoring sites surveyed in 2021–2024, Graphite One, 2024.

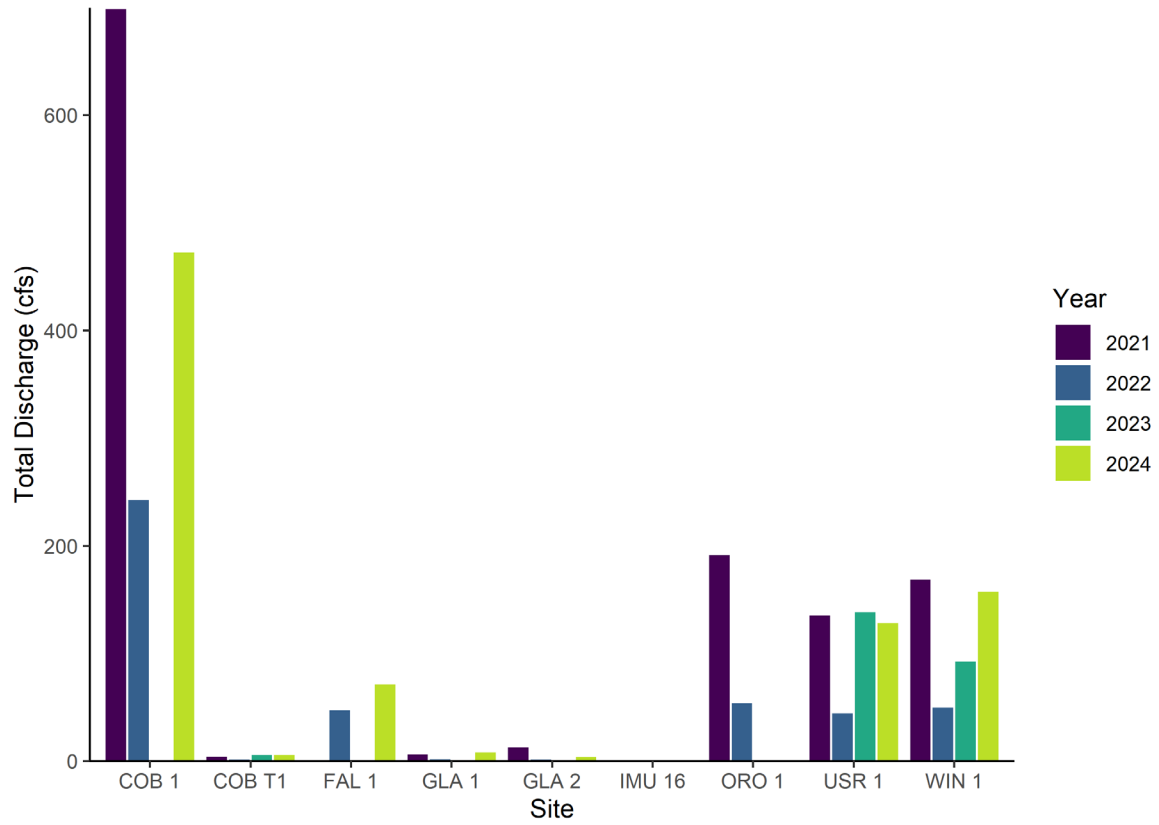


Figure 8. Periphyton standing crop density as described by chlorophyll-a, -b, and -c concentrations shown by biomonitoring site and year, 2019 and 2021–2024, Graphite One, 2024.

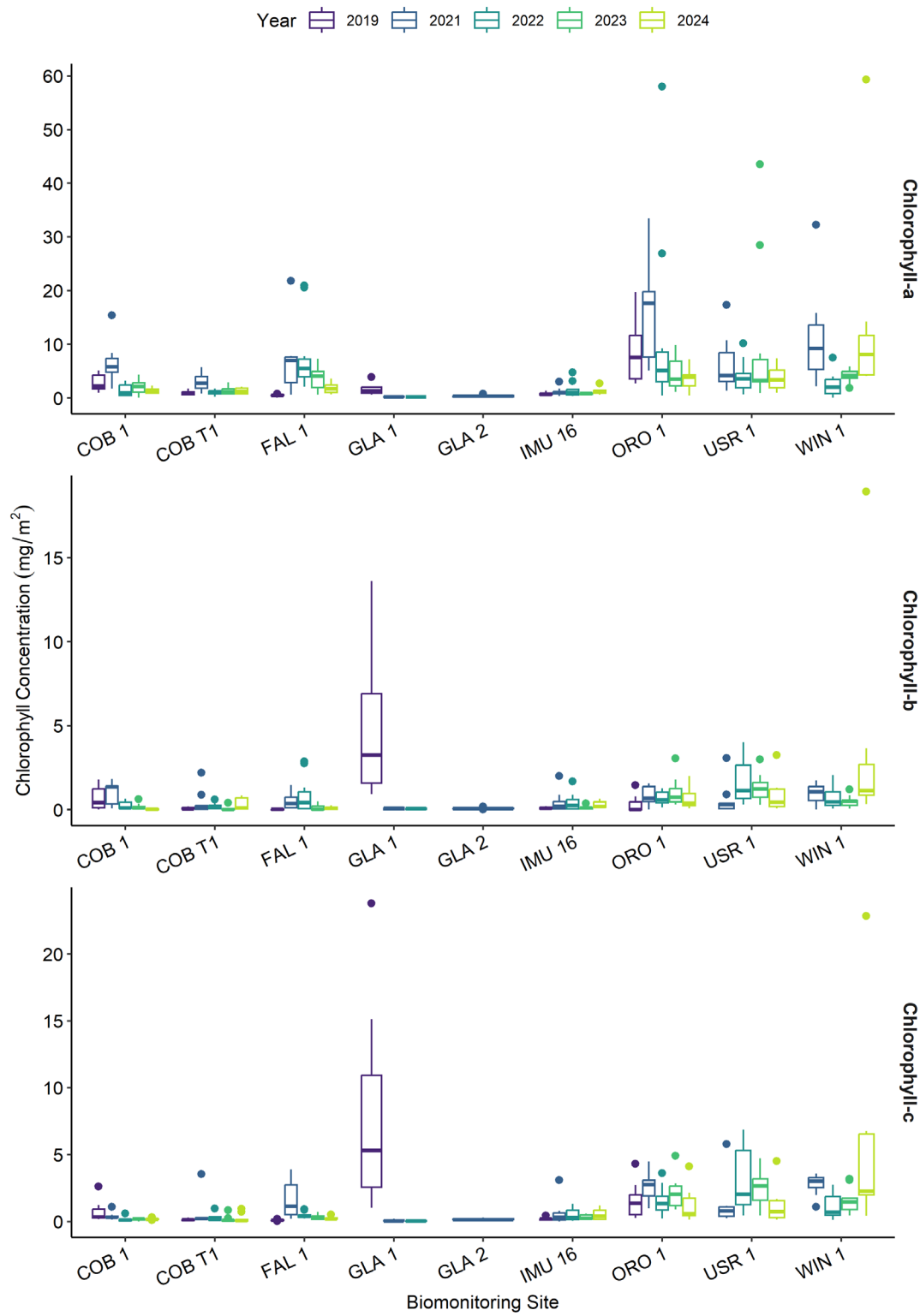


Figure 9. Mean proportions of chlorophyll-a, -b, and -c at biomonitoring sites, 2019 and 2021–2024, Graphite One, 2024.

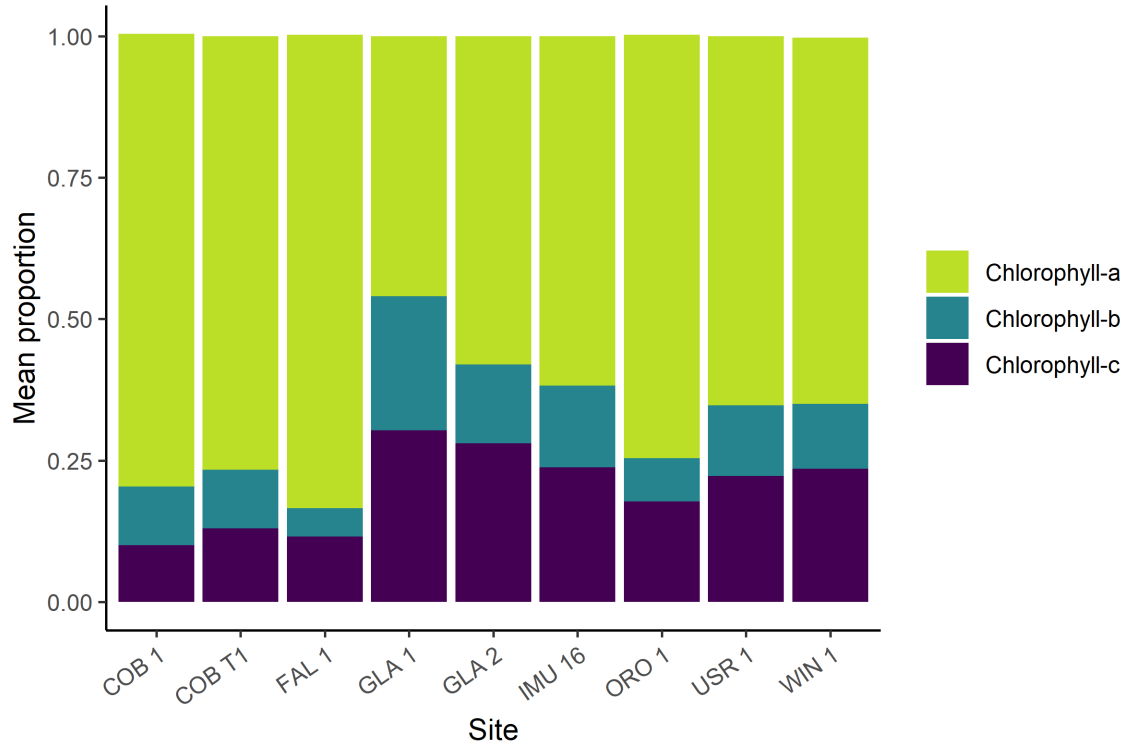


Figure 10. Macroinvertebrate density by biomonitoring site and year, 2019 and 2021–2024, Graphite One, 2024.

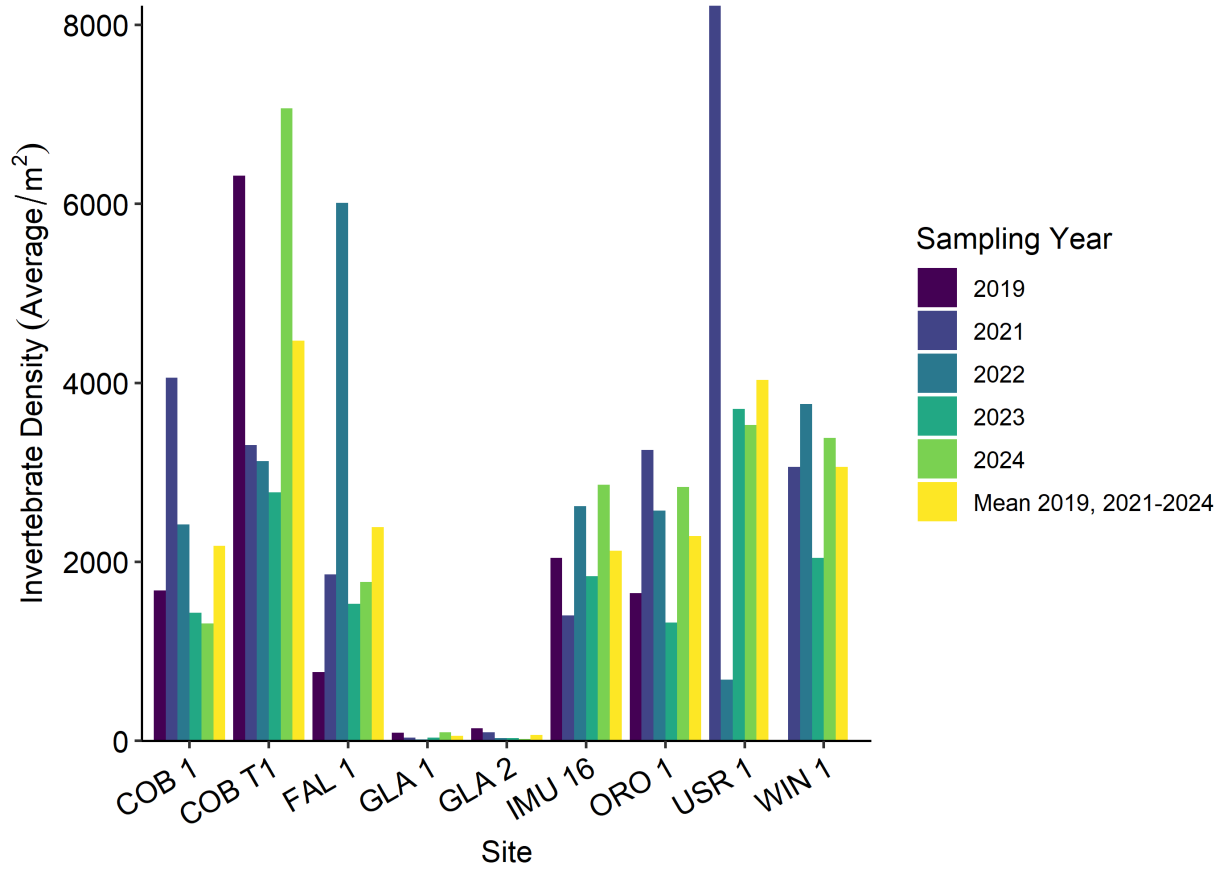


Figure 11. Percent of Ephemeroptera, Plecoptera, and Trichoptera out of total Insecta taxa by biomonitoring site and year, 2019 and 2021–2024, Graphite One, 2024.

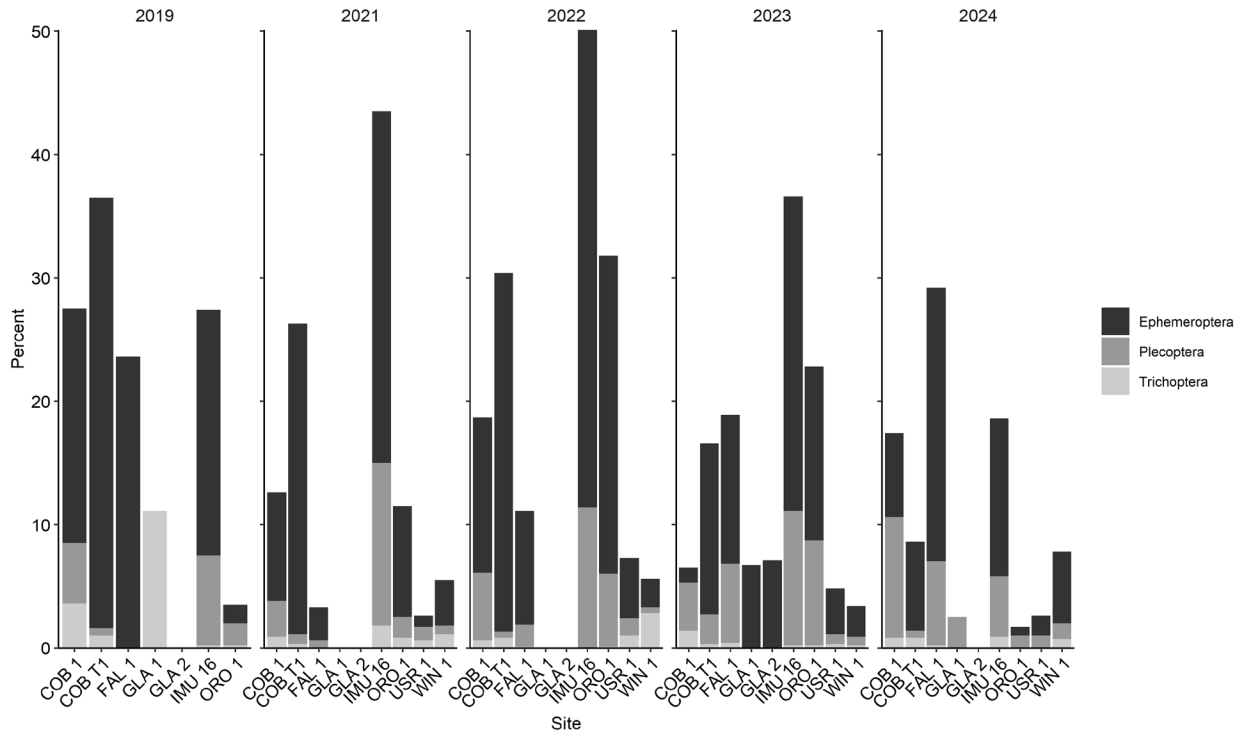


Figure 12. Catch per unit effort (CPUE) for electrofishing and minnow traps at biomonitoring sites, 2019 and 2021–2024, Graphite One, 2024.

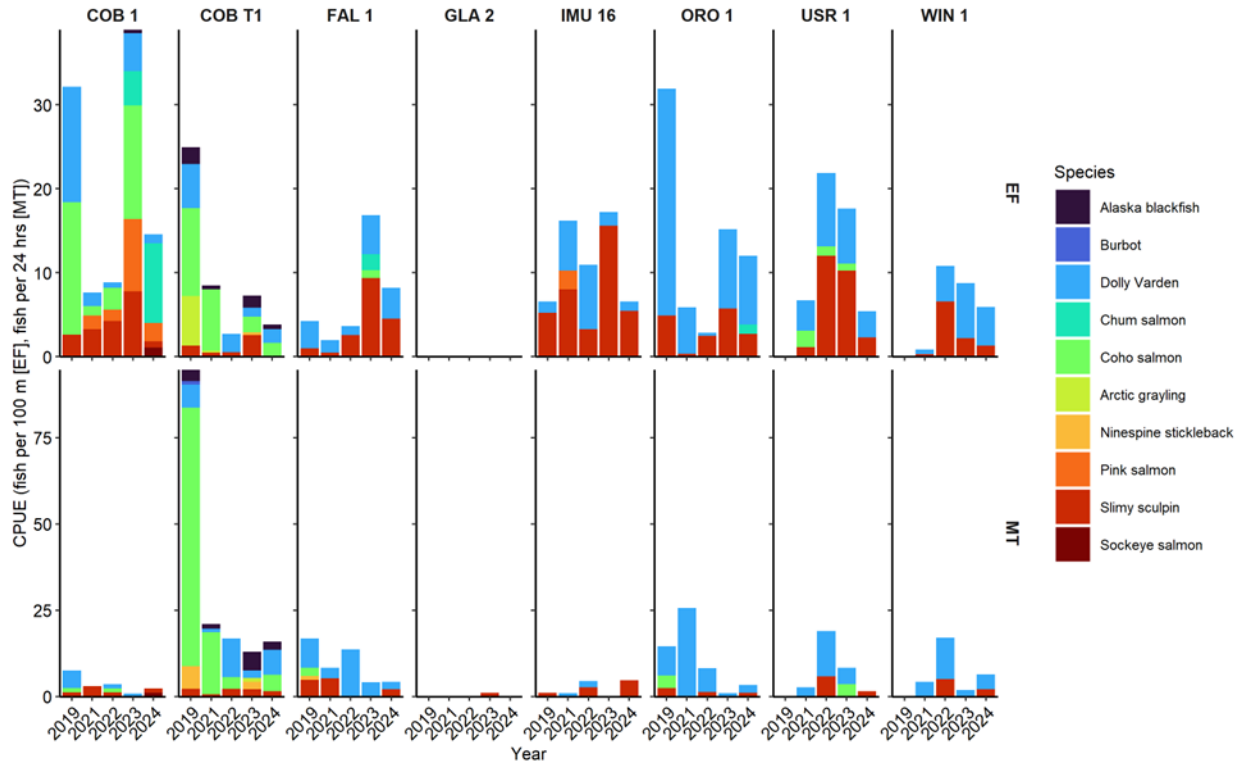


Figure 13. Length frequency distributions of juvenile Dolly Varden and coho salmon at biomonitoring sites, 2019 and 2021–2024, Graphite One, 2024.

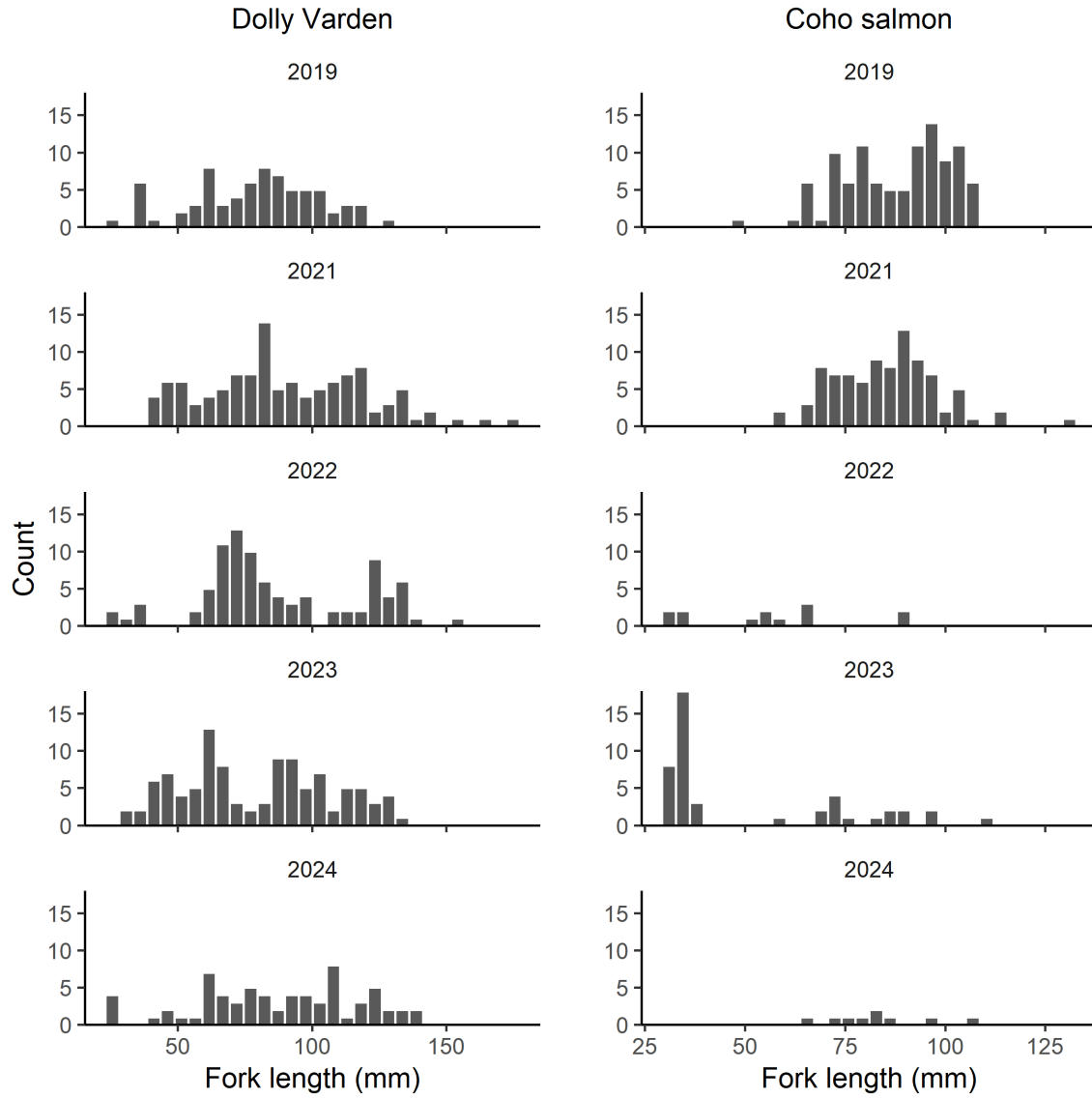


Figure 14. Juvenile Dolly Varden fish element concentrations by biomonitoring site and year, 2019 and 2021–2024, Graphite One, 2024.

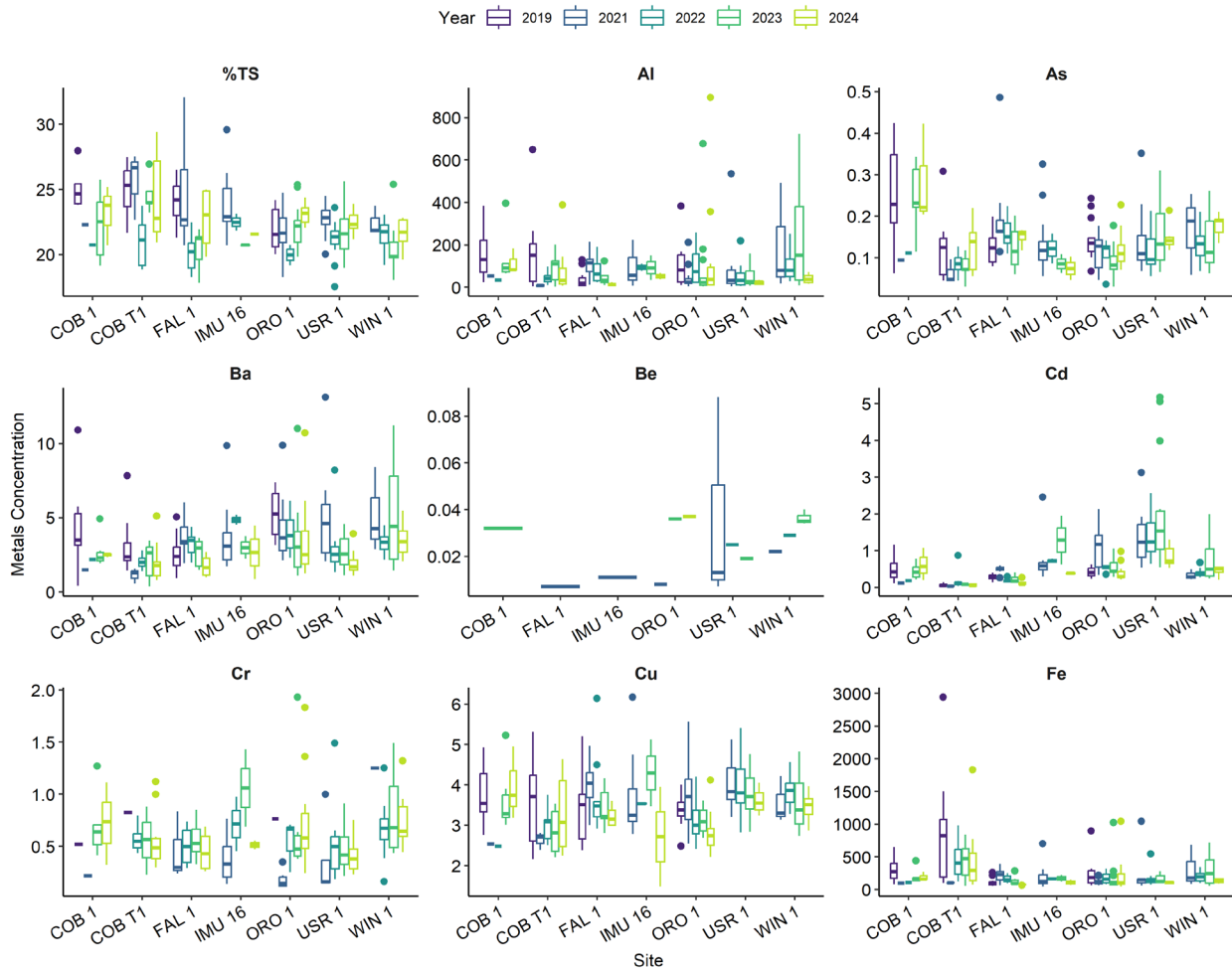


Figure 14. Juvenile Dolly Varden fish element concentrations by biomonitoring site and year, 2019 and 2021–2024, Graphite One, 2024.

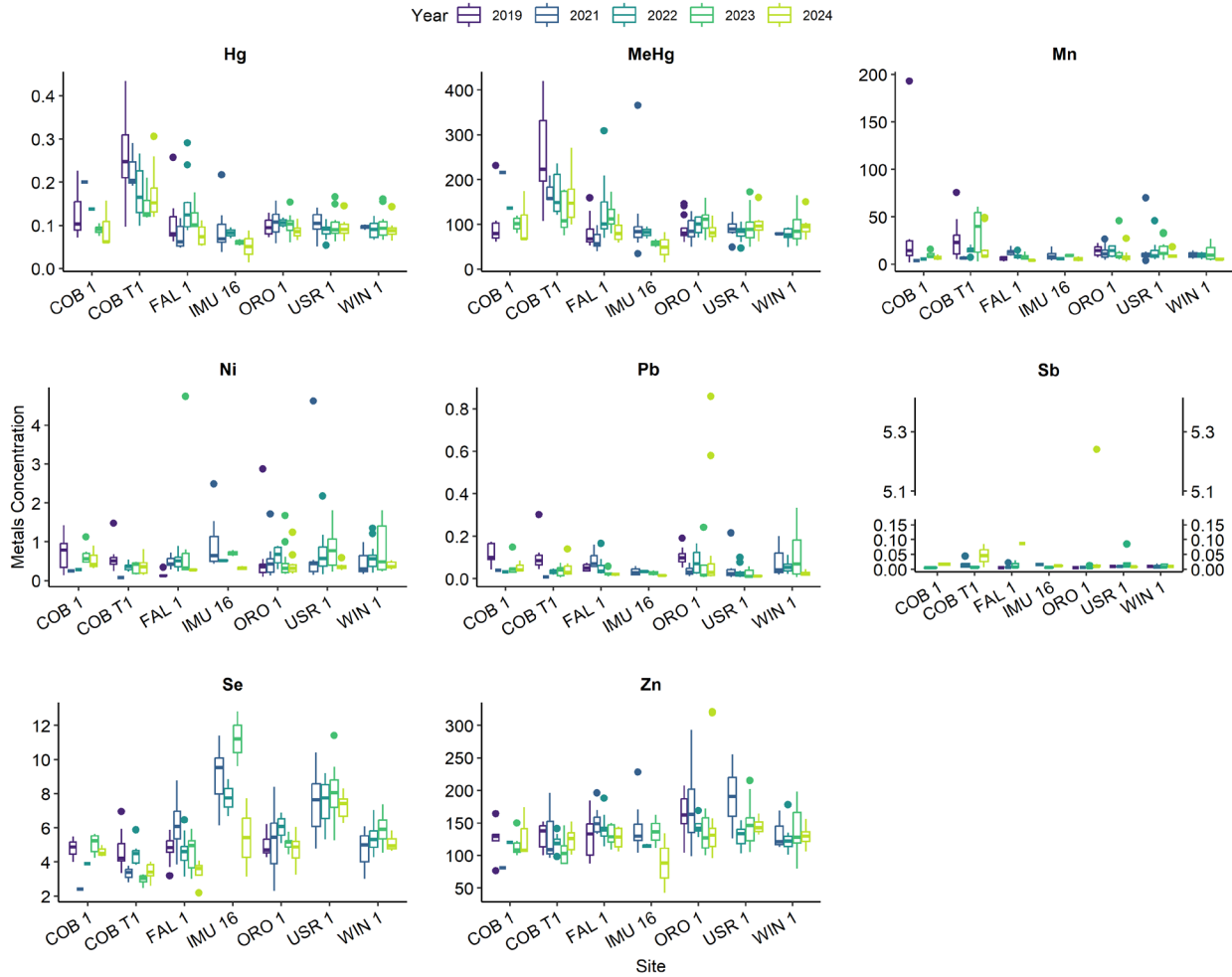


Figure 15. Catch per unit effort (CPUE) by species for fyke nets in Imuruk Basin during spring and fall sampling periods, 2022–2024, Graphite One, 2024.

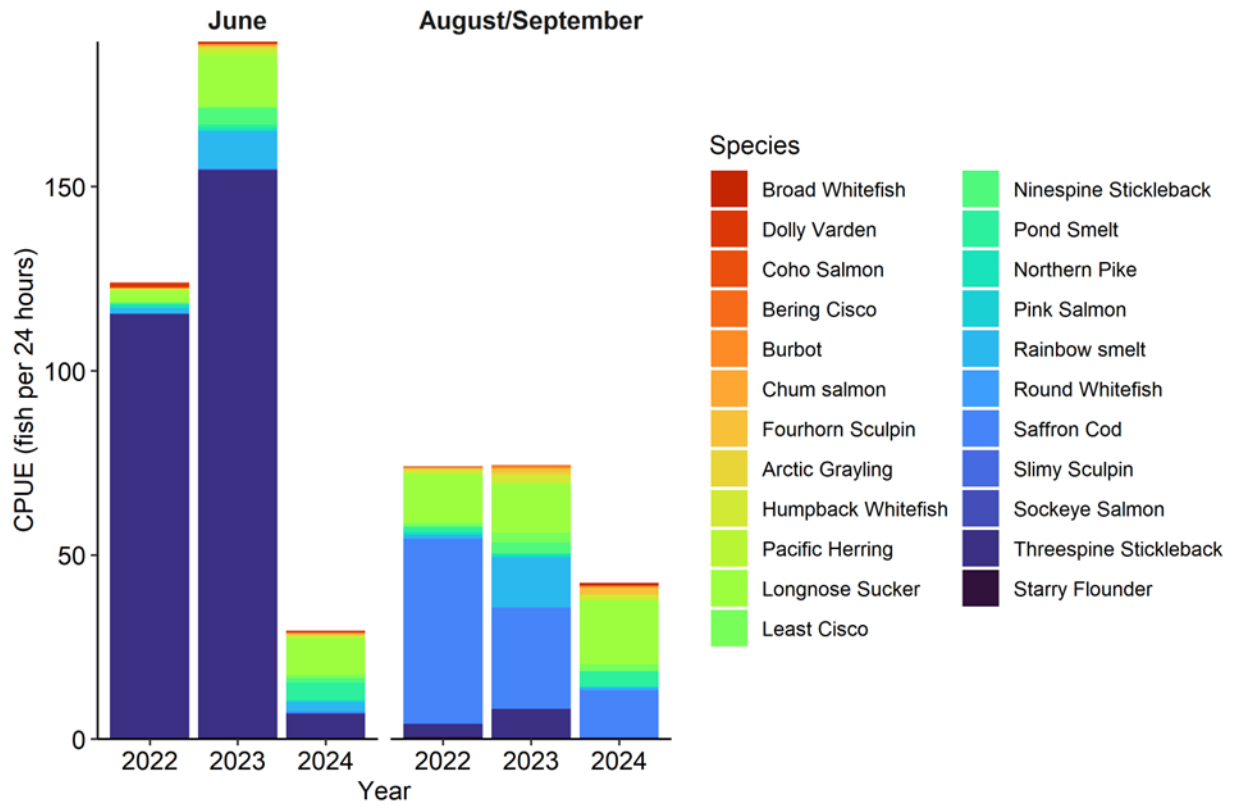


Figure 16. Proportion of each fish species caught out of the total at each site for fyke nets (large circles) and a random subset of gill nets (small circles) in Imuruk Basin in 2024, Graphite One, 2024.

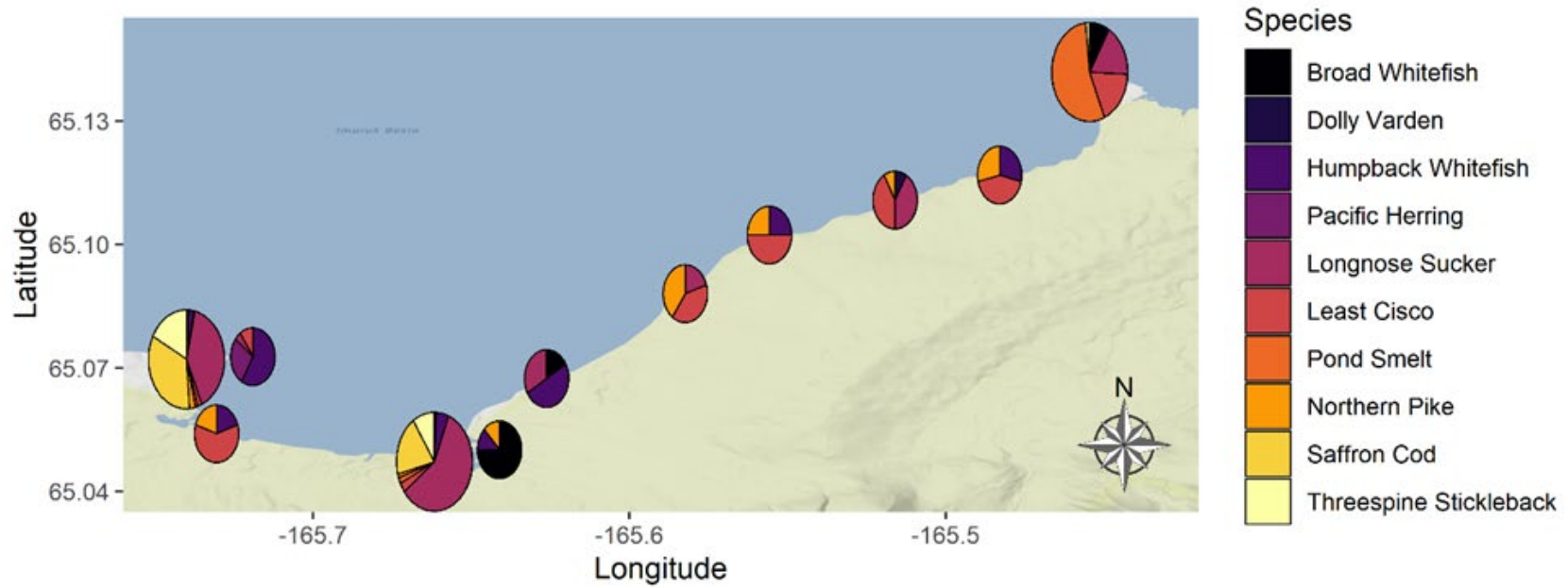


Figure 17. Water temperature at fyke net sites during sampling in Imuruk Basin, Graphite One, 2024.

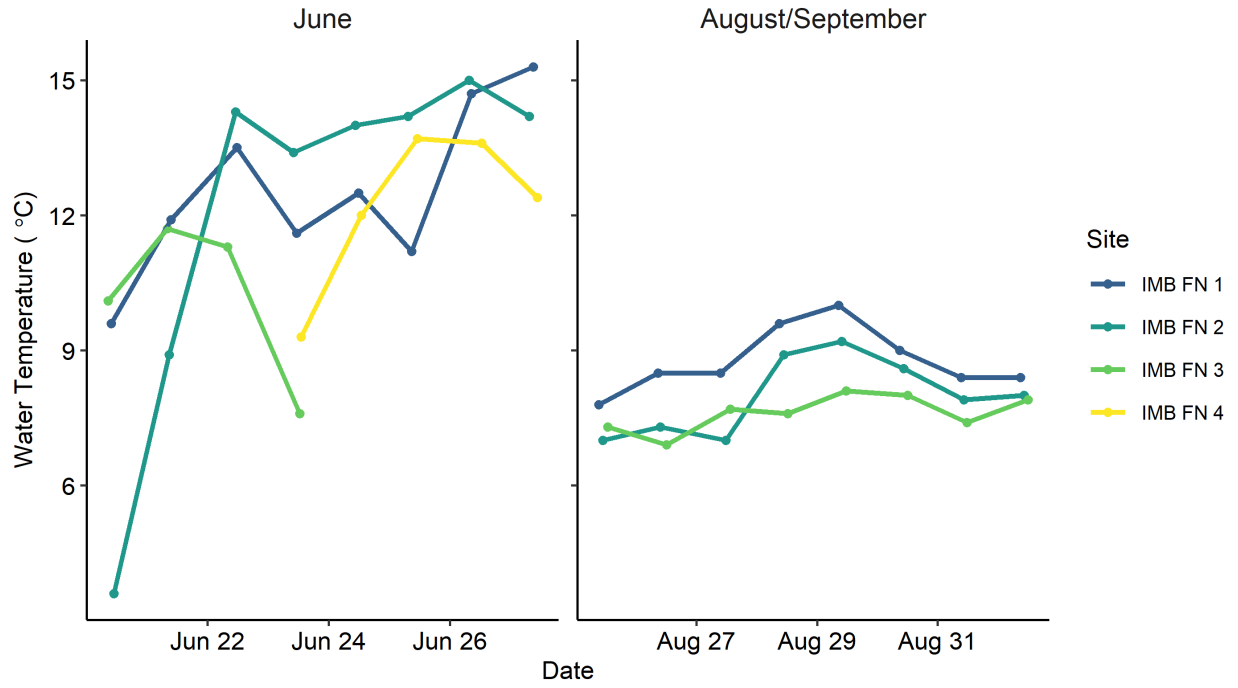


Figure 18. Water temperature averaged across fyke net sites in Imuruk Basin, 2022–2024, Graphite One, 2024.

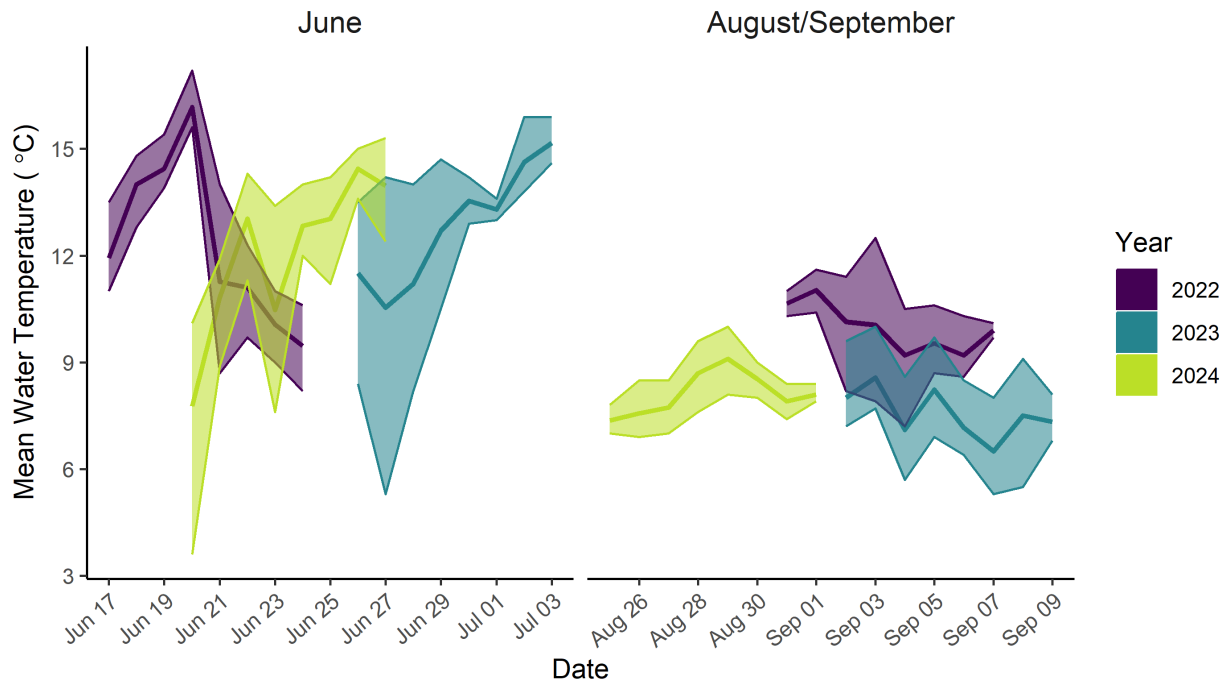


Figure 19. Salinity at fyke net sites during sampling in Imuruk Basin, Graphite One, 2024.

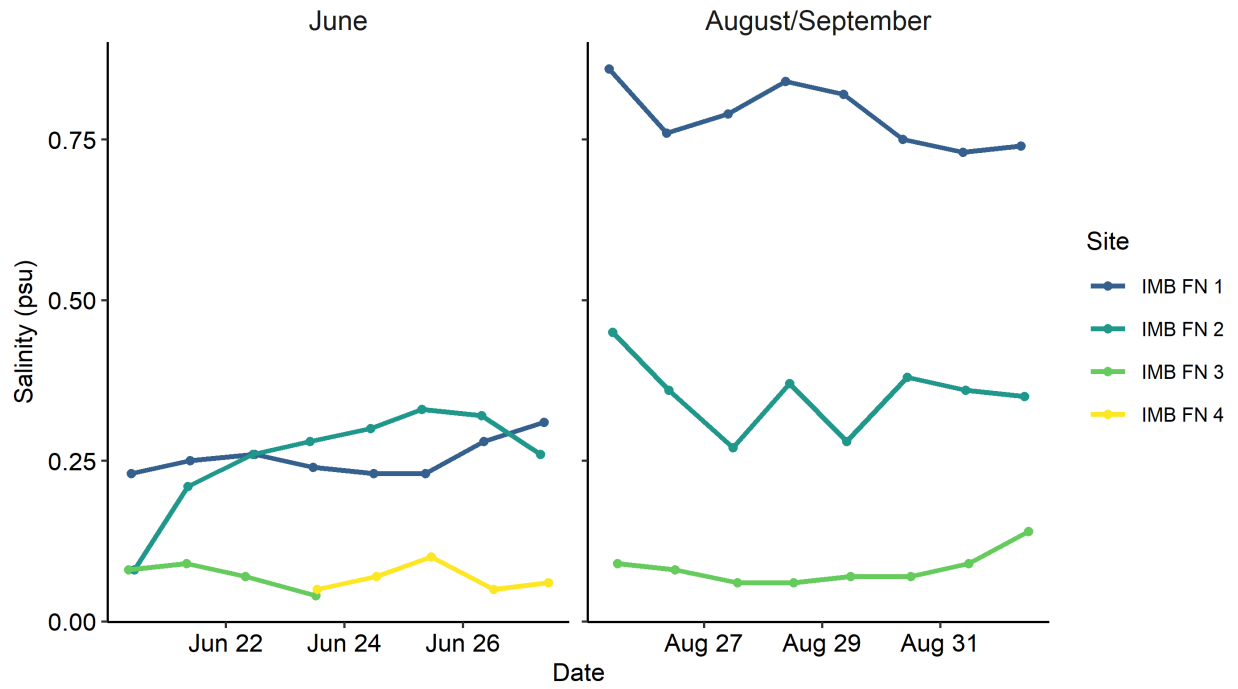


Figure 20. Fish species catch composition for all fyke net and gill net sites in Imuruk Basin sampling, Graphite One, 2024.

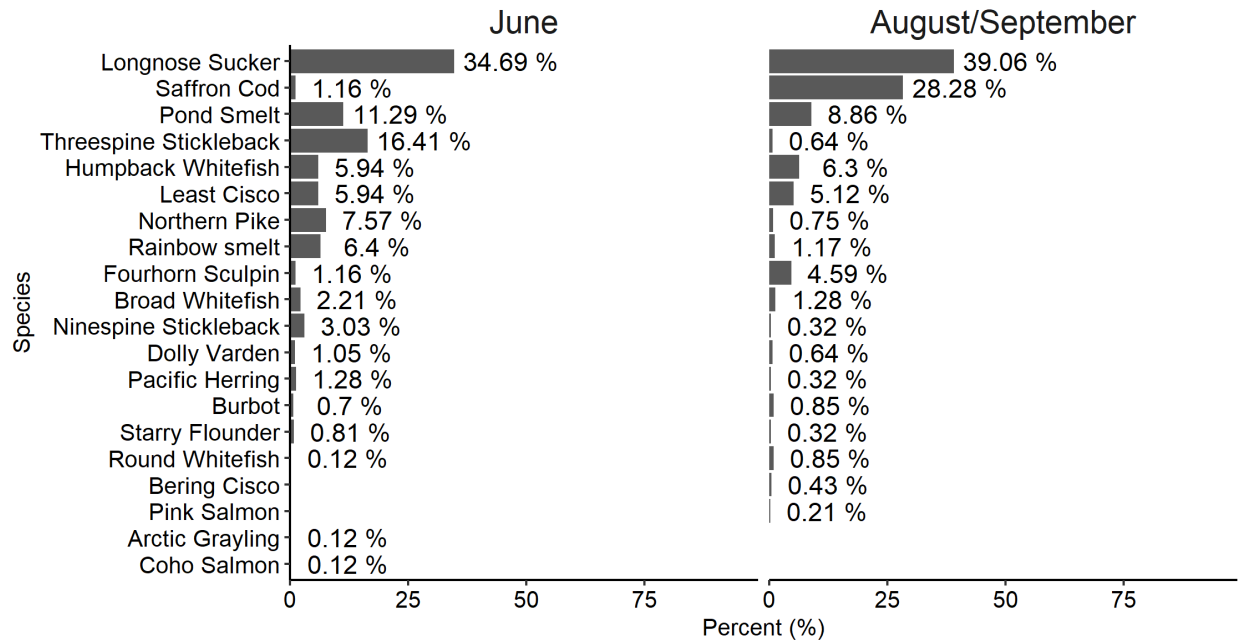


Figure 21. Catch per unit effort (CPUE) by species for fyke nets in Imuruk Basin during spring and fall sampling periods without longnose suckers or saffron cod, Graphite One, 2024.

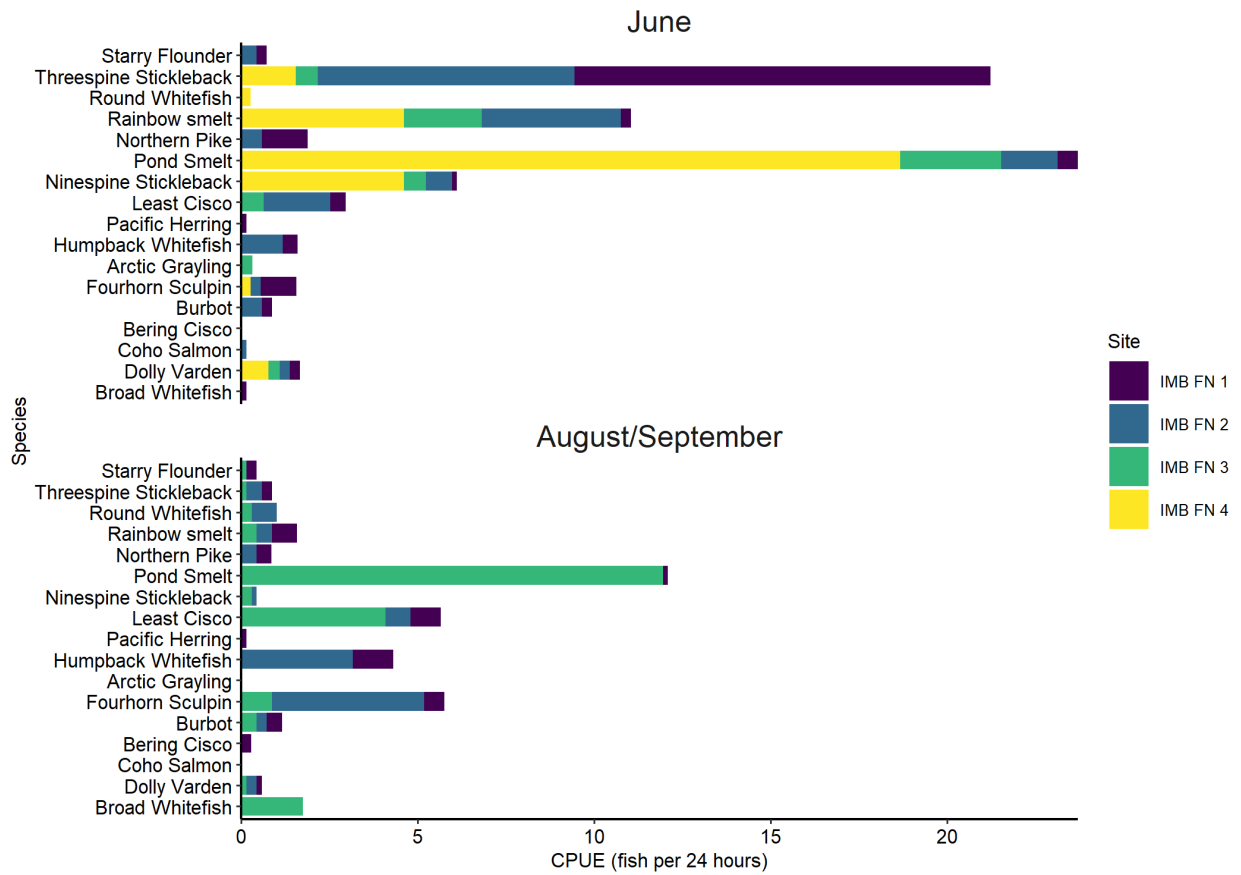


Figure 22. Catch per unit effort (CPUE) by species for fyke nets in Imuruk Basin during spring and fall sampling periods in 2024, Graphite One, 2024.

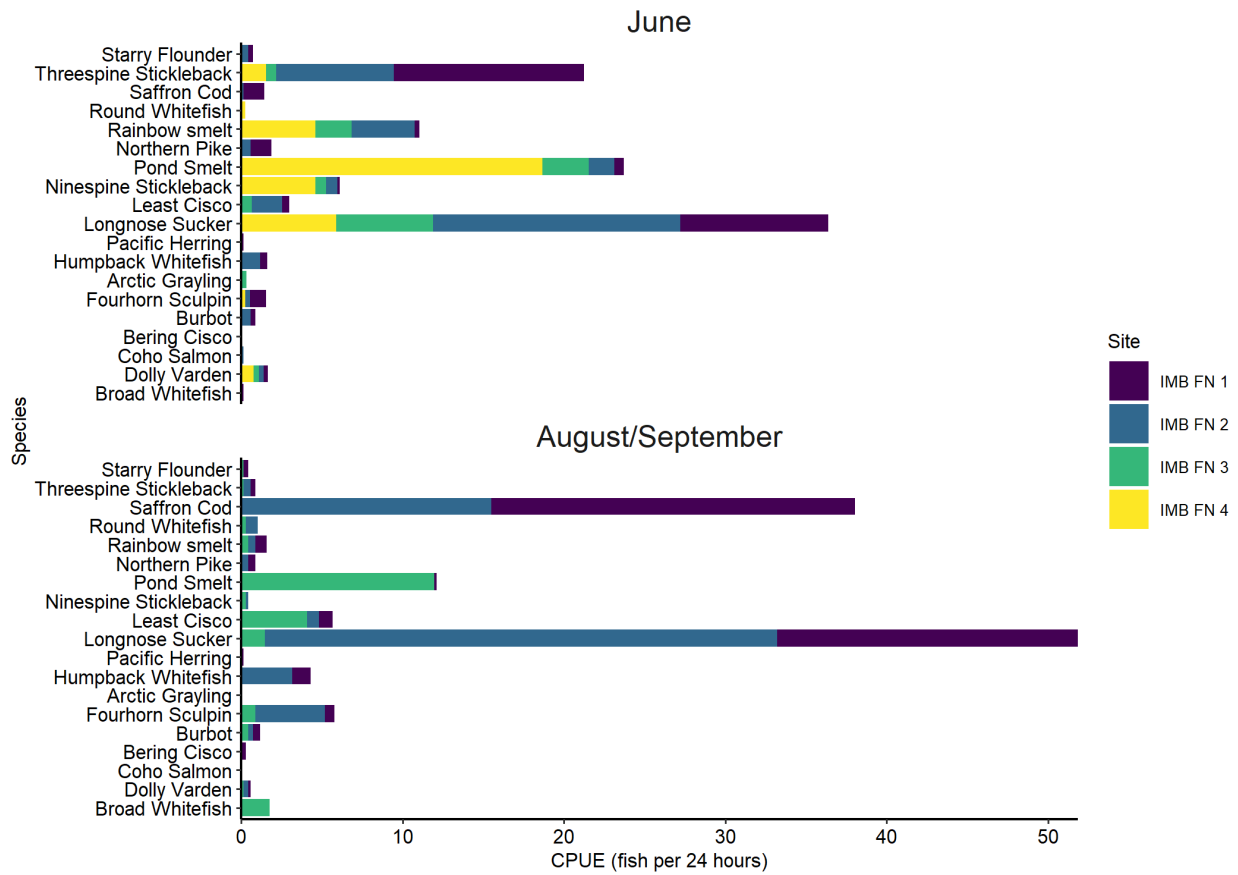


Figure 23. Catch per unit effort (CPUE) by species for gill net sites during June sampling in Imuruk Basin, with sites arranged from west to east, Graphite One, 2024.

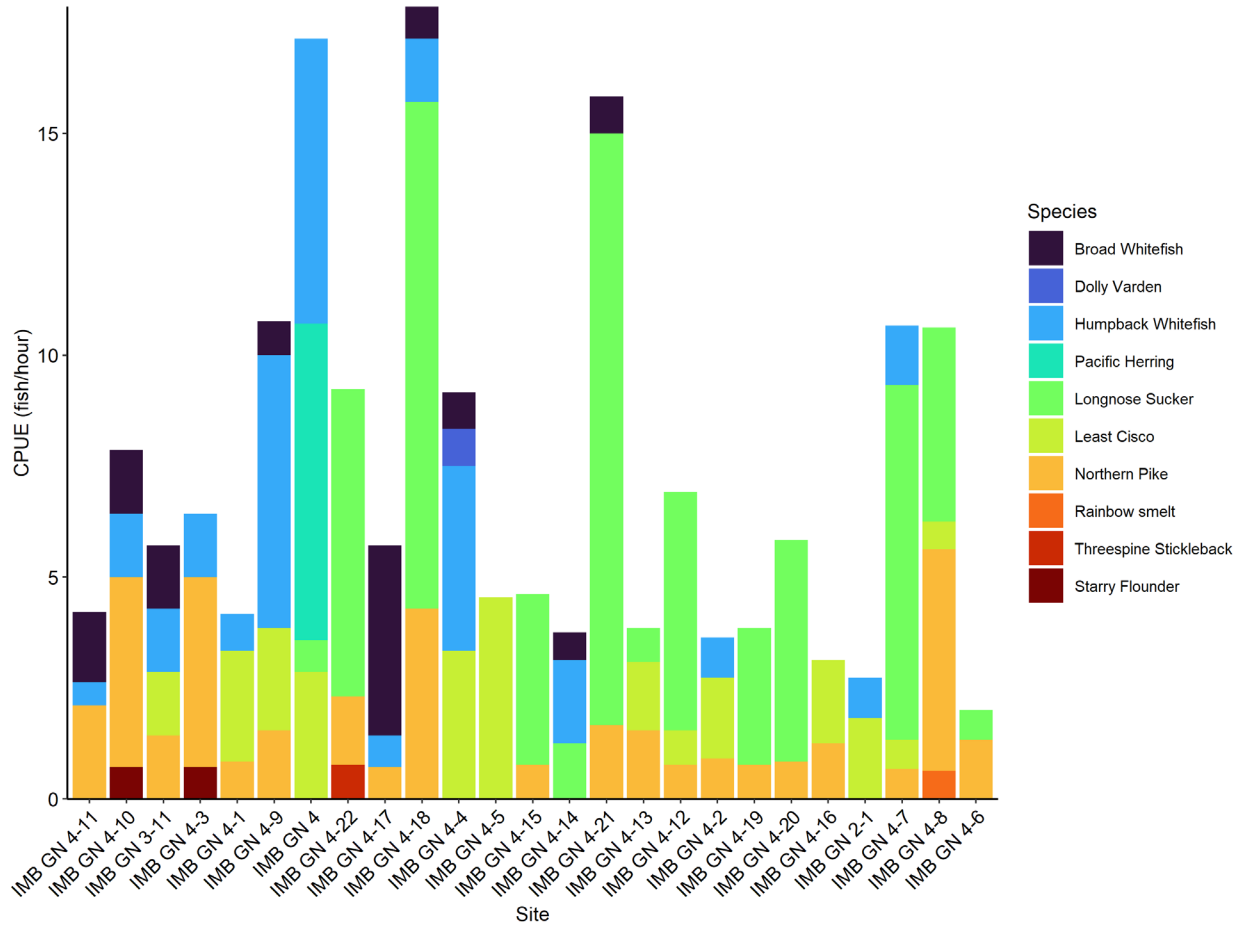


Figure 24. Catch per unit effort (CPUE) by species for gill net sites during August sampling in Imuruk Basin, with sites arranged from west to east, Graphite One, 2024.

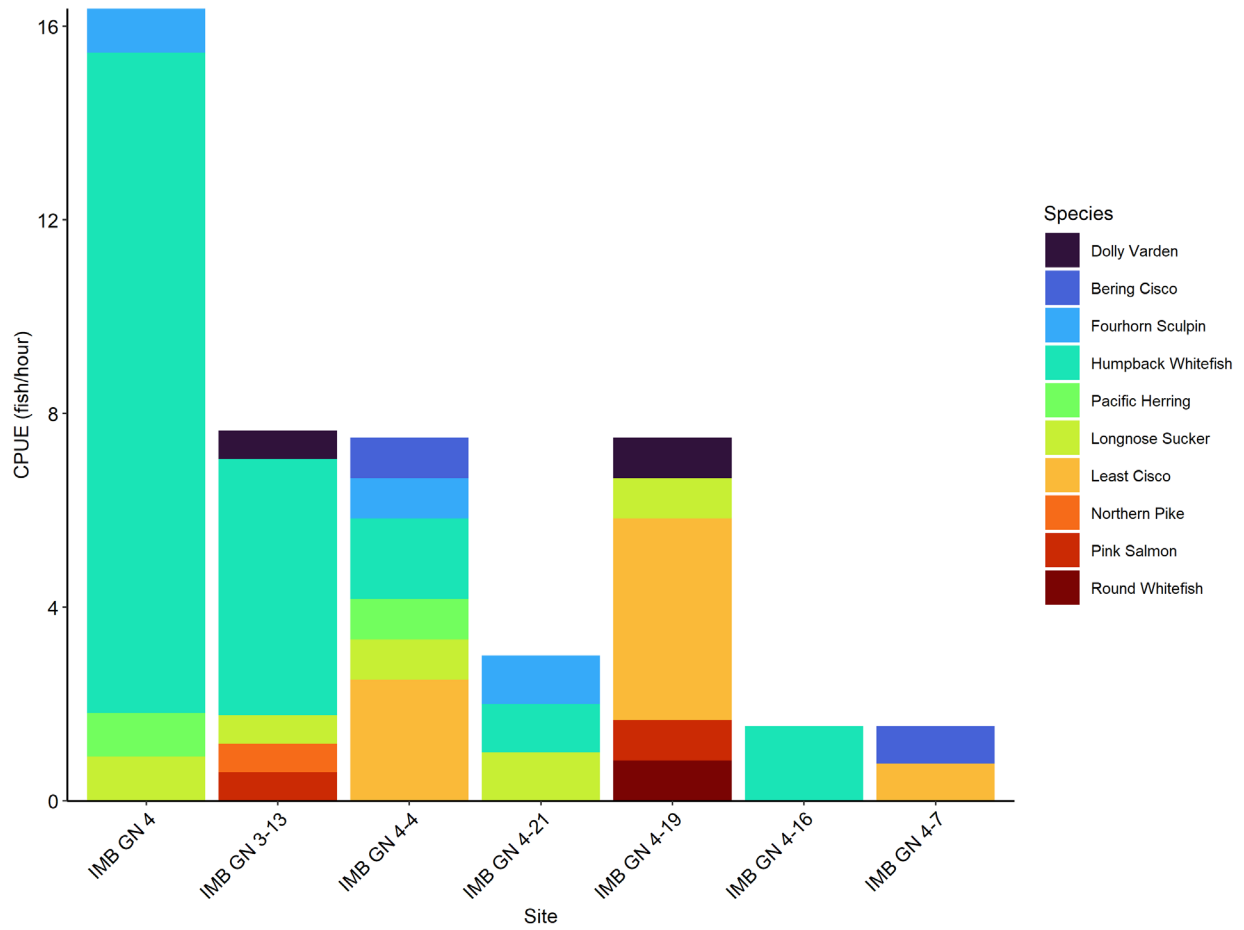
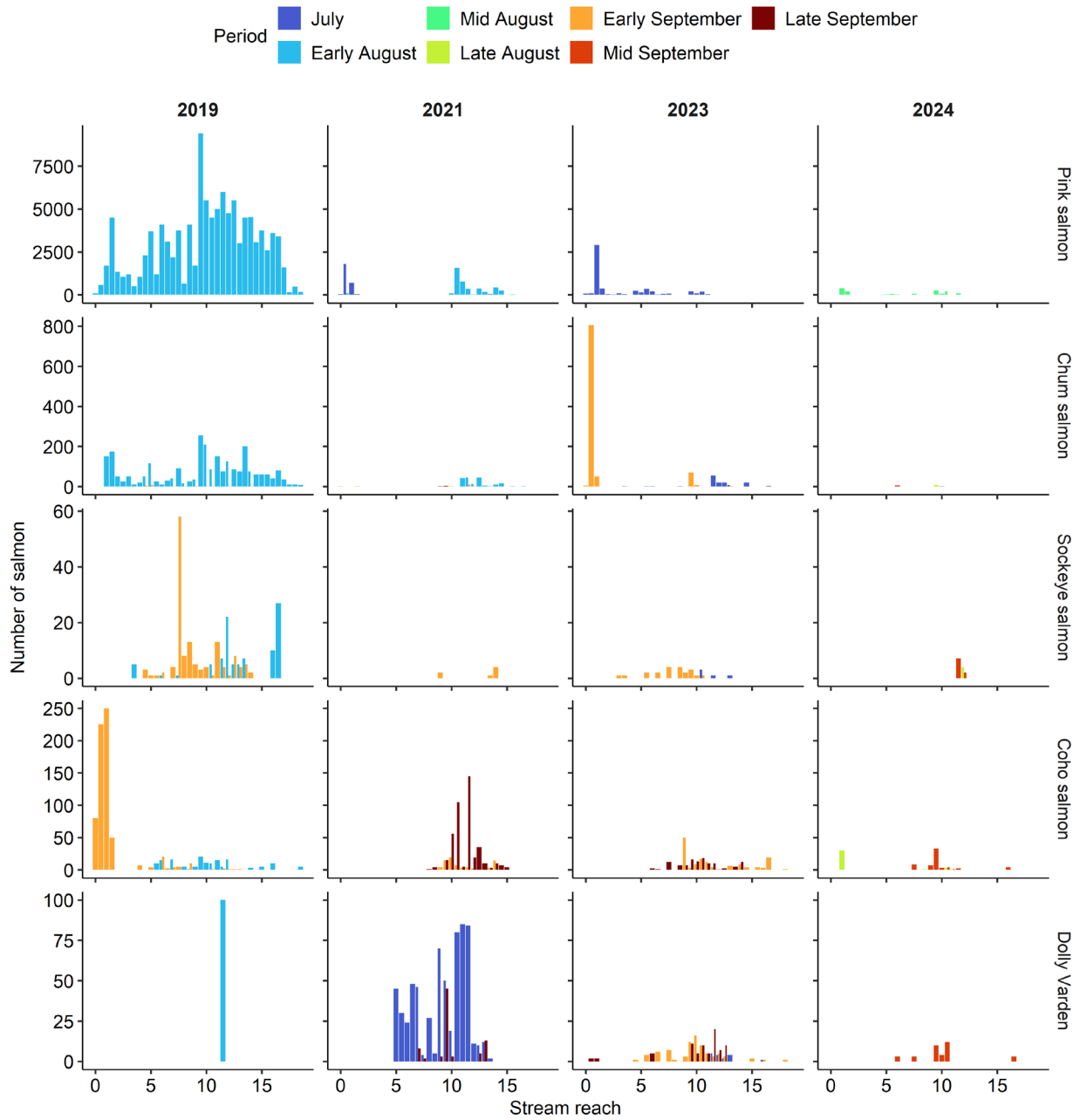
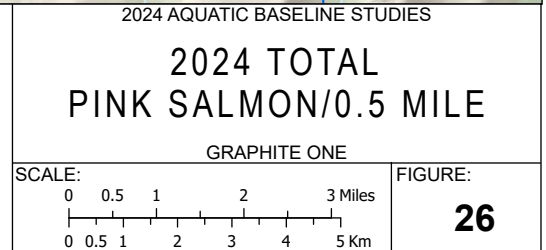
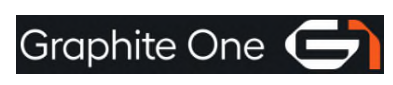
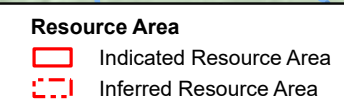
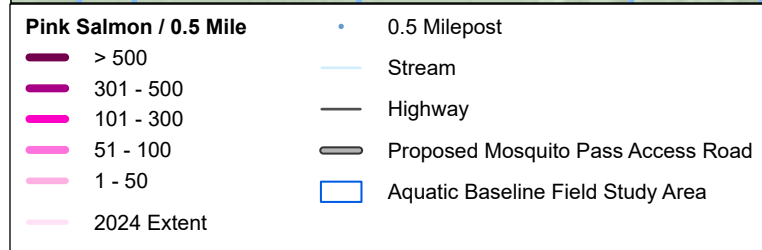
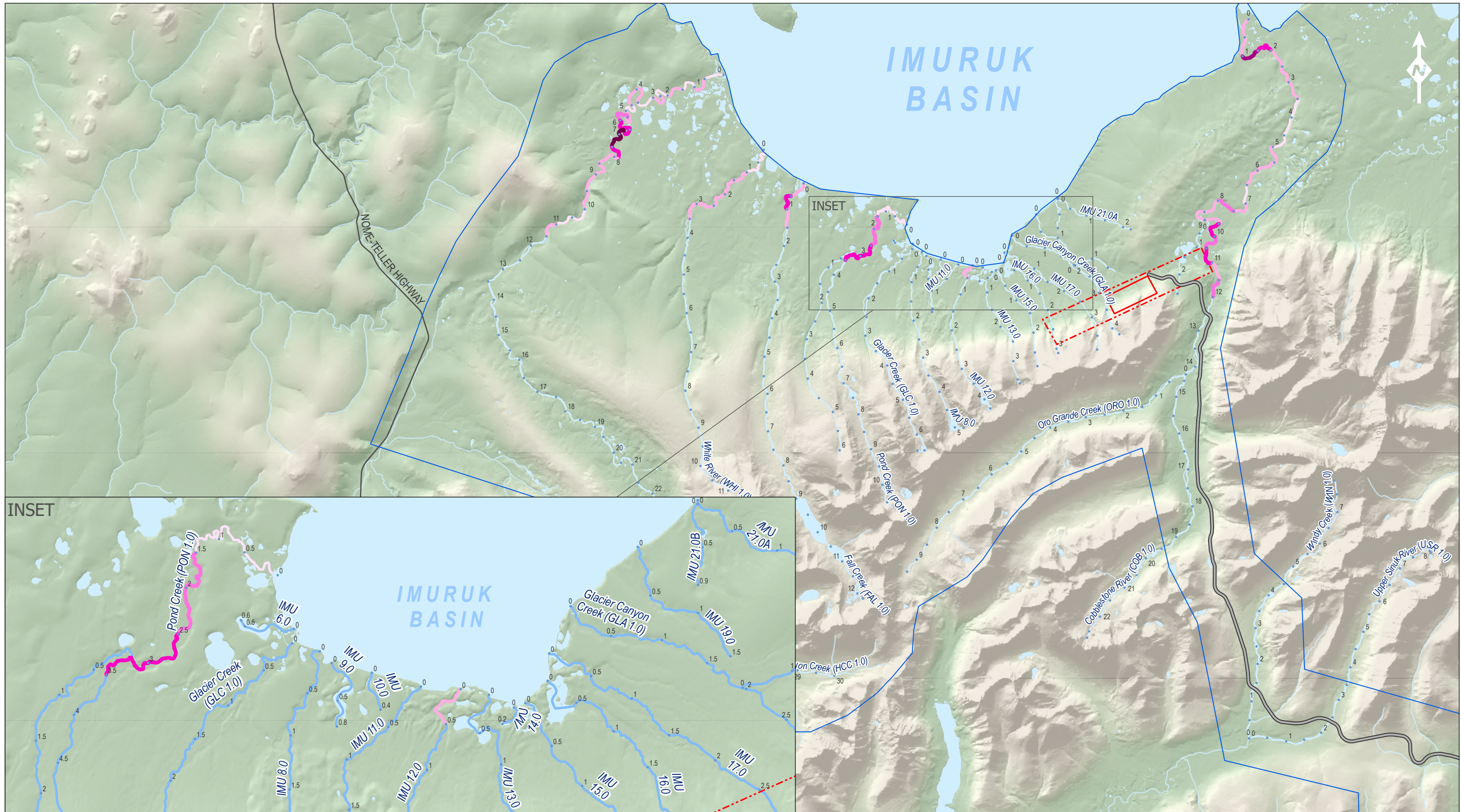
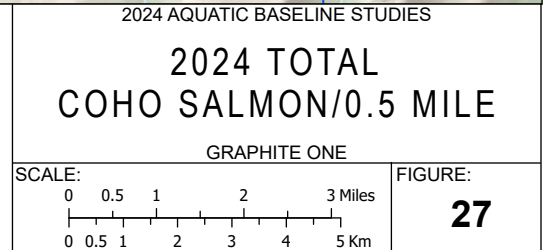
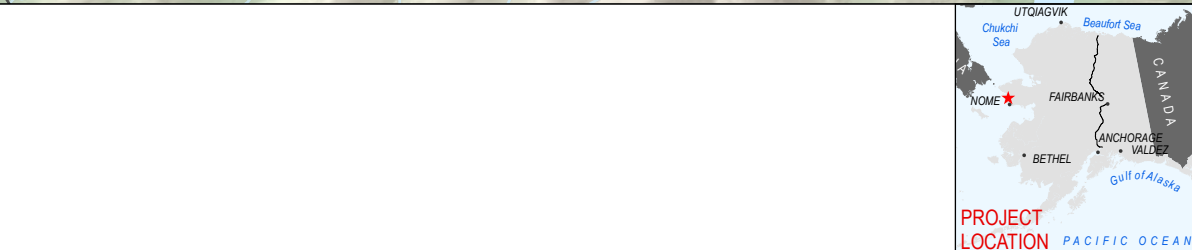
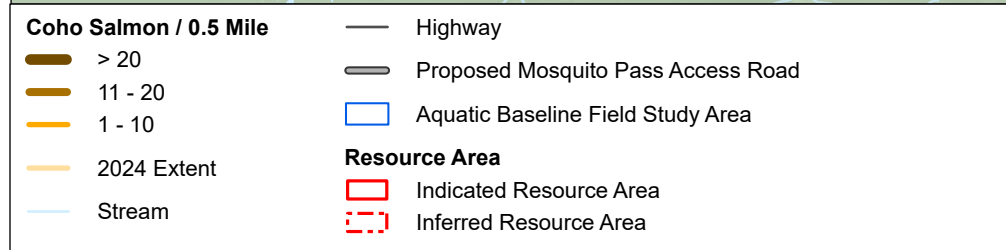
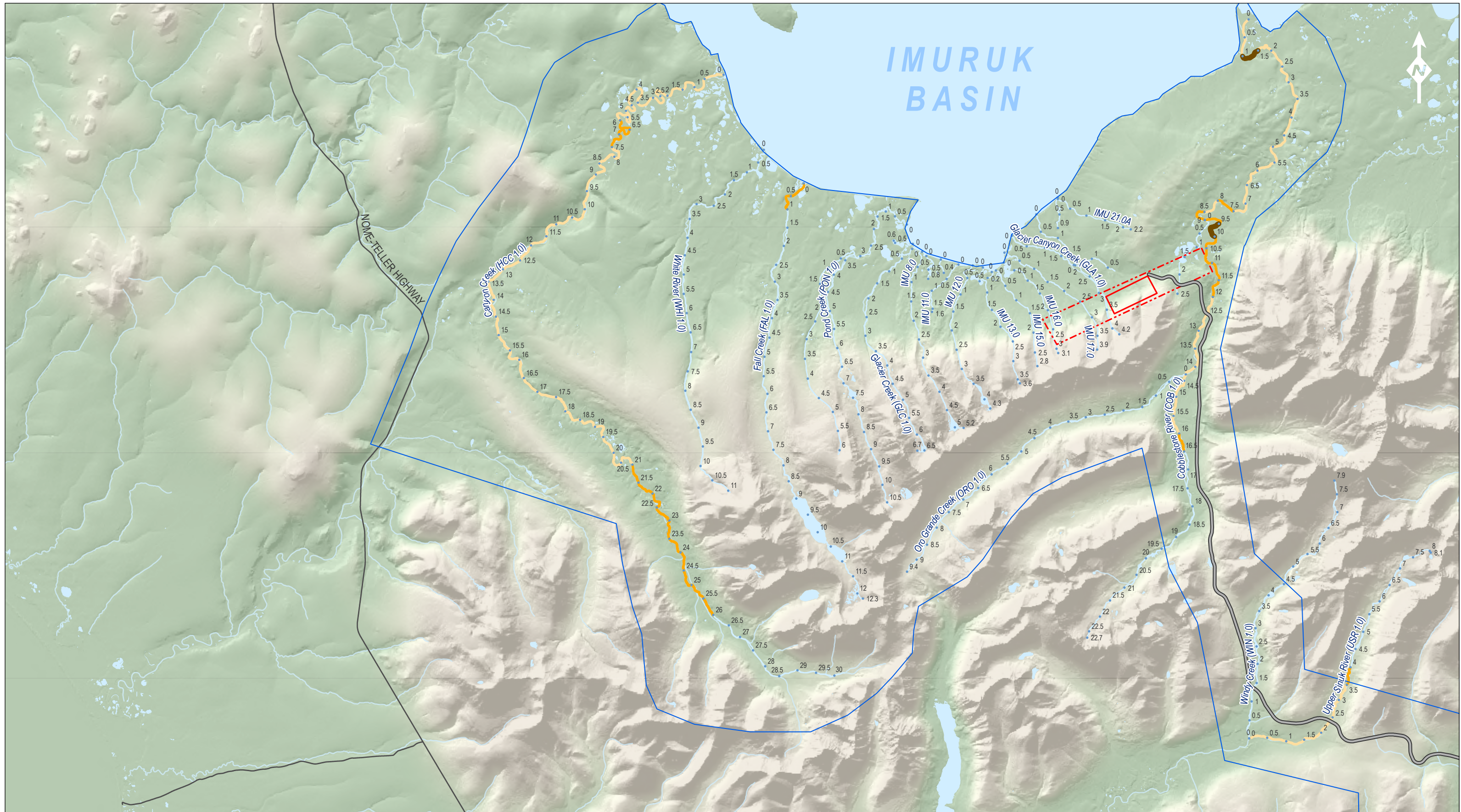
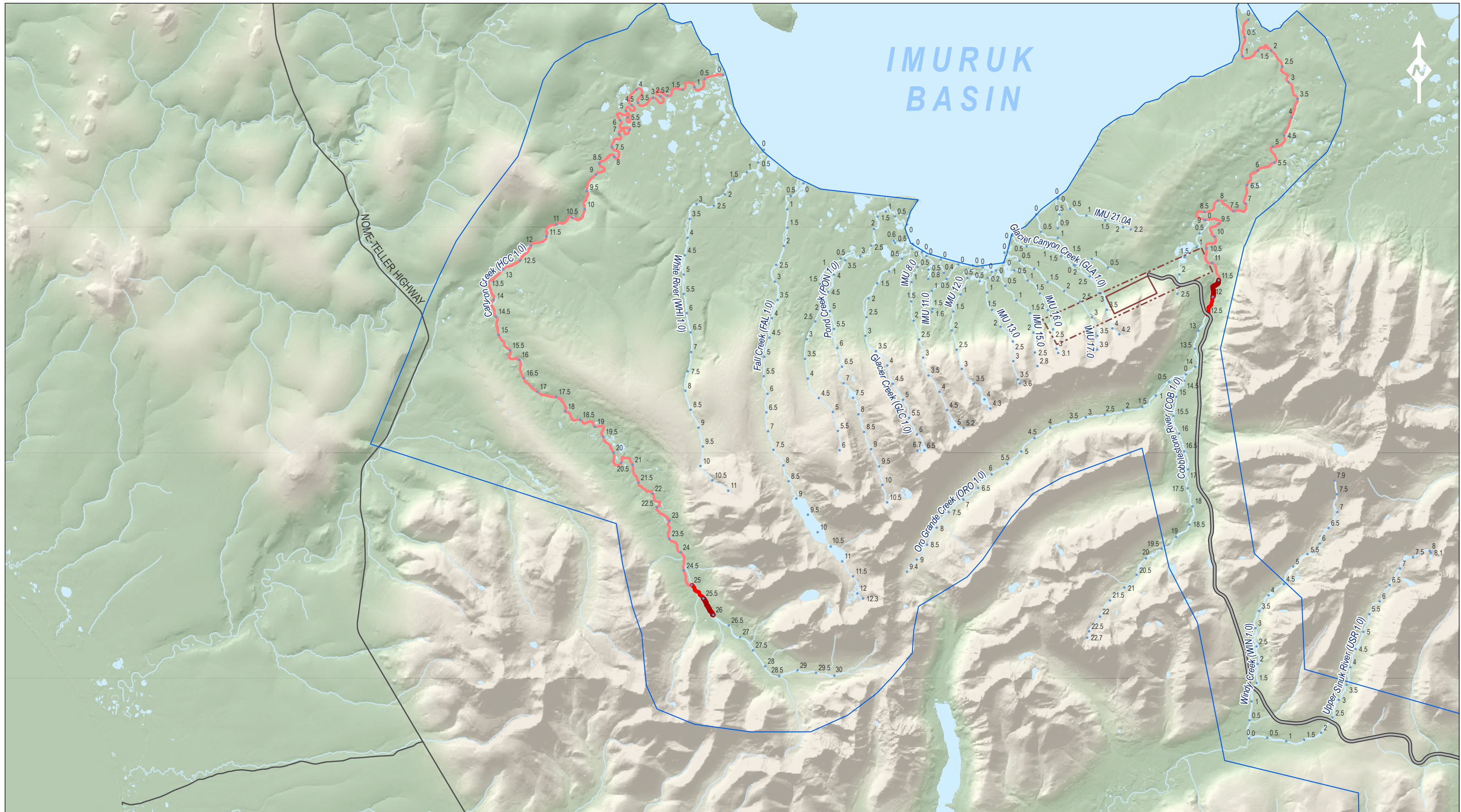


Figure 25. Pacific salmon densities observed during aerial surveys during 2019, 2021, and 2023–2024 seasons in the Cobblestone River, Graphite One, 2024.









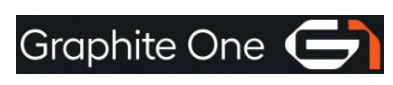
Sockeye Salmon / 0.5 Mile

- █ > 5
- █ 1 - 5
- █ 2024 Extent
- █ Stream

- Highway
- Proposed Mosquito Pass Access Road
- ▭ Aquatic Baseline Field Study Area

Resource Area

- ▭ Indicated Resource Area
- ▭ Inferred Resource Area



2024 AQUATIC BASELINE STUDIES

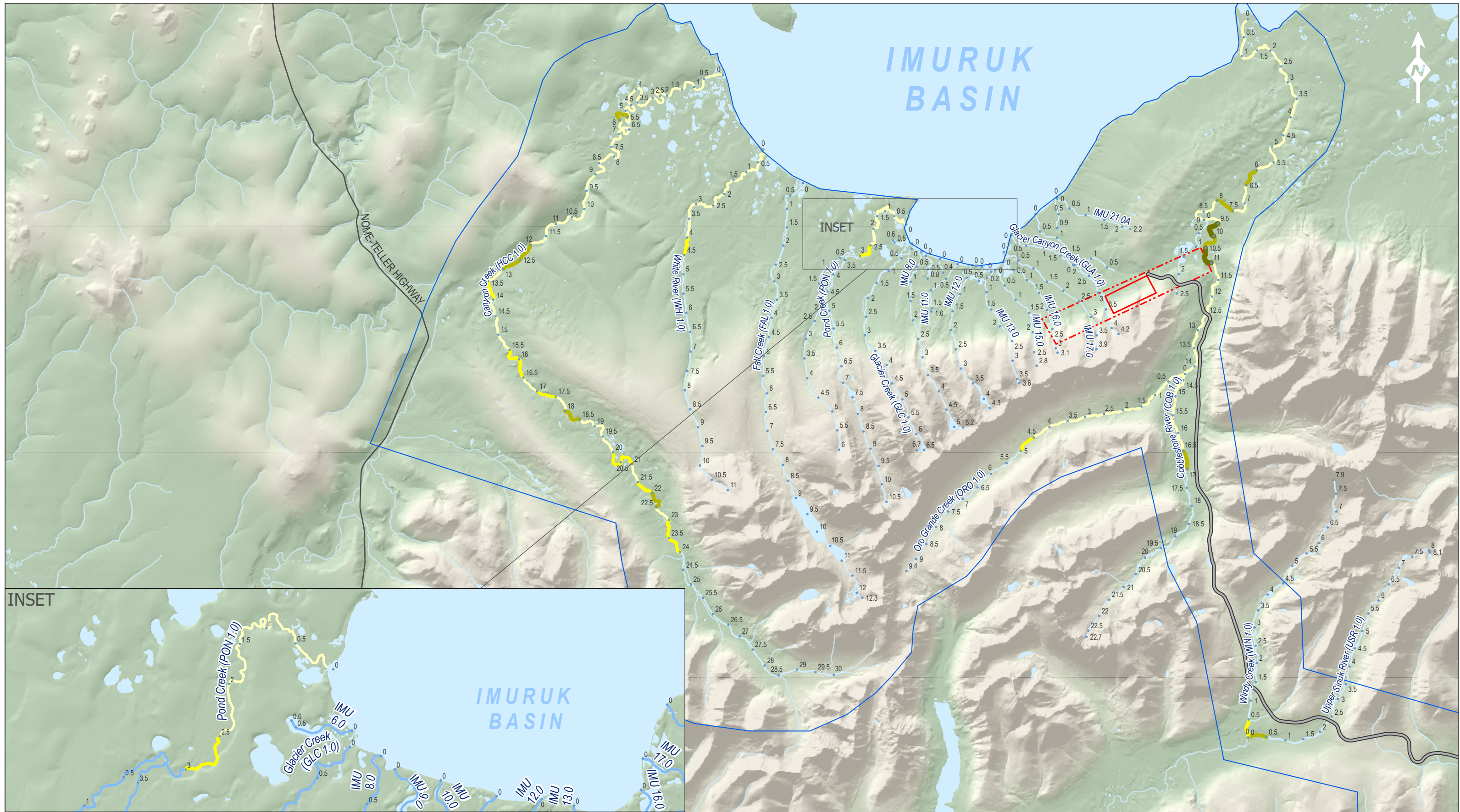
2024 TOTAL SOCKEYE SALMON/0.5 MILE

GRAPHITE ONE

SCALE:

FIGURE:

28



- Dolly Varden / 0.5 Mile**
- 5 - 12
 - 3 - 4
 - 1 - 2
 - 2024 Extent
 - Stream
- Highway
- Proposed Mosquito Pass Access Road
- Aquatic Baseline Field Study Area
- Resource Area**
- ▭ Indicated Resource Area
 - ▭ Inferred Resource Area



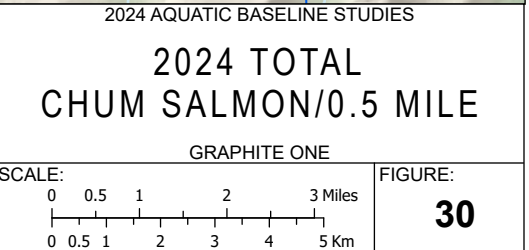
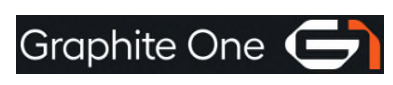
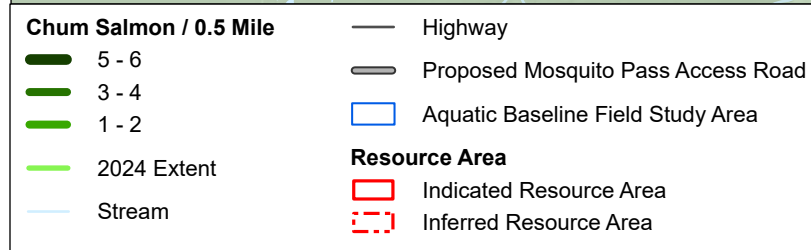
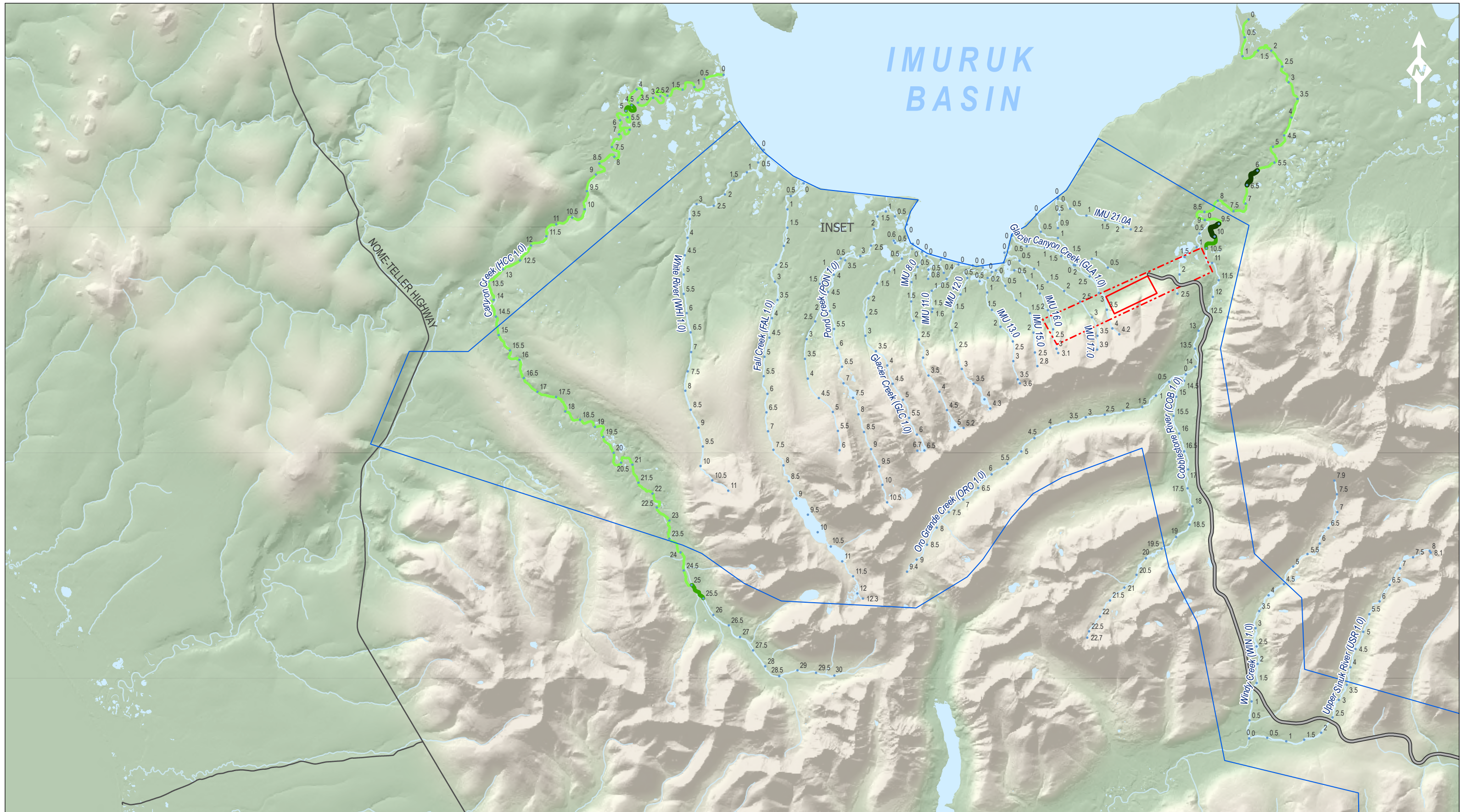
2024 AQUATIC BASELINE STUDIES

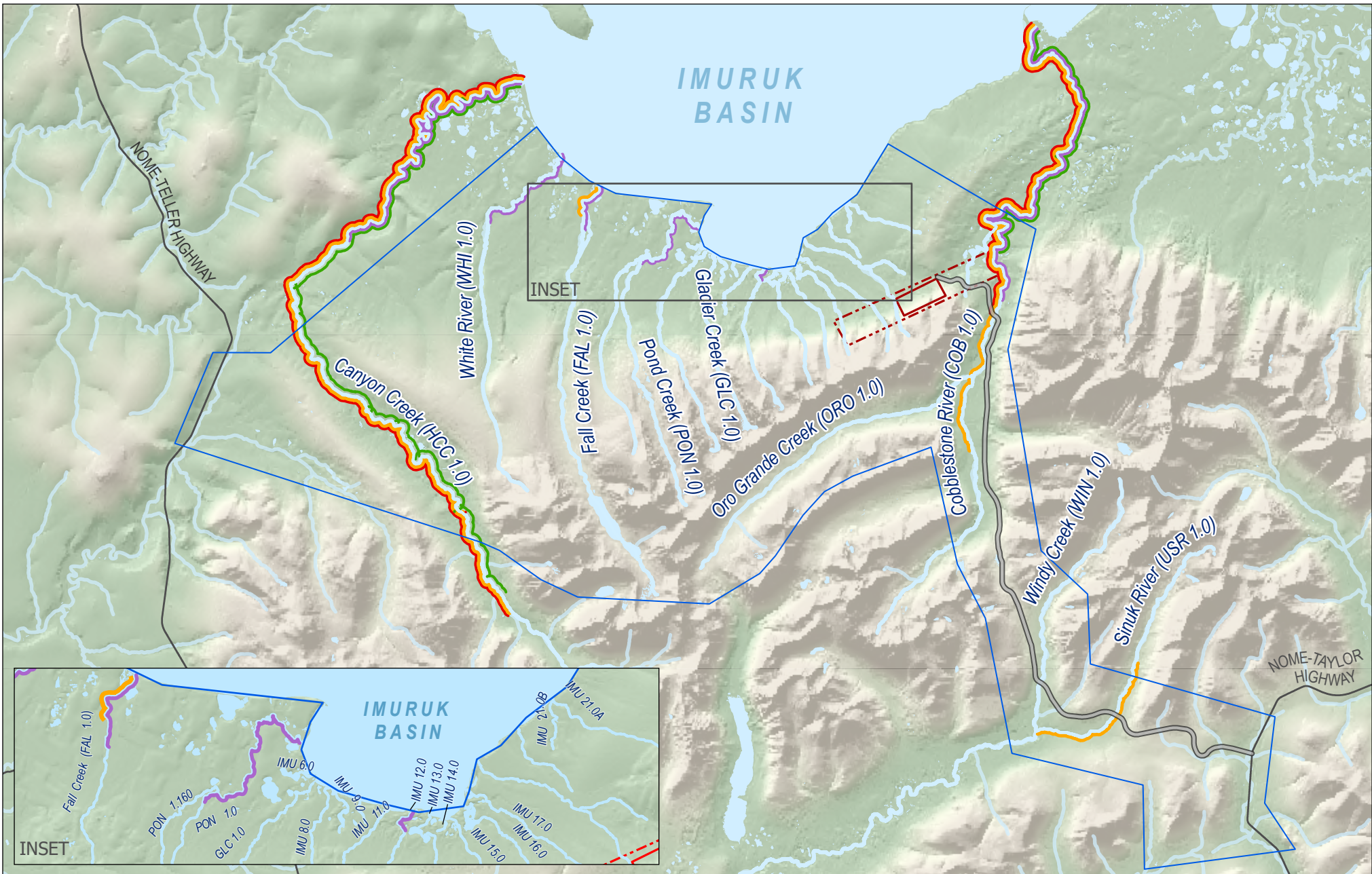
2024 TOTAL DOLLY VARDEN/0.5 MILE

GRAPHITE ONE

SCALE: 0 0.5 1 2 3 Miles / 0 0.5 1 2 3 4 5 Km

FIGURE: **29**





Adult Salmon Distribution 2024

- Coho
- Chum
- Sockeye
- Pink

Infrastructure

- Proposed Mosquito Pass Access Road
- Highway
- Aquatic Baseline Field Study Area

Resource Area

- Indicated Resource Area
- Inferred Resource Area



Graphite One

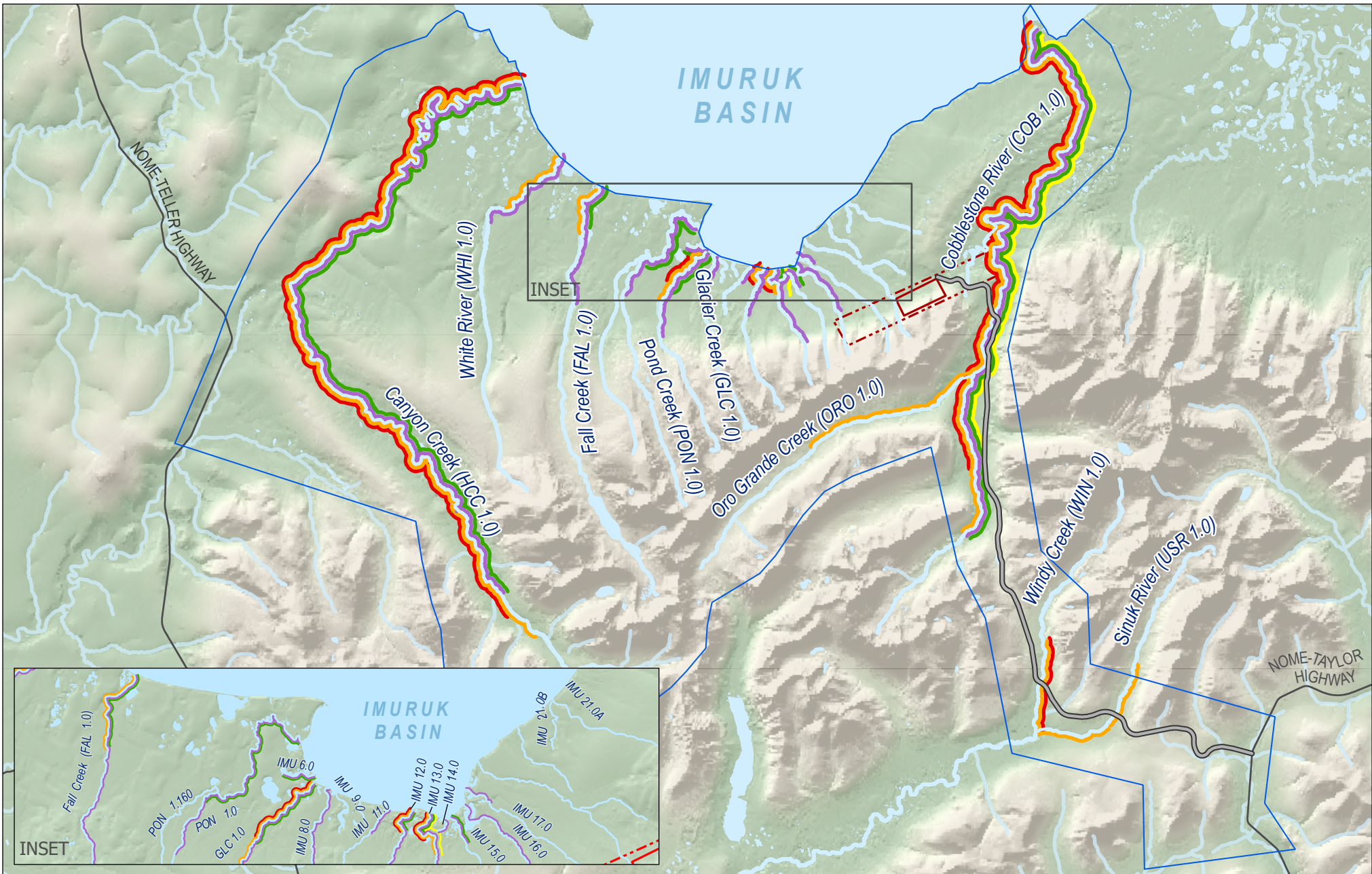
2024 AQUATIC BASELINE STUDIES

IMURUK BASIN 2024 SALMON DISTRIBUTION

GRAPHITE ONE

SCALE:

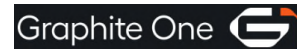
FIGURE: **31**



Adult Salmon Distribution 2019 - 2024

- Coho
- Chum
- Sockeye
- Pink
- Chinook

- Proposed Mosquito Pass Access Road
- Highway
- Study Area
- Resource Area**
- Indicated Resource Area
- Inferred Resource Area



2024 AQUATIC BASELINE STUDIES
IMURUK BASIN
 2019, 2021, AND 2023 - 2024
SALMON DISTRIBUTION

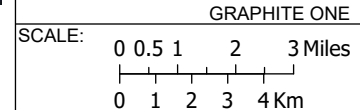


FIGURE:
32

Figure 33. Length-frequency histogram for Dolly Varden spawning studies, showing the relative abundance of fork lengths of Dolly Varden by sex that were captured during fall sampling, 2021–2023 and 2024, Graphite One, 2024.

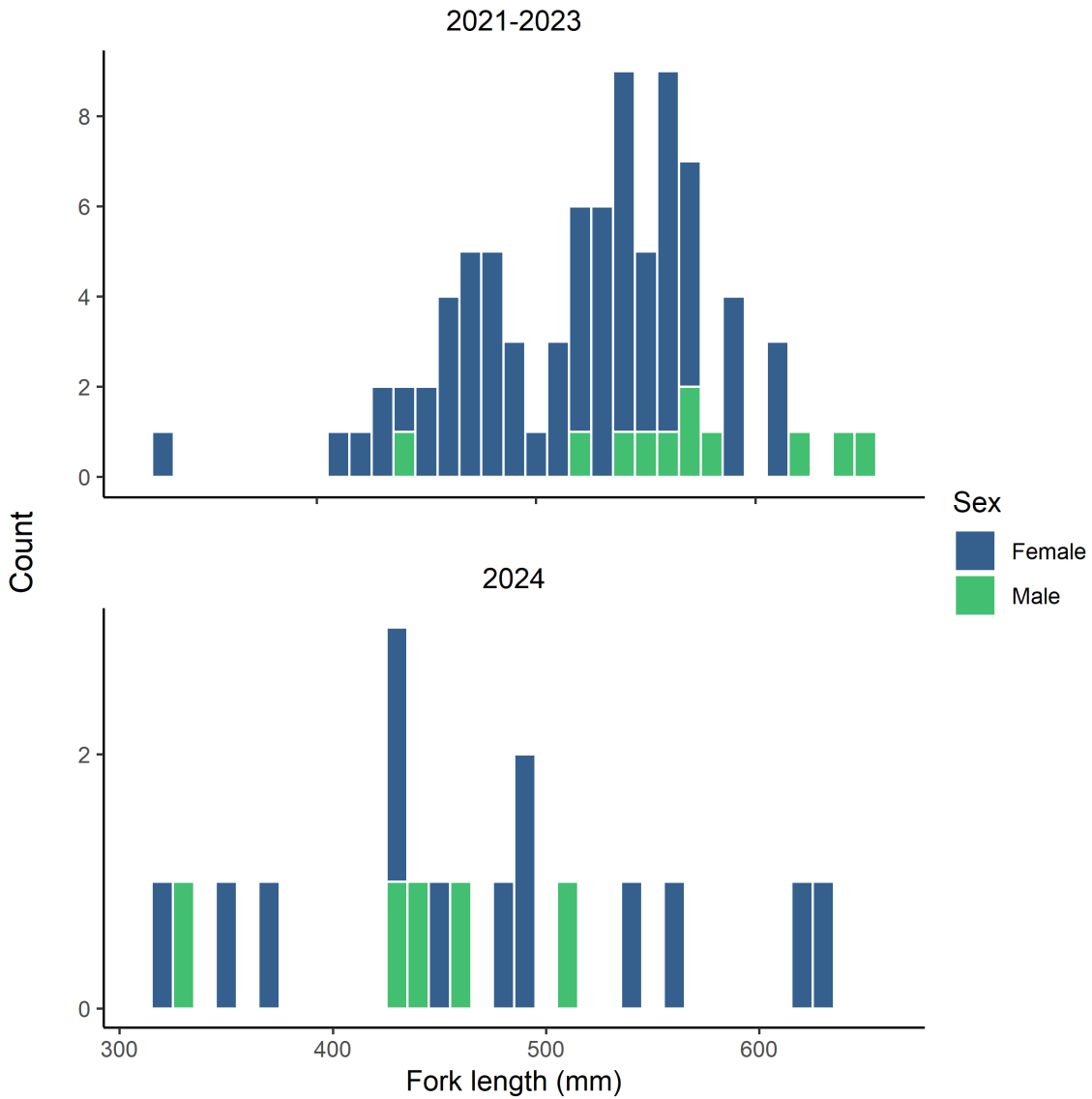


Figure 34. Proportion of Dolly Varden of each maturity state caught on each date sampled in August/September at stream sites across years 2021–2024, Graphite One, 2024.

NOTE: Fish caught in Imuruk Basin (n = 3) on August 26 and 29, 2024, are excluded due to low sample size.

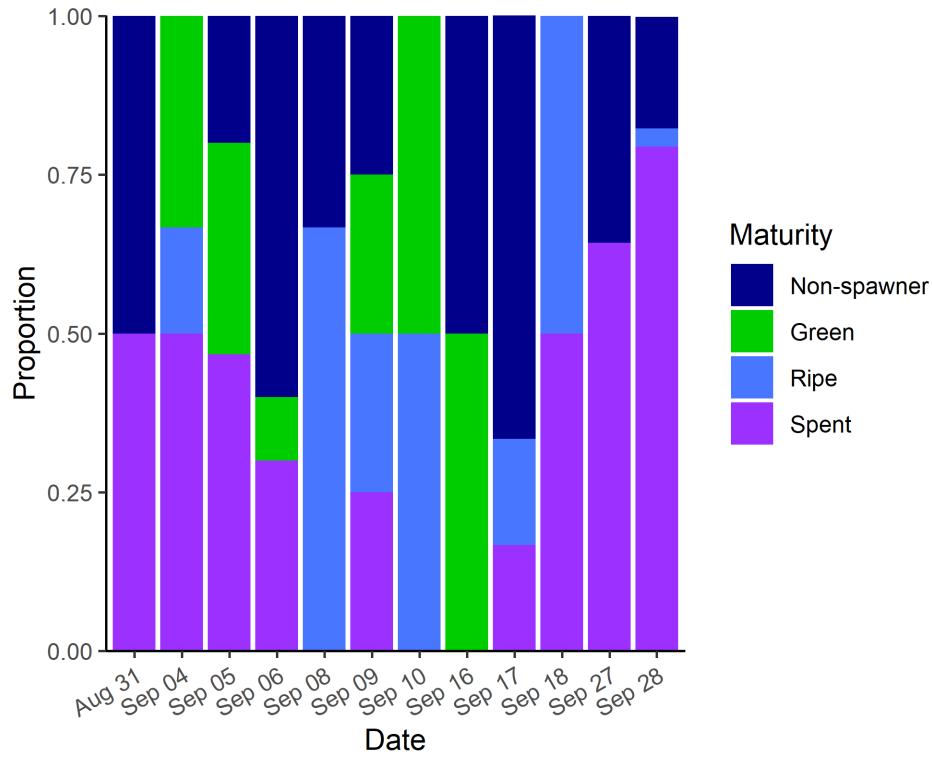


Figure 35. Arctic Grayling adult captured in the Cobblestone River, Graphite One, 2024.



APPENDICES

Appendix A. Biomonitoring water quality measurements, 2019, 2021–2024.

Appendix A. Water quality measurements at biomonitoring sites across all years of sampling, 2019–2024, Graphite One, 2024.

Year	Site	Date	Water temperature (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen %	Conductivity (µS/cm)	Specific conductance (µS/cm)	Turbidity (NTU)	pH
2019	COB 1	7/17/2019 9:33	8.4	--	103.3	--	124.9	0.52	6.9
2019	COB 1	7/16/2019 14:25	11.4	--	108.2	--	122.5	0.71	6.79
2019	COB T1	7/14/2019 10:39	20	--	76.9	--	241.8	1.54	6.94
2019	FAL 1	7/16/2019 11:59	10.6	--	103.1	--	85.6	0.22	6.68
2019	FAL 1	7/15/2019 15:09	12.7	--	101.6	--	82.3	0.41	6.11
2019	GLA 1	7/14/2019 15:30	6.8	--	101.7	--	619.6	4.67	4.91
2019	GLA 1	7/15/2019 13:20	6	--	100	--	635.5	4.98	4.92
2019	GLA 2	7/14/2019 19:16	5.7	--	103.9	--	516.4	6.48	4.68
2019	GLA 2	7/15/2019 12:52	5.1	--	104.4	--	550.1	7.24	4.65
2019	IMU 16	7/14/2019 14:00	5.4	--	107.5	--	195.5	0.25	7.08
2019	IMU 16	7/13/2019 17:04	5.6	--	107.7	--	196.2	0.26	6.63
2019	IMU 16	7/14/2019 14:00	5.4	--	107.5	--	195.5	0.25	7.03
2019	ORO 1	7/16/2019 9:35	9.8	--	100.5	--	79.7	0.38	6.26
2019	ORO 1	7/15/2019 10:18	10.2	--	101	--	78.5	0.37	6.49
2021	COB 1	7/5/2021 16:43	7.1	12.34	101.8	74.5	113.3	1.32	7.56
2021	COB 1	7/6/2021 17:14	8.2	11.93	101	86.4	127.3	0.36	7.54
2021	COB 1	7/7/2021 13:45	6.6	12.43	101.6	89.1	137.3	0.34	7.68
2021	COB T1	7/7/2021 14:52	11.4	10.11	92.7	304.4	410.8	0.73	7.32
2021	COB T1	7/6/2021 11:00	12.5	9.64	90.6	314.3	412.4	0.72	7.17
2021	COB T1	7/8/2021 9:52	11	9.8	89.2	299.6	408.7	0.88	7.26
2021	FAL 1	7/3/2021 15:34	9.3	11.59	101	121.2	173.3	0.9	7.63
2021	FAL 1	7/4/2021 14:13	6.7	12.32	100.7	11.33	174.4	0.59	7.58
2021	GLA 1	7/5/2021 9:54	2.8	13.4	99.2	240.8	417.8	4	5.02
2021	GLA 1	7/6/2021 10:05	3.7	13.08	99	216.3	364.9	13.09	5.28
2021	GLA 2	7/4/2021 18:24	4.2	12.95	99.6	305.8	507	4.25	5.43
2021	GLA 2	7/5/2021 14:20	3.7	13.08	99.2	320.1	539	3.53	5.42
2021	IMU 16	7/3/2021 10:40	5.3	12.62	99.7	138.5	221.9	0.37	7.12
2021	IMU 16	7/4/2021 12:24	4.9	12.76	99.95	134.8	218.1	0.27	7.19
2021	ORO 1	7/7/2021 16:57	6.7	12.09	98.7	63	97.7	0.32	7.67
2021	ORO 1	7/8/2021 10:31	5.9	12.32	98.8	63.8	100.5	0.31	7.52
2021	USR 1	7/8/2021 18:59	8	11.47	97.6	105.3	155.8	0.9	7.63
2021	USR 1	7/9/2021 8:48	5.4	12.04	95.1	85	135.9	1.04	7.48
2021	WIN 1	7/8/2021 18:04	6.7	12.56	102.8	85.5	131.3	0.33	7.75
2021	WIN 1	7/9/2021 13:35	5.9	12.55	100.6	82.4	129.7	0.4	7.66
2022	COB 1	7/7/2022 15:12	9.7	11.43	100.7	105.2	148.5	0	7.93
2022	COB 1	7/8/2022 8:45	7.9	11.42	96.2	100.7	149.5	0	7.83
2022	COB T1	7/7/2022 16:07	15.5	8	80.1	321	392.5	1.22	7.2
2022	COB T1	7/8/2022 15:09	17.4	7.41	73.3	332.9	389.5	0.22	7.22
2022	FAL 1	7/6/2022 10:03	9.2	11.59	100.9	103.3	148.1	0.01	7.95
2022	FAL 1	7/7/2022 8:38	9.9	11.13	98.5	103.9	146	0	7.63
2022	GLA 1	7/6/2022 15:00	7.8	12.06	102.1	299.6	445.5	2.7	5.46
2022	GLA 2	7/10/2022 13:37	8.5	11.96	102.3	277	404.2	4.57	5.42
2022	IMU 16	7/6/2022 10:53	4.5	13.15	101.9	150.5	247.2	1.37	7.59
2022	IMU 16	7/7/2022 13:20	5.8	12.21	97.7	155.6	245.8	0.78	7.45
2022	ORO 1	7/8/2022 18:40	15	9.49	93.9	78.8	94.4	--	7.74
2022	ORO 1	7/9/2022 8:37	9.2	10.83	94	69.4	99.4	0	7.89
2022	USR 1	7/9/2022 16:33	16.9	9.71	106.2	151.7	179.5	0.25	7.88
2022	USR 1	7/10/2022 8:36	11.8	11.41	102.5	136.6	182.8	0	7.91
2022	WIN 1	7/9/2022 10:55	11.1	11.17	101.5	103.2	140.4	0.6	7.77

Appendix A. Water quality measurements at biomonitoring sites across all years of sampling, 2019–2024, Graphite One, 2024.

Year	Site	Date	Water temperature (°C)	Dissolved oxygen (mg/L)	Dissolved oxygen %	Conductivity (µS/cm)	Specific conductance (µS/cm)	Turbidity (NTU)	pH
2022	WIN 1	7/10/2022 11:20	12.4	11.02	103.6	113.7	149.7	0	7.84
2023	COB 1	7/5/2023 9:29	4.7	13.48	104.7	65.1	106.4	0.03	7.6
2023	COB 1	7/6/2023 10:45	5.6	13.16	104.2	69.6	110.5	0.01	7.36
2023	COB T1	7/3/2023 15:48	17.1	8.63	89.6	239.3	281.9	0.52	7.12
2023	COB T1	7/4/2023 14:37	16.1	8.78	88.3	237.5	286.4	0.65	7.12
2023	FAL 1	7/4/2023 16:50	9.4	11.97	104.6	53.9	76.8	0	7.53
2023	FAL 1	7/5/2023 14:10	7.5	13.5	108.4	61.6	92.7	0	7.13
2023	GLA 1	7/6/2023 7:45	2.5	14.76	108	189.9	333.4	1.92	6.19
2023	GLA 1	7/7/2023 7:23	2.8	14.85	109.4	154.8	269	4.82	6.49
2023	GLA 2	7/6/2023 12:07	3.3	14.46	108.6	144.1	246.7	2.32	6.71
2023	GLA 2	7/7/2023 8:16	2.7	14.45	106.3	111.7	194.7	10.7	6.87
2023	IMU 16	7/5/2023 17:16	6.5	13	106.1	174.6	269.4	0.07	7.24
2023	IMU 16	7/6/2023 13:28	5.4	13.88	109.1	169.6	271	0.1	7.12
2023	ORO 1	7/4/2023 8:29	4.8	13.63	106.4	43.3	70.5	0	7.46
2023	ORO 1	7/5/2023 7:59	4.4	13.72	105.6	44.1	72.8	0	7.5
2023	USR 1	7/2/2023 10:55	9	12.3	106.8	98.4	141.8	0	7.71
2023	USR 1	7/1/2023 12:14	8.8	12.2	105.1	94.7	137	0.02	7.63
2023	WIN 1	7/2/2023 12:31	7.7	12.63	105	64.3	96.3	0.07	6.44
2023	WIN 1	7/3/2023 14:24	7.5	13.32	112	65	97.5	0	--
2024	COB 1	7/13/2024 11:46	5.1	15.52	122.2	55.1	88.9	0.95	7.09
2024	COB 1	7/14/2024 7:59	4.5	15.48	119.8	60.3	99.4	0	7.11
2024	COB T1	7/14/2024 10:49	11.7	10.02	92.2	181.1	243.3	0.26	6.99
2024	COB T1	7/15/2024 17:33	12.9	10.6	100.1	189.3	246.4	0	7.01
2024	FAL 1	7/12/2024 7:47	4.1	16.17	123.6	50.7	84.5	0.03	7.2
2024	FAL 1	7/11/2024 8:26	5.3	16.01	127	60.8	97.4	0.03	6.96
2024	GLA 1	7/13/2024 16:25	6.6	14.8	121	182.3	280.7	4.87	6.24
2024	GLA 1	7/14/2024 17:35	4	16	122.3	145.4	242.7	123.3	6.3
2024	GLA 2	7/16/2024 8:06	2.1	16.72	121.4	131.9	234.4	3.2	6.45
2024	GLA 2	7/17/2024 8:30	1.9	17.24	124.6	138.5	247.6	3.3	6.44
2024	IMU 16	7/12/2024 17:40	4.5	16.4	127.3	167	274.7	0.03	6.69
2024	IMU 16	7/11/2024 15:28	5.1	14.88	116.9	166.7	269.2	0	7.01
2024	ORO 1	7/12/2024 11:29	4.6	15.5	120.4	39.6	64.7	0	6.52
2024	ORO 1	7/13/2024 8:27	4.3	15.91	122.8	40.3	66.4	0	6.61
2024	USR 1	7/15/2024 8:09	5	14.42	113.2	77.9	126.3	0.4	7.11
2024	USR 1	7/13/2024 9:45	5.7	15.04	120.3	57.6	91.3	0.17	6.92
2024	WIN 1	7/15/2024 12:45	4.2	16.02	123.2	60	99.5	0	6.78
2024	WIN 1	7/16/2024 10:54	4.9	15.3	119.7	70.1	113.9	0.05	7.18

Appendix B. Streamflow measurements, 2024.

STREAMFLOW MEASUREMENT

Graphite One - 2024 Aquatic Baseline Studies

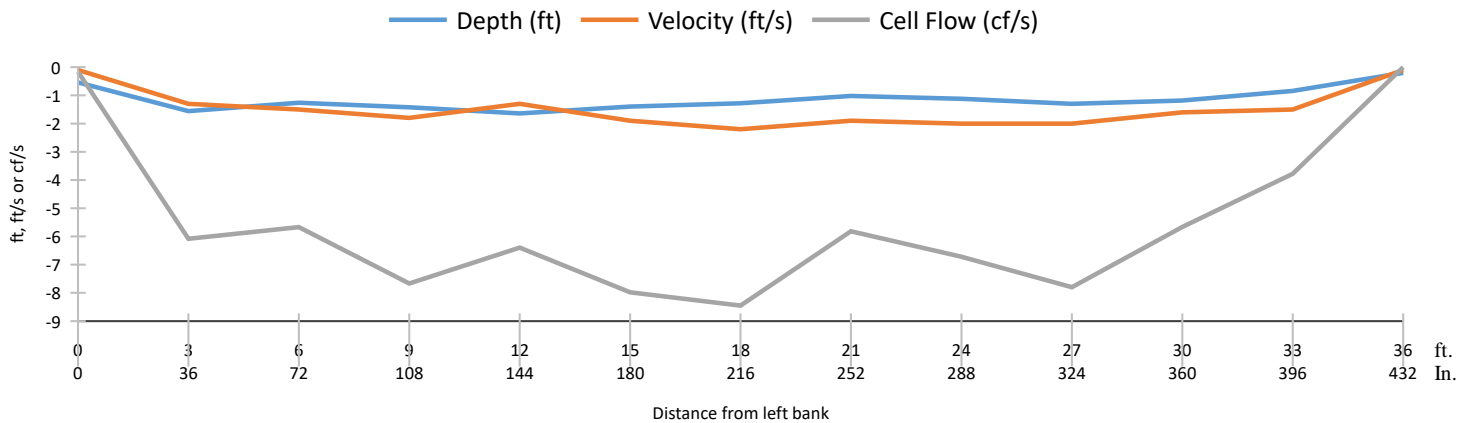
Set No. 24072A
Station FAL 1
Date/Time 7/11/2024 9:48:00 AM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	0.0	3.00	0.54	1.62	0.1	0.16	0
2	3.0	3.00	1.56	4.68	1.3	6.08	8
3	6.0	3.00	1.26	3.78	1.5	5.67	8
4	9.0	3.00	1.42	4.26	1.8	7.67	11
5	12.0	3.00	1.64	4.92	1.3	6.40	9
6	15.0	3.00	1.40	4.20	1.9	7.98	11
7	18.0	3.00	1.28	3.84	2.2	8.45	12
8	21.0	3.00	1.02	3.06	1.9	5.81	8
9	24.0	3.00	1.12	3.36	2.0	6.72	9
10	27.0	3.00	1.30	3.90	2.0	7.80	11
11	30.0	3.00	1.18	3.54	1.6	5.66	8
12	33.0	3.00	0.84	2.52	1.5	3.78	5
13	36.0	0.00	0.20	0.00	0.1	0.00	0

Q Total 72.19

Stream Profile



Owl Ridge NRC

STREAMFLOW MEASUREMENT

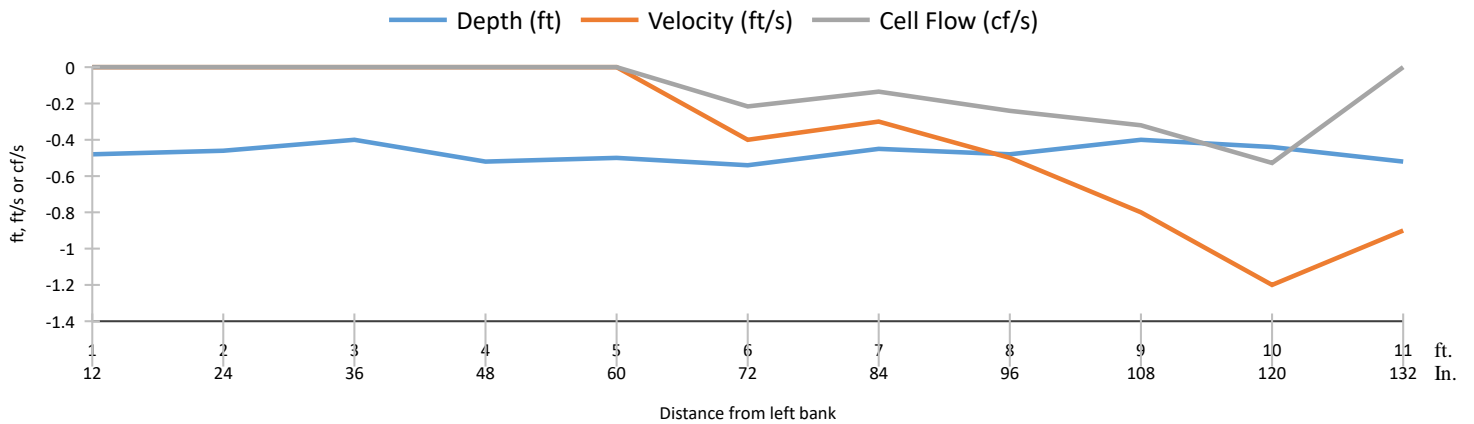
Graphite One - 2024 Aquatic Baseline Studies

Set No. 24073A
Station IMU 16
Date/Time 7/11/2024 4:08:00 PM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	1.0	1.00	0.48	0.48	0.0	0.00	0
2	2.0	1.00	0.46	0.46	0.0	0.00	0
3	3.0	1.00	0.40	0.40	0.0	0.00	0
4	4.0	1.00	0.52	0.52	0.0	0.00	0
5	5.0	1.00	0.50	0.50	0.0	0.00	0
6	6.0	1.00	0.54	0.54	0.4	0.22	15
7	7.0	1.00	0.45	0.45	0.3	0.14	9
8	8.0	1.00	0.48	0.48	0.5	0.24	17
9	9.0	1.00	0.40	0.40	0.8	0.32	22
10	10.0	1.00	0.44	0.44	1.2	0.53	37
11	11.0	0.00	0.52	0.00	0.9	0.00	0
Q Total						1.44	

Stream Profile



STREAMFLOW MEASUREMENT

Graphite One - 2024 Aquatic Baseline Studies

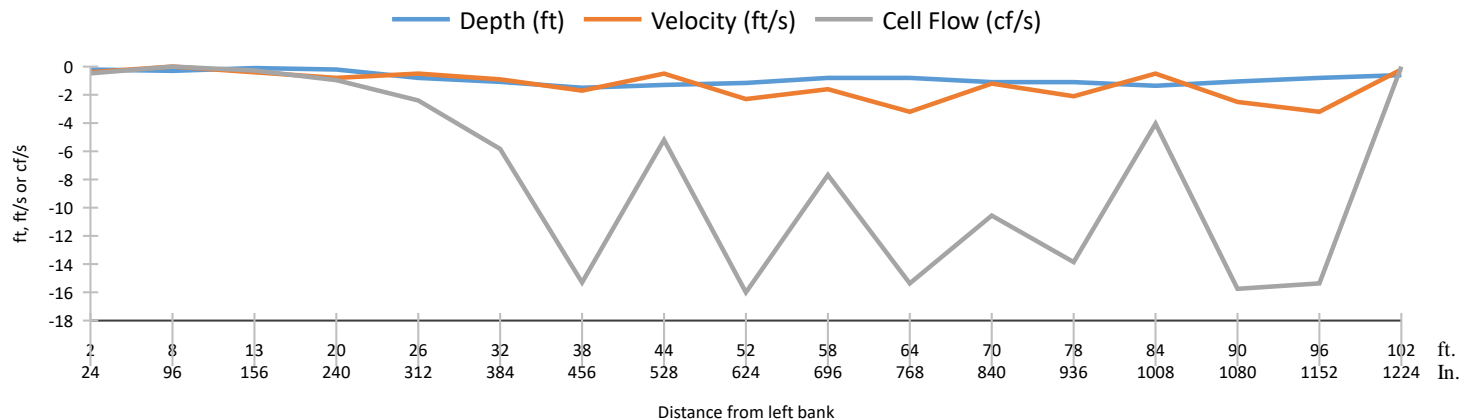
Set No. 24075A
Station USR 1
Date/Time 7/16/2024 12:31:00 PM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	2.0	6.00	0.20	1.20	0.4	0.48	0
2	8.0	5.00	0.30	1.50	0.0	0.00	0
3	13.0	7.00	0.10	0.70	0.4	0.28	0
4	20.0	6.00	0.20	1.20	0.8	0.96	1
5	26.0	6.00	0.80	4.80	0.5	2.40	2
6	32.0	6.00	1.08	6.48	0.9	5.83	5
7	38.0	6.00	1.50	9.00	1.7	15.30	12
8	44.0	8.00	1.30	10.40	0.5	5.20	4
9	52.0	6.00	1.16	6.96	2.3	16.01	12
10	58.0	6.00	0.80	4.80	1.6	7.68	6
11	64.0	6.00	0.80	4.80	3.2	15.36	12
12	70.0	8.00	1.10	8.80	1.2	10.56	8
13	78.0	6.00	1.10	6.60	2.1	13.86	11
14	84.0	6.00	1.35	8.10	0.5	4.05	3
15	90.0	6.00	1.05	6.30	2.5	15.75	12
16	96.0	6.00	0.80	4.80	3.2	15.36	12
17	102.0	0.00	0.60	0.00	0.2	0.00	0

Q Total 129.08

Stream Profile



Owl Ridge NRC

STREAMFLOW MEASUREMENT

Graphite One - 2024 Aquatic Baseline Studies

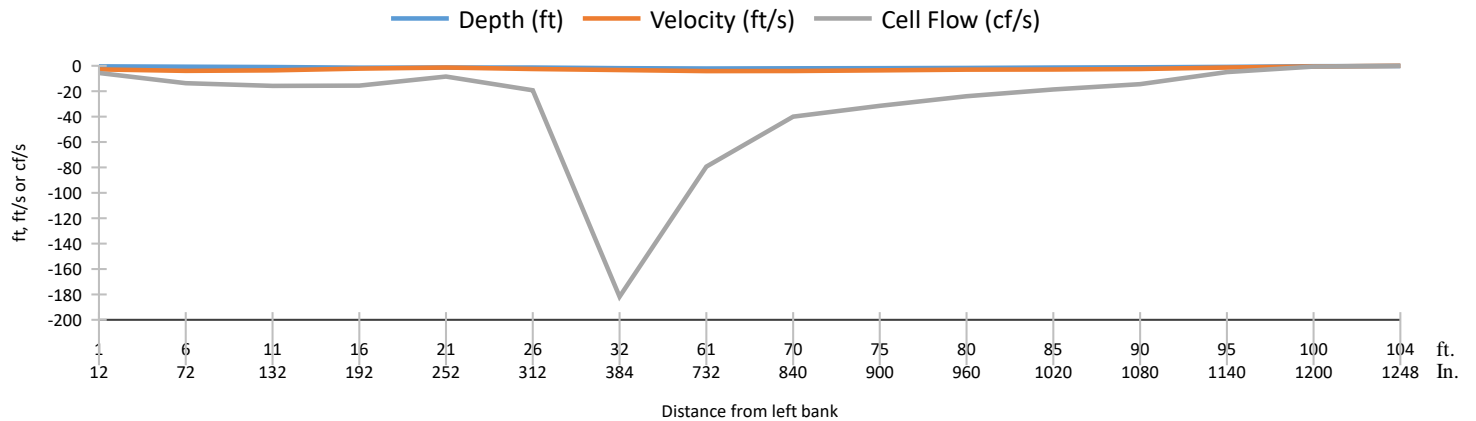
Set No. 24076A
Station COB 1
Date/Time 7/16/2024 5:54:00 PM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	1.0	5.00	0.40	2.00	2.8	5.60	1
2	6.0	5.00	0.70	3.50	3.9	13.65	3
3	11.0	5.00	0.90	4.50	3.5	15.75	3
4	16.0	5.00	1.42	7.10	2.2	15.62	3
5	21.0	5.00	1.30	6.50	1.3	8.45	2
6	26.0	6.00	1.28	7.68	2.5	19.20	4
7	32.0	29.00	1.90	55.10	3.3	181.83	38
8	61.0	9.00	2.10	18.90	4.2	79.38	17
9	70.0	5.00	2.00	10.00	4.0	40.00	8
10	75.0	5.00	1.80	9.00	3.5	31.50	7
11	80.0	5.00	1.60	8.00	3.0	24.00	5
12	85.0	5.00	1.28	6.40	2.9	18.56	4
13	90.0	5.00	1.15	5.75	2.5	14.38	3
14	95.0	5.00	0.75	3.75	1.3	4.88	1
15	100.0	4.00	0.30	1.20	0.5	0.60	0
16	104.0	0.00	0.20	0.00	0.0	0.00	0

Q Total 473.39

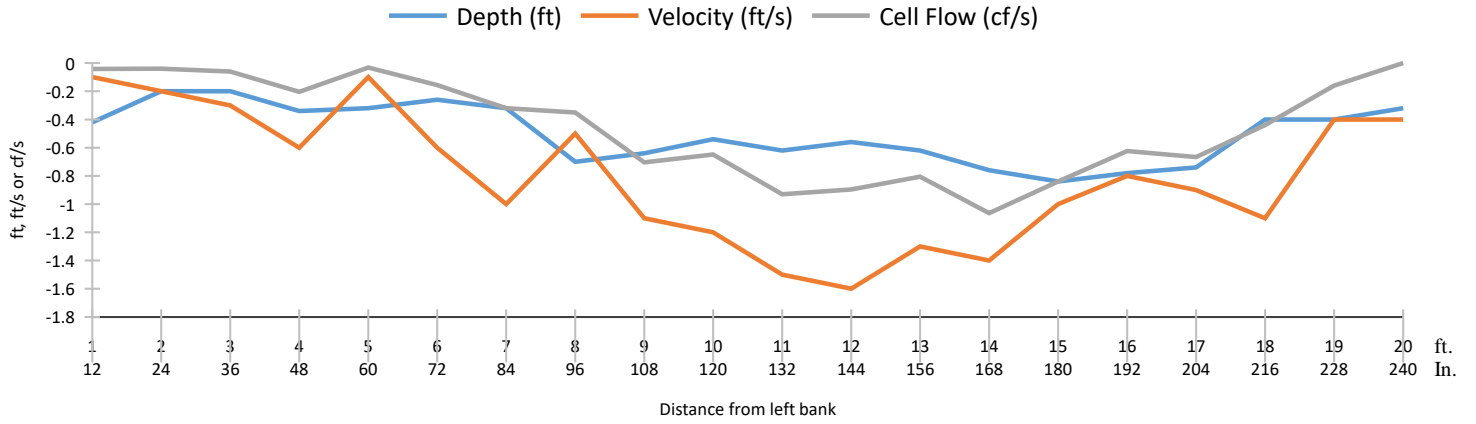
Stream Profile



Owl Ridge NRC

Q Total 8.98

Stream Profile



STREAMFLOW MEASUREMENT

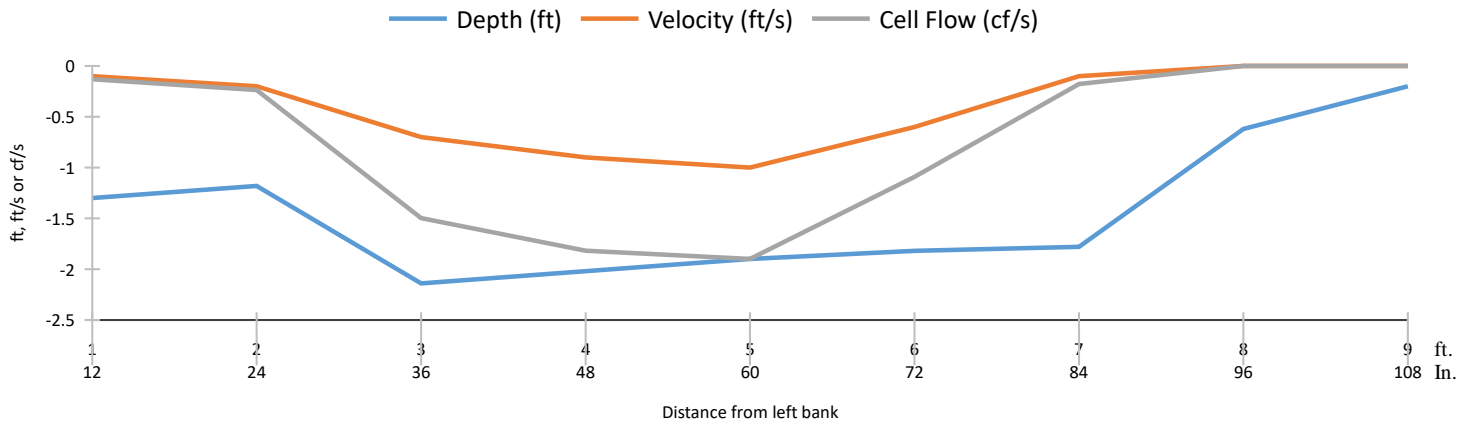
Graphite One - 2024 Aquatic Baseline Studies

Set No. 24078A
Station COB T1
Date/Time 7/16/2024 5:15:00 PM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	1.0	1.00	1.30	1.30	0.1	0.13	2
2	2.0	1.00	1.18	1.18	0.2	0.24	3
3	3.0	1.00	2.14	2.14	0.7	1.50	22
4	4.0	1.00	2.02	2.02	0.9	1.82	27
5	5.0	1.00	1.90	1.90	1.0	1.90	28
6	6.0	1.00	1.82	1.82	0.6	1.09	16
7	7.0	1.00	1.78	1.78	0.1	0.18	3
8	8.0	1.00	0.62	0.62	0.0	0.00	0
9	9.0	0.00	0.20	0.00	0.0	0.00	0
Q Total						6.85	

Stream Profile



Owl Ridge NRC

STREAMFLOW MEASUREMENT

Graphite One - 2024 Aquatic Baseline Studies

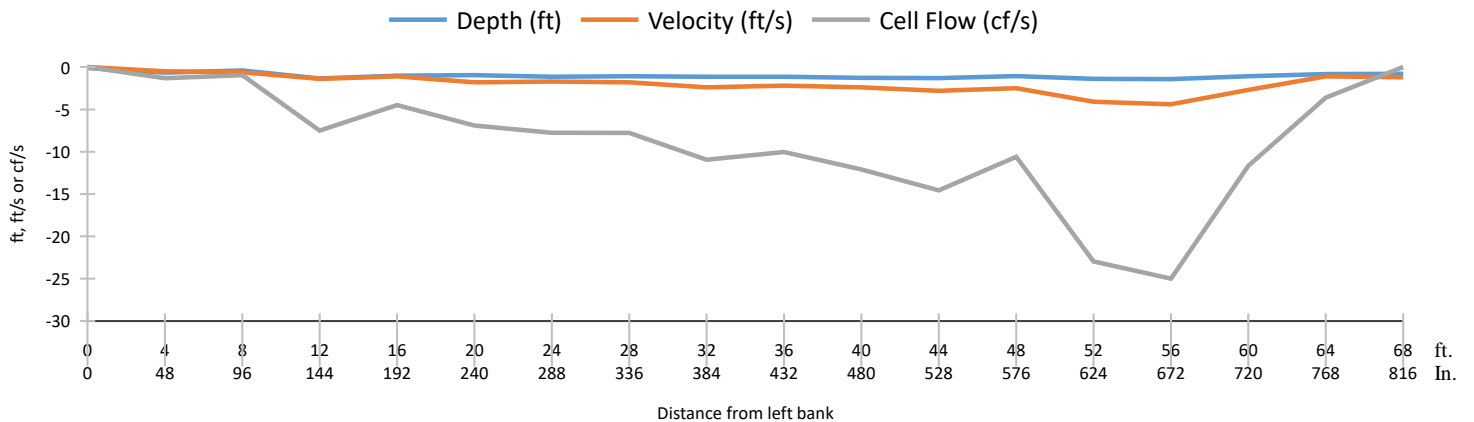
Set No. 24079A
Station WIN 1
Date/Time 7/16/2024 11:22:00 AM

Wetted Width (ft) Wetted Max. Depth (ft)
OHW Width (ft) OHWM Max. Depth (ft)
Bankfull Width (ft) Bankfull Max. Depth (ft)

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	0.0	4.00	0.10	0.40	0.0	0.00	0
2	4.0	4.00	0.66	2.64	0.5	1.32	1
3	8.0	4.00	0.40	1.60	0.6	0.96	1
4	12.0	4.00	1.34	5.36	1.4	7.50	5
5	16.0	4.00	1.02	4.08	1.1	4.49	3
6	20.0	4.00	0.96	3.84	1.8	6.91	4
7	24.0	4.00	1.14	4.56	1.7	7.75	5
8	28.0	4.00	1.08	4.32	1.8	7.78	5
9	32.0	4.00	1.14	4.56	2.4	10.94	7
10	36.0	4.00	1.14	4.56	2.2	10.03	6
11	40.0	4.00	1.26	5.04	2.4	12.10	8
12	44.0	4.00	1.30	5.20	2.8	14.56	9
13	48.0	4.00	1.06	4.24	2.5	10.60	7
14	52.0	4.00	1.40	5.60	4.1	22.96	15
15	56.0	4.00	1.42	5.68	4.4	24.99	16
16	60.0	4.00	1.08	4.32	2.7	11.66	7
17	64.0	4.00	0.82	3.28	1.1	3.61	2
18	68.0	0.00	0.80	0.00	1.2	0.00	0

Q Total 158.17

Stream Profile



Owl Ridge NRC

STREAMFLOW MEASUREMENT

Graphite One - 2024 Aquatic Baseline Studies

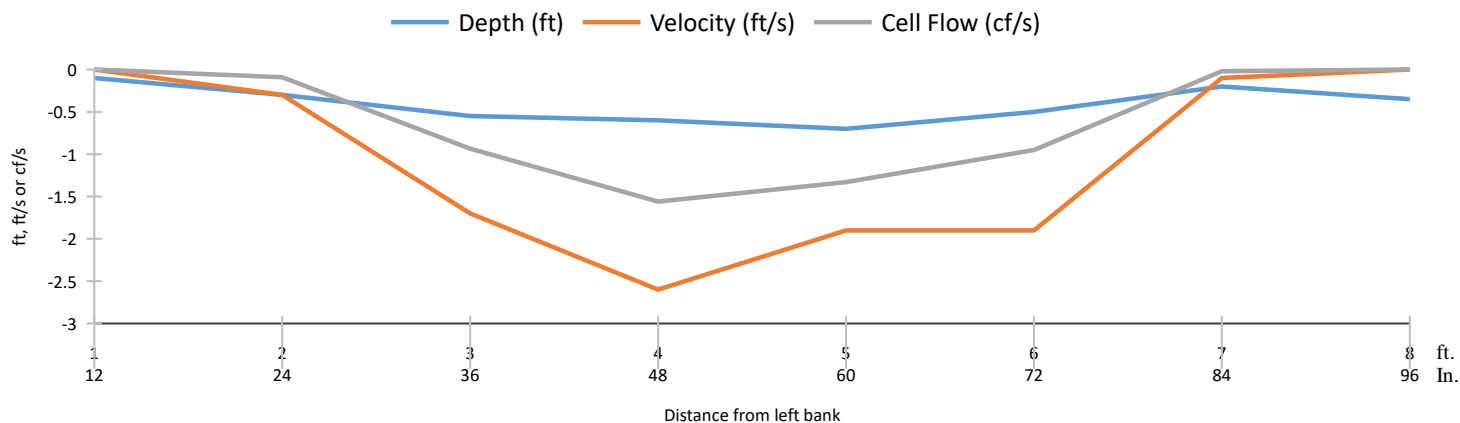
Set No. 24080A
Station GLA 2
Date/Time 7/16/2024 8:55:00 AM

Wetted Width (ft) **Wetted Max. Depth (ft)**
OHW Width (ft) **OHWM Max. Depth (ft)**
Bankfull Width (ft) **Bankfull Max. Depth (ft)**

#	Distance to Bank (ft)	Width Interval (ft)	Depth (ft)	Area (ft^2)	Velocity (ft/s)	Cell Flow (cf/s)	Total Flow (%)
1	1.0	1.00	0.10	0.10	0.0	0.00	0
2	2.0	1.00	0.30	0.30	0.3	0.09	2
3	3.0	1.00	0.55	0.55	1.7	0.94	19
4	4.0	1.00	0.60	0.60	2.6	1.56	32
5	5.0	1.00	0.70	0.70	1.9	1.33	27
6	6.0	1.00	0.50	0.50	1.9	0.95	19
7	7.0	1.00	0.20	0.20	0.1	0.02	0
8	8.0	0.00	0.35	0.00	0.0	0.00	0

Q Total 4.89

Stream Profile



Owl Ridge NRC

Appendix C. Periphyton standing crop data, 2019, 2021–2024.

CHLOROPHYLL ANALYSIS RESULTS

Program Name:	2019 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	19002	Instrument Detection Limit:	0.45 mg/m ²
Station:	COB T1	Estimated Detection Limit:	0.23 mg/m ²
Sample Collection Date:	13-Jul-19	Linear Check Maximun:	71.77 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2019		0.638	0.6408	1.75	0.0005	0.0791
12/20/2019		0.5432	0.4272	1.5	0.0439	0.0925
12/20/2019		1.53512	1.4952	1.7	0.1858	0.1927
12/20/2019	BELOW DETECTION	0.22404	0.3204	2.5	0.0384	0.102
12/20/2019		1.13348	0.9612	1.562	0.0555	0.2764
12/20/2019	BELOW DETECTION	0.17664	0.2136	2	0.0601	0.1086
12/20/2019		1.03932	0.9612	1.643	0.1202	0.0936
12/20/2019		0.67892	0.6408	1.667	0.0522	0.1401
12/20/2019		1.94908	1.7088	1.593	0.148	0.1699
12/20/2019		1.04548	0.9612	1.643	0.0361	0.124
Sample Size		10			10	10
Mean		0.83			0.07	0.14
Mininum		0.21			0.00	0.08
Maximun		1.71			0.19	0.28
Std. Dev.		0.49			0.06	0.06
Std. Error		0.15			0.02	0.02

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19008 **Instrument Detection Limit:** 0.45 mg/m²
Station: IMU 16 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 13-Jul-19 **Linear Check Maximun:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2019	BELOW DETECTION	0.44192	0.4272	1.667	0.1608	0.1735
12/20/2019		1.6228	1.2816	1.5	0.1946	0.4432
12/20/2019		0.86204	0.8544	1.727	0.0388	0.1811
12/20/2019		1.04548	0.8544	1.533	0.0361	0.124
12/20/2019	BELOW DETECTION	0.31916	0.3204	1.75	0.0056	0
12/20/2019		0.67244	0.534	1.5	0.1257	0.2078
12/20/2019		0.57764	0.4272	1.444	0.1692	0.2212
12/20/2019		0.77372	0.6408	1.545	0.0088	0.1268
12/20/2019	BELOW DETECTION	0.17664	0.2136	2	0.0601	0.1086
12/20/2019		0.4484	0.534	2	0.0874	0.1058
		Sample Size	10		10	10
		Mean	0.61		0.09	0.17
		Mininum	0.21		0.01	0.00
		Maximun	1.28		0.19	0.44
		Std. Dev.	0.31		0.07	0.12
		Std. Error	0.10		0.02	0.04

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19014 **Instrument Detection Limit:** 0.45 mg/m²
Station: GLA 1 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 14-Jul-19 **Linear Check Maximun:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/20/2019		5.90176	1.9224	1.145	6.0456	9.5103
12/20/2019		1.29284	0.534	1.192	1.2574	2.1107
12/20/2019	BELOW DETECTION	0.21108	0.1068	1.25	0.1853	0.2373
12/20/2019	BELOW DETECTION	0.12924	0	1	0.0818	0.1153
12/20/2019		12.45304	3.8448	1.135	13.596	23.7751
12/20/2019		1.60572	1.1748	1.423	0.9183	1.0152
12/20/2019		1.57248	0.6408	1.188	1.6826	2.7034
12/20/2019		3.40172	1.3884	1.191	3.0468	5.0724
12/20/2019		8.08244	2.136	1.113	9.4569	15.1114
12/20/2019		2.95504	0.9612	1.143	3.4414	5.5317
<hr/>						
Sample Size		10			10	10
Mean		1.27			3.97	6.52
Mininum		0.00			0.08	0.12
Maximun		3.84			13.60	23.78
Std. Dev.		1.15			4.47	7.66
Std. Error		0.36			1.41	2.42

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19020 **Instrument Detection Limit:** 0.45 mg/m²
Station: GLA 2 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 14-Jul-19 **Linear Check Maximun:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2019	BELOW DETECTION	0.13572	0	1	0.0083	0.0476
12/20/2019	BELOW DETECTION	0.08832	0.2136		0.03	0.0543
12/20/2019	BELOW DETECTION	0.21756	0.2136	1.667	0.1118	0.1696
12/20/2019	BELOW DETECTION	0.08832	0	1	0.03	0.0543
12/20/2019	BELOW DETECTION	0.17664	0.2136	2	0.0601	0.1086
12/20/2019	BELOW DETECTION	0.17664	0.1068	1.333	0.0601	0.1086
12/20/2019	BELOW DETECTION	0.08832	0	1	0.03	0.0543
12/20/2019	BELOW DETECTION	0.21788	0.2136	1.667	0.1225	0.0716
12/20/2019	BELOW DETECTION	0.13572	0.1068	1.5	0.0083	0.0476
12/20/2019	BELOW DETECTION	0.36656	0.4272	2	0	0
Sample Size		10			10	10
Mean		0.15			0.05	0.07
Mininum		0.00			0.00	0.00
Maximun		0.43			0.12	0.17
Std. Dev.		0.14			0.04	0.05
Std. Error		0.04			0.01	0.01

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19026 **Instrument Detection Limit:** 0.45 mg/m²
Station: ORO 1 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 15-Jul-19 **Linear Check Maximun:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/20/2019		8.75472	7.9032	1.627	0	1.1952
12/20/2019		22.04248	19.6512	1.617	0	1.5809
12/20/2019		14.46636	12.1752	1.556	0.7897	2.7128
12/20/2019		3.10816	2.67	1.581	0	0.2736
12/20/2019		21.26036	19.5444	1.649	0	2.1103
12/20/2019		4.41142	4.005	1.636	0	0.2966
12/20/2019		3.7223	3.3642	1.63	0	0.4051
12/20/2019		3.16992	2.8836	1.628	0.2016	0.7948
12/20/2019		8.91972	7.1556	1.508	1.4507	4.3116
12/20/2019		11.9422	10.0392	1.556	0.5577	1.5371
<hr/>						
Sample Size		10			10	10
Mean		8.94			0.30	1.52
Mininum		2.67			0.00	0.27
Maximun		19.65			1.45	4.31
Std. Dev.		6.45			0.49	1.27
Std. Error		2.04			0.16	0.40

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19032 **Instrument Detection Limit:** 0.45 mg/m²
Station: FAL 1 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 15-Jul-19 **Linear Check Maximun:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2019		0.90976	0.7476	1.538	0.0278	0.0763
12/20/2019		0.638	0.534	1.556	0.0005	0.0791
12/20/2019	BELOW DETECTION	0.27176	0.2136	1.5	0.0273	0
12/20/2019		0.50196	0.4272	1.571	0	0.1296
12/20/2019		0.59708	0.4272	1.444	0	0.0181
12/20/2019	BELOW DETECTION	0.36624	0.2136	1.333	0	0.0819
12/20/2019		0.5432	0.4272	1.5	0.0439	0.0925
12/20/2019		0.5906	0.534	1.625	0.0222	0.0858
12/20/2019	BELOW DETECTION	0.1422	0.1068	1.5	0	0
12/20/2019		0.54288	0.4272	1.5	0.0333	0.1906
Sample Size		10			10	10
Mean		0.41			0.02	0.08
Mininum		0.11			0.00	0.00
Maximun		0.75			0.04	0.19
Std. Dev.		0.19			0.02	0.06
Std. Error		0.06			0.01	0.02

Program Name: 2019 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 19038 **Instrument Detection Limit:** 0.45 mg/m²
Station: COB 1 **Estimated Detection Limit:** 0.23 mg/m²
Sample Collection Date: 16-Jul-19 **Linear Check Maximum:** 71.77 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2019		4.083	3.5244	1.569	0.7645	0.9459
12/20/2019		5.12532	4.4856	1.575	1.4093	1.2123
12/20/2019		2.22668	1.8156	1.531	0.0805	0.2956
12/20/2019		5.33612	4.9128	1.648	0.0219	0.1768
12/20/2019		1.8952	1.602	1.556	0.2432	0.2442
12/20/2019		2.91572	2.3496	1.512	0.6051	0.3447
12/20/2019		2.23964	2.0292	1.633	0	0.1602
12/20/2019		5.70488	5.0196	1.58	1.6423	0.845
12/20/2019		2.38808	1.1748	1.244	1.7751	2.597
12/20/2019		1.30396	0.9612	1.45	0.1997	0.3546
Sample Size		10			10	10
Mean		2.79			0.67	0.72
Minimum		0.96			0.00	0.16
Maximum		5.02			1.78	2.60
Std. Dev.		1.56			0.69	0.75
Std. Error		0.49			0.22	0.24

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21001c	Instrument Detection Limit:	0.12 mg/m ²
Station:	IMU 16	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	03-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/1/2021		0.8	0.75	1.64	0.21	0.32
12/1/2021		0.36	0.32	1.6	0.06	0.05
12/1/2021		0.91	0.85	1.67	0.02	0.17
12/1/2021		2.96	1.71	1.3	2	3.08
12/1/2021		0.99	0.96	1.69	0.2	0.27
12/1/2021		1.37	0.96	1.41	0.51	0.78
12/1/2021		0.96	0.75	1.5	0.02	0
12/1/2021		1.05	0.96	1.6	0.44	0.62
12/1/2021		1.01	0.75	1.44	0.39	0.56
12/1/2021		1.55	1.39	1.62	0.04	0.06
12/1/2021		3.39	2.99	1.58	0.89	0.65

Sample Size	11	11	11
Mean	1.13	0.43	0.60
Minimum	0.32	0.02	0.00
Maximum	2.99	2.00	3.08
Std. Dev.	0.72	0.58	0.87
Std. Error	0.22	0.18	0.26

Program Name: 2021 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 21002C **Instrument Detection Limit:** 0.12 mg/m²
Station: FAL 1 **Estimated Detection Limit:** 0.56 mg/m²
Sample Collection Date: 04-Jul-21 **Linear Check Maximun:** 67.43 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/2/2021		24.55	21.79	1.61	0.79	3.18
12/2/2021		8.02	6.94	1.59	0.07	0.9
12/2/2021		1.9	1.5	1.5	0.15	0.37
12/2/2021	Turbidity Too High	16.84	14.2	1.55	1.83	3.53
12/2/2021	Turbidity Too High	11.8	9.83	1.53	3.13	4.25
12/2/2021		0.72	0.53	1.45	0.1	0.2
12/2/2021		8.02	6.94	1.58	0.57	1.37
12/2/2021	Turbidity Too High	14.38	12.28	1.57	1.13	3.55
12/2/2021	Turbidity Too High	105.21	64.51	1.35	22.24	12.16
12/2/2021		9.65	7.8	1.51	1.46	3.89
		Sample Size	10		10	10
		Mean	14.63		3.15	3.34
		Mininum	0.53		0.07	0.20
		Maximun	64.51		22.24	12.16
		Std. Dev.	18.57		6.78	3.46
		Std. Error	5.87		2.14	1.09

Program Name: 2021 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 21003C **Instrument Detection Limit:** 0.12 mg/m²
Station: GLA 2 **Estimated Detection Limit:** 0.56 mg/m²
Sample Collection Date: 04-Jul-21 **Linear Check Maximun:** 67.43 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/1/2021	Below Detection	0.04	0.11		0.05	0.06
12/1/2021		0.13	0.21	3	0.08	0.12
12/1/2021	Below Detection	0.09	0.11	2	0.03	0.05
12/1/2021		0.35	0.32	1.6	0.19	0.28
12/1/2021		0.13	0.11	1.5	0.07	0.21
12/1/2021	Below Detection	0.05	0.11		0	0
12/1/2021		0.36	0.32	1.6	0.06	0.05
12/1/2021		0.58	0.53	1.63	0.1	0.15
12/1/2021		0.14	0.21	3	0	0.15
12/1/2021		0.95	0.75	1.5	0.07	0.24
		Sample Size	10		10	10
		Mean	0.28		0.07	0.13
		Mininum	0.11		0.00	0.00
		Maximun	0.75		0.19	0.28
		Std. Dev.	0.21		0.05	0.09
		Std. Error	0.07		0.02	0.03

Program Name: 2021 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 21004C **Instrument Detection Limit:** 0.12 mg/m²
Station: GLA 1 **Estimated Detection Limit:** 0.56 mg/m²
Sample Collection Date: 05-Jul-21 **Linear Check Maximun:** 67.43 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/1/2021		0.17	0.11	1.33	0.13	0.18
12/1/2021	Below Detection	0.04	0.11		0.05	0.06
12/1/2021	Below Detection	0.04	0.11		0.05	0.06
12/1/2021		0.18	0.32	4	0	0.04
12/1/2021		0.14	0.11	1.5	0.01	0.05
12/1/2021		0.49	0.32	1.38	0.16	0
12/1/2021		0.13	0.21	3	0.08	0.12
12/1/2021	Below Detection	0.09	0.21		0.03	0.05
12/1/2021	Below Detection	0.04	0.11		0.05	0.06
12/1/2021	Below Detection	0.04	0	1	0.05	0.06
Sample Size		10			10	10
Mean		0.16			0.06	0.07
Mininum		0.00			0.00	0.00
Maximun		0.32			0.16	0.18
Std. Dev.		0.10			0.05	0.05
Std. Error		0.03			0.02	0.02

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21006C	Instrument Detection Limit:	0.12 mg/m ²
Station:	COB 1	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	06-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/2/2021		6.65	6.41	1.7	0.06	0.49
12/2/2021		6	5.77	1.68	1.41	0.28
12/2/2021		5.95	5.66	1.68	0.35	0.23
12/2/2021		15.96	15.38	1.69	1.82	1.09
12/2/2021		3.74	3.52	1.65	1.17	0.15
12/2/2021		6.42	6.19	1.68	1.36	0.35
12/2/2021		8.65	8.33	1.68	1.4	0.29
12/2/2021		8.65	8.33	1.68	1.4	0.29
12/2/2021		4.54	4.38	1.69	0.21	0.45
12/2/2021		1.89	1.71	1.62	0.32	0.31
12/2/2021		5.26	5.23	1.71	1.6	0.35

Sample Size	11	11	11
Mean	6.45	1.01	0.39
Minimum	1.71	0.06	0.15
Maximum	15.38	1.82	1.09
Std. Dev.	3.53	0.64	0.25
Std. Error	1.07	0.19	0.08

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21007C	Instrument Detection Limit:	0.12 mg/m ²
Station:	COB T1	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	06-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/2/2021		3.23	2.99	1.65	0.16	0.23
12/2/2021		1.76	1.71	1.7	0.25	0.1
12/2/2021		5.95	5.66	1.67	0.88	0.31
12/2/2021		3.7	3.42	1.65	0	0.26
12/2/2021		5.87	5.55	1.68	0.22	0.31
12/2/2021		0.77	0.75	1.7	0.01	0.13
12/2/2021		2.32	2.03	1.59	0.05	0.18
12/2/2021		6.04	4.17	1.4	2.2	3.53
12/2/2021		2.55	2.46	1.7	0.1	0.19
12/2/2021		1.87	1.39	1.46	0.03	0.15
	Sample Size	10			10	10
	Mean	3.01			0.39	0.54
	Minimum	0.75			0.00	0.10
	Maximum	5.66			2.20	3.53
	Std. Dev.	1.69			0.69	1.05
	Std. Error	0.53			0.22	0.33

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21008C	Instrument Detection Limit:	0.12 mg/m ²
Station:	ORO 1	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	08-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/2/2021		21.38	19.44	1.63	0.51	3.07
12/2/2021		17.41	15.81	1.63	1.09	2.88
12/2/2021		7.57	7.05	1.66	0	0.99
12/2/2021		7.38	6.73	1.64	0	0.95
12/2/2021		21.78	19.65	1.62	0.78	1.71
12/2/2021		29.73	27.55	1.65	0.57	2.65
12/2/2021		22.51	19.86	1.6	1.53	4.48
12/2/2021		38.12	33.43	1.6	0.48	3.4
12/2/2021		10.62	9.18	1.57	1.48	3.1
12/2/2021		6.15	5.02	1.52	1.56	2.52
	Sample Size	10			10	10
	Mean	16.37			0.80	2.58
	Minimum	5.02			0.00	0.95
	Maximum	33.43			1.56	4.48
	Std. Dev.	9.48			0.59	1.10
	Std. Error	3.00			0.19	0.35

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21010c	Instrument Detection Limit:	0.12 mg/m ²
Station:	WIN 1	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	09-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/2/2021	Turbidity Too High	17.99	15.17	1.54	4.29	5.98
12/2/2021		35.04	32.25	1.65	0	3.4
12/2/2021		14.11	12.82	1.63	1.21	3.23
12/2/2021		2.89	2.14	1.43	1.3	1.97
12/2/2021		8.35	7.9	1.68	0	1.08
12/2/2021		5.53	4.27	1.47	1.74	3.59
12/2/2021		17.6	15.81	1.62	0.9	3.08
12/2/2021		6.53	5.66	1.58	0.73	2.72
12/2/2021	Turbidity Too High	9.01	7.37	1.52	2.15	3.92
12/2/2021		11.8	10.47	1.6	1.64	2.95
Sample Size		10			10	10
Mean		11.39			1.40	3.19
Minimum		2.14			0.00	1.08
Maximum		32.25			4.29	5.98
Std. Dev.		8.62			1.24	1.28
Std. Error		2.73			0.39	0.40

Program Name:	2021 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	21011C	Instrument Detection Limit:	0.12 mg/m ²
Station:	USR 1	Estimated Detection Limit:	0.56 mg/m ²
Sample Collection Date:	09-Jul-21	Linear Check Maximum:	67.43 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/2/2021		6.31	5.77	1.64	0.35	0.77
12/2/2021		18.35	17.3	1.67	0.91	1.15
12/2/2021		4.34	3.84	1.6	0.33	0.94
12/2/2021		1.41	1.28	1.63	0	0.3
12/2/2021		6.18	4.27	1.39	3.06	5.79
12/2/2021		10.29	9.29	1.63	0	0.82
12/2/2021		4.35	4.06	1.66	0.39	0.35
12/2/2021		2.14	1.92	1.62	0.05	0.24
12/2/2021		11.47	10.68	1.66	0.28	1.14
12/2/2021		3.04	2.78	1.63	0.14	0.48
Sample Size		10			10	10
Mean		6.12			0.55	1.20
Minimum		1.28			0.00	0.24
Maximum		17.30			3.06	5.79
Std. Dev.		4.96			0.92	1.65
Std. Error		1.57			0.29	0.52

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22043b	Instrument Detection Limit:	0.12 mg/m ²
Station:	GLA 2	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	10-Jul-22	Linear Check Maximun:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/15/2022	below estimated DL	0.0474	0.1068		0	0
12/15/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/15/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/15/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/15/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/15/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/15/2022	below estimated DL	0.0474	0.1068		0	0
12/15/2022	below estimated DL	0.0474	0.1068		0	0
12/15/2022	below estimated DL	0.08184	0.1068	2	0.1035	0.122
12/15/2022	below estimated DL	0.088	0.1068	2	0.0194	0.1524
Sample Size		10			10	10
Mean		0.11			0.04	0.06
Mininum		0.11			0.00	0.00
Maximun		0.11			0.10	0.15
Std. Dev.		0.00			0.03	0.05
Std. Error		0.00			0.01	0.02

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22044b	Instrument Detection Limit:	0.12 mg/m ²
Station:	USR 1	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	09-Jul-22	Linear Check Maximum:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/15/2022		4.5908	3.738	1.522	0.6513	1.2039
12/15/2022		5.78636	4.6992	1.518	1.0201	1.9034
12/15/2022		2.92568	0.6408	1.094	2.7714	4.6721
12/15/2022		4.99764	4.0584	1.521	0.6656	1.4449
12/15/2022		1.9696	1.4952	1.467	0.3882	0.7282
12/15/2022		6.41108	3.4176	1.274	3.9947	6.8516
12/15/2022		12.90048	10.146	1.492	2.3002	5.6328
12/15/2022		2.93572	1.8156	1.34	1.2529	2.1547
12/15/2022		2.39068	1.9224	1.514	0.2982	0.4415
12/15/2022		10.6866	7.5828	1.418	3.206	5.5172
Sample Size		10			10	10
Mean		3.95			1.65	3.06
Minimum		0.64			0.30	0.44
Maximum		10.15			3.99	6.85
Std. Dev.		2.95			1.31	2.36
Std. Error		0.93			0.42	0.75

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22045b	Instrument Detection Limit:	0.12 mg/m ²
Station:	COB T1	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	07-Jul-22	Linear Check Maximum:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/16/2022		0.22436	0.2136	1.667	0.049	0.0039
12/16/2022		1.29132	1.068	1.526	0.3573	0.3919
12/16/2022		1.31184	1.3884	1.765	0.5976	0.9502
12/16/2022		1.1338	1.068	1.667	0.0661	0.1783
12/16/2022		1.1338	1.068	1.667	0.0661	0.1783
12/16/2022		0.82144	0.7476	1.636	0	0.022
12/16/2022		1.71856	1.4952	1.583	0.1831	0.1356
12/16/2022		1.94908	1.7088	1.593	0.148	0.1699
12/16/2022		0.72016	0.6408	1.6	0.1146	0.103
12/16/2022		0.7952	0.7476	1.636	0.281	0.3908
Sample Size		10			10	10
Mean		1.01			0.19	0.25
Minimum		0.21			0.00	0.00
Maximum		1.71			0.60	0.95
Std. Dev.		0.45			0.18	0.28
Std. Error		0.14			0.06	0.09

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22046b	Instrument Detection Limit:	0.12 mg/m ²
Station:	ORO 1	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	08-Jul-22	Linear Check Maximum:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/16/2022		6.52552	5.9808	1.636	0.4748	0.8459
12/16/2022		3.97492	3.204	1.508	0.9443	1.1927
12/16/2022		3.34168	2.8836	1.574	0.3883	0.4807
12/16/2022		0.67244	0.4272	1.364	0.1257	0.2078
12/16/2022		4.89496	4.272	1.588	0.3112	0.8627
12/16/2022		2.80712	1.602	1.306	1.1924	1.8432
12/16/2022		29.95236	26.9136	1.619	1.0625	3.611
12/16/2022		7.37364	6.5148	1.598	0.6287	1.4566
12/16/2022		65.78484	57.9924	1.603	0.5182	2.8768
12/16/2022		10.5608	9.1848	1.581	1.2504	1.8966
	Sample Size	10			10	10
	Mean	11.90			0.69	1.53
	Minimum	0.43			0.13	0.21
	Maximum	57.99			1.25	3.61
	Std. Dev.	17.87			0.39	1.07
	Std. Error	5.65			0.12	0.34

Program Name: 2022 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 22047b **Instrument Detection Limit:** 0.12 mg/m²
Station: COB 1 **Estimated Detection Limit:** 0.6 mg/m²
Sample Collection Date: 08-Jul-22 **Linear Check Maximun:** 73.12 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/16/2022		3.37124	3.204	1.667	0.6402	0.1867
12/16/2022		3.36996	2.9904	1.596	0.5977	0.579
12/16/2022		1.55788	1.4952	1.667	0.5006	0.0644
12/16/2022		2.8056	2.67	1.676	0.2922	0.1244
12/16/2022		0.58444	0.534	1.625	0.1063	0.0554
12/16/2022		0.4484	0.4272	1.667	0.0874	0.1058
12/16/2022		0.4958	0.534	1.833	0.0656	0.0992
12/16/2022		1.40556	1.2816	1.632	0.0934	0.1755
12/16/2022		0.45488	0.4272	1.667	0.0139	0.0382
12/16/2022		0.4484	0.4272	1.667	0.0874	0.1058
Sample Size		10			10	10
Mean		1.40			0.25	0.15
Mininum		0.43			0.01	0.04
Maximun		3.20			0.64	0.58
Std. Dev.		1.14			0.24	0.16
Std. Error		0.36			0.08	0.05

Program Name: 2022 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 22048b **Instrument Detection Limit:** 0.12 mg/m²
Station: GLA 1 **Estimated Detection Limit:** 0.6 mg/m²
Sample Collection Date: 06-Jul-22 **Linear Check Maximun:** 73.12 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/16/2022	below estimated DL	0	0		0	0
12/16/2022	below estimated DL	0	0		0	0
12/16/2022		0.12956	0.2136	3	0.0924	0.0172
12/16/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/16/2022	below estimated DL	0.04092	0.1068		0.0518	0.061
12/16/2022	below estimated DL	0.0474	0.1068		0	0
12/16/2022		0.08832	0.2136		0.03	0.0543
12/16/2022	below estimated DL	0.08832	0.1068	2	0.03	0.0543
12/16/2022		0.0948	0.2136		0	0
12/16/2022		0.12924	0.2136	3	0.0818	0.1153
Sample Size		10			10	10
Mean		0.13			0.03	0.04
Mininum		0.00			0.00	0.00
Maximun		0.21			0.09	0.12
Std. Dev.		0.08			0.03	0.04
Std. Error		0.03			0.01	0.01

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22049b	Instrument Detection Limit:	0.12 mg/m ²
Station:	FAL 1	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	06-Jul-22	Linear Check Maximum:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/16/2022		2.1796	2.0292	1.655	0.1128	0.2042
12/16/2022		8.05244	7.6896	1.686	0.2522	0.5412
12/16/2022		5.59208	5.34	1.676	0.8155	0.3538
12/16/2022		4.5202	4.272	1.678	0	0.3814
12/16/2022		6.87884	6.408	1.645	1.3101	0.2248
12/16/2022		22.09484	20.5056	1.646	2.7526	0.8527
12/16/2022		5.75924	5.4468	1.671	0.4245	0.3572
12/16/2022		7.29468	6.7284	1.643	0.621	0.4519
12/16/2022		3.78092	3.5244	1.66	0.0352	0.3833
12/16/2022		3.8348	3.6312	1.68	0	0.309
12/16/2022		22.31272	20.9328	1.658	2.8751	0.9242

Sample Size	11	11	11
Mean	7.86	0.84	0.45
Minimum	2.03	0.00	0.20
Maximum	20.93	2.88	0.92
Std. Dev.	6.56	1.06	0.24
Std. Error	1.98	0.32	0.07

Program Name:	2022 Aquatic Baseline Studies	Analytical Laboratory:	
Set No.:	22050b	Instrument Detection Limit:	0.12 mg/m ²
Station:	IMU 16	Estimated Detection Limit:	0.6 mg/m ²
Sample Collection Date:	06-Jul-22	Linear Check Maximun:	73.12 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/16/2022		0.6854	0.534	1.5	0	0.0724
12/16/2022		1.60496	1.3884	1.565	0.4682	0.1558
12/16/2022		1.16824	1.068	1.625	0.1914	0.307
12/16/2022		0.56404	0.3204	1.3	0.2948	0.5527
12/16/2022		1.677	1.602	1.682	0.11	0.2708
12/16/2022		0.77372	0.6408	1.545	0.0088	0.1268
12/16/2022		5.42632	4.6992	1.564	1.6778	1.0135
12/16/2022		1.60476	0.9612	1.321	0.8864	1.3095
12/16/2022		0.40748	0.3204	1.5	0.0356	0.0448
12/16/2022		3.68168	3.0972	1.547	0.6448	0.9314
	Sample Size	10			10	10
	Mean	1.46			0.43	0.48
	Mininum	0.32			0.00	0.04
	Maximun	4.70			1.68	1.31
	Std. Dev.	1.40			0.53	0.45
	Std. Error	0.44			0.17	0.14

Program Name: 2022 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 22051b **Instrument Detection Limit:** 0.12 mg/m²
Station: WIN 1 **Estimated Detection Limit:** 0.6 mg/m²
Sample Collection Date: 09-Jul-22 **Linear Check Maximum:** 73.12 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/16/2022		0.22404	0.2136	1.667	0.0384	0.102
12/16/2022		4.96568	3.8448	1.474	1.4724	2.7408
12/16/2022		1.1162	0	1	1.1974	2.002
12/16/2022		8.98204	7.476	1.534	2.061	2.7428
12/16/2022		2.25432	1.9224	1.562	0.2686	0.59
12/16/2022		0.49548	0.4272	1.571	0.055	0.1972
12/16/2022		4.67848	3.9516	1.552	0.66	1.4544
12/16/2022		2.11892	1.9224	1.621	0.2709	0.4443
12/16/2022		2.4316	2.0292	1.543	0.3499	0.5025
12/16/2022		2.6836	2.136	1.5	0.587	0.8008
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Sample Size		10			10	10
Mean		2.39			0.70	1.16
Minimum		0.00			0.04	0.10
Maximum		7.48			2.06	2.74
Std. Dev.		2.24			0.67	1.01
Std. Error		0.71			0.21	0.32

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23041B	Instrument Detection Limit:	0.09 mg/m ²
Station:	USR 1	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	01-Jul-23	Linear Check Maximum:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/18/2023		9.708	8.2236	1.554	1.3658	3.8126
12/18/2023		3.77572	0.8544	1.099	2.9891	4.6943
12/18/2023		3.82388	3.204	1.545	0.5796	0.9114
12/18/2023		31.26524	28.4088	1.632	0.845	2.0577
12/18/2023		4.06888	2.9904	1.438	1.2977	2.5291
12/18/2023		4.0814	3.3108	1.517	0.7113	1.4363
12/18/2023		46.92756	43.4676	1.652	1.1672	3.1627
12/18/2023		4.217	3.8448	1.632	0.2908	0.4284
12/18/2023		4.30856	2.8836	1.38	1.703	2.7666
12/18/2023		4.6424	2.9904	1.359	2.0436	3.187
Sample Size		10			10	10
Mean		10.02			1.30	2.50
Minimum		0.85			0.29	0.43
Maximum		43.47			2.99	4.69
Std. Dev.		14.23			0.79	1.32
Std. Error		4.50			0.25	0.42

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23042B	Instrument Detection Limit:	0.09 mg/m ²
Station:	WIN 1	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	02-Jul-23	Linear Check Maximum:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/18/2023		5.46452	4.5924	1.551	0.5006	1.642
12/18/2023		6.69408	5.874	1.591	0.5552	1.5126
12/18/2023		2.09032	1.8156	1.586	0.0509	0.4441
12/18/2023		4.77848	4.1652	1.582	0.5006	1.7657
12/18/2023		4.07352	3.6312	1.607	0.3134	0.8407
12/18/2023		4.66996	4.1652	1.609	0.2409	1.055
12/18/2023		5.8296	5.0196	1.566	0.86	3.1718
12/18/2023		5.83064	5.34	1.641	0.045	0.6683
12/18/2023		2.36252	1.9224	1.514	0.5176	1.3988
12/18/2023		4.80008	3.8448	1.5	1.2016	3.0853
Sample Size		10			10	10
Mean		4.04			0.48	1.56
Minimum		1.82			0.04	0.44
Maximum		5.87			1.20	3.17
Std. Dev.		1.33			0.35	0.93
Std. Error		0.42			0.11	0.29

Program Name: 2023 Aquatic Baseline Studies **Analytical Laboratory:** ADFG
Set No.: 23043B **Instrument Detection Limit:** 0.09 mg/m²
Station: GLA 1 **Estimated Detection Limit:** 0.39 mg/m²
Sample Collection Date: 06-Jul-23 **Linear Check Maximun:** 65.03 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/20/2023	Below Estimated	0	0		0	0
12/20/2023	Below Estimated	0.08832	0.2136		0.03	0.0543
12/20/2023	Below Estimated	0.08184	0.2136		0.1035	0.122
12/20/2023	Below Estimated	0.0474	0.1068		0	0
12/20/2023	Below Estimated	0.31916	0.3204	1.75	0.0056	0
12/20/2023	Below Estimated	0.04708	0.1068		0	0.0914
12/20/2023	Below Estimated	0.0474	0.1068		0	0
12/20/2023	Below Estimated	0	0		0	0
12/20/2023	Below Estimated	0.0474	0.1068		0	0
12/20/2023	Below Estimated	0	0		0	0
		Sample Size	10		10	10
		Mean	0.12		0.01	0.03
		Mininum	0.00		0.00	0.00
		Maximun	0.32		0.10	0.12
		Std. Dev.	0.11		0.03	0.05
		Std. Error	0.03		0.01	0.01

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23044B	Instrument Detection Limit:	0.09 mg/m ²
Station:	ORO 1	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	04-Jul-23	Linear Check Maximun:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/18/2023		7.31736	5.874	1.505	1.7827	2.5328
12/18/2023		10.61656	9.1848	1.581	0.504	2.0721
12/18/2023		8.08496	7.1556	1.604	0.3136	1.2583
12/18/2023		3.09088	2.0292	1.373	1.0408	1.9993
12/18/2023		11.40432	9.8256	1.575	0.8266	2.8248
12/18/2023		4.29724	3.738	1.583	0.3412	1.0408
12/18/2023		4.47604	3.204	1.423	1.3227	2.672
12/18/2023		2.62876	1.9224	1.439	0.6503	1.1694
12/18/2023		3.42256	2.8836	1.551	0.4599	0.897
12/18/2023		3.58548	1.068	1.133	3.0547	4.9172
	Sample Size	10			10	10
	Mean	4.69			1.03	2.14
	Mininum	1.07			0.31	0.90
	Maximun	9.83			3.05	4.92
	Std. Dev.	3.13			0.85	1.21
	Std. Error	0.99			0.27	0.38

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23045B	Instrument Detection Limit:	0.09 mg/m ²
Station:	COB T1	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	03-Jul-23	Linear Check Maximum:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/18/2023		1.31756	1.2816	1.706	0.074	0.0231
12/18/2023		0.86884	0.7476	1.583	0	0.0153
12/18/2023		2.32212	2.136	1.645	0.0583	0.086
12/18/2023		0.5906	0.534	1.625	0.0222	0.0858
12/18/2023		0.95716	0.8544	1.615	0.006	0.0696
12/18/2023		2.13836	1.7088	1.516	0.0504	0.2412
12/18/2023		0.91624	0.9612	1.818	0	0.0086
12/18/2023		0.7328	0.7476	1.778	0	0.0658
12/18/2023		3.06248	2.8836	1.659	0.4026	0.8454
12/18/2023		2.00912	1.602	1.517	0	0.1259
Sample Size		10			10	10
Mean		1.35			0.06	0.16
Minimum		0.53			0.00	0.01
Maximum		2.88			0.40	0.85
Std. Dev.		0.74			0.12	0.25
Std. Error		0.23			0.04	0.08

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23046B	Instrument Detection Limit:	0.09 mg/m ²
Station:	FAL 1	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	05-Jul-23	Linear Check Maximum:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/18/2023		4.23612	4.0584	1.691	0.0598	0.3234
12/18/2023		5.29392	4.9128	1.657	0	0.5082
12/18/2023		4.14748	3.8448	1.655	0.0191	0.3672
12/18/2023		5.28776	4.9128	1.657	0.0117	0.4778
12/18/2023		6.30276	6.0876	1.695	0.479	0.3516
12/18/2023		0.5906	0.534	1.625	0.0222	0.0858
12/18/2023		1.77212	1.602	1.625	0.0772	0.1593
12/18/2023		1.4754	1.4952	1.737	0.3758	0.1386
12/18/2023		7.52092	7.2624	1.701	0.0187	0.7056
12/18/2023		4.30596	4.0584	1.667	0.3422	0.2865
12/18/2023		2.464	2.2428	1.636	0	0.1641

Sample Size	11	11	11
Mean	3.73	0.13	0.32
Minimum	0.53	0.00	0.09
Maximum	7.26	0.48	0.71
Std. Dev.	2.07	0.18	0.19
Std. Error	0.63	0.05	0.06

Program Name:	2023 Aquatic Baseline Studies	Analytical Laboratory:	ADFG
Set No.:	23047B	Instrument Detection Limit:	0.09 mg/m ²
Station:	IMU 16	Estimated Detection Limit:	0.39 mg/m ²
Sample Collection Date:	06-Jul-23	Linear Check Maximun:	65.03 mg/m ²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/20/2023	Below Estimated	0.23052	0.2136	1.667	0	0.0343
12/20/2023	Below Estimated	0.18312	0.2136	2	0	0.041
12/20/2023		0.71984	0.534	1.455	0.104	0.2011
12/20/2023	Below Estimated	0.0474	0.1068		0	0
12/20/2023		0.99128	0.8544	1.571	0.1206	0.2964
12/20/2023		1.26208	1.068	1.556	0.116	0.5878
12/20/2023		1.06016	0.7476	1.412	0.3711	0.5538
12/20/2023	Below Estimated	0.22436	0.1068	1.25	0.049	0.0039
12/20/2023		0.95684	0.8544	1.615	0	0.1677
12/20/2023		0.5906	0.6408	1.857	0.0222	0.0858
Sample Size		10			10	10
Mean		0.53			0.08	0.20
Mininum		0.11			0.00	0.00
Maximun		1.07			0.37	0.59
Std. Dev.		0.35			0.11	0.22
Std. Error		0.11			0.04	0.07

Program Name: 2023 Aquatic Baseline Studies **Analytical Laboratory:** ADFG
Set No.: 23048B **Instrument Detection Limit:** 0.09 mg/m²
Station: COB 1 **Estimated Detection Limit:** 0.39 mg/m²
Sample Collection Date: 05-Jul-23 **Linear Check Maximun:** 65.03 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/18/2023		2.27408	2.136	1.667	0.0588	0.2889
12/18/2023		1.31076	1.2816	1.706	0.1368	0.1888
12/18/2023		1.00488	0.534	1.294	0	0
12/18/2023		3.09948	2.8836	1.643	0.613	0.1895
12/18/2023		2.28088	2.136	1.667	0	0.1231
12/18/2023		0.99808	0.9612	1.692	0.0578	0.1306
12/18/2023		0.48964	0	1	0.1498	0.0688
12/18/2023		4.4894	4.272	1.678	0.3394	0.2294
12/18/2023		2.59356	2.4564	1.676	0.075	0.1813
12/18/2023		3.49716	3.3108	1.674	0.1868	0.2272
	Sample Size	10			10	10
	Mean	2.00			0.16	0.16
	Mininum	0.00			0.00	0.00
	Maximun	4.27			0.61	0.29
	Std. Dev.	1.32			0.19	0.08
	Std. Error	0.42			0.06	0.03

Program Name: 2023 Aquatic Baseline Studies **Analytical Laboratory:** ADFG
Set No.: 23049B **Instrument Detection Limit:** 0.09 mg/m²
Station: GLA 2 **Estimated Detection Limit:** 0.39 mg/m²
Sample Collection Date: 07-Jul-23 **Linear Check Maximun:** 65.03 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0.0474	0.1068		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0.0474	0.1068		0	0
12/21/2023	Below Estimated	0	0		0	0
12/21/2023	Below Estimated	0.04092	0.1068		0.0518	0.061
Sample Size		10			10	10
Mean		0.03			0.01	0.01
Mininum		0.00			0.00	0.00
Maximun		0.11			0.05	0.06
Std. Dev.		0.05			0.02	0.02
Std. Error		0.02			0.01	0.01

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24072B **Instrument Detection Limit:** 0 mg/m²
Station: FAL 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 11-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	NA	1.75948	1.602	1.625	0.2348	0.1966
12/4/2024	NA	0.76724	0.6408	1.545	0.0823	0.1944
12/4/2024	NA	0.86204	0.7476	1.583	0.0388	0.1811
12/4/2024	Below Estimated	0.31268	0.3204	1.75	0.079	0.0582
12/4/2024	NA	1.72472	1.7088	1.727	0.099	0.166
12/4/2024	NA	2.57996	2.3496	1.629	0.2006	0.5128
12/4/2024	Below Estimated	0.22404	0.1068	1.25	0.0384	0.102
12/4/2024	NA	1.2286	1.068	1.588	0.0227	0.1649
12/4/2024	NA	2.55232	2.3496	1.647	0.0126	0.2184
12/4/2024	NA	3.77476	3.5244	1.66	0.1194	0.3529
Sample Size		10			10	10
Mean		1.44			0.09	0.21
Mininum		0.11			0.01	0.06
Maximun		3.52			0.23	0.51
Std. Dev.		1.07			0.07	0.13
Std. Error		0.34			0.02	0.04

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24073B **Instrument Detection Limit:** 0 mg/m²
Station: IMU 16 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 11-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	Below Estimated	0.40716	0.3204	1.5	0.025	0.1429
12/4/2024	Below Estimated	0.40716	0.4272	1.8	0.025	0.1429
12/4/2024	NA	0.57796	0.534	1.625	0.1798	0.1231
12/4/2024	Below Estimated	0.22404	0.2136	1.667	0.0384	0.102
12/4/2024	NA	0.9916	0.8544	1.571	0.1313	0.1983
12/4/2024	Below Estimated	0.35976	0.4272	2	0.0467	0.1496
12/4/2024	NA	2.99424	2.67	1.61	0.1734	0.3919
12/4/2024	NA	1.99076	1.3884	1.406	0.6498	1.0903
12/4/2024	NA	1.38548	1.068	1.476	0.2926	0.5747
12/4/2024	NA	0.90328	0.8544	1.667	0.1012	0.144
12/4/2024	NA	2.03784	1.4952	1.438	0.6174	1.1817

Sample Size	11	11	11
Mean	0.93	0.21	0.39
Mininum	0.21	0.02	0.10
Maximun	2.67	0.65	1.18
Std. Dev.	0.72	0.23	0.40
Std. Error	0.22	0.07	0.12

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24074B **Instrument Detection Limit:** 0 mg/m²
Station: ORO 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 12-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	NA	5.31712	4.5924	1.573	0.6818	1.3374
12/4/2024	Below Estimated	0.5432	0.534	1.714	0.0439	0.0925
12/4/2024	NA	2.03676	1.7088	1.552	0.1567	0.4204
12/4/2024	NA	9.47368	7.1556	1.462	1.9883	4.117
12/4/2024	Low quality sample; 664/665 < 1	0.78192	0.4272	1.286	0.4173	0.6242
12/4/2024	NA	4.76204	3.8448	1.507	1.2456	2.1416
12/4/2024	NA	4.57676	3.9516	1.578	0.3375	0.578
12/4/2024	NA	0.63152	0.4272	1.4	0.074	0.1468
12/4/2024	Low quality sample; 664/665 < 1	5.50032	3.738	1.385	2.6592	3.8047
12/4/2024	NA	3.20596	2.7768	1.578	0.38	0.4331
		Sample Size	10		10	10
		Mean	2.92		0.80	1.37
		Mininum	0.43		0.04	0.09
		Maximun	7.16		2.66	4.12
		Std. Dev.	2.18		0.89	1.50
		Std. Error	0.69		0.28	0.47

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24075B **Instrument Detection Limit:** 0 mg/m²
Station: USR 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 15-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	NA	8.10392	7.3692	1.622	1.2157	1.4686
12/4/2024	NA	7.04364	5.2332	1.438	3.2536	4.4949
12/4/2024	NA	4.08096	3.738	1.636	0.2719	0.4788
12/4/2024	NA	1.0864	0.9612	1.6	0.0878	0.185
12/4/2024	NA	1.12764	0.9612	1.562	0.1502	0.1479
12/4/2024	NA	6.2234	5.4468	1.58	1.3076	1.6542
12/4/2024	NA	5.50768	4.9128	1.605	0.6268	1.0164
12/4/2024	NA	3.31036	2.7768	1.531	1.2164	1.5804
12/4/2024	NA	1.7718	1.602	1.625	0.0666	0.2574
12/4/2024	NA	3.30724	2.9904	1.622	0.2631	0.352

Sample Size	10	10	10
Mean	3.60	0.85	1.16
Mininum	0.96	0.07	0.15
Maximun	7.37	3.25	4.49
Std. Dev.	2.13	0.98	1.32
Std. Error	0.67	0.31	0.42

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24076B **Instrument Detection Limit:** 0 mg/m²
Station: COB 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 13-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m²)	Phaeo. Corrected Chl-a (mg/m²)	664/665 Ratio	Chl-b (mg/m²)	Chl-c (mg/m²)
12/3/2024	Below Estimated	0.27144	0.2136	1.5	0.0166	0.0953
12/3/2024	Below Estimated	0.45488	0.4272	1.667	0.0139	0.0382
12/3/2024	Below Estimated	0.40748	0.4272	1.8	0.0356	0.0448
12/3/2024	NA	1.77212	1.602	1.625	0.0772	0.1593
12/3/2024	NA	1.73088	1.602	1.652	0.0148	0.1964
12/3/2024	NA	0.86236	0.8544	1.727	0.0495	0.083
12/3/2024	NA	0.95684	0.8544	1.615	0	0.1677
12/3/2024	Below Estimated	0.27144	0.2136	1.5	0.0166	0.0953
12/3/2024	NA	2.37504	2.2428	1.677	0	0.3059
12/3/2024	NA	0.90944	0.8544	1.667	0.0171	0.1744
		Sample Size	10		10	10
		Mean	0.93		0.02	0.14
		Mininum	0.21		0.00	0.04
		Maximun	2.24		0.08	0.31
		Std. Dev.	0.68		0.02	0.08
		Std. Error	0.22		0.01	0.03

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24077B **Instrument Detection Limit:** 0 mg/m²
Station: GLA 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 13-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	Below Estimated	0.22404	0.2136	1.667	0.0384	0.102
12/4/2024	Below Estimated	0.08832	0.2136		0.03	0.0543
12/4/2024	Below Estimated	0.13572	0.2136	3	0.0083	0.0476
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.20428	0.534		0.2482	0.4031
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.0474	0.1068		0	0
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
		Sample Size	10		10	10
		Mean	0.18		0.06	0.09
		Mininum	0.11		0.00	0.00
		Maximun	0.53		0.25	0.40
		Std. Dev.	0.13		0.07	0.11
		Std. Error	0.04		0.02	0.04

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24078B **Instrument Detection Limit:** 0 mg/m²
Station: COB T1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 14-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
11/26/2024	NA	0.72664	0.6408	1.6	0.0412	0.0354
11/26/2024	NA	0.67924	0.6408	1.667	0.0629	0.042
11/26/2024	NA	1.18152	1.1748	1.733	0.055	0.0735
11/26/2024	NA	2.15496	2.0292	1.655	0.4493	0.0826
11/26/2024	NA	0.9036	0.7476	1.538	0.1119	0.0459
11/26/2024	NA	0.95748	0.8544	1.615	0.0167	0
11/26/2024	NA	2.07972	1.8156	1.567	0.7011	0.9484
11/26/2024	NA	2.12352	1.9224	1.6	0.8486	0.1267
11/26/2024	Below Estimated	0.4484	0.4272	1.667	0.0874	0.1058
11/26/2024	NA	2.2164	1.8156	1.515	0.7414	0.7018
Sample Size		10			10	10
Mean		1.21			0.31	0.22
Mininum		0.43			0.02	0.00
Maximun		2.03			0.85	0.95
Std. Dev.		0.62			0.34	0.33
Std. Error		0.20			0.11	0.10

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24079B **Instrument Detection Limit:** 0 mg/m²
Station: WIN 1 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 15-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	NA	4.445	4.272	1.678	0.8857	0.4089
12/4/2024	NA	4.48876	4.1652	1.65	0.3181	0.4256
12/4/2024	NA	4.84056	4.0584	1.543	0.8139	2.1888
12/4/2024	NA	6.55896	4.806	1.429	2.6909	6.7428
12/4/2024	NA	10.5036	8.1168	1.469	3.6482	6.5318
12/4/2024	NA	13.05988	11.6412	1.606	1.3795	1.9932
12/4/2024	Low quality sample; 664/665 < 1	7.71536	5.2332	1.374	4.7657	11.2112
12/4/2024	NA	11.02088	10.0392	1.627	1.1483	2.2594
12/4/2024	NA	15.96736	14.2044	1.607	0.861	2.6787
12/4/2024	NA	76.1746	59.274	1.482	18.9387	22.8219
Sample Size		10			10	10
Mean		12.58			3.54	5.73
Mininum		4.06			0.32	0.41
Maximun		59.27			18.94	22.82
Std. Dev.		16.79			5.60	6.90
Std. Error		5.31			1.77	2.18

Program Name: 2024 Aquatic Baseline Studies **Analytical Laboratory:**
Set No.: 24080B **Instrument Detection Limit:** 0 mg/m²
Station: GLA 2 **Estimated Detection Limit:** 0 mg/m²
Sample Collection Date: 16-Jul-24 **Linear Check Maximun:** 0 mg/m²

Date Analyzed	Below Instrument Detection Limit or Above Linear Check	Chl-a (mg/m ²)	Phaeo. Corrected Chl-a (mg/m ²)	664/665 Ratio	Chl-b (mg/m ²)	Chl-c (mg/m ²)
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
12/4/2024	Below Estimated	0.08832	0.2136		0.03	0.0543
12/4/2024	Below Estimated	0.08832	0.2136		0.03	0.0543
12/4/2024	Below Estimated	0.0474	0.1068		0	0
12/4/2024	Below Estimated	0	0		0	0
12/4/2024	Below Estimated	0.04092	0.1068		0.0518	0.061
Sample Size		10			10	10
Mean		0.12			0.04	0.05
Mininum		0.00			0.00	0.00
Maximun		0.21			0.05	0.06
Std. Dev.		0.06			0.02	0.03
Std. Error		0.02			0.01	0.01

Appendix D. Aquatic macroinvertebrate data, 2019, 2021–2024.

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2019	7/13/2019	COB T1	Annelida	Polychaeta	Sabellidae	--	654
2019	7/13/2019	COB T1	Arachnida	--	--	--	3
2019	7/13/2019	COB T1	Copepoda	--	--	--	9
2019	7/13/2019	COB T1	Crustacea	Cladocera	--	--	1
2019	7/13/2019	COB T1	Gastropoda	Hygrophila	Lymnaeidae	--	39
2019	7/13/2019	COB T1	Gastropoda	Hygrophila	Planorbidae	--	47
2019	7/13/2019	COB T1	Gastropoda	--	Valvatidae	--	76
2019	7/13/2019	COB T1	Gastropoda	--	--	--	2
2019	7/13/2019	COB T1	Insecta	Diptera	Chironomidae	--	290
2019	7/13/2019	COB T1	Insecta	Diptera	Empididae	Clinocera	8
2019	7/13/2019	COB T1	Insecta	Diptera	Simuliidae	Simulium	482
2019	7/13/2019	COB T1	Insecta	Diptera	Simuliidae	--	6
2019	7/13/2019	COB T1	Insecta	Ephemeroptera	Ameletidae	Ameletus	174
2019	7/13/2019	COB T1	Insecta	Ephemeroptera	Baetidae	Baetis	34
2019	7/13/2019	COB T1	Insecta	Ephemeroptera	Leptophlebiidae	Paraleptophlebia	222
2019	7/13/2019	COB T1	Insecta	Ephemeroptera	--	--	2
2019	7/13/2019	COB T1	Insecta	Plecoptera	Nemouridae	--	8
2019	7/13/2019	COB T1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	11
2019	7/13/2019	COB T1	Insecta	Trichoptera	--	--	2
2019	7/13/2019	COB T1	Misc. terrestrial org	--	--	--	10
2019	7/13/2019	COB T1	Mollusca	Bivalvia	Sphaeriidae	Pisidium	19
2019	7/13/2019	COB T1	Nematoda	--	--	--	253
2019	7/13/2019	COB T1	Oligochaeta	--	--	--	436
2019	7/13/2019	COB T1	Ostracoda	--	--	--	50
2019	7/13/2019	COB T1	Platyhelminthes	--	--	--	3
2019	7/13/2019	IMU 16	Arachnida	--	--	--	9
2019	7/13/2019	IMU 16	Collembola	--	--	--	1
2019	7/13/2019	IMU 16	Insecta	Diptera	Ceratopogonidae	Ceratopogon	22
2019	7/13/2019	IMU 16	Insecta	Diptera	Chironomidae	--	342
2019	7/13/2019	IMU 16	Insecta	Diptera	Empididae	Clinocera	50
2019	7/13/2019	IMU 16	Insecta	Diptera	Empididae	Hemerodromia	1
2019	7/13/2019	IMU 16	Insecta	Diptera	Simuliidae	--	1
2019	7/13/2019	IMU 16	Insecta	Diptera	Tipulidae	Dicranota	5
2019	7/13/2019	IMU 16	Insecta	Diptera	--	--	24
2019	7/13/2019	IMU 16	Insecta	Ephemeroptera	Ameletidae	Ameletus	2
2019	7/13/2019	IMU 16	Insecta	Ephemeroptera	Baetidae	Baetis	65
2019	7/13/2019	IMU 16	Insecta	Ephemeroptera	Baetidae	--	7
2019	7/13/2019	IMU 16	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	48
2019	7/13/2019	IMU 16	Insecta	Plecoptera	Chloroperlidae	--	9
2019	7/13/2019	IMU 16	Insecta	Plecoptera	Nemouridae	Zapada	20
2019	7/13/2019	IMU 16	Insecta	Plecoptera	Nemouridae	--	10
2019	7/13/2019	IMU 16	Insecta	Plecoptera	Perlodidae	Isoperla	1
2019	7/13/2019	IMU 16	Insecta	Plecoptera	Perlodidae	--	1
2019	7/13/2019	IMU 16	Insecta	Plecoptera	--	--	4
2019	7/13/2019	IMU 16	Insecta	Trichoptera	--	--	1
2019	7/13/2019	IMU 16	Misc. terrestrial org	--	--	--	1
2019	7/13/2019	IMU 16	Nematoda	--	--	--	14
2019	7/13/2019	IMU 16	Oligochaeta	--	--	--	278
2019	7/13/2019	IMU 16	Ostracoda	--	--	--	3
2019	7/14/2019	GLA 1	Collembola	--	--	--	6

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2019	7/14/2019	GLA 1	Insecta	Coleoptera	--	--	2
2019	7/14/2019	GLA 1	Insecta	Diptera	Chironomidae	--	12
2019	7/14/2019	GLA 1	Insecta	Diptera	Simuliidae	Simulium	1
2019	7/14/2019	GLA 1	Insecta	Diptera	--	--	1
2019	7/14/2019	GLA 1	Insecta	Trichoptera	--	--	2
2019	7/14/2019	GLA 1	Misc. terrestrial org	--	--	--	16
2019	7/14/2019	GLA 2	Insecta	Diptera	Chironomidae	--	2
2019	7/14/2019	GLA 2	Misc. terrestrial org	--	--	--	61
2019	7/15/2019	FAL 1	Insecta	Coleoptera	Staphylinidae	--	1
2019	7/15/2019	FAL 1	Insecta	Diptera	Chironomidae	--	56
2019	7/15/2019	FAL 1	Insecta	Diptera	Simuliidae	Simulium	200
2019	7/15/2019	FAL 1	Insecta	Diptera	Simuliidae	--	1
2019	7/15/2019	FAL 1	Insecta	Diptera	--	--	1
2019	7/15/2019	FAL 1	Insecta	Ephemeroptera	Baetidae	Acentrella	2
2019	7/15/2019	FAL 1	Insecta	Ephemeroptera	Baetidae	Baetis	18
2019	7/15/2019	FAL 1	Insecta	Ephemeroptera	Baetidae	--	2
2019	7/15/2019	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	28
2019	7/15/2019	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	30
2019	7/15/2019	FAL 1	Misc. terrestrial org	--	--	--	4
2019	7/15/2019	FAL 1	Nematoda	--	--	--	2
2019	7/15/2019	FAL 1	Platyhelminthes	--	--	--	1
2019	7/15/2019	ORO 1	Arachnida	--	--	--	70
2019	7/15/2019	ORO 1	Insecta	Diptera	Chironomidae	--	577
2019	7/15/2019	ORO 1	Insecta	Diptera	Empididae	Clinocera	7
2019	7/15/2019	ORO 1	Insecta	Diptera	Simuliidae	Simulium	4
2019	7/15/2019	ORO 1	Insecta	Diptera	Simuliidae	--	1
2019	7/15/2019	ORO 1	Insecta	Ephemeroptera	Baetidae	Baetis	3
2019	7/15/2019	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	6
2019	7/15/2019	ORO 1	Insecta	Plecoptera	Chloroperlidae	--	3
2019	7/15/2019	ORO 1	Insecta	Plecoptera	Nemouridae	Zapada	7
2019	7/15/2019	ORO 1	Insecta	Plecoptera	--	--	1
2019	7/15/2019	ORO 1	Insecta	Trichoptera	--	--	1
2019	7/15/2019	ORO 1	Nematoda	--	--	--	7
2019	7/15/2019	ORO 1	Oligochaeta	--	--	--	46
2019	7/15/2019	ORO 1	Ostracoda	--	--	--	3
2019	7/15/2019	ORO 1	Platyhelminthes	--	--	--	7
2019	7/16/2019	COB 1	Actinopterygii	Scorpaeniformes	Cottidae	--	7
2019	7/16/2019	COB 1	Arachnida	--	--	--	10
2019	7/16/2019	COB 1	Insecta	Diptera	Ceratopogonidae	Ceratopogon	1
2019	7/16/2019	COB 1	Insecta	Diptera	Chironomidae	--	114
2019	7/16/2019	COB 1	Insecta	Diptera	Empididae	--	1
2019	7/16/2019	COB 1	Insecta	Diptera	Simuliidae	Simulium	391
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	Baetidae	Baetis	3
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	3
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	100
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	22
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	Heptageniidae	--	1
2019	7/16/2019	COB 1	Insecta	Ephemeroptera	--	--	4
2019	7/16/2019	COB 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	20
2019	7/16/2019	COB 1	Insecta	Plecoptera	Chloroperlidae	Sweltsa	9

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2019	7/16/2019	COB 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2019	7/16/2019	COB 1	Insecta	Plecoptera	Perlodidae	Isoperla	2
2019	7/16/2019	COB 1	Insecta	Plecoptera	--	--	2
2019	7/16/2019	COB 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	2
2019	7/16/2019	COB 1	Insecta	Trichoptera	Limnephilidae	Ecclisomyia	10
2019	7/16/2019	COB 1	Insecta	Trichoptera	Limnephilidae	--	6
2019	7/16/2019	COB 1	Insecta	Trichoptera	--	--	7
2019	7/16/2019	COB 1	Misc. terrestrial org	--	--	--	2
2019	7/16/2019	COB 1	Mollusca	Bivalvia	Sphaeriidae	Pisidium	1
2019	7/16/2019	COB 1	Nematoda	--	--	--	2
2019	7/16/2019	COB 1	Oligochaeta	--	--	--	33
2019	7/16/2019	COB 1	Platyhelminthes	--	--	--	3
2021	7/3/2021	FAL 1	Annelida	Oligochaeta	--	--	25
2021	7/3/2021	FAL 1	Arachnida	Acarina	--	--	31
2021	7/3/2021	FAL 1	Collembola	Collembola	--	--	1
2021	7/3/2021	FAL 1	Crustacea	Ostracoda	--	--	21
2021	7/3/2021	FAL 1	Insecta	Diptera	Chironomidae	--	640
2021	7/3/2021	FAL 1	Insecta	Diptera	Culicidae	--	1
2021	7/3/2021	FAL 1	Insecta	Diptera	Empididae	Chelifera	3
2021	7/3/2021	FAL 1	Insecta	Diptera	Empididae	Clinocera	4
2021	7/3/2021	FAL 1	Insecta	Diptera	Simuliidae	--	28
2021	7/3/2021	FAL 1	Insecta	Diptera	Tipulidae	Dicranota	3
2021	7/3/2021	FAL 1	Insecta	Diptera	--	--	3
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	2
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Baetidae	Acentrella	5
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Baetidae	Baetis	8
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Baetidae	--	2
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	1
2021	7/3/2021	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	1
2021	7/3/2021	FAL 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2021	7/3/2021	FAL 1	Insecta	Plecoptera	--	--	3
2021	7/3/2021	FAL 1	Insecta	--	--	--	1
2021	7/3/2021	FAL 1	Nematoda	--	--	--	53
2021	7/3/2021	FAL 1	Platyhelminthes	--	--	--	1
2021	7/3/2021	IMU 16	Actinopterygii	Salmoniformes	Salmonidae	Coregonus	1
2021	7/3/2021	IMU 16	Actinopterygii	Salmoniformes	Salmonidae	Oncorhynchus	2
2021	7/3/2021	IMU 16	Actinopterygii	Salmoniformes	Salmonidae	Thymallus	2
2021	7/3/2021	IMU 16	Annelida	Oligochaeta	--	--	266
2021	7/3/2021	IMU 16	Arachnida	Acarina	--	--	16
2021	7/3/2021	IMU 16	Collembola	Collembola	Entomobryidae	--	2
2021	7/3/2021	IMU 16	Crustacea	Ostracoda	--	--	1
2021	7/3/2021	IMU 16	Insecta	Diptera	Chironomidae	--	163
2021	7/3/2021	IMU 16	Insecta	Diptera	Culicidae	--	1
2021	7/3/2021	IMU 16	Insecta	Diptera	Empididae	Chelifera	7
2021	7/3/2021	IMU 16	Insecta	Diptera	Empididae	Clinocera	73
2021	7/3/2021	IMU 16	Insecta	Diptera	Simuliidae	--	1
2021	7/3/2021	IMU 16	Insecta	Diptera	--	--	7
2021	7/3/2021	IMU 16	Insecta	Ephemeroptera	Ameletidae	Ameletus	2
2021	7/3/2021	IMU 16	Insecta	Ephemeroptera	Baetidae	Baetis	36
2021	7/3/2021	IMU 16	Insecta	Ephemeroptera	Baetidae	--	4

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2021	7/3/2021	IMU 16	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	85
2021	7/3/2021	IMU 16	Insecta	Plecoptera	Chloroperlidae	Alaskaperla	1
2021	7/3/2021	IMU 16	Insecta	Plecoptera	Chloroperlidae	Suwallia	3
2021	7/3/2021	IMU 16	Insecta	Plecoptera	Chloroperlidae	--	4
2021	7/3/2021	IMU 16	Insecta	Plecoptera	Nemouridae	Zapada	27
2021	7/3/2021	IMU 16	Insecta	Plecoptera	Perlodidae	Isoperla	3
2021	7/3/2021	IMU 16	Insecta	Plecoptera	--	--	21
2021	7/3/2021	IMU 16	Insecta	Trichoptera	Limnephilidae	--	1
2021	7/3/2021	IMU 16	Insecta	Trichoptera	--	--	7
2021	7/3/2021	IMU 16	Nematoda	--	--	--	18
2021	7/3/2021	IMU 16	Platyhelminthes	--	--	--	4
2021	7/4/2021	GLA 2	Annelida	Oligochaeta	--	--	12
2021	7/4/2021	GLA 2	Arachnida	Acarina	--	--	1
2021	7/4/2021	GLA 2	Collembola	Collembola	--	--	1
2021	7/4/2021	GLA 2	Collembola	Symphyleona	Sminthuridae	--	1
2021	7/4/2021	GLA 2	Insecta	Diptera	Chironomidae	--	7
2021	7/4/2021	GLA 2	Insecta	Diptera	Culicidae	--	15
2021	7/4/2021	GLA 2	Insecta	Diptera	Tipulidae	Dicranota	1
2021	7/4/2021	GLA 2	Insecta	Diptera	Tipulidae	Ormosia	6
2021	7/4/2021	GLA 2	Insecta	Diptera	--	--	5
2021	7/4/2021	GLA 2	Insecta	Hemiptera	Aphididae	--	1
2021	7/4/2021	GLA 2	Insecta	Hemiptera	Hebridae	--	1
2021	7/4/2021	GLA 2	Insecta	Thysanoptera	--	--	1
2021	7/5/2021	GLA 1	Arachnida	Acarina	--	--	1
2021	7/5/2021	GLA 1	Insecta	Diptera	--	--	2
2021	7/5/2021	GLA 1	Insecta	Hemiptera	Aphididae	--	9
2021	7/5/2021	GLA 1	Insecta	--	--	--	5
2021	7/6/2021	COB T1	Actinopterygii	Salmoniformes	Salmonidae	Oncorhynchus	2
2021	7/6/2021	COB T1	Actinopterygii	Scorpaeniformes	Cottidae	Cottus	1
2021	7/6/2021	COB T1	Annelida	Oligochaeta	--	--	321
2021	7/6/2021	COB T1	Annelida	Polychaeta	Sabellidae	--	24
2021	7/6/2021	COB T1	Arachnida	Acarina	--	--	10
2021	7/6/2021	COB T1	Arachnida	Araneae	--	--	1
2021	7/6/2021	COB T1	Collembola	Symphyleona	Sminthuridae	--	2
2021	7/6/2021	COB T1	Copepoda	Calanoida	--	--	32
2021	7/6/2021	COB T1	Copepoda	Harpacticoida	--	--	11
2021	7/6/2021	COB T1	Crustacea	Amphipoda	Gammaridae	--	1
2021	7/6/2021	COB T1	Crustacea	Amphipoda	--	--	8
2021	7/6/2021	COB T1	Crustacea	Ostracoda	--	--	72
2021	7/6/2021	COB T1	Insecta	Diptera	Chironomidae	--	171
2021	7/6/2021	COB T1	Insecta	Diptera	Culicidae	--	3
2021	7/6/2021	COB T1	Insecta	Diptera	Dixidae	--	3
2021	7/6/2021	COB T1	Insecta	Diptera	Simuliidae	--	655
2021	7/6/2021	COB T1	Insecta	Diptera	--	--	5
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	Ameletidae	Ameletus	15
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	Baetidae	Acentrella	21
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	Baetidae	Baetis	77
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	Baetidae	--	1
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	Leptophlebiidae	--	167
2021	7/6/2021	COB T1	Insecta	Ephemeroptera	--	--	9

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2021	7/6/2021	COB T1	Insecta	Plecoptera	--	--	9
2021	7/6/2021	COB T1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	2
2021	7/6/2021	COB T1	Insecta	Trichoptera	Limnephilidae	--	1
2021	7/6/2021	COB T1	Insecta	--	--	--	11
2021	7/6/2021	COB T1	Mollusca	Bivalvia	Sphaeriidae	Pisidium	2
2021	7/6/2021	COB T1	Mollusca	Gastropoda	Lymnaeidae	Lymnaea	4
2021	7/6/2021	COB T1	Mollusca	Gastropoda	Physidae	Physa	5
2021	7/6/2021	COB T1	Mollusca	Gastropoda	Planorbidae	Gyraulus	38
2021	7/6/2021	COB T1	Mollusca	Gastropoda	Planorbidae	--	7
2021	7/6/2021	COB T1	Mollusca	Gastropoda	Valvatidae	Valvata	54
2021	7/6/2021	COB T1	Mollusca	Gastropoda	--	--	4
2021	7/6/2021	COB T1	Nematoda	--	--	--	33
2021	7/6/2021	COB T1	Platyhelminthes	--	--	--	4
2021	7/7/2021	COB 1	Actinopterygii	Scorpaeniformes	Cottidae	Cottus	1
2021	7/7/2021	COB 1	Annelida	Oligochaeta	--	--	115
2021	7/7/2021	COB 1	Arachnida	Acarina	--	--	51
2021	7/7/2021	COB 1	Crustacea	Ostracoda	--	--	24
2021	7/7/2021	COB 1	Insecta	Diptera	Chironomidae	--	1257
2021	7/7/2021	COB 1	Insecta	Diptera	Ephydriidae	--	2
2021	7/7/2021	COB 1	Insecta	Diptera	Simuliidae	--	150
2021	7/7/2021	COB 1	Insecta	Diptera	Tipulidae	Dicranota	2
2021	7/7/2021	COB 1	Insecta	Diptera	--	--	1
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	20
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Baetidae	Acentrella	3
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Baetidae	Baetis	5
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Baetidae	--	6
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	4
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	50
2021	7/7/2021	COB 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	54
2021	7/7/2021	COB 1	Insecta	Plecoptera	Chloroperlidae	Alloperla	1
2021	7/7/2021	COB 1	Insecta	Plecoptera	Chloroperlidae	Kathroperla	1
2021	7/7/2021	COB 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	40
2021	7/7/2021	COB 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2021	7/7/2021	COB 1	Insecta	Plecoptera	Perlodidae	Isoperla	1
2021	7/7/2021	COB 1	Insecta	Plecoptera	--	--	3
2021	7/7/2021	COB 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	11
2021	7/7/2021	COB 1	Insecta	Trichoptera	Limnephilidae	--	2
2021	7/7/2021	COB 1	Insecta	Trichoptera	--	--	1
2021	7/7/2021	COB 1	Nematoda	--	--	--	12
2021	7/7/2021	COB 1	Nematomorpha	--	--	--	2
2021	7/7/2021	COB 1	Platyhelminthes	--	--	--	5
2021	7/8/2021	ORO 1	Annelida	Oligochaeta	--	--	33
2021	7/8/2021	ORO 1	Arachnida	Acarina	--	--	85
2021	7/8/2021	ORO 1	Insecta	Diptera	Chironomidae	--	1061
2021	7/8/2021	ORO 1	Insecta	Diptera	Empididae	Clinocera	5
2021	7/8/2021	ORO 1	Insecta	Diptera	Simuliidae	--	107
2021	7/8/2021	ORO 1	Insecta	Ephemeroptera	Baetidae	Acentrella	1
2021	7/8/2021	ORO 1	Insecta	Ephemeroptera	Baetidae	Baetis	59
2021	7/8/2021	ORO 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	2
2021	7/8/2021	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	46

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2021	7/8/2021	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	12
2021	7/8/2021	ORO 1	Insecta	Hymenoptera	--	--	1
2021	7/8/2021	ORO 1	Insecta	Plecoptera	Chloroperlidae	--	6
2021	7/8/2021	ORO 1	Insecta	Plecoptera	Nemouridae	Podmosta	1
2021	7/8/2021	ORO 1	Insecta	Plecoptera	Nemouridae	Zapada	8
2021	7/8/2021	ORO 1	Insecta	Plecoptera	Perlodidae	Isoperla	7
2021	7/8/2021	ORO 1	Insecta	Plecoptera	--	--	1
2021	7/8/2021	ORO 1	Insecta	Thysanoptera	--	--	1
2021	7/8/2021	ORO 1	Insecta	Trichoptera	Brachycentridae	--	9
2021	7/8/2021	ORO 1	Insecta	Trichoptera	--	--	2
2021	7/8/2021	ORO 1	Nematoda	--	--	--	11
2021	7/8/2021	ORO 1	Platyhelminthes	--	--	--	5
2021	7/9/2021	USR 1	Actinopterygii	Scorpaeniformes	Cottidae	Cottus	1
2021	7/9/2021	USR 1	Annelida	Oligochaeta	--	--	57
2021	7/9/2021	USR 1	Arachnida	Acarina	--	--	42
2021	7/9/2021	USR 1	Copepoda	Cyclopoida	--	--	1
2021	7/9/2021	USR 1	Copepoda	Harpacticoida	--	--	9
2021	7/9/2021	USR 1	Crustacea	Ostracoda	--	--	133
2021	7/9/2021	USR 1	Insecta	Diptera	Ceratopogonidae	--	7
2021	7/9/2021	USR 1	Insecta	Diptera	Chironomidae	--	3251
2021	7/9/2021	USR 1	Insecta	Diptera	Empididae	Clinocera	9
2021	7/9/2021	USR 1	Insecta	Diptera	Simuliidae	--	75
2021	7/9/2021	USR 1	Insecta	Diptera	Tipulidae	Dicranota	4
2021	7/9/2021	USR 1	Insecta	Diptera	--	--	1
2021	7/9/2021	USR 1	Insecta	Ephemeroptera	Baetidae	Baetis	2
2021	7/9/2021	USR 1	Insecta	Ephemeroptera	Baetidae	--	3
2021	7/9/2021	USR 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	19
2021	7/9/2021	USR 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	7
2021	7/9/2021	USR 1	Insecta	Hemiptera	Aphididae	--	1
2021	7/9/2021	USR 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	17
2021	7/9/2021	USR 1	Insecta	Plecoptera	Chloroperlidae	--	6
2021	7/9/2021	USR 1	Insecta	Plecoptera	Nemouridae	Zapada	11
2021	7/9/2021	USR 1	Insecta	Plecoptera	--	--	4
2021	7/9/2021	USR 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	10
2021	7/9/2021	USR 1	Insecta	Trichoptera	Brachycentridae	--	3
2021	7/9/2021	USR 1	Insecta	Trichoptera	Limnephilidae	--	5
2021	7/9/2021	USR 1	Insecta	Trichoptera	--	--	3
2021	7/9/2021	USR 1	Nematoda	--	--	--	15
2021	7/9/2021	USR 1	Platyhelminthes	--	--	--	1
2021	7/9/2021	WIN 1	Annelida	Oligochaeta	--	--	11
2021	7/9/2021	WIN 1	Arachnida	Acarina	--	--	4
2021	7/9/2021	WIN 1	Crustacea	Ostracoda	--	--	20
2021	7/9/2021	WIN 1	Insecta	Diptera	Chironomidae	--	1222
2021	7/9/2021	WIN 1	Insecta	Diptera	Empididae	Clinocera	1
2021	7/9/2021	WIN 1	Insecta	Diptera	Empididae	Oreogeton	2
2021	7/9/2021	WIN 1	Insecta	Diptera	Empididae	--	1
2021	7/9/2021	WIN 1	Insecta	Diptera	Simuliidae	--	17
2021	7/9/2021	WIN 1	Insecta	Diptera	Tipulidae	Dicranota	1
2021	7/9/2021	WIN 1	Insecta	Diptera	--	--	2
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Baetidae	Acentrella	1
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Baetidae	Baetis	7
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Baetidae	--	2
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	6
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	26
2021	7/9/2021	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	6
2021	7/9/2021	WIN 1	Insecta	Plecoptera	Chloroperlidae	Kathroperla	1
2021	7/9/2021	WIN 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	3
2021	7/9/2021	WIN 1	Insecta	Plecoptera	Chloroperlidae	--	2
2021	7/9/2021	WIN 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2021	7/9/2021	WIN 1	Insecta	Plecoptera	--	--	2
2021	7/9/2021	WIN 1	Insecta	Trichoptera	Limnephilidae	--	11
2021	7/9/2021	WIN 1	Insecta	Trichoptera	--	--	4
2021	7/9/2021	WIN 1	Mollusca	Bivalvia	Sphaeriidae	Pisidium	1
2021	7/9/2021	WIN 1	Nematoda	--	--	--	22
2022	7/6/2022	FAL 1	Annelida	Oligochaeta	--	--	80
2022	7/6/2022	FAL 1	Arachnida	Acarina	--	--	74
2022	7/6/2022	FAL 1	Crustacea	Ostracoda	--	--	5
2022	7/6/2022	FAL 1	Insecta	Diptera	Chironomidae	--	1118
2022	7/6/2022	FAL 1	Insecta	Diptera	Simuliidae	--	1018
2022	7/6/2022	FAL 1	Insecta	Diptera	Tipulidae	Dicranota	1
2022	7/6/2022	FAL 1	Insecta	Diptera	--	--	1
2022	7/6/2022	FAL 1	Insecta	Ephemeroptera	Baetidae	Acentrella	100
2022	7/6/2022	FAL 1	Insecta	Ephemeroptera	Baetidae	Baetis	7
2022	7/6/2022	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	35
2022	7/6/2022	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	80
2022	7/6/2022	FAL 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	3
2022	7/6/2022	FAL 1	Insecta	Plecoptera	Chloroperlidae	Sweltsa	24
2022	7/6/2022	FAL 1	Insecta	Plecoptera	Nemouridae	Zapada	8
2022	7/6/2022	FAL 1	Insecta	Plecoptera	Perlodidae	Isoperla	3
2022	7/6/2022	FAL 1	Insecta	Plecoptera	--	--	6
2022	7/6/2022	FAL 1	Insecta	Trichoptera	--	--	3
2022	7/6/2022	FAL 1	Insecta	--	--	--	2
2022	7/6/2022	FAL 1	Nematoda	--	--	--	3
2022	7/6/2022	FAL 1	Platyhelminthes	--	--	--	135
2022	7/6/2022	GLA 1	Insecta	Diptera	Chironomidae	--	4
2022	7/6/2022	GLA 1	Insecta	Diptera	Tipulidae	Ormosia	1
2022	7/6/2022	GLA 1	Insecta	Diptera	--	--	2
2022	7/6/2022	GLA 1	Insecta	--	--	--	1
2022	7/6/2022	GLA 1	None	--	--	--	0
2022	7/6/2022	IMU 16	Annelida	Oligochaeta	--	--	313
2022	7/6/2022	IMU 16	Arachnida	Acarina	--	--	11
2022	7/6/2022	IMU 16	Collembola	Symphyleona	Sminthuridae	--	1
2022	7/6/2022	IMU 16	Insecta	Diptera	Chironomidae	--	362
2022	7/6/2022	IMU 16	Insecta	Diptera	Empididae	Chelifera	17
2022	7/6/2022	IMU 16	Insecta	Diptera	Simuliidae	--	33
2022	7/6/2022	IMU 16	Insecta	Diptera	Tipulidae	Dicranota	1
2022	7/6/2022	IMU 16	Insecta	Diptera	--	--	1
2022	7/6/2022	IMU 16	Insecta	Ephemeroptera	Ameletidae	Ameletus	2
2022	7/6/2022	IMU 16	Insecta	Ephemeroptera	Baetidae	Acentrella	2

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2022	7/6/2022	IMU 16	Insecta	Ephemeroptera	Baetidae	Baetis	142
2022	7/6/2022	IMU 16	Insecta	Ephemeroptera	Baetidae	--	8
2022	7/6/2022	IMU 16	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	168
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Chloroperlidae	Suwallia	3
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Chloroperlidae	Sweltsa	4
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Chloroperlidae	--	22
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Nemouridae	Ostrocerca	8
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Nemouridae	Zapada	44
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Nemouridae	--	1
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Perlodidae	Isoperla	1
2022	7/6/2022	IMU 16	Insecta	Plecoptera	Perlodidae	--	4
2022	7/6/2022	IMU 16	Insecta	Plecoptera	--	--	8
2022	7/6/2022	IMU 16	Nematoda	--	--	--	23
2022	7/6/2022	IMU 16	Platyhelminthes	--	--	--	2
2022	7/7/2022	COB T1	Annelida	Oligochaeta	--	--	241
2022	7/7/2022	COB T1	Annelida	Polychaeta	Capitellidae	--	1
2022	7/7/2022	COB T1	Annelida	Polychaeta	Sabellidae	Manayunkia	47
2022	7/7/2022	COB T1	Arachnida	Acarina	--	--	5
2022	7/7/2022	COB T1	Copepoda	Cyclopoida	--	--	1
2022	7/7/2022	COB T1	Copepoda	Harpacticoida	--	--	4
2022	7/7/2022	COB T1	Crustacea	Amphipoda	Gammaridae	--	6
2022	7/7/2022	COB T1	Crustacea	Amphipoda	--	--	12
2022	7/7/2022	COB T1	Crustacea	Cladocera	--	--	19
2022	7/7/2022	COB T1	Crustacea	Ostracoda	--	--	20
2022	7/7/2022	COB T1	Insecta	Coleoptera	--	--	1
2022	7/7/2022	COB T1	Insecta	Diptera	Chironomidae	--	101
2022	7/7/2022	COB T1	Insecta	Diptera	Simuliidae	--	534
2022	7/7/2022	COB T1	Insecta	Diptera	--	--	1
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	Ameletidae	Ameletus	51
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	Baetidae	Acentrella	2
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	Baetidae	Baetis	10
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	Baetidae	Paracleodes	204
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	1
2022	7/7/2022	COB T1	Insecta	Ephemeroptera	--	--	1
2022	7/7/2022	COB T1	Insecta	Homoptera	--	--	1
2022	7/7/2022	COB T1	Insecta	Hymenoptera	--	--	2
2022	7/7/2022	COB T1	Insecta	Plecoptera	Nemouridae	--	4
2022	7/7/2022	COB T1	Insecta	Plecoptera	--	--	1
2022	7/7/2022	COB T1	Insecta	Trichoptera	Limnephilidae	Limnephilis	1
2022	7/7/2022	COB T1	Insecta	Trichoptera	Limnephilidae	--	1
2022	7/7/2022	COB T1	Insecta	Trichoptera	--	--	5
2022	7/7/2022	COB T1	Insecta	--	--	--	3
2022	7/7/2022	COB T1	Mollusca	Bivalvia	Sphaeriidae	Pisidium	9
2022	7/7/2022	COB T1	Mollusca	Bivalvia	Sphaeriidae	--	1
2022	7/7/2022	COB T1	Mollusca	Gastropoda	Lymnaeidae	--	3
2022	7/7/2022	COB T1	Mollusca	Gastropoda	Planorbidae	--	7
2022	7/7/2022	COB T1	Mollusca	Gastropoda	Valvatidae	--	75
2022	7/7/2022	COB T1	Mollusca	Gastropoda	--	--	1
2022	7/7/2022	COB T1	Nematoda	--	--	--	26
2022	7/7/2022	COB T1	Platyhelminthes	--	--	--	5

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2022	7/8/2022	COB 1	Annelida	Oligochaeta	--	--	75
2022	7/8/2022	COB 1	Annelida	Polychaeta	Sabellidae	Manayunkia	1
2022	7/8/2022	COB 1	Arachnida	Acarina	--	--	40
2022	7/8/2022	COB 1	Collembola	Entomobryomorpha	Isotomidae	--	1
2022	7/8/2022	COB 1	Collembola	Poduromorpha	Poduridae	--	1
2022	7/8/2022	COB 1	Crustacea	Ostracoda	--	--	7
2022	7/8/2022	COB 1	Insecta	Diptera	Chironomidae	--	740
2022	7/8/2022	COB 1	Insecta	Diptera	Empididae	Chelifera	1
2022	7/8/2022	COB 1	Insecta	Diptera	Simuliidae	--	30
2022	7/8/2022	COB 1	Insecta	Diptera	Tipulidae	Dicranota	4
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Baetidae	Acentrella	48
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Baetidae	Baetis	1
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Baetidae	Paracleodes	5
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Baetidae	Procleon	2
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	39
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	20
2022	7/8/2022	COB 1	Insecta	Ephemeroptera	--	--	5
2022	7/8/2022	COB 1	Insecta	Hymenoptera	--	--	1
2022	7/8/2022	COB 1	Insecta	Plecoptera	Capniidae	--	1
2022	7/8/2022	COB 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	40
2022	7/8/2022	COB 1	Insecta	Plecoptera	Perlodidae	Isoperla	1
2022	7/8/2022	COB 1	Insecta	Plecoptera	Perlodidae	--	9
2022	7/8/2022	COB 1	Insecta	Plecoptera	--	--	2
2022	7/8/2022	COB 1	Insecta	Trichoptera	Glossosomatidae	--	2
2022	7/8/2022	COB 1	Insecta	Trichoptera	--	--	4
2022	7/8/2022	COB 1	Platyhelminthes	--	--	--	8
2022	7/9/2022	ORO 1	Annelida	Oligochaeta	--	--	157
2022	7/9/2022	ORO 1	Arachnida	Acarina	--	--	50
2022	7/9/2022	ORO 1	Copepoda	Harpacticoida	--	--	12
2022	7/9/2022	ORO 1	Crustacea	Ostracoda	--	--	4
2022	7/9/2022	ORO 1	Insecta	Diptera	Ceratopogonidae	--	1
2022	7/9/2022	ORO 1	Insecta	Diptera	Chironomidae	--	404
2022	7/9/2022	ORO 1	Insecta	Diptera	Empididae	Chelifera	7
2022	7/9/2022	ORO 1	Insecta	Diptera	Simuliidae	--	196
2022	7/9/2022	ORO 1	Insecta	Diptera	Tipulidae	Dicranota	1
2022	7/9/2022	ORO 1	Insecta	Diptera	--	--	1
2022	7/9/2022	ORO 1	Insecta	Ephemeroptera	Baetidae	Baetis	4
2022	7/9/2022	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	171
2022	7/9/2022	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	56
2022	7/9/2022	ORO 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	19
2022	7/9/2022	ORO 1	Insecta	Plecoptera	Chloroperlidae	--	16
2022	7/9/2022	ORO 1	Insecta	Plecoptera	Nemouridae	Zapada	14
2022	7/9/2022	ORO 1	Insecta	Plecoptera	Perlodidae	Isoperla	3
2022	7/9/2022	ORO 1	Insecta	Plecoptera	Perlodidae	--	1
2022	7/9/2022	ORO 1	Insecta	Trichoptera	Ryachaphiidae	Ryachaphilia	1
2022	7/9/2022	ORO 1	Nematoda	--	--	--	38
2022	7/9/2022	ORO 1	Platyhelminthes	--	--	--	2
2022	7/9/2022	USR 1	Annelida	Oligochaeta	--	--	2
2022	7/9/2022	USR 1	Arachnida	Acarina	--	--	15
2022	7/9/2022	USR 1	Copepoda	Harpacticoida	--	--	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2022	7/9/2022	USR 1	Crustacea	Ostracoda	--	--	2
2022	7/9/2022	USR 1	Insecta	Diptera	Chironomidae	--	235
2022	7/9/2022	USR 1	Insecta	Diptera	Simuliidae	--	20
2022	7/9/2022	USR 1	Insecta	Diptera	--	--	8
2022	7/9/2022	USR 1	Insecta	Ephemeroptera	Baetidae	Acentrella	4
2022	7/9/2022	USR 1	Insecta	Ephemeroptera	Baetidae	--	5
2022	7/9/2022	USR 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	1
2022	7/9/2022	USR 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	3
2022	7/9/2022	USR 1	Insecta	Ephemeroptera	--	--	1
2022	7/9/2022	USR 1	Insecta	Hymenoptera	--	--	1
2022	7/9/2022	USR 1	Insecta	Hymenoptera: Sym	--	--	1
2022	7/9/2022	USR 1	Insecta	Plecoptera	Nemouridae	Zapada	4
2022	7/9/2022	USR 1	Insecta	Trichoptera	Brachycentridae	--	2
2022	7/9/2022	USR 1	Insecta	Trichoptera	Limnephilidae	--	1
2022	7/9/2022	USR 1	Insecta	--	--	--	1
2022	7/9/2022	WIN 1	Annelida	Oligochaeta	--	--	6
2022	7/9/2022	WIN 1	Arachnida	Acarina	--	--	9
2022	7/9/2022	WIN 1	Collembola	Isotomidae	--	--	1
2022	7/9/2022	WIN 1	Copepoda	Harpacticoida	--	--	14
2022	7/9/2022	WIN 1	Crustacea	Ostracoda	--	--	8
2022	7/9/2022	WIN 1	Insecta	Diptera	Chironomidae	--	988
2022	7/9/2022	WIN 1	Insecta	Diptera	Empididae	Chelifera	1
2022	7/9/2022	WIN 1	Insecta	Diptera	Simuliidae	--	545
2022	7/9/2022	WIN 1	Insecta	Diptera	--	--	16
2022	7/9/2022	WIN 1	Insecta	Ephemeroptera	Baetidae	Acentrella	3
2022	7/9/2022	WIN 1	Insecta	Ephemeroptera	Baetidae	Baetis	16
2022	7/9/2022	WIN 1	Insecta	Ephemeroptera	Ephemerellidae	--	1
2022	7/9/2022	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	4
2022	7/9/2022	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	14
2022	7/9/2022	WIN 1	Insecta	Plecoptera	Capniidae	Capnia	3
2022	7/9/2022	WIN 1	Insecta	Plecoptera	Nemouridae	Zapada	2
2022	7/9/2022	WIN 1	Insecta	Plecoptera	Perlodidae	Isoperla	1
2022	7/9/2022	WIN 1	Insecta	Plecoptera	Perlodidae	--	2
2022	7/9/2022	WIN 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	21
2022	7/9/2022	WIN 1	Insecta	Trichoptera	Brachycentridae	--	17
2022	7/9/2022	WIN 1	Insecta	Trichoptera	Limnephilidae	--	2
2022	7/9/2022	WIN 1	Insecta	Trichoptera	--	--	6
2022	7/9/2022	WIN 1	Nematoda	--	--	--	13
2022	7/10/2022	GLA 2	Insecta	Diptera	Chironomidae	--	3
2022	7/10/2022	GLA 2	Insecta	Diptera	--	--	5
2022	7/10/2022	GLA 2	Insecta	Hymenoptera	--	--	1
2022	7/10/2022	GLA 2	Insecta	--	--	--	4
2022	7/10/2022	GLA 2	None	--	--	--	0
2023	7/1/2023	USR 1	Annelida	Oligochaeta	--	--	19
2023	7/1/2023	USR 1	Arachnida	Acarina	mite	--	27
2023	7/1/2023	USR 1	Arachnida	Acarina	spider	--	2
2023	7/1/2023	USR 1	Arachnida	Acarina	--	--	9
2023	7/1/2023	USR 1	Collembola	Entomobryomorpha	Isotomidae	--	2
2023	7/1/2023	USR 1	Copepoda	Harpacticoida	--	--	1
2023	7/1/2023	USR 1	Crustacea	Ostracoda	--	--	89

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2023	7/1/2023	USR 1	Insecta	Diptera	Ceratopogonidae	--	2
2023	7/1/2023	USR 1	Insecta	Diptera	Chironomidae	--	1411
2023	7/1/2023	USR 1	Insecta	Diptera	Empididae	--	4
2023	7/1/2023	USR 1	Insecta	Diptera	Simuliidae	--	20
2023	7/1/2023	USR 1	Insecta	Diptera	--	--	5
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	1
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Baetidae	Acentrella	24
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Baetidae	Baetis	1
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Baetidae	--	1
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	26
2023	7/1/2023	USR 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	3
2023	7/1/2023	USR 1	Insecta	Plecoptera	Nemouridae	Zapada	10
2023	7/1/2023	USR 1	Insecta	Plecoptera	--	--	2
2023	7/1/2023	USR 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	1
2023	7/1/2023	USR 1	Insecta	Trichoptera	Brachycentridae	--	1
2023	7/1/2023	USR 1	Insecta	Trichoptera	Limnephilidae	Ecclisomyia	2
2023	7/1/2023	USR 1	Insecta	Trichoptera	--	--	1
2023	7/1/2023	USR 1	Insecta	--	--	--	1
2023	7/1/2023	USR 1	Nematoda	--	--	--	3
2023	7/1/2023	USR 1	Platyhelminthes	--	--	--	2
2023	7/2/2023	WIN 1	Annelida	Oligochaeta	--	--	24
2023	7/2/2023	WIN 1	Arachnida	Acarina	mite	--	2
2023	7/2/2023	WIN 1	Arachnida	Acarina	--	--	1
2023	7/2/2023	WIN 1	Copepoda	Harpacticoida	--	--	1
2023	7/2/2023	WIN 1	Crustacea	Ostracoda	--	--	2
2023	7/2/2023	WIN 1	Insecta	Diptera	Chironomidae	--	835
2023	7/2/2023	WIN 1	Insecta	Diptera	Empididae	--	2
2023	7/2/2023	WIN 1	Insecta	Diptera	Simuliidae	--	1
2023	7/2/2023	WIN 1	Insecta	Diptera	--	--	2
2023	7/2/2023	WIN 1	Insecta	Ephemeroptera	Baetidae	Acentrella	4
2023	7/2/2023	WIN 1	Insecta	Ephemeroptera	Baetidae	Baetis	9
2023	7/2/2023	WIN 1	Insecta	Ephemeroptera	Baetidae	--	2
2023	7/2/2023	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	7
2023	7/2/2023	WIN 1	Insecta	Plecoptera	Nemouridae	Podmosta	2
2023	7/2/2023	WIN 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2023	7/2/2023	WIN 1	Insecta	Plecoptera	Perlodidae	Isoperla	1
2023	7/2/2023	WIN 1	Insecta	Plecoptera	--	--	2
2023	7/2/2023	WIN 1	Insecta	Trichoptera	Limnephilidae	--	1
2023	7/2/2023	WIN 1	Insecta	Trichoptera	--	--	1
2023	7/2/2023	WIN 1	Insecta	--	--	--	1
2023	7/2/2023	WIN 1	Nematoda	--	--	--	20
2023	7/3/2023	COB T1	Annelida	Oligochaeta	--	--	140
2023	7/3/2023	COB T1	Annelida	Polychaeta	Sabellidae	Manayunkia	65
2023	7/3/2023	COB T1	Arachnida	Acarina	mite	--	2
2023	7/3/2023	COB T1	Arachnida	Acarina	--	--	1
2023	7/3/2023	COB T1	Chordata	Pisces	--	--	1
2023	7/3/2023	COB T1	Copepoda	Cyclopoida	--	--	7
2023	7/3/2023	COB T1	Crustacea	Amphipoda	Gammaridae	--	1
2023	7/3/2023	COB T1	Crustacea	Amphipoda	--	--	1
2023	7/3/2023	COB T1	Crustacea	Cladocera	--	--	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2023	7/3/2023	COB T1	Insecta	Diptera	Chironomidae	--	120
2023	7/3/2023	COB T1	Insecta	Diptera	Simuliidae	--	696
2023	7/3/2023	COB T1	Insecta	Diptera	--	--	8
2023	7/3/2023	COB T1	Insecta	Ephemeroptera	Baetidae	Baetis	1
2023	7/3/2023	COB T1	Insecta	Ephemeroptera	Baetidae	--	30
2023	7/3/2023	COB T1	Insecta	Ephemeroptera	--	--	106
2023	7/3/2023	COB T1	Insecta	Hymenoptera	--	--	1
2023	7/3/2023	COB T1	Insecta	Plecoptera	Nemouridae	Podmosta	17
2023	7/3/2023	COB T1	Insecta	Plecoptera	Nemouridae	--	6
2023	7/3/2023	COB T1	Insecta	Plecoptera	--	--	1
2023	7/3/2023	COB T1	Insecta	Trichoptera	Brachycentridae	--	1
2023	7/3/2023	COB T1	Insecta	Trichoptera	Limnephilidae	Limnephilis	2
2023	7/3/2023	COB T1	Mollusca	Bivalvia	Pisidiidae	--	2
2023	7/3/2023	COB T1	Mollusca	Gastropoda	Lymnaeidae	--	1
2023	7/3/2023	COB T1	Mollusca	Gastropoda	Planorbidae	--	2
2023	7/3/2023	COB T1	Mollusca	Gastropoda	Valvatidae	--	27
2023	7/3/2023	COB T1	Mollusca	Gastropoda	--	--	1
2023	7/3/2023	COB T1	Nematoda	--	--	--	5
2023	7/3/2023	COB T1	Platyhelminthes	--	--	--	4
2023	7/4/2023	ORO 1	Annelida	Oligochaeta	--	--	159
2023	7/4/2023	ORO 1	Annelida	Polychaeta	Sabellidae	Manayunkia	1
2023	7/4/2023	ORO 1	Arachnida	Acarina	--	--	25
2023	7/4/2023	ORO 1	Crustacea	Ostracoda	--	--	1
2023	7/4/2023	ORO 1	Insecta	Diptera	Ceratopogonidae	--	1
2023	7/4/2023	ORO 1	Insecta	Diptera	Chironomidae	--	384
2023	7/4/2023	ORO 1	Insecta	Diptera	Empididae	Chelifera	1
2023	7/4/2023	ORO 1	Insecta	Diptera	Empididae	--	1
2023	7/4/2023	ORO 1	Insecta	Diptera	Simuliidae	--	9
2023	7/4/2023	ORO 1	Insecta	Diptera	Tipulidae	Dicranota	1
2023	7/4/2023	ORO 1	Insecta	Diptera	--	--	1
2023	7/4/2023	ORO 1	Insecta	Ephemeroptera	Baetidae	Acentrella	2
2023	7/4/2023	ORO 1	Insecta	Ephemeroptera	Baetidae	Baetis	6
2023	7/4/2023	ORO 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	2
2023	7/4/2023	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	59
2023	7/4/2023	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	4
2023	7/4/2023	ORO 1	Insecta	Plecoptera	Chloroperlidae	Haploperla	5
2023	7/4/2023	ORO 1	Insecta	Plecoptera	Chloroperlidae	--	3
2023	7/4/2023	ORO 1	Insecta	Plecoptera	Nemouridae	Podmosta	2
2023	7/4/2023	ORO 1	Insecta	Plecoptera	Nemouridae	Zapada	32
2023	7/4/2023	ORO 1	Insecta	Plecoptera	--	--	2
2023	7/4/2023	ORO 1	Insecta	Trichoptera	--	--	1
2023	7/4/2023	ORO 1	Nematoda	--	--	--	12
2023	7/4/2023	ORO 1	Platyhelminthes	--	--	--	1
2023	7/5/2023	COB 1	Annelida	Oligochaeta	--	--	70
2023	7/5/2023	COB 1	Arachnida	Acarina	mite	--	33
2023	7/5/2023	COB 1	Arachnida	Acarina	spider	--	1
2023	7/5/2023	COB 1	Arachnida	Acarina	--	--	14
2023	7/5/2023	COB 1	Chordata	Pisces	Cottidae	--	2
2023	7/5/2023	COB 1	Collembola	Entomobryomorpha	Isotomidae	--	1
2023	7/5/2023	COB 1	Collembola	Poduromorpha	Poduridae	--	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2023	7/5/2023	COB 1	Collembola	Symphyleona	Sminthuridae	--	1
2023	7/5/2023	COB 1	Collembola	--	--	--	1
2023	7/5/2023	COB 1	Copepoda	Cyclopoida	--	--	1
2023	7/5/2023	COB 1	Crustacea	Ostracoda	--	--	2
2023	7/5/2023	COB 1	Insecta	Diptera	Chironomidae	--	450
2023	7/5/2023	COB 1	Insecta	Diptera	Empididae	--	1
2023	7/5/2023	COB 1	Insecta	Diptera	Tipulidae	Dicranota	8
2023	7/5/2023	COB 1	Insecta	Diptera	Tipulidae	Hexatoma	2
2023	7/5/2023	COB 1	Insecta	Diptera	Tipulidae	Tipula	4
2023	7/5/2023	COB 1	Insecta	Diptera	--	--	9
2023	7/5/2023	COB 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	1
2023	7/5/2023	COB 1	Insecta	Ephemeroptera	Baetidae	Acentrella	1
2023	7/5/2023	COB 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	1
2023	7/5/2023	COB 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	3
2023	7/5/2023	COB 1	Insecta	Plecoptera	Capniidae	--	1
2023	7/5/2023	COB 1	Insecta	Plecoptera	Chloroperlidae	Alloperla	5
2023	7/5/2023	COB 1	Insecta	Plecoptera	Chloroperlidae	--	11
2023	7/5/2023	COB 1	Insecta	Plecoptera	Nemouridae	Podmosta	2
2023	7/5/2023	COB 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2023	7/5/2023	COB 1	Insecta	Trichoptera	Limnephilidae	Ecclisomyia	7
2023	7/5/2023	COB 1	Nematoda	--	--	--	6
2023	7/5/2023	COB 1	Platyhelminthes	--	--	--	4
2023	7/5/2023	FAL 1	Annelida	Oligochaeta	--	--	127
2023	7/5/2023	FAL 1	Arachnida	Acarina	mite	--	20
2023	7/5/2023	FAL 1	Arachnida	Acarina	--	--	22
2023	7/5/2023	FAL 1	Chordata	Pisces	Cottidae	Cottus cognatus	1
2023	7/5/2023	FAL 1	Collembola	Poduromorpha	Poduridae	--	1
2023	7/5/2023	FAL 1	Crustacea	Ostracoda	--	--	2
2023	7/5/2023	FAL 1	Insecta	Diptera	Chironomidae	--	385
2023	7/5/2023	FAL 1	Insecta	Diptera	Empididae	Chelifera	1
2023	7/5/2023	FAL 1	Insecta	Diptera	Simuliidae	--	22
2023	7/5/2023	FAL 1	Insecta	Diptera	Tipulidae	Dicranota	2
2023	7/5/2023	FAL 1	Insecta	Diptera	--	--	4
2023	7/5/2023	FAL 1	Insecta	Ephemeroptera	Baetidae	Acentrella	10
2023	7/5/2023	FAL 1	Insecta	Ephemeroptera	Baetidae	Baetis	18
2023	7/5/2023	FAL 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	2
2023	7/5/2023	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	20
2023	7/5/2023	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	12
2023	7/5/2023	FAL 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	13
2023	7/5/2023	FAL 1	Insecta	Plecoptera	Nemouridae	Zapada	16
2023	7/5/2023	FAL 1	Insecta	Plecoptera	--	--	4
2023	7/5/2023	FAL 1	Insecta	Trichoptera	Brachycentridae	--	2
2023	7/5/2023	FAL 1	Insecta	--	--	--	1
2023	7/5/2023	FAL 1	Mollusca	Gastropoda	Valvatidae	--	1
2023	7/5/2023	FAL 1	Nematoda	--	--	--	1
2023	7/5/2023	FAL 1	Platyhelminthes	--	--	--	2
2023	7/6/2023	GLA 1	Annelida	Oligochaeta	--	--	1
2023	7/6/2023	GLA 1	Collembola	Poduromorpha	Poduridae	--	1
2023	7/6/2023	GLA 1	Insecta	Diptera	Chironomidae	--	3
2023	7/6/2023	GLA 1	Insecta	Diptera	Empididae	--	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2023	7/6/2023	GLA 1	Insecta	Diptera	Tipulidae	Tipula	1
2023	7/6/2023	GLA 1	Insecta	Diptera	--	--	8
2023	7/6/2023	GLA 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	1
2023	7/6/2023	GLA 1	Insecta	--	--	--	1
2023	7/6/2023	IMU 16	Annelida	Oligochaeta	--	--	143
2023	7/6/2023	IMU 16	Arachnida	Acarina	mite	--	3
2023	7/6/2023	IMU 16	Arachnida	Acarina	--	--	10
2023	7/6/2023	IMU 16	Crustacea	Ostracoda	--	--	10
2023	7/6/2023	IMU 16	Insecta	Diptera	Chironomidae	--	339
2023	7/6/2023	IMU 16	Insecta	Diptera	Empididae	Chelifera	40
2023	7/6/2023	IMU 16	Insecta	Diptera	Empididae	--	8
2023	7/6/2023	IMU 16	Insecta	Diptera	Tipulidae	Dicranota	1
2023	7/6/2023	IMU 16	Insecta	Diptera	Tipulidae	Rhabdomastix	1
2023	7/6/2023	IMU 16	Insecta	Diptera	--	--	17
2023	7/6/2023	IMU 16	Insecta	Ephemeroptera	Baetidae	Acentrella	97
2023	7/6/2023	IMU 16	Insecta	Ephemeroptera	Baetidae	Baetis	6
2023	7/6/2023	IMU 16	Insecta	Ephemeroptera	Baetidae	--	11
2023	7/6/2023	IMU 16	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	49
2023	7/6/2023	IMU 16	Insecta	Ephemeroptera	--	--	1
2023	7/6/2023	IMU 16	Insecta	Hymenoptera	--	--	1
2023	7/6/2023	IMU 16	Insecta	Plecoptera	Chloroperlidae	Haploperla	1
2023	7/6/2023	IMU 16	Insecta	Plecoptera	Chloroperlidae	--	10
2023	7/6/2023	IMU 16	Insecta	Plecoptera	Nemouridae	Podmosta	4
2023	7/6/2023	IMU 16	Insecta	Plecoptera	Nemouridae	Zapada	45
2023	7/6/2023	IMU 16	Insecta	Plecoptera	--	--	10
2023	7/6/2023	IMU 16	Insecta	Trichoptera	--	--	1
2023	7/6/2023	IMU 16	Nematoda	--	--	--	14
2023	7/6/2023	IMU 16	Platyhelminthes	--	--	--	5
2023	7/7/2023	GLA 2	Insecta	Diptera	Chironomidae	--	2
2023	7/7/2023	GLA 2	Insecta	Diptera	--	--	11
2023	7/7/2023	GLA 2	Insecta	Ephemeroptera	--	--	1
2023	7/7/2023	GLA 2	devoid of fauna	--	--	--	--
2024	7/11/2024	FAL 1	Annelida	Oligochaeta	--	--	127
2024	7/11/2024	FAL 1	Arachnida	Acarina	mite	--	21
2024	7/11/2024	FAL 1	Arachnida	Acarina	--	--	3
2024	7/11/2024	FAL 1	Crustacea	Ostracoda	--	--	5
2024	7/11/2024	FAL 1	Insecta	Coleoptera	--	--	1
2024	7/11/2024	FAL 1	Insecta	Diptera	Chironomidae	--	374
2024	7/11/2024	FAL 1	Insecta	Diptera	Empididae	Chelifera	4
2024	7/11/2024	FAL 1	Insecta	Diptera	Empididae	--	8
2024	7/11/2024	FAL 1	Insecta	Diptera	Simuliidae	--	54
2024	7/11/2024	FAL 1	Insecta	Diptera	Tipulidae	Dicranota	2
2024	7/11/2024	FAL 1	Insecta	Diptera	--	--	3
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	5
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Baetidae	Baetis	55
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Baetidae	--	3
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	64
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	10
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	Heptageniidae	--	2
2024	7/11/2024	FAL 1	Insecta	Ephemeroptera	--	--	1

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2024	7/11/2024	FAL 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	31
2024	7/11/2024	FAL 1	Insecta	Plecoptera	Chloroperlidae	--	9
2024	7/11/2024	FAL 1	Insecta	Plecoptera	Nemouridae	Zapada	1
2024	7/11/2024	FAL 1	Insecta	Plecoptera	Perlodidae	Isoperla	1
2024	7/11/2024	FAL 1	Insecta	Plecoptera	--	--	1
2024	7/11/2024	FAL 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	1
2024	7/11/2024	FAL 1	Mollusca	Gastropoda	--	--	1
2024	7/11/2024	FAL 1	Nematoda	--	--	--	11
2024	7/11/2024	FAL 1	Platyhelminthes	--	--	--	2
2024	7/11/2024	IMU 16	Annelida	Oligochaeta	--	--	453
2024	7/11/2024	IMU 16	Arachnida	Acarina	mite	--	3
2024	7/11/2024	IMU 16	Arachnida	Acarina	--	--	3
2024	7/11/2024	IMU 16	Crustacea	Ostracoda	--	--	11
2024	7/11/2024	IMU 16	Insecta	Diptera	Ceratopogonidae	--	2
2024	7/11/2024	IMU 16	Insecta	Diptera	Chironomidae	--	512
2024	7/11/2024	IMU 16	Insecta	Diptera	Empididae	Chelifera	88
2024	7/11/2024	IMU 16	Insecta	Diptera	Empididae	--	4
2024	7/11/2024	IMU 16	Insecta	Diptera	Tipulidae	Dicranota	1
2024	7/11/2024	IMU 16	Insecta	Diptera	Tipulidae	Ormosia	2
2024	7/11/2024	IMU 16	Insecta	Diptera	Tipulidae	Tipula	1
2024	7/11/2024	IMU 16	Insecta	Diptera	--	--	4
2024	7/11/2024	IMU 16	Insecta	Ephemeroptera	Ameletidae	Ameletus	2
2024	7/11/2024	IMU 16	Insecta	Ephemeroptera	Baetidae	Acentrella	3
2024	7/11/2024	IMU 16	Insecta	Ephemeroptera	Baetidae	Baetis	25
2024	7/11/2024	IMU 16	Insecta	Ephemeroptera	Baetidae	--	21
2024	7/11/2024	IMU 16	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	46
2024	7/11/2024	IMU 16	Insecta	Plecoptera	Chloroperlidae	--	26
2024	7/11/2024	IMU 16	Insecta	Plecoptera	Nemouridae	Podmosta	2
2024	7/11/2024	IMU 16	Insecta	Plecoptera	Nemouridae	--	1
2024	7/11/2024	IMU 16	Insecta	Plecoptera	--	--	8
2024	7/11/2024	IMU 16	Insecta	Trichoptera	--	--	7
2024	7/11/2024	IMU 16	Nematoda	--	--	--	62
2024	7/11/2024	IMU 16	Platyhelminthes	--	--	--	1
2024	7/12/2024	ORO 1	Annelida	Oligochaeta	--	--	152
2024	7/12/2024	ORO 1	Arachnida	Acarina	--	--	17
2024	7/12/2024	ORO 1	Collembola	--	--	--	1
2024	7/12/2024	ORO 1	Crustacea	Ostracoda	--	--	5
2024	7/12/2024	ORO 1	Insecta	Diptera	Chironomidae	--	986
2024	7/12/2024	ORO 1	Insecta	Diptera	Empididae	Chelifera	5
2024	7/12/2024	ORO 1	Insecta	Diptera	Empididae	--	4
2024	7/12/2024	ORO 1	Insecta	Diptera	Tipulidae	Dicranota	1
2024	7/12/2024	ORO 1	Insecta	Diptera	--	--	1
2024	7/12/2024	ORO 1	Insecta	Ephemeroptera	Baetidae	Baetis	1
2024	7/12/2024	ORO 1	Insecta	Ephemeroptera	Baetidae	--	3
2024	7/12/2024	ORO 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	1
2024	7/12/2024	ORO 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	2
2024	7/12/2024	ORO 1	Insecta	Plecoptera	Chloroperlidae	--	1
2024	7/12/2024	ORO 1	Insecta	Plecoptera	Nemouridae	Zapada	8
2024	7/12/2024	ORO 1	Insecta	Plecoptera	--	--	1
2024	7/12/2024	ORO 1	Nematoda	--	--	--	87

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2024	7/12/2024	ORO 1	Platyhelminthes	--	--	--	1
2024	7/13/2024	COB 1	Annelida	Oligochaeta	--	--	174
2024	7/13/2024	COB 1	Arachnida	Acarina	mite	--	6
2024	7/13/2024	COB 1	Arachnida	Acarina	--	--	5
2024	7/13/2024	COB 1	Chordata	Pisces	Cottidae	--	1
2024	7/13/2024	COB 1	Collembola	Poduromorpha	Poduridae	--	1
2024	7/13/2024	COB 1	Collembola	--	--	--	1
2024	7/13/2024	COB 1	Insecta	Diptera	Chironomidae	--	255
2024	7/13/2024	COB 1	Insecta	Diptera	Empididae	Chelifera	5
2024	7/13/2024	COB 1	Insecta	Diptera	Empididae	Clinocera	2
2024	7/13/2024	COB 1	Insecta	Diptera	Empididae	--	1
2024	7/13/2024	COB 1	Insecta	Diptera	Simuliidae	--	3
2024	7/13/2024	COB 1	Insecta	Diptera	Tipulidae	Dicranota	3
2024	7/13/2024	COB 1	Insecta	Diptera	Tipulidae	Hexatoma	9
2024	7/13/2024	COB 1	Insecta	Diptera	Tipulidae	Ormosia	2
2024	7/13/2024	COB 1	Insecta	Diptera	Tipulidae	Tipula	23
2024	7/13/2024	COB 1	Insecta	Diptera	Tipulidae	--	1
2024	7/13/2024	COB 1	Insecta	Diptera	--	--	1
2024	7/13/2024	COB 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	3
2024	7/13/2024	COB 1	Insecta	Ephemeroptera	Baetidae	Baetis	1
2024	7/13/2024	COB 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	20
2024	7/13/2024	COB 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	1
2024	7/13/2024	COB 1	Insecta	Plecoptera	Chloroperlidae	Sweltsa	22
2024	7/13/2024	COB 1	Insecta	Plecoptera	Chloroperlidae	--	9
2024	7/13/2024	COB 1	Insecta	Plecoptera	Nemouridae	Podmosta	1
2024	7/13/2024	COB 1	Insecta	Plecoptera	Nemouridae	--	2
2024	7/13/2024	COB 1	Insecta	Plecoptera	--	--	2
2024	7/13/2024	COB 1	Insecta	Trichoptera	Limnephilidae	--	2
2024	7/13/2024	COB 1	Insecta	Trichoptera	--	--	1
2024	7/13/2024	COB 1	Nematoda	--	--	--	14
2024	7/13/2024	COB 1	Platyhelminthes	--	--	--	19
2024	7/13/2024	GLA 1	Annelida	Oligochaeta	--	--	2
2024	7/13/2024	GLA 1	Collembola	Poduromorpha	Poduridae	--	1
2024	7/13/2024	GLA 1	Collembola	Symphyleona	Sminthuridae	--	1
2024	7/13/2024	GLA 1	Insecta	Diptera	Chironomidae	--	6
2024	7/13/2024	GLA 1	Insecta	Diptera	Tipulidae	Ormosia	1
2024	7/13/2024	GLA 1	Insecta	Diptera	--	--	10
2024	7/13/2024	GLA 1	Insecta	Lepidoptera	--	--	1
2024	7/13/2024	GLA 1	Insecta	Plecoptera	Chloroperlidae	--	1
2024	7/13/2024	GLA 1	Insecta	--	--	--	21
2024	7/14/2024	COB T1	Annelida	Oligochaeta	--	--	197
2024	7/14/2024	COB T1	Annelida	Polychaeta	Sabellidae	Manayunkia	412
2024	7/14/2024	COB T1	Arachnida	Acarina	--	--	1
2024	7/14/2024	COB T1	Chordata	Pisces	Cottidae	--	1
2024	7/14/2024	COB T1	Collembola	Symphyleona	Sminthuridae	--	1
2024	7/14/2024	COB T1	Copepoda	Calanoida	--	--	2
2024	7/14/2024	COB T1	Copepoda	Cyclopoida	--	--	1
2024	7/14/2024	COB T1	Crustacea	Amphipoda	Gammaridae	--	1
2024	7/14/2024	COB T1	Crustacea	Ostracoda	--	--	23
2024	7/14/2024	COB T1	Insecta	Diptera	Chironomidae	--	210

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2024	7/14/2024	COB T1	Insecta	Diptera	Empididae	Chelifera	3
2024	7/14/2024	COB T1	Insecta	Diptera	Simuliidae	--	1978
2024	7/14/2024	COB T1	Insecta	Diptera	--	--	69
2024	7/14/2024	COB T1	Insecta	Ephemeroptera	Baetidae	--	139
2024	7/14/2024	COB T1	Insecta	Ephemeroptera	--	--	40
2024	7/14/2024	COB T1	Insecta	Lepidoptera	--	--	1
2024	7/14/2024	COB T1	Insecta	Plecoptera	Nemouridae	Podmosta	7
2024	7/14/2024	COB T1	Insecta	Plecoptera	Nemouridae	--	7
2024	7/14/2024	COB T1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	2
2024	7/14/2024	COB T1	Insecta	Trichoptera	Brachycentridae	--	17
2024	7/14/2024	COB T1	Insecta	--	--	--	1
2024	7/14/2024	COB T1	Mollusca	Bivalvia	Pisidiidae	--	10
2024	7/14/2024	COB T1	Mollusca	Gastropoda	Lymnaeidae	--	1
2024	7/14/2024	COB T1	Mollusca	Gastropoda	Valvatidae	--	36
2024	7/14/2024	COB T1	Mollusca	Gastropoda	--	--	2
2024	7/14/2024	COB T1	Nematoda	--	--	--	16
2024	7/14/2024	COB T1	Platyhelminthes	--	--	--	3
2024	7/15/2024	USR 1	Annelida	Oligochaeta	--	--	112
2024	7/15/2024	USR 1	Arachnida	Acarina	mite	--	16
2024	7/15/2024	USR 1	Arachnida	Acarina	--	--	1
2024	7/15/2024	USR 1	Collembola	Poduromorpha	Poduridae	--	1
2024	7/15/2024	USR 1	Copepoda	Cyclopoida	--	--	5
2024	7/15/2024	USR 1	Copepoda	Harpacticoida	--	--	2
2024	7/15/2024	USR 1	Crustacea	Cladocera	--	--	1
2024	7/15/2024	USR 1	Crustacea	Ostracoda	--	--	26
2024	7/15/2024	USR 1	Insecta	Diptera	Ceratopogonidae	--	24
2024	7/15/2024	USR 1	Insecta	Diptera	Chironomidae	--	1250
2024	7/15/2024	USR 1	Insecta	Diptera	Empididae	Chelifera	3
2024	7/15/2024	USR 1	Insecta	Diptera	Empididae	--	6
2024	7/15/2024	USR 1	Insecta	Diptera	Simuliidae	--	10
2024	7/15/2024	USR 1	Insecta	Diptera	Tipulidae	--	2
2024	7/15/2024	USR 1	Insecta	Diptera	--	--	1
2024	7/15/2024	USR 1	Insecta	Ephemeroptera	Baetidae	--	1
2024	7/15/2024	USR 1	Insecta	Ephemeroptera	Ephemerellidae	--	2
2024	7/15/2024	USR 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	18
2024	7/15/2024	USR 1	Insecta	Plecoptera	Chloroperlidae	--	4
2024	7/15/2024	USR 1	Insecta	Plecoptera	Nemouridae	Zapada	7
2024	7/15/2024	USR 1	Insecta	Plecoptera	--	--	3
2024	7/15/2024	USR 1	Insecta	--	--	--	3
2024	7/15/2024	USR 1	Mollusca	Bivalvia	Sphaeridae	Sphaerium	5
2024	7/15/2024	USR 1	Mollusca	Gastropoda	--	--	1
2024	7/15/2024	USR 1	Nematoda	--	--	--	71
2024	7/15/2024	USR 1	Platyhelminthes	--	--	--	14
2024	7/15/2024	WIN 1	Annelida	Oligochaeta	--	--	86
2024	7/15/2024	WIN 1	Arachnida	Acarina	--	--	3
2024	7/15/2024	WIN 1	Collembola	Entomobryomorpha	Entomobryidae	--	1
2024	7/15/2024	WIN 1	Crustacea	Ostracoda	--	--	3
2024	7/15/2024	WIN 1	Insecta	Diptera	Chironomidae	--	1224
2024	7/15/2024	WIN 1	Insecta	Diptera	Empididae	--	2
2024	7/15/2024	WIN 1	Insecta	Diptera	Simuliidae	--	9

Appendix D. Macroinvertebrate counts from Hess sampling across all years, 2019–2024, Graphite One, 2024.

Year	Date	Site	Class	Order	Family	Genus	Count
2024	7/15/2024	WIN 1	Insecta	Diptera	Tipulidae	Ormosia	1
2024	7/15/2024	WIN 1	Insecta	Diptera	--	--	3
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Ameletidae	Ameletus	1
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Baetidae	Acentrella	5
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Baetidae	Baetis	7
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	6
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Ephemerellidae	--	1
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	40
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Heptageniidae	Epeorus	16
2024	7/15/2024	WIN 1	Insecta	Ephemeroptera	Heptageniidae	--	2
2024	7/15/2024	WIN 1	Insecta	Plecoptera	Chloroperlidae	Suwallia	4
2024	7/15/2024	WIN 1	Insecta	Plecoptera	Chloroperlidae	--	1
2024	7/15/2024	WIN 1	Insecta	Plecoptera	Nemouridae	Podmosta	2
2024	7/15/2024	WIN 1	Insecta	Plecoptera	Nemouridae	--	1
2024	7/15/2024	WIN 1	Insecta	Plecoptera	--	--	9
2024	7/15/2024	WIN 1	Insecta	Trichoptera	Brachycentridae	Brachycentrus	7
2024	7/15/2024	WIN 1	Insecta	Trichoptera	Brachycentridae	--	2
2024	7/15/2024	WIN 1	Insecta	Trichoptera	--	--	1
2024	7/15/2024	WIN 1	Nematoda	--	--	--	86
2024	7/16/2024	GLA 2	Annelida	Oligochaeta	--	--	1
2024	7/16/2024	GLA 2	Insecta	Diptera	Chironomidae	--	1
2024	7/16/2024	GLA 2	Insecta	Diptera	--	--	4
2024	7/16/2024	GLA 2	Insecta	--	--	--	1
2024	7/16/2024	GLA 2	Mollusca	Gastropoda	--	--	1
2024	7/16/2024	GLA 2	Nematoda	--	--	--	1

Appendix E. Juvenile whole-body element concentrations, 2024.



13751 Lake City Way NE, Ste 108, Seattle, WA 98125 • USA • T:206-632-6206 • info@brooksapplied.com

January 9, 2025

Graphite One Inc
ATTN: Bill Morris
471 W. 36th Ave, Suite 100
Anchorage, AK 99503
bmorris@owlridgenc.com

RE: Project GRP-AL2001

Client Project: Graphite Creek

Dear Bill Morris,

On November 13, 2024, Brooks Applied Labs (BAL) received forty-nine (49) fish tissue samples. The samples were logged-in for the analyses of aluminum (Al), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), selenium (Se), antimony (Sb), nickel (Ni), zinc (Zn), mercury (Hg), methyl mercury (MeHg), and % totals solids (%TS) analyses according to the chain-of-custody forms. All samples were received and stored according to BAL SOPs and EPA methodology.

Once thawed, the samples were homogenized using pre-cleaned commercial grade homogenization equipment.

Total Metals and Mercury Quantitation by ICP-QQQ-MS

All samples were digested via microwave with a mixture of concentrated nitric acid, hydrochloric acid, and hydrogen peroxide. Trace metals were analyzed using inductively coupled plasma triple quadrupole mass spectrometry (ICP-QQQ-MS). The ICP-QQQ-MS uses advanced interference removal techniques to ensure accuracy of the sample results. For more information, please visit the *Interference Reduction Technology* section on our website, www.brooksapplied.com.

All samples were originally analyzed in sequence S241181. Samples 2411145-19, 2411145-38, and 2411145-39 had Zn results that were above calibration curve and could not be reported. These samples were reanalyzed at a greater dilution in sequence S241186. The reported Zn results for these samples were from the reanalysis.

The standard reference material (SRM) B242910-SRM1 had a recovery for Ba that was outside the acceptance at 2210%. This SRM was reanalyzed with confirming failing high results. Due to the extremely high recovery, and the fact that all other analytes recovered within acceptable limits, the Ba result for this SRM was not reported as it is suspected that this sample was contaminated during the prep. All other blank spikes and SRMs had Ba recoveries within the method acceptance limits, and no samples results were qualified on the basis of this SRM recovery.

The standard reference material (SRM) B242910-SRM3 had a recovery for Mn that was outside the acceptance. This SRM was reanalyzed for Mn as B242910-SRM4, and the recovery was within method acceptance levels. This reanalysis was reported for Mn, and no further action was required.

The standard reference material (SRM) B242910-SRM1, B242910-SRM2, and B242910-SRM3 had recoveries for Ni that were outside the acceptance limit. The result and the true value met secondary criteria (within 5x the MRL and within 2x the MRL of each other), and these standards were not reported for Ni. No sample results were qualified on the basis of these SRM recoveries.

In instances where the native sample result and/or the associated duplicate (DUP) result were below the MDL the RPD was not calculated (**N/C**).

In instances where a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample, the recoveries are not considered valid indicators of data quality. However, these results are reported as a demonstration of precision. When the spiking levels were $\leq 25\%$ of the native sample concentrations, the recoveries were not reported (NR). No sample results were qualified on the basis of the MS or MSD recoveries.

The matrix spike duplicate (MSD) B242910-MSD1 performed on sample 2411145-07 had recoveries for Ba, Cr, Mn, Ni, and Se outside the method acceptance limits. In addition, the relative percent difference (RPD) between B242910-MS1/MSD1 was above the acceptance limit for As, Ba, Cr, Cu, Mn, and Pb. The Ba, Cr, Mn, Ni, and Se results for sample 2411145-07 were qualified N for low bias, and the As, Ba, Cr, Cu, Mn, and Pb results were qualified M for duplicate imprecision.

The duplicate (DUP) B242910-DUP2 performed on sample 2411145-18 had a relative percent difference (RPD) for Pb that was above the acceptance limit (200%). The DUP result and the native result met secondary criteria (within 5x the MRL and within 2x the MRL of each other) and no further action was required.

The duplicate (DUP) B242910-DUP3 performed on sample 2411145-28 had a relative percent difference (RPD) for Ba above the acceptance limit (37%). The Ba result for sample 2411145-28 was qualified M for duplicate imprecision.

The duplicate (DUP) B242910-DUP4 performed on sample 2411145-40 had a relative percent difference (RPD) for Cr that was above the acceptance limit (33%). The DUP result and the native result met secondary criteria (within 5x the MRL and within 2x the MRL of each other) and no further action was required.

The matrix spike (MS) B242910-MS4 and matrix spike duplicate (MSD) B242910-MSD4 performed on sample 2411145-40 had recoveries for Mn that were outside the acceptance limit. The Mn result for sample 2411145-40 was qualified N for low bias.

The duplicate (DUP) B242910-DUP5 performed on sample 2411145-49 had a relative percent difference (RPD) for Cr and Pb that was above the acceptance limit. In both cases, the DUP result and the native result met secondary criteria (within 5x the MRL and within the MRL of each other) and no further action was required.

The duplicate (DUP) B242910-DUP5 performed on sample 2411145-49 had a relative percent difference (RPD) for Al, Ba, Fe, Mn, and Zn that was above the acceptance limit. The Al, Ba, Fe, Mn, and Zn result for sample 2411145-49 were qualified M for duplicate imprecision.

The matrix spike (MS) B242910-MS5 and matrix spike duplicate (MSD) B242910-MSD5 performed on sample 2411145-49 had a recovery outside the acceptance limit for Al. B242910-MSD5 had a recovery outside the acceptance limit for Mn. In addition, the relative percent difference (RPD) between B242910-MS5/MSD5 was above the acceptance limit for Al and Mn. The Al and Mn results for sample 2411145-49 were qualified N for low/high bias, and the Al and Mn results were qualified M for duplicate imprecision.

The matrix spike (MS) B242910-MS5 performed on sample 2411145-49 had a recovery outside the acceptance limit for Fe. In instances where a matrix spike/matrix spike duplicate (MS/MSD) set was spiked at a level less than the native sample, the recoveries are not considered valid indicators of data quality. However, these results are reported as a demonstration of precision.

Total Mercury using MERX

All samples for Hg analysis were digested via modified EPA Method 1631, Appendix using a mixture of concentrated nitric acid and concentrated sulfuric acid. The digested samples were preserved with bromine monochloride prior to analysis. The preserved digests were then analyzed via cold vapor atomic fluorescence spectroscopy (CVAFS).

Methyl Mercury using MERX

All samples for MeHg analysis were extracted with a mixture of potassium hydroxide and methanol in accordance with BAL SOPs. Extracts were then analyzed via cold vapor gas chromatography atomic fluorescence spectroscopy (CV-GC-AFS).

In instances where the MeHg results for samples were slightly larger than their associated total Hg results. The results were considered statistically equivalent [relative percent difference (RPD) less than 30%] and all Hg in these samples should be presumed to be in the methylated form.

Total Solids

Solid samples were homogenized, and an aliquot of each sample was measured into a pre-weighed vessel and dried in an oven for at least 12 hours. The vessels were removed from the oven, weighed again, and the percent of dried solid material was calculated.

Sample 2411145-23 could not be analyzed for %TS due to the sample being exhausted during the metals, Hg, and MeHg preps. The %TS was cancelled for this sample, and all results are reported in wet weight.

Sample results reported for mercury and methyl mercury were method blank corrected, while all other results were not method blank corrected, as described in the calculations section of the relevant BAL SOP(s). All results were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

All data was reported without further qualification and all other associated quality control sample results met the acceptance criteria.

BAL verifies that the reported results of all analyses for which the laboratory is accredited meet the requirements of the accrediting body, unless otherwise noted in the report narrative. For more information regarding accreditations please see the *Report Information* and *Batch Summary* pages. This report must be used in its entirety for interpretation of results.

Please feel free to contact us if you have any questions regarding this report.

Sincerely,

A handwritten signature in black ink that reads "Amy Goodall". The signature is written in a cursive, flowing style.

Amy Goodall
Project Manager
Brooks Applied Labs
amy@brooksapplied.com



Report Information

General Disclaimers

Test results are based solely upon the sample submitted to Brooks Applied Labs in the condition it was received. This report shall not be reproduced or copied, except in full, without written approval of the laboratory. Brooks Applied Labs is not responsible for the consequences arising from the use of a partial report.

Laboratory Accreditation

BAL maintains accreditation with various state and national agencies for select test methods. For a current list of BAL accreditations, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. The reported analyte/matrix/method combination shall be considered outside BAL's scopes of accreditation unless otherwise identified as ISO, TNI, or ISO,TNI in the tables. It is the responsibility of the client to verify whether a specific accreditation is required for the intended data use.

ISO: ISO/IEC 17025:2017 accredited test method. Issued by ANSI National Accreditation Board (ANAB), #ADE-1447.02

TNI: NELAP accredited test method. Issued by the State of Florida Department of Health, #E87982.

ISO,TNI: Test method is accredited under both the ISO/IEC 17025:2017 and NELAP accreditations referenced above.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

AR	as received	MS	matrix spike
BAL	Brooks Applied Labs	MSD	matrix spike duplicate
BLK	method blank	ND	non-detect
BS	blank spike	NR	non-reportable
CAL	calibration standard	N/C	not calculated
CCB	continuing calibration blank	PS	post preparation spike
CCV	continuing calibration verification	REC	percent recovery
COC	chain of custody record	RPD	relative percent difference
D	dissolved fraction	SCV	secondary calibration verification
DUP	duplicate	SOP	standard operating procedure
IBL	instrument blank	SRM	reference material
ICV	initial calibration verification	T	total fraction
MDL	method detection limit	TR	total recoverable fraction
MRL	method reporting limit		

Definition of Data Qualifiers

E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Please see narrative for explanation.
J	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
J-1	Estimated value. A full explanation is presented in the narrative.
M	Duplicate precision (RPD) was not within acceptance criteria. Please see narrative for explanation.
N	Spike recovery was not within acceptance criteria. Please see narrative for explanation.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.
Z	Holding time and/or preservation requirements not established for this method; however, BAL recommendations for holding time were not followed. Please see narrative for explanation.



Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
COB1-081524-DV1	2411145-01	Fish	Sample	08/15/2024	11/13/2024
COB1-081524-DV2	2411145-02	Fish	Sample	08/15/2024	11/13/2024
COB1-081524-DV3	2411145-03	Fish	Sample	08/15/2024	11/13/2024
FAL1-071124-DV1	2411145-04	Fish	Sample	07/11/2024	11/13/2024
FAL1-071124-DV2	2411145-05	Fish	Sample	07/11/2024	11/13/2024
FAL1-081424-DV3	2411145-06	Fish	Sample	08/14/2024	11/13/2024
FAL1-081424-DV4	2411145-07	Fish	Sample	08/14/2024	11/13/2024
WIN1-071524-DV1	2411145-08	Fish	Sample	07/15/2024	11/13/2024
WIN1-071524-DV2	2411145-09	Fish	Sample	07/15/2024	11/13/2024
WIN1-071524-DV3	2411145-10	Fish	Sample	07/15/2024	11/13/2024
WIN1-071524-DV4	2411145-11	Fish	Sample	07/15/2024	11/13/2024
WIN1-081224-DV5	2411145-12	Fish	Sample	08/12/2024	11/13/2024
WIN1-081224-DV6	2411145-13	Fish	Sample	08/12/2024	11/13/2024
WIN1-081224-DV7	2411145-14	Fish	Sample	08/12/2024	11/13/2024
USR1-071524-DV1	2411145-15	Fish	Sample	07/15/2024	11/13/2024
USR1-081524-DV2	2411145-16	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV3	2411145-17	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV4	2411145-18	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV5	2411145-19	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV6	2411145-20	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV7	2411145-21	Fish	Sample	08/15/2024	11/13/2024
USR1-081524-DV8	2411145-22	Fish	Sample	08/15/2024	11/13/2024
1MU16-071124-DV1	2411145-23	Fish	Sample	07/11/2024	11/13/2024
1MU16-081424-DV2	2411145-24	Fish	Sample	08/14/2024	11/13/2024
COBT1-071424-DV1	2411145-25	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV2	2411145-26	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV3	2411145-27	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV4	2411145-28	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV5	2411145-29	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV6	2411145-30	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV7	2411145-31	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV8	2411145-32	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV9	2411145-33	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV10	2411145-34	Fish	Sample	07/15/2024	11/13/2024
COBT1-071424-DV11	2411145-35	Fish	Sample	07/15/2024	11/13/2024
ORO1-071224-DV1	2411145-36	Fish	Sample	07/12/2024	11/13/2024
ORO1-071224-DV2	2411145-37	Fish	Sample	07/12/2024	11/13/2024
ORO1-071224-DV3	2411145-38	Fish	Sample	07/12/2024	11/13/2024
ORO1-071224-DV4	2411145-39	Fish	Sample	07/12/2024	11/13/2024
ORO1-081524-DV5	2411145-40	Fish	Sample	08/15/2024	11/13/2024
ORO1-081524-DV6	2411145-41	Fish	Sample	08/15/2024	11/13/2024



Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
<i>ORO1-081524-DV7</i>	2411145-42	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV8</i>	2411145-43	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV9</i>	2411145-44	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV10</i>	2411145-45	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV11</i>	2411145-46	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV12</i>	2411145-47	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV13</i>	2411145-48	Fish	Sample	08/15/2024	11/13/2024
<i>ORO1-081524-DV14</i>	2411145-49	Fish	Sample	08/15/2024	11/13/2024



Batch Summary

Analyte	Lab Matrix	Method	Accred.	Prepared	Analyzed	Batch	Sequence
%TS	Biota	SOP BAL-0501	ISO	12/10/24	12/11/24	B243106	N/A
Al	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
As	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Ba	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Be	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Cd	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Cr	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Cu	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Fe	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Hg	Biota	EPA 1631 Appendix	ISO,TNI	11/26/24	11/27/24	B242983	S241165
Hg	Biota	EPA 1631 Appendix	ISO,TNI	12/04/24	12/05/24	B242914	S241189
MeHg	Biota	EPA 1630 Mod	ISO,TNI	11/25/24	11/26/24	B242806	S241156
MeHg	Biota	EPA 1630 Mod	ISO,TNI	11/27/24	11/30/24	B242984	S241169
MeHg	Biota	EPA 1630 Mod	ISO,TNI	11/29/24	12/02/24	B242807	S241176
Mn	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Ni	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Pb	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Sb	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Se	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Zn	Biota	EPA 6020B Mod	ISO	12/03/24	12/03/24	B242910	S241181
Zn	Biota	EPA 6020B Mod	ISO	12/03/24	12/05/24	B242910	S241186



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COB1-081524-DV1										
2411145-01	%TS	Fish	NA	25.17		0.10	0.33	%	B243106	N/A
2411145-01	Al	Fish	dry	82.7		3.28	7.80	mg/kg	B242910	S241181
2411145-01	As	Fish	dry	0.204		0.008	0.031	mg/kg	B242910	S241181
2411145-01	Ba	Fish	dry	2.56		0.015	0.078	mg/kg	B242910	S241181
2411145-01	Be	Fish	dry	≤ 0.023	U	0.023	0.070	mg/kg	B242910	S241181
2411145-01	Cd	Fish	dry	0.196		0.009	0.027	mg/kg	B242910	S241181
2411145-01	Cr	Fish	dry	0.736		0.195	0.585	mg/kg	B242910	S241181
2411145-01	Cu	Fish	dry	3.18		0.117	0.780	mg/kg	B242910	S241181
2411145-01	Fe	Fish	dry	143		1.40	3.12	mg/kg	B242910	S241181
2411145-01	Hg	Fish	dry	61.9		0.644	1.61	ng/g	B242983	S241165
2411145-01	MeHg	Fish	dry	66.4		4.0	12.0	ng/g	B242806	S241156
2411145-01	Mn	Fish	dry	6.44		0.039	0.078	mg/kg	B242910	S241181
2411145-01	Ni	Fish	dry	0.409	J	0.199	1.40	mg/kg	B242910	S241181
2411145-01	Pb	Fish	dry	0.042		0.009	0.028	mg/kg	B242910	S241181
2411145-01	Sb	Fish	dry	≤ 0.006	U	0.006	0.019	mg/kg	B242910	S241181
2411145-01	Se	Fish	dry	4.32		0.020	0.039	mg/kg	B242910	S241181
2411145-01	Zn	Fish	dry	105		0.858	3.12	mg/kg	B242910	S241181
COB1-081524-DV2										
2411145-02	%TS	Fish	NA	20.71		0.06	0.19	%	B243106	N/A
2411145-02	Al	Fish	dry	79.9		3.86	9.20	mg/kg	B242910	S241181
2411145-02	As	Fish	dry	0.221		0.009	0.037	mg/kg	B242910	S241181
2411145-02	Ba	Fish	dry	2.33		0.017	0.092	mg/kg	B242910	S241181
2411145-02	Be	Fish	dry	≤ 0.028	U	0.028	0.083	mg/kg	B242910	S241181
2411145-02	Cd	Fish	dry	0.568		0.010	0.032	mg/kg	B242910	S241181
2411145-02	Cr	Fish	dry	0.321	J	0.230	0.690	mg/kg	B242910	S241181
2411145-02	Cu	Fish	dry	3.74		0.138	0.920	mg/kg	B242910	S241181
2411145-02	Fe	Fish	dry	160		1.66	3.68	mg/kg	B242910	S241181
2411145-02	Hg	Fish	dry	157		0.783	1.96	ng/g	B242983	S241165
2411145-02	MeHg	Fish	dry	174		4.8	14.5	ng/g	B242806	S241156
2411145-02	Mn	Fish	dry	4.40		0.046	0.092	mg/kg	B242910	S241181
2411145-02	Ni	Fish	dry	0.315	J	0.235	1.66	mg/kg	B242910	S241181
2411145-02	Pb	Fish	dry	0.035		0.011	0.033	mg/kg	B242910	S241181
2411145-02	Sb	Fish	dry	0.017	J	0.007	0.022	mg/kg	B242910	S241181
2411145-02	Se	Fish	dry	4.49		0.023	0.046	mg/kg	B242910	S241181
2411145-02	Zn	Fish	dry	174		1.01	3.68	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COB1-081524-DV3										
2411145-03	%TS	Fish	NA	23.77		0.14	0.46	%	B243106	N/A
2411145-03	Al	Fish	dry	182		3.45	8.23	mg/kg	B242910	S241181
2411145-03	As	Fish	dry	0.422		0.008	0.033	mg/kg	B242910	S241181
2411145-03	Ba	Fish	dry	2.53		0.015	0.082	mg/kg	B242910	S241181
2411145-03	Be	Fish	dry	≤ 0.025	U	0.025	0.074	mg/kg	B242910	S241181
2411145-03	Cd	Fish	dry	1.07		0.009	0.029	mg/kg	B242910	S241181
2411145-03	Cr	Fish	dry	1.11		0.206	0.617	mg/kg	B242910	S241181
2411145-03	Cu	Fish	dry	4.95		0.123	0.823	mg/kg	B242910	S241181
2411145-03	Fe	Fish	dry	266		1.48	3.29	mg/kg	B242910	S241181
2411145-03	Hg	Fish	dry	60.5		0.666	1.67	ng/g	B242983	S241165
2411145-03	MeHg	Fish	dry	67.4		4.3	12.8	ng/g	B242806	S241156
2411145-03	Mn	Fish	dry	9.99		0.041	0.082	mg/kg	B242910	S241181
2411145-03	Ni	Fish	dry	0.901	J	0.210	1.48	mg/kg	B242910	S241181
2411145-03	Pb	Fish	dry	0.085		0.010	0.030	mg/kg	B242910	S241181
2411145-03	Sb	Fish	dry	≤ 0.007	U	0.007	0.020	mg/kg	B242910	S241181
2411145-03	Se	Fish	dry	4.99		0.021	0.041	mg/kg	B242910	S241181
2411145-03	Zn	Fish	dry	108		0.905	3.29	mg/kg	B242910	S241181
FAL1-071124-DV1										
2411145-04	%TS	Fish	NA	19.83		0.08	0.28	%	B243106	N/A
2411145-04	Al	Fish	dry	24.6		3.93	9.36	mg/kg	B242910	S241181
2411145-04	As	Fish	dry	0.152		0.009	0.037	mg/kg	B242910	S241181
2411145-04	Ba	Fish	dry	2.11		0.018	0.094	mg/kg	B242910	S241181
2411145-04	Be	Fish	dry	≤ 0.028	U	0.028	0.084	mg/kg	B242910	S241181
2411145-04	Cd	Fish	dry	0.270		0.010	0.033	mg/kg	B242910	S241181
2411145-04	Cr	Fish	dry	0.566	J	0.234	0.702	mg/kg	B242910	S241181
2411145-04	Cu	Fish	dry	3.00		0.140	0.936	mg/kg	B242910	S241181
2411145-04	Fe	Fish	dry	82.0		1.68	3.74	mg/kg	B242910	S241181
2411145-04	Hg	Fish	dry	111		0.812	2.03	ng/g	B242983	S241165
2411145-04	MeHg	Fish	dry	123		5.1	15.3	ng/g	B242806	S241156
2411145-04	Mn	Fish	dry	4.51		0.047	0.094	mg/kg	B242910	S241181
2411145-04	Ni	Fish	dry	0.261	J	0.239	1.68	mg/kg	B242910	S241181
2411145-04	Pb	Fish	dry	0.029	J	0.011	0.034	mg/kg	B242910	S241181
2411145-04	Sb	Fish	dry	≤ 0.007	U	0.007	0.022	mg/kg	B242910	S241181
2411145-04	Se	Fish	dry	3.68		0.023	0.047	mg/kg	B242910	S241181
2411145-04	Zn	Fish	dry	141		1.03	3.74	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
FAL1-071124-DV2										
2411145-05	%TS	Fish	NA	21.22		0.04	0.14	%	B243106	N/A
2411145-05	Al	Fish	dry	3.24	J	3.05	7.27	mg/kg	B242910	S241181
2411145-05	As	Fish	dry	0.163		0.007	0.029	mg/kg	B242910	S241181
2411145-05	Ba	Fish	dry	2.68		0.014	0.073	mg/kg	B242910	S241181
2411145-05	Be	Fish	dry	≤ 0.022	U	0.022	0.065	mg/kg	B242910	S241181
2411145-05	Cd	Fish	dry	0.065		0.008	0.025	mg/kg	B242910	S241181
2411145-05	Cr	Fish	dry	0.689		0.182	0.546	mg/kg	B242910	S241181
2411145-05	Cu	Fish	dry	3.00		0.109	0.727	mg/kg	B242910	S241181
2411145-05	Fe	Fish	dry	74.4		1.31	2.91	mg/kg	B242910	S241181
2411145-05	Hg	Fish	dry	52.6		0.745	1.86	ng/g	B242983	S241165
2411145-05	MeHg	Fish	dry	58.6		4.7	14.1	ng/g	B242806	S241156
2411145-05	Mn	Fish	dry	4.50		0.036	0.073	mg/kg	B242910	S241181
2411145-05	Ni	Fish	dry	0.312	J	0.185	1.31	mg/kg	B242910	S241181
2411145-05	Pb	Fish	dry	0.018	J	0.009	0.026	mg/kg	B242910	S241181
2411145-05	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-05	Se	Fish	dry	2.18		0.018	0.036	mg/kg	B242910	S241181
2411145-05	Zn	Fish	dry	144		0.800	2.91	mg/kg	B242910	S241181
FAL1-081424-DV3										
2411145-06	%TS	Fish	NA	24.85		0.04	0.12	%	B243106	N/A
2411145-06	Al	Fish	dry	16.7		3.26	7.76	mg/kg	B242910	S241181
2411145-06	As	Fish	dry	0.166		0.008	0.031	mg/kg	B242910	S241181
2411145-06	Ba	Fish	dry	1.17		0.015	0.078	mg/kg	B242910	S241181
2411145-06	Be	Fish	dry	≤ 0.023	U	0.023	0.070	mg/kg	B242910	S241181
2411145-06	Cd	Fish	dry	0.082		0.009	0.027	mg/kg	B242910	S241181
2411145-06	Cr	Fish	dry	0.260	J	0.194	0.582	mg/kg	B242910	S241181
2411145-06	Cu	Fish	dry	3.60		0.116	0.776	mg/kg	B242910	S241181
2411145-06	Fe	Fish	dry	73.7		1.40	3.10	mg/kg	B242910	S241181
2411145-06	Hg	Fish	dry	57.1		0.640	1.60	ng/g	B242983	S241165
2411145-06	MeHg	Fish	dry	68.4		4.0	12.1	ng/g	B242806	S241156
2411145-06	Mn	Fish	dry	3.85		0.039	0.078	mg/kg	B242910	S241181
2411145-06	Ni	Fish	dry	0.278	J	0.198	1.40	mg/kg	B242910	S241181
2411145-06	Pb	Fish	dry	0.011	J	0.009	0.028	mg/kg	B242910	S241181
2411145-06	Sb	Fish	dry	≤ 0.006	U	0.006	0.019	mg/kg	B242910	S241181
2411145-06	Se	Fish	dry	3.56		0.019	0.039	mg/kg	B242910	S241181
2411145-06	Zn	Fish	dry	106		0.854	3.10	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
FAL1-081424-DV4										
2411145-07	%TS	Fish	NA	24.97		0.04	0.12	%	B243106	N/A
2411145-07	Al	Fish	dry	9.36		3.28	7.81	mg/kg	B242910	S241181
2411145-07	As	Fish	dry	0.117	M	0.008	0.031	mg/kg	B242910	S241181
2411145-07	Ba	Fish	dry	0.987	M N	0.015	0.078	mg/kg	B242910	S241181
2411145-07	Be	Fish	dry	≤ 0.023	U	0.023	0.070	mg/kg	B242910	S241181
2411145-07	Cd	Fish	dry	0.082		0.009	0.027	mg/kg	B242910	S241181
2411145-07	Cr	Fish	dry	0.294	M N J	0.195	0.586	mg/kg	B242910	S241181
2411145-07	Cu	Fish	dry	3.29	M	0.117	0.781	mg/kg	B242910	S241181
2411145-07	Fe	Fish	dry	62.2		1.41	3.12	mg/kg	B242910	S241181
2411145-07	Hg	Fish	dry	91.0		0.641	1.60	ng/g	B242983	S241165
2411145-07	MeHg	Fish	dry	89.7		4.0	11.9	ng/g	B242806	S241156
2411145-07	Mn	Fish	dry	3.40	M N	0.039	0.078	mg/kg	B242910	S241181
2411145-07	Ni	Fish	dry	≤ 0.199	N U	0.199	1.41	mg/kg	B242910	S241181
2411145-07	Pb	Fish	dry	0.025	M J	0.009	0.028	mg/kg	B242910	S241181
2411145-07	Sb	Fish	dry	0.087		0.006	0.019	mg/kg	B242910	S241181
2411145-07	Se	Fish	dry	4.06	N	0.020	0.039	mg/kg	B242910	S241181
2411145-07	Zn	Fish	dry	116		0.859	3.12	mg/kg	B242910	S241181
WIN1-071524-DV1										
2411145-08	%TS	Fish	NA	22.68		0.04	0.12	%	B243106	N/A
2411145-08	Al	Fish	dry	14.9		3.50	8.34	mg/kg	B242910	S241181
2411145-08	As	Fish	dry	0.152		0.008	0.033	mg/kg	B242910	S241181
2411145-08	Ba	Fish	dry	2.89		0.016	0.083	mg/kg	B242910	S241181
2411145-08	Be	Fish	dry	≤ 0.025	U	0.025	0.075	mg/kg	B242910	S241181
2411145-08	Cd	Fish	dry	0.566		0.009	0.029	mg/kg	B242910	S241181
2411145-08	Cr	Fish	dry	0.607	J	0.208	0.625	mg/kg	B242910	S241181
2411145-08	Cu	Fish	dry	3.22		0.125	0.834	mg/kg	B242910	S241181
2411145-08	Fe	Fish	dry	87.8		1.50	3.34	mg/kg	B242910	S241181
2411145-08	Hg	Fish	dry	86.1		0.708	1.77	ng/g	B242983	S241165
2411145-08	MeHg	Fish	dry	92.5		4.4	13.2	ng/g	B242806	S241156
2411145-08	Mn	Fish	dry	5.10		0.042	0.083	mg/kg	B242910	S241181
2411145-08	Ni	Fish	dry	0.324	J	0.213	1.50	mg/kg	B242910	S241181
2411145-08	Pb	Fish	dry	0.014	J	0.010	0.030	mg/kg	B242910	S241181
2411145-08	Sb	Fish	dry	≤ 0.007	U	0.007	0.020	mg/kg	B242910	S241181
2411145-08	Se	Fish	dry	4.82		0.021	0.042	mg/kg	B242910	S241181
2411145-08	Zn	Fish	dry	122		0.917	3.34	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WIN1-071524-DV2										
2411145-09	%TS	Fish	NA	20.64		0.21	0.71	%	B243106	N/A
2411145-09	Al	Fish	dry	62.5		3.69	8.78	mg/kg	B242910	S241181
2411145-09	As	Fish	dry	0.189		0.009	0.035	mg/kg	B242910	S241181
2411145-09	Ba	Fish	dry	3.89		0.016	0.088	mg/kg	B242910	S241181
2411145-09	Be	Fish	dry	≤ 0.026	U	0.026	0.079	mg/kg	B242910	S241181
2411145-09	Cd	Fish	dry	0.441		0.010	0.031	mg/kg	B242910	S241181
2411145-09	Cr	Fish	dry	0.954		0.220	0.659	mg/kg	B242910	S241181
2411145-09	Cu	Fish	dry	3.51		0.132	0.878	mg/kg	B242910	S241181
2411145-09	Fe	Fish	dry	171		1.58	3.51	mg/kg	B242910	S241181
2411145-09	Hg	Fish	dry	99.6		0.774	1.94	ng/g	B242983	S241165
2411145-09	MeHg	Fish	dry	96.5		4.9	14.7	ng/g	B242806	S241156
2411145-09	Mn	Fish	dry	6.24		0.044	0.088	mg/kg	B242910	S241181
2411145-09	Ni	Fish	dry	0.490	J	0.224	1.58	mg/kg	B242910	S241181
2411145-09	Pb	Fish	dry	0.034		0.011	0.032	mg/kg	B242910	S241181
2411145-09	Sb	Fish	dry	≤ 0.007	U	0.007	0.021	mg/kg	B242910	S241181
2411145-09	Se	Fish	dry	5.08		0.022	0.044	mg/kg	B242910	S241181
2411145-09	Zn	Fish	dry	131		0.966	3.51	mg/kg	B242910	S241181
WIN1-071524-DV3										
2411145-10	%TS	Fish	NA	21.38		0.05	0.15	%	B243106	N/A
2411145-10	Al	Fish	dry	37.6		3.90	9.28	mg/kg	B242910	S241181
2411145-10	As	Fish	dry	0.135		0.009	0.037	mg/kg	B242910	S241181
2411145-10	Ba	Fish	dry	3.39		0.017	0.093	mg/kg	B242910	S241181
2411145-10	Be	Fish	dry	≤ 0.028	U	0.028	0.083	mg/kg	B242910	S241181
2411145-10	Cd	Fish	dry	0.499		0.010	0.032	mg/kg	B242910	S241181
2411145-10	Cr	Fish	dry	0.445	J	0.232	0.696	mg/kg	B242910	S241181
2411145-10	Cu	Fish	dry	2.86		0.139	0.928	mg/kg	B242910	S241181
2411145-10	Fe	Fish	dry	152		1.67	3.71	mg/kg	B242910	S241181
2411145-10	Hg	Fish	dry	87.3		0.746	1.87	ng/g	B242983	S241165
2411145-10	MeHg	Fish	dry	94.7		4.6	13.7	ng/g	B242806	S241156
2411145-10	Mn	Fish	dry	4.92		0.046	0.093	mg/kg	B242910	S241181
2411145-10	Ni	Fish	dry	0.286	J	0.237	1.67	mg/kg	B242910	S241181
2411145-10	Pb	Fish	dry	0.017	J	0.011	0.033	mg/kg	B242910	S241181
2411145-10	Sb	Fish	dry	≤ 0.007	U	0.007	0.022	mg/kg	B242910	S241181
2411145-10	Se	Fish	dry	4.64		0.023	0.046	mg/kg	B242910	S241181
2411145-10	Zn	Fish	dry	156		1.02	3.71	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WIN1-071524-DV4										
2411145-11	%TS	Fish	NA	19.58		0.07	0.22	%	B243106	N/A
2411145-11	Al	Fish	dry	70.9		4.24	10.1	mg/kg	B242910	S241181
2411145-11	As	Fish	dry	0.210		0.010	0.040	mg/kg	B242910	S241181
2411145-11	Ba	Fish	dry	4.32		0.019	0.101	mg/kg	B242910	S241181
2411145-11	Be	Fish	dry	≤ 0.030	U	0.030	0.091	mg/kg	B242910	S241181
2411145-11	Cd	Fish	dry	0.563		0.011	0.035	mg/kg	B242910	S241181
2411145-11	Cr	Fish	dry	0.801		0.252	0.757	mg/kg	B242910	S241181
2411145-11	Cu	Fish	dry	3.96		0.151	1.01	mg/kg	B242910	S241181
2411145-11	Fe	Fish	dry	173		1.82	4.04	mg/kg	B242910	S241181
2411145-11	Hg	Fish	dry	143		0.826	2.06	ng/g	B242983	S241165
2411145-11	MeHg	Fish	dry	150		5.1	15.4	ng/g	B242806	S241156
2411145-11	Mn	Fish	dry	6.60		0.050	0.101	mg/kg	B242910	S241181
2411145-11	Ni	Fish	dry	0.462	J	0.257	1.82	mg/kg	B242910	S241181
2411145-11	Pb	Fish	dry	0.045		0.012	0.036	mg/kg	B242910	S241181
2411145-11	Sb	Fish	dry	≤ 0.008	U	0.008	0.024	mg/kg	B242910	S241181
2411145-11	Se	Fish	dry	4.72		0.025	0.050	mg/kg	B242910	S241181
2411145-11	Zn	Fish	dry	142		1.11	4.04	mg/kg	B242910	S241181
WIN1-081224-DV5										
2411145-12	%TS	Fish	NA	22.81		0.04	0.13	%	B243106	N/A
2411145-12	Al	Fish	dry	45.8		3.35	7.98	mg/kg	B242910	S241181
2411145-12	As	Fish	dry	0.193		0.008	0.032	mg/kg	B242910	S241181
2411145-12	Ba	Fish	dry	2.05		0.015	0.080	mg/kg	B242910	S241181
2411145-12	Be	Fish	dry	≤ 0.024	U	0.024	0.072	mg/kg	B242910	S241181
2411145-12	Cd	Fish	dry	0.534		0.009	0.028	mg/kg	B242910	S241181
2411145-12	Cr	Fish	dry	0.585	J	0.200	0.599	mg/kg	B242910	S241181
2411145-12	Cu	Fish	dry	3.54		0.120	0.798	mg/kg	B242910	S241181
2411145-12	Fe	Fish	dry	127		1.44	3.19	mg/kg	B242910	S241181
2411145-12	Hg	Fish	dry	64.2		0.689	1.72	ng/g	B242983	S241165
2411145-12	MeHg	Fish	dry	65.3		4.3	12.9	ng/g	B242806	S241156
2411145-12	Mn	Fish	dry	5.05		0.040	0.080	mg/kg	B242910	S241181
2411145-12	Ni	Fish	dry	0.353	J	0.204	1.44	mg/kg	B242910	S241181
2411145-12	Pb	Fish	dry	0.024	J	0.010	0.029	mg/kg	B242910	S241181
2411145-12	Sb	Fish	dry	≤ 0.006	U	0.006	0.019	mg/kg	B242910	S241181
2411145-12	Se	Fish	dry	5.63		0.020	0.040	mg/kg	B242910	S241181
2411145-12	Zn	Fish	dry	106		0.878	3.19	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
WIN1-081224-DV6										
2411145-13	%TS	Fish	NA	22.65		0.11	0.36	%	B243106	N/A
2411145-13	Al	Fish	dry	17.4		3.63	8.65	mg/kg	B242910	S241181
2411145-13	As	Fish	dry	0.193		0.009	0.035	mg/kg	B242910	S241181
2411145-13	Ba	Fish	dry	2.48		0.016	0.087	mg/kg	B242910	S241181
2411145-13	Be	Fish	dry	≤ 0.026	U	0.026	0.078	mg/kg	B242910	S241181
2411145-13	Cd	Fish	dry	0.379		0.010	0.030	mg/kg	B242910	S241181
2411145-13	Cr	Fish	dry	0.645	J	0.216	0.649	mg/kg	B242910	S241181
2411145-13	Cu	Fish	dry	3.77		0.130	0.865	mg/kg	B242910	S241181
2411145-13	Fe	Fish	dry	92.9		1.56	3.46	mg/kg	B242910	S241181
2411145-13	Hg	Fish	dry	73.2		0.707	1.77	ng/g	B242983	S241165
2411145-13	MeHg	Fish	dry	74.4		4.4	13.3	ng/g	B242806	S241156
2411145-13	Mn	Fish	dry	4.74		0.043	0.087	mg/kg	B242910	S241181
2411145-13	Ni	Fish	dry	0.360	J	0.221	1.56	mg/kg	B242910	S241181
2411145-13	Pb	Fish	dry	0.016	J	0.010	0.031	mg/kg	B242910	S241181
2411145-13	Sb	Fish	dry	≤ 0.007	U	0.007	0.021	mg/kg	B242910	S241181
2411145-13	Se	Fish	dry	5.84		0.022	0.043	mg/kg	B242910	S241181
2411145-13	Zn	Fish	dry	121		0.952	3.46	mg/kg	B242910	S241181
WIN1-081224-DV7										
2411145-14	%TS	Fish	NA	21.71		0.24	0.78	%	B243106	N/A
2411145-14	Al	Fish	dry	27.4		2.82	6.70	mg/kg	B242910	S241181
2411145-14	As	Fish	dry	0.171		0.007	0.027	mg/kg	B242910	S241181
2411145-14	Ba	Fish	dry	5.46		0.013	0.067	mg/kg	B242910	S241181
2411145-14	Be	Fish	dry	≤ 0.020	U	0.020	0.060	mg/kg	B242910	S241181
2411145-14	Cd	Fish	dry	0.210		0.007	0.023	mg/kg	B242910	S241181
2411145-14	Cr	Fish	dry	1.32		0.168	0.503	mg/kg	B242910	S241181
2411145-14	Cu	Fish	dry	3.33		0.101	0.670	mg/kg	B242910	S241181
2411145-14	Fe	Fish	dry	118		1.21	2.68	mg/kg	B242910	S241181
2411145-14	Hg	Fish	dry	88.1		0.741	1.85	ng/g	B242983	S241165
2411145-14	MeHg	Fish	dry	104		4.6	13.9	ng/g	B242806	S241156
2411145-14	Mn	Fish	dry	6.24		0.034	0.067	mg/kg	B242910	S241181
2411145-14	Ni	Fish	dry	0.525	J	0.171	1.21	mg/kg	B242910	S241181
2411145-14	Pb	Fish	dry	0.025		0.008	0.024	mg/kg	B242910	S241181
2411145-14	Sb	Fish	dry	0.010	J	0.005	0.016	mg/kg	B242910	S241181
2411145-14	Se	Fish	dry	4.95		0.017	0.034	mg/kg	B242910	S241181
2411145-14	Zn	Fish	dry	130		0.737	2.68	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
USR1-071524-DV1										
2411145-15	%TS	Fish	NA	21.15		0.04	0.14	%	B243106	N/A
2411145-15	Al	Fish	dry	28.7		3.85	9.17	mg/kg	B242910	S241181
2411145-15	As	Fish	dry	0.148		0.009	0.037	mg/kg	B242910	S241181
2411145-15	Ba	Fish	dry	1.70		0.017	0.092	mg/kg	B242910	S241181
2411145-15	Be	Fish	dry	≤ 0.028	U	0.028	0.083	mg/kg	B242910	S241181
2411145-15	Cd	Fish	dry	1.08		0.010	0.032	mg/kg	B242910	S241181
2411145-15	Cr	Fish	dry	0.750		0.229	0.688	mg/kg	B242910	S241181
2411145-15	Cu	Fish	dry	3.60		0.138	0.917	mg/kg	B242910	S241181
2411145-15	Fe	Fish	dry	118		1.65	3.67	mg/kg	B242910	S241181
2411145-15	Hg	Fish	dry	108		0.753	1.88	ng/g	B242983	S241165
2411145-15	MeHg	Fish	dry	110		4.7	14.0	ng/g	B242806	S241156
2411145-15	Mn	Fish	dry	7.07		0.046	0.092	mg/kg	B242910	S241181
2411145-15	Ni	Fish	dry	0.587	J	0.234	1.65	mg/kg	B242910	S241181
2411145-15	Pb	Fish	dry	0.015	J	0.011	0.033	mg/kg	B242910	S241181
2411145-15	Sb	Fish	dry	≤ 0.007	U	0.007	0.022	mg/kg	B242910	S241181
2411145-15	Se	Fish	dry	7.58		0.023	0.046	mg/kg	B242910	S241181
2411145-15	Zn	Fish	dry	163		1.01	3.67	mg/kg	B242910	S241181
USR1-081524-DV2										
2411145-16	%TS	Fish	NA	22.16		0.04	0.14	%	B243106	N/A
2411145-16	Al	Fish	dry	12.8		3.22	7.68	mg/kg	B242910	S241181
2411145-16	As	Fish	dry	0.132		0.008	0.031	mg/kg	B242910	S241181
2411145-16	Ba	Fish	dry	3.92		0.014	0.077	mg/kg	B242910	S241181
2411145-16	Be	Fish	dry	≤ 0.023	U	0.023	0.069	mg/kg	B242910	S241181
2411145-16	Cd	Fish	dry	0.686		0.008	0.027	mg/kg	B242910	S241181
2411145-16	Cr	Fish	dry	0.484	J	0.192	0.576	mg/kg	B242910	S241181
2411145-16	Cu	Fish	dry	4.05		0.115	0.768	mg/kg	B242910	S241181
2411145-16	Fe	Fish	dry	93.2		1.38	3.07	mg/kg	B242910	S241181
2411145-16	Hg	Fish	dry	145		0.727	1.82	ng/g	B242983	S241165
2411145-16	MeHg	Fish	dry	160		4.5	13.5	ng/g	B242806	S241156
2411145-16	Mn	Fish	dry	7.38		0.038	0.077	mg/kg	B242910	S241181
2411145-16	Ni	Fish	dry	0.272	J	0.196	1.38	mg/kg	B242910	S241181
2411145-16	Pb	Fish	dry	0.012	J	0.009	0.028	mg/kg	B242910	S241181
2411145-16	Sb	Fish	dry	0.007	J	0.006	0.018	mg/kg	B242910	S241181
2411145-16	Se	Fish	dry	6.27		0.019	0.038	mg/kg	B242910	S241181
2411145-16	Zn	Fish	dry	143		0.844	3.07	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
USR1-081524-DV3										
2411145-17	%TS	Fish	NA	22.10		0.04	0.14	%	B243106	N/A
2411145-17	Al	Fish	dry	13.7		2.92	6.96	mg/kg	B242910	S241181
2411145-17	As	Fish	dry	0.143		0.007	0.028	mg/kg	B242910	S241181
2411145-17	Ba	Fish	dry	1.52		0.013	0.070	mg/kg	B242910	S241181
2411145-17	Be	Fish	dry	≤ 0.021	U	0.021	0.063	mg/kg	B242910	S241181
2411145-17	Cd	Fish	dry	0.661		0.008	0.024	mg/kg	B242910	S241181
2411145-17	Cr	Fish	dry	0.300	J	0.174	0.522	mg/kg	B242910	S241181
2411145-17	Cu	Fish	dry	3.24		0.104	0.696	mg/kg	B242910	S241181
2411145-17	Fe	Fish	dry	90.5		1.25	2.78	mg/kg	B242910	S241181
2411145-17	Hg	Fish	dry	89.4		0.722	1.80	ng/g	B242983	S241165
2411145-17	MeHg	Fish	dry	94.2		4.5	13.4	ng/g	B242806	S241156
2411145-17	Mn	Fish	dry	7.46		0.035	0.070	mg/kg	B242910	S241181
2411145-17	Ni	Fish	dry	0.374	J	0.177	1.25	mg/kg	B242910	S241181
2411145-17	Pb	Fish	dry	≤ 0.008	U	0.008	0.025	mg/kg	B242910	S241181
2411145-17	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-17	Se	Fish	dry	7.45		0.017	0.035	mg/kg	B242910	S241181
2411145-17	Zn	Fish	dry	132		0.765	2.78	mg/kg	B242910	S241181
USR1-081524-DV4										
2411145-18	%TS	Fish	NA	23.88		0.04	0.12	%	B243106	N/A
2411145-18	Al	Fish	dry	8.70		3.29	7.83	mg/kg	B242910	S241181
2411145-18	As	Fish	dry	0.132		0.008	0.031	mg/kg	B242910	S241181
2411145-18	Ba	Fish	dry	1.08		0.015	0.078	mg/kg	B242910	S241181
2411145-18	Be	Fish	dry	≤ 0.024	U	0.024	0.071	mg/kg	B242910	S241181
2411145-18	Cd	Fish	dry	0.628		0.009	0.027	mg/kg	B242910	S241181
2411145-18	Cr	Fish	dry	0.238	J	0.196	0.588	mg/kg	B242910	S241181
2411145-18	Cu	Fish	dry	3.49		0.118	0.783	mg/kg	B242910	S241181
2411145-18	Fe	Fish	dry	82.3		1.41	3.13	mg/kg	B242910	S241181
2411145-18	Hg	Fish	dry	85.7		0.671	1.68	ng/g	B242983	S241165
2411145-18	MeHg	Fish	dry	93.7		4.2	12.6	ng/g	B242806	S241156
2411145-18	Mn	Fish	dry	8.37		0.039	0.078	mg/kg	B242910	S241181
2411145-18	Ni	Fish	dry	0.309	J	0.200	1.41	mg/kg	B242910	S241181
2411145-18	Pb	Fish	dry	≤ 0.009	U	0.009	0.028	mg/kg	B242910	S241181
2411145-18	Sb	Fish	dry	≤ 0.006	U	0.006	0.019	mg/kg	B242910	S241181
2411145-18	Se	Fish	dry	7.92		0.020	0.039	mg/kg	B242910	S241181
2411145-18	Zn	Fish	dry	137		0.862	3.13	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
USR1-081524-DV5										
2411145-19	%TS	Fish	NA	22.99		0.04	0.13	%	B243106	N/A
2411145-19	Al	Fish	dry	25.2		2.99	7.13	mg/kg	B242910	S241181
2411145-19	As	Fish	dry	0.118		0.007	0.029	mg/kg	B242910	S241181
2411145-19	Ba	Fish	dry	2.77		0.013	0.071	mg/kg	B242910	S241181
2411145-19	Be	Fish	dry	≤ 0.021	U	0.021	0.064	mg/kg	B242910	S241181
2411145-19	Cd	Fish	dry	1.30		0.008	0.025	mg/kg	B242910	S241181
2411145-19	Cr	Fish	dry	0.230	J	0.178	0.535	mg/kg	B242910	S241181
2411145-19	Cu	Fish	dry	3.41		0.107	0.713	mg/kg	B242910	S241181
2411145-19	Fe	Fish	dry	116		1.28	2.85	mg/kg	B242910	S241181
2411145-19	Hg	Fish	dry	90.8		0.702	1.75	ng/g	B242983	S241165
2411145-19	MeHg	Fish	dry	98.1		4.3	12.9	ng/g	B242806	S241156
2411145-19	Mn	Fish	dry	18.4		0.036	0.071	mg/kg	B242910	S241181
2411145-19	Ni	Fish	dry	0.402	J	0.182	1.28	mg/kg	B242910	S241181
2411145-19	Pb	Fish	dry	0.013	J	0.009	0.026	mg/kg	B242910	S241181
2411145-19	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-19	Se	Fish	dry	7.40		0.018	0.036	mg/kg	B242910	S241181
2411145-19	Zn	Fish	dry	164		3.92	14.3	mg/kg	B242910	S241186
USR1-081524-DV6										
2411145-20	%TS	Fish	NA	23.13		0.04	0.14	%	B243106	N/A
2411145-20	Al	Fish	dry	34.1		3.19	7.60	mg/kg	B242910	S241181
2411145-20	As	Fish	dry	0.151		0.008	0.030	mg/kg	B242910	S241181
2411145-20	Ba	Fish	dry	1.93		0.014	0.076	mg/kg	B242910	S241181
2411145-20	Be	Fish	dry	≤ 0.023	U	0.023	0.068	mg/kg	B242910	S241181
2411145-20	Cd	Fish	dry	0.734		0.008	0.027	mg/kg	B242910	S241181
2411145-20	Cr	Fish	dry	0.390	J	0.190	0.570	mg/kg	B242910	S241181
2411145-20	Cu	Fish	dry	3.81		0.114	0.760	mg/kg	B242910	S241181
2411145-20	Fe	Fish	dry	117		1.37	3.04	mg/kg	B242910	S241181
2411145-20	Hg	Fish	dry	101		0.692	1.73	ng/g	B242983	S241165
2411145-20	MeHg	Fish	dry	105		4.3	12.8	ng/g	B242806	S241156
2411145-20	Mn	Fish	dry	9.30		0.038	0.076	mg/kg	B242910	S241181
2411145-20	Ni	Fish	dry	0.346	J	0.194	1.37	mg/kg	B242910	S241181
2411145-20	Pb	Fish	dry	0.011	J	0.009	0.027	mg/kg	B242910	S241181
2411145-20	Sb	Fish	dry	≤ 0.006	U	0.006	0.018	mg/kg	B242910	S241181
2411145-20	Se	Fish	dry	8.30		0.019	0.038	mg/kg	B242910	S241181
2411145-20	Zn	Fish	dry	137		0.836	3.04	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
USR1-081524-DV7										
2411145-21	%TS	Fish	NA	21.80		0.06	0.20	%	B243106	N/A
2411145-21	Al	Fish	dry	26.7		2.97	7.07	mg/kg	B242910	S241181
2411145-21	As	Fish	dry	0.214		0.007	0.028	mg/kg	B242910	S241181
2411145-21	Ba	Fish	dry	1.30		0.013	0.071	mg/kg	B242910	S241181
2411145-21	Be	Fish	dry	≤ 0.021	U	0.021	0.064	mg/kg	B242910	S241181
2411145-21	Cd	Fish	dry	1.04		0.008	0.025	mg/kg	B242910	S241181
2411145-21	Cr	Fish	dry	0.369	J	0.177	0.530	mg/kg	B242910	S241181
2411145-21	Cu	Fish	dry	3.80		0.106	0.707	mg/kg	B242910	S241181
2411145-21	Fe	Fish	dry	111		1.27	2.83	mg/kg	B242910	S241181
2411145-21	Hg	Fish	dry	69.4		0.731	1.83	ng/g	B242983	S241165
2411145-21	MeHg	Fish	dry	61.1		4.1	12.3	ng/g	B242984	S241169
2411145-21	Mn	Fish	dry	8.75		0.035	0.071	mg/kg	B242910	S241181
2411145-21	Ni	Fish	dry	0.378	J	0.180	1.27	mg/kg	B242910	S241181
2411145-21	Pb	Fish	dry	0.013	J	0.008	0.025	mg/kg	B242910	S241181
2411145-21	Sb	Fish	dry	0.009	J	0.006	0.017	mg/kg	B242910	S241181
2411145-21	Se	Fish	dry	6.30		0.018	0.035	mg/kg	B242910	S241181
2411145-21	Zn	Fish	dry	148		0.778	2.83	mg/kg	B242910	S241181
USR1-081524-DV8										
2411145-22	%TS	Fish	NA	22.44		0.04	0.13	%	B243106	N/A
2411145-22	Al	Fish	dry	25.4		3.67	8.74	mg/kg	B242910	S241181
2411145-22	As	Fish	dry	0.139		0.009	0.035	mg/kg	B242910	S241181
2411145-22	Ba	Fish	dry	1.67		0.016	0.087	mg/kg	B242910	S241181
2411145-22	Be	Fish	dry	≤ 0.026	U	0.026	0.079	mg/kg	B242910	S241181
2411145-22	Cd	Fish	dry	0.526		0.010	0.031	mg/kg	B242910	S241181
2411145-22	Cr	Fish	dry	0.472	J	0.218	0.655	mg/kg	B242910	S241181
2411145-22	Cu	Fish	dry	3.29		0.131	0.874	mg/kg	B242910	S241181
2411145-22	Fe	Fish	dry	102		1.57	3.50	mg/kg	B242910	S241181
2411145-22	Hg	Fish	dry	63.1		0.718	1.79	ng/g	B242983	S241165
2411145-22	MeHg	Fish	dry	65.8		3.7	11.1	ng/g	B242984	S241169
2411145-22	Mn	Fish	dry	9.63		0.044	0.087	mg/kg	B242910	S241181
2411145-22	Ni	Fish	dry	0.320	J	0.223	1.57	mg/kg	B242910	S241181
2411145-22	Pb	Fish	dry	0.011	J	0.010	0.031	mg/kg	B242910	S241181
2411145-22	Sb	Fish	dry	≤ 0.007	U	0.007	0.021	mg/kg	B242910	S241181
2411145-22	Se	Fish	dry	6.79		0.022	0.044	mg/kg	B242910	S241181
2411145-22	Zn	Fish	dry	142		0.961	3.50	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
1MU16-071124-DV1										
2411145-23	Al	Fish	AR	37.4		2.04	4.85	mg/kg	B242910	S241181
2411145-23	As	Fish	AR	0.046		0.005	0.019	mg/kg	B242910	S241181
2411145-23	Ba	Fish	AR	0.867		0.009	0.049	mg/kg	B242910	S241181
2411145-23	Be	Fish	AR	≤ 0.015	U	0.015	0.044	mg/kg	B242910	S241181
2411145-23	Cd	Fish	AR	0.412		0.005	0.017	mg/kg	B242910	S241181
2411145-23	Cr	Fish	AR	0.470		0.121	0.364	mg/kg	B242910	S241181
2411145-23	Cu	Fish	AR	1.48		0.073	0.485	mg/kg	B242910	S241181
2411145-23	Fe	Fish	AR	68.0		0.873	1.94	mg/kg	B242910	S241181
2411145-23	Hg	Fish	AR	14.5		0.393	0.982	ng/g	B242983	S241165
2411145-23	MeHg	Fish	AR	15.1		1.6	4.8	ng/g	B242984	S241169
2411145-23	Mn	Fish	AR	3.06		0.024	0.049	mg/kg	B242910	S241181
2411145-23	Ni	Fish	AR	0.270	J	0.124	0.873	mg/kg	B242910	S241181
2411145-23	Pb	Fish	AR	0.013	J	0.006	0.017	mg/kg	B242910	S241181
2411145-23	Sb	Fish	AR	0.013		0.004	0.012	mg/kg	B242910	S241181
2411145-23	Se	Fish	AR	3.12		0.012	0.024	mg/kg	B242910	S241181
2411145-23	Zn	Fish	AR	42.4		0.534	1.94	mg/kg	B242910	S241181
1MU16-081424-DV2										
2411145-24	%TS	Fish	NA	21.56		0.04	0.14	%	B243106	N/A
2411145-24	Al	Fish	dry	66.7		3.59	8.54	mg/kg	B242910	S241181
2411145-24	As	Fish	dry	0.102		0.009	0.034	mg/kg	B242910	S241181
2411145-24	Ba	Fish	dry	4.46		0.016	0.085	mg/kg	B242910	S241181
2411145-24	Be	Fish	dry	≤ 0.026	U	0.026	0.077	mg/kg	B242910	S241181
2411145-24	Cd	Fish	dry	0.352		0.009	0.030	mg/kg	B242910	S241181
2411145-24	Cr	Fish	dry	0.555	J	0.213	0.640	mg/kg	B242910	S241181
2411145-24	Cu	Fish	dry	3.95		0.128	0.854	mg/kg	B242910	S241181
2411145-24	Fe	Fish	dry	144		1.54	3.41	mg/kg	B242910	S241181
2411145-24	Hg	Fish	dry	87.8		0.747	1.87	ng/g	B242983	S241165
2411145-24	MeHg	Fish	dry	82.4		3.9	11.6	ng/g	B242984	S241169
2411145-24	Mn	Fish	dry	8.18		0.043	0.085	mg/kg	B242910	S241181
2411145-24	Ni	Fish	dry	0.373	J	0.218	1.54	mg/kg	B242910	S241181
2411145-24	Pb	Fish	dry	0.017	J	0.010	0.031	mg/kg	B242910	S241181
2411145-24	Sb	Fish	dry	0.010	J	0.007	0.020	mg/kg	B242910	S241181
2411145-24	Se	Fish	dry	7.71		0.021	0.043	mg/kg	B242910	S241181
2411145-24	Zn	Fish	dry	134		0.939	3.41	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV1										
2411145-25	%TS	Fish	NA	22.79		0.04	0.14	%	B243106	N/A
2411145-25	Al	Fish	dry	110		2.60	6.19	mg/kg	B242910	S241181
2411145-25	As	Fish	dry	0.141		0.006	0.025	mg/kg	B242910	S241181
2411145-25	Ba	Fish	dry	1.92		0.012	0.062	mg/kg	B242910	S241181
2411145-25	Be	Fish	dry	≤ 0.019	U	0.019	0.056	mg/kg	B242910	S241181
2411145-25	Cd	Fish	dry	0.066		0.007	0.022	mg/kg	B242910	S241181
2411145-25	Cr	Fish	dry	0.539		0.155	0.464	mg/kg	B242910	S241181
2411145-25	Cu	Fish	dry	4.55		0.093	0.619	mg/kg	B242910	S241181
2411145-25	Fe	Fish	dry	658		1.11	2.48	mg/kg	B242910	S241181
2411145-25	Hg	Fish	dry	119		0.708	1.77	ng/g	B242914	S241189
2411145-25	MeHg	Fish	dry	99.2		4.0	12.1	ng/g	B242984	S241169
2411145-25	Mn	Fish	dry	15.7		0.031	0.062	mg/kg	B242910	S241181
2411145-25	Ni	Fish	dry	0.391	J	0.158	1.11	mg/kg	B242910	S241181
2411145-25	Pb	Fish	dry	0.055		0.007	0.022	mg/kg	B242910	S241181
2411145-25	Sb	Fish	dry	0.006	J	0.005	0.015	mg/kg	B242910	S241181
2411145-25	Se	Fish	dry	4.01		0.015	0.031	mg/kg	B242910	S241181
2411145-25	Zn	Fish	dry	134		0.681	2.48	mg/kg	B242910	S241181
COBT1-071424-DV2										
2411145-26	%TS	Fish	NA	20.93		0.05	0.15	%	B243106	N/A
2411145-26	Al	Fish	dry	144		3.22	7.67	mg/kg	B242910	S241181
2411145-26	As	Fish	dry	0.167		0.008	0.031	mg/kg	B242910	S241181
2411145-26	Ba	Fish	dry	3.32		0.014	0.077	mg/kg	B242910	S241181
2411145-26	Be	Fish	dry	≤ 0.023	U	0.023	0.069	mg/kg	B242910	S241181
2411145-26	Cd	Fish	dry	0.092		0.008	0.027	mg/kg	B242910	S241181
2411145-26	Cr	Fish	dry	0.589		0.192	0.575	mg/kg	B242910	S241181
2411145-26	Cu	Fish	dry	4.63		0.115	0.767	mg/kg	B242910	S241181
2411145-26	Fe	Fish	dry	769		1.38	3.07	mg/kg	B242910	S241181
2411145-26	Hg	Fish	dry	259		0.764	1.91	ng/g	B242914	S241189
2411145-26	MeHg	Fish	dry	271		4.6	13.8	ng/g	B242984	S241169
2411145-26	Mn	Fish	dry	49.4		0.038	0.077	mg/kg	B242910	S241181
2411145-26	Ni	Fish	dry	0.529	J	0.196	1.38	mg/kg	B242910	S241181
2411145-26	Pb	Fish	dry	0.071		0.009	0.028	mg/kg	B242910	S241181
2411145-26	Sb	Fish	dry	0.046		0.006	0.018	mg/kg	B242910	S241181
2411145-26	Se	Fish	dry	2.59		0.019	0.038	mg/kg	B242910	S241181
2411145-26	Zn	Fish	dry	152		0.844	3.07	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV3										
2411145-27	%TS	Fish	NA	22.75		0.05	0.15	%	B243106	N/A
2411145-27	Al	Fish	dry	388		3.33	7.94	mg/kg	B242910	S241181
2411145-27	As	Fish	dry	0.220		0.008	0.032	mg/kg	B242910	S241181
2411145-27	Ba	Fish	dry	5.11		0.015	0.079	mg/kg	B242910	S241181
2411145-27	Be	Fish	dry	≤ 0.024	U	0.024	0.071	mg/kg	B242910	S241181
2411145-27	Cd	Fish	dry	0.093		0.009	0.028	mg/kg	B242910	S241181
2411145-27	Cr	Fish	dry	1.12		0.199	0.596	mg/kg	B242910	S241181
2411145-27	Cu	Fish	dry	4.38		0.119	0.794	mg/kg	B242910	S241181
2411145-27	Fe	Fish	dry	1830		1.43	3.18	mg/kg	B242910	S241181
2411145-27	Hg	Fish	dry	125		0.705	1.76	ng/g	B242914	S241189
2411145-27	MeHg	Fish	dry	110		4.2	12.7	ng/g	B242984	S241169
2411145-27	Mn	Fish	dry	48.1		0.040	0.079	mg/kg	B242910	S241181
2411145-27	Ni	Fish	dry	0.808	J	0.202	1.43	mg/kg	B242910	S241181
2411145-27	Pb	Fish	dry	0.140		0.010	0.029	mg/kg	B242910	S241181
2411145-27	Sb	Fish	dry	0.085		0.006	0.019	mg/kg	B242910	S241181
2411145-27	Se	Fish	dry	3.41		0.020	0.040	mg/kg	B242910	S241181
2411145-27	Zn	Fish	dry	142		0.873	3.18	mg/kg	B242910	S241181
COBT1-071424-DV4										
2411145-28	%TS	Fish	NA	27.42		0.04	0.12	%	B243106	N/A
2411145-28	Al	Fish	dry	6.25	J	2.90	6.90	mg/kg	B242910	S241181
2411145-28	As	Fish	dry	0.055		0.007	0.028	mg/kg	B242910	S241181
2411145-28	Ba	Fish	dry	0.855	M	0.013	0.069	mg/kg	B242910	S241181
2411145-28	Be	Fish	dry	≤ 0.021	U	0.021	0.062	mg/kg	B242910	S241181
2411145-28	Cd	Fish	dry	0.021	J	0.008	0.024	mg/kg	B242910	S241181
2411145-28	Cr	Fish	dry	0.369	J	0.173	0.518	mg/kg	B242910	S241181
2411145-28	Cu	Fish	dry	2.27		0.104	0.690	mg/kg	B242910	S241181
2411145-28	Fe	Fish	dry	74.3		1.24	2.76	mg/kg	B242910	S241181
2411145-28	Hg	Fish	dry	174		0.585	1.46	ng/g	B242914	S241189
2411145-28	MeHg	Fish	dry	162		3.4	10.1	ng/g	B242984	S241169
2411145-28	Mn	Fish	dry	6.88		0.035	0.069	mg/kg	B242910	S241181
2411145-28	Ni	Fish	dry	≤ 0.176	U	0.176	1.24	mg/kg	B242910	S241181
2411145-28	Pb	Fish	dry	≤ 0.008	U	0.008	0.025	mg/kg	B242910	S241181
2411145-28	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-28	Se	Fish	dry	3.65		0.017	0.035	mg/kg	B242910	S241181
2411145-28	Zn	Fish	dry	101		0.759	2.76	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV5										
2411145-29	%TS	Fish	NA	21.41		0.04	0.14	%	B243106	N/A
2411145-29	Al	Fish	dry	44.4		2.98	7.09	mg/kg	B242910	S241181
2411145-29	As	Fish	dry	0.163		0.007	0.028	mg/kg	B242910	S241181
2411145-29	Ba	Fish	dry	2.11		0.013	0.071	mg/kg	B242910	S241181
2411145-29	Be	Fish	dry	≤ 0.021	U	0.021	0.064	mg/kg	B242910	S241181
2411145-29	Cd	Fish	dry	0.080		0.008	0.025	mg/kg	B242910	S241181
2411145-29	Cr	Fish	dry	0.494	J	0.177	0.531	mg/kg	B242910	S241181
2411145-29	Cu	Fish	dry	3.07		0.106	0.709	mg/kg	B242910	S241181
2411145-29	Fe	Fish	dry	306		1.28	2.83	mg/kg	B242910	S241181
2411145-29	Hg	Fish	dry	143		0.754	1.89	ng/g	B242914	S241189
2411145-29	MeHg	Fish	dry	121		4.0	12.1	ng/g	B242984	S241169
2411145-29	Mn	Fish	dry	8.13		0.035	0.071	mg/kg	B242910	S241181
2411145-29	Ni	Fish	dry	0.268	J	0.181	1.28	mg/kg	B242910	S241181
2411145-29	Pb	Fish	dry	0.028		0.009	0.026	mg/kg	B242910	S241181
2411145-29	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-29	Se	Fish	dry	3.84		0.018	0.035	mg/kg	B242910	S241181
2411145-29	Zn	Fish	dry	126		0.779	2.83	mg/kg	B242910	S241181
COBT1-071424-DV6										
2411145-30	%TS	Fish	NA	23.53		0.03	0.12	%	B243106	N/A
2411145-30	Al	Fish	dry	68.9		3.45	8.21	mg/kg	B242910	S241181
2411145-30	As	Fish	dry	0.139		0.008	0.033	mg/kg	B242910	S241181
2411145-30	Ba	Fish	dry	1.28		0.015	0.082	mg/kg	B242910	S241181
2411145-30	Be	Fish	dry	≤ 0.025	U	0.025	0.074	mg/kg	B242910	S241181
2411145-30	Cd	Fish	dry	0.051		0.009	0.029	mg/kg	B242910	S241181
2411145-30	Cr	Fish	dry	0.476	J	0.205	0.616	mg/kg	B242910	S241181
2411145-30	Cu	Fish	dry	3.83		0.123	0.821	mg/kg	B242910	S241181
2411145-30	Fe	Fish	dry	459		1.48	3.28	mg/kg	B242910	S241181
2411145-30	Hg	Fish	dry	306		0.685	1.71	ng/g	B242914	S241189
2411145-30	MeHg	Fish	dry	264		4.1	12.3	ng/g	B242984	S241169
2411145-30	Mn	Fish	dry	14.0		0.041	0.082	mg/kg	B242910	S241181
2411145-30	Ni	Fish	dry	0.357	J	0.209	1.48	mg/kg	B242910	S241181
2411145-30	Pb	Fish	dry	0.033		0.010	0.030	mg/kg	B242910	S241181
2411145-30	Sb	Fish	dry	≤ 0.007	U	0.007	0.020	mg/kg	B242910	S241181
2411145-30	Se	Fish	dry	3.82		0.021	0.041	mg/kg	B242910	S241181
2411145-30	Zn	Fish	dry	136		0.903	3.28	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV7										
2411145-31	%TS	Fish	NA	28.05		0.03	0.11	%	B243106	N/A
2411145-31	Al	Fish	dry	8.66		2.51	5.97	mg/kg	B242910	S241181
2411145-31	As	Fish	dry	0.070		0.006	0.024	mg/kg	B242910	S241181
2411145-31	Ba	Fish	dry	0.913		0.011	0.060	mg/kg	B242910	S241181
2411145-31	Be	Fish	dry	≤ 0.018	U	0.018	0.054	mg/kg	B242910	S241181
2411145-31	Cd	Fish	dry	0.025		0.007	0.021	mg/kg	B242910	S241181
2411145-31	Cr	Fish	dry	0.420	J	0.149	0.448	mg/kg	B242910	S241181
2411145-31	Cu	Fish	dry	2.75		0.090	0.597	mg/kg	B242910	S241181
2411145-31	Fe	Fish	dry	102		1.07	2.39	mg/kg	B242910	S241181
2411145-31	Hg	Fish	dry	152		0.570	1.43	ng/g	B242914	S241189
2411145-31	MeHg	Fish	dry	147		2.9	8.8	ng/g	B242984	S241169
2411145-31	Mn	Fish	dry	8.25		0.030	0.060	mg/kg	B242910	S241181
2411145-31	Ni	Fish	dry	0.197	J	0.152	1.07	mg/kg	B242910	S241181
2411145-31	Pb	Fish	dry	≤ 0.007	U	0.007	0.021	mg/kg	B242910	S241181
2411145-31	Sb	Fish	dry	≤ 0.005	U	0.005	0.014	mg/kg	B242910	S241181
2411145-31	Se	Fish	dry	3.23		0.015	0.030	mg/kg	B242910	S241181
2411145-31	Zn	Fish	dry	109		0.657	2.39	mg/kg	B242910	S241181
COBT1-071424-DV8										
2411145-32	%TS	Fish	NA	26.92		0.04	0.12	%	B243106	N/A
2411145-32	Al	Fish	dry	9.07		2.57	6.12	mg/kg	B242910	S241181
2411145-32	As	Fish	dry	0.059		0.006	0.024	mg/kg	B242910	S241181
2411145-32	Ba	Fish	dry	0.790		0.011	0.061	mg/kg	B242910	S241181
2411145-32	Be	Fish	dry	≤ 0.018	U	0.018	0.055	mg/kg	B242910	S241181
2411145-32	Cd	Fish	dry	0.019	J	0.007	0.021	mg/kg	B242910	S241181
2411145-32	Cr	Fish	dry	≤ 0.153	U	0.153	0.459	mg/kg	B242910	S241181
2411145-32	Cu	Fish	dry	2.32		0.092	0.612	mg/kg	B242910	S241181
2411145-32	Fe	Fish	dry	86.3		1.10	2.45	mg/kg	B242910	S241181
2411145-32	Hg	Fish	dry	200		0.592	1.48	ng/g	B242914	S241189
2411145-32	MeHg	Fish	dry	195		3.1	9.3	ng/g	B242984	S241169
2411145-32	Mn	Fish	dry	8.55		0.031	0.061	mg/kg	B242910	S241181
2411145-32	Ni	Fish	dry	≤ 0.156	U	0.156	1.10	mg/kg	B242910	S241181
2411145-32	Pb	Fish	dry	≤ 0.007	U	0.007	0.022	mg/kg	B242910	S241181
2411145-32	Sb	Fish	dry	≤ 0.005	U	0.005	0.015	mg/kg	B242910	S241181
2411145-32	Se	Fish	dry	3.41		0.015	0.031	mg/kg	B242910	S241181
2411145-32	Zn	Fish	dry	108		0.673	2.45	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV9										
2411145-33	%TS	Fish	NA	21.16		0.04	0.14	%	B243106	N/A
2411145-33	Al	Fish	dry	32.7		3.42	8.14	mg/kg	B242910	S241181
2411145-33	As	Fish	dry	0.137		0.008	0.033	mg/kg	B242910	S241181
2411145-33	Ba	Fish	dry	1.77		0.015	0.081	mg/kg	B242910	S241181
2411145-33	Be	Fish	dry	≤ 0.024	U	0.024	0.073	mg/kg	B242910	S241181
2411145-33	Cd	Fish	dry	0.097		0.009	0.028	mg/kg	B242910	S241181
2411145-33	Cr	Fish	dry	0.998		0.203	0.610	mg/kg	B242910	S241181
2411145-33	Cu	Fish	dry	3.11		0.122	0.814	mg/kg	B242910	S241181
2411145-33	Fe	Fish	dry	293		1.46	3.25	mg/kg	B242910	S241181
2411145-33	Hg	Fish	dry	162		0.761	1.90	ng/g	B242914	S241189
2411145-33	MeHg	Fish	dry	152		4.6	13.7	ng/g	B242984	S241169
2411145-33	Mn	Fish	dry	8.25		0.041	0.081	mg/kg	B242910	S241181
2411145-33	Ni	Fish	dry	0.462	J	0.207	1.46	mg/kg	B242910	S241181
2411145-33	Pb	Fish	dry	0.024	J	0.010	0.029	mg/kg	B242910	S241181
2411145-33	Sb	Fish	dry	≤ 0.007	U	0.007	0.020	mg/kg	B242910	S241181
2411145-33	Se	Fish	dry	3.98		0.020	0.041	mg/kg	B242910	S241181
2411145-33	Zn	Fish	dry	125		0.895	3.25	mg/kg	B242910	S241181
COBT1-071424-DV10										
2411145-34	%TS	Fish	NA	29.41		0.03	0.11	%	B243106	N/A
2411145-34	Al	Fish	dry	23.5		2.09	4.98	mg/kg	B242910	S241181
2411145-34	As	Fish	dry	0.074		0.005	0.020	mg/kg	B242910	S241181
2411145-34	Ba	Fish	dry	1.51		0.009	0.050	mg/kg	B242910	S241181
2411145-34	Be	Fish	dry	≤ 0.015	U	0.015	0.045	mg/kg	B242910	S241181
2411145-34	Cd	Fish	dry	0.030		0.005	0.017	mg/kg	B242910	S241181
2411145-34	Cr	Fish	dry	0.295	J	0.125	0.374	mg/kg	B242910	S241181
2411145-34	Cu	Fish	dry	2.24		0.075	0.498	mg/kg	B242910	S241181
2411145-34	Fe	Fish	dry	200		0.897	1.99	mg/kg	B242910	S241181
2411145-34	Hg	Fish	dry	129		0.547	1.37	ng/g	B242914	S241189
2411145-34	MeHg	Fish	dry	99.8		3.2	9.6	ng/g	B242984	S241169
2411145-34	Mn	Fish	dry	9.82		0.025	0.050	mg/kg	B242910	S241181
2411145-34	Ni	Fish	dry	0.142	J	0.127	0.897	mg/kg	B242910	S241181
2411145-34	Pb	Fish	dry	0.016	J	0.006	0.018	mg/kg	B242910	S241181
2411145-34	Sb	Fish	dry	≤ 0.004	U	0.004	0.012	mg/kg	B242910	S241181
2411145-34	Se	Fish	dry	2.86		0.012	0.025	mg/kg	B242910	S241181
2411145-34	Zn	Fish	dry	109		0.548	1.99	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
COBT1-071424-DV11										
2411145-35	%TS	Fish	NA	22.12		0.04	0.13	%	B243106	N/A
2411145-35	Al	Fish	dry	22.3		2.78	6.61	mg/kg	B242910	S241181
2411145-35	As	Fish	dry	0.159		0.007	0.026	mg/kg	B242910	S241181
2411145-35	Ba	Fish	dry	1.82		0.012	0.066	mg/kg	B242910	S241181
2411145-35	Be	Fish	dry	≤ 0.020	U	0.020	0.060	mg/kg	B242910	S241181
2411145-35	Cd	Fish	dry	0.051		0.007	0.023	mg/kg	B242910	S241181
2411145-35	Cr	Fish	dry	0.348	J	0.165	0.496	mg/kg	B242910	S241181
2411145-35	Cu	Fish	dry	2.63		0.099	0.661	mg/kg	B242910	S241181
2411145-35	Fe	Fish	dry	167		1.19	2.64	mg/kg	B242910	S241181
2411145-35	Hg	Fish	dry	134		0.724	1.81	ng/g	B242914	S241189
2411145-35	MeHg	Fish	dry	132		3.7	11.0	ng/g	B242984	S241169
2411145-35	Mn	Fish	dry	7.60		0.033	0.066	mg/kg	B242910	S241181
2411145-35	Ni	Fish	dry	0.179	J	0.169	1.19	mg/kg	B242910	S241181
2411145-35	Pb	Fish	dry	0.016	J	0.008	0.024	mg/kg	B242910	S241181
2411145-35	Sb	Fish	dry	≤ 0.005	U	0.005	0.016	mg/kg	B242910	S241181
2411145-35	Se	Fish	dry	3.14		0.017	0.033	mg/kg	B242910	S241181
2411145-35	Zn	Fish	dry	126		0.727	2.64	mg/kg	B242910	S241181
ORO1-071224-DV1										
2411145-36	%TS	Fish	NA	22.17		0.18	0.59	%	B243106	N/A
2411145-36	Al	Fish	dry	356		3.71	8.83	mg/kg	B242910	S241181
2411145-36	As	Fish	dry	0.177		0.009	0.035	mg/kg	B242910	S241181
2411145-36	Ba	Fish	dry	4.49		0.017	0.088	mg/kg	B242910	S241181
2411145-36	Be	Fish	dry	≤ 0.026	U	0.026	0.079	mg/kg	B242910	S241181
2411145-36	Cd	Fish	dry	0.735		0.010	0.031	mg/kg	B242910	S241181
2411145-36	Cr	Fish	dry	1.36		0.221	0.662	mg/kg	B242910	S241181
2411145-36	Cu	Fish	dry	3.33		0.132	0.883	mg/kg	B242910	S241181
2411145-36	Fe	Fish	dry	381		1.59	3.53	mg/kg	B242910	S241181
2411145-36	Hg	Fish	dry	86.6		1.42	3.56	ng/g	B242914	S241189
2411145-36	MeHg	Fish	dry	87.1		4.6	13.7	ng/g	B242807	S241176
2411145-36	Mn	Fish	dry	12.2		0.044	0.088	mg/kg	B242910	S241181
2411145-36	Ni	Fish	dry	0.662	J	0.225	1.59	mg/kg	B242910	S241181
2411145-36	Pb	Fish	dry	0.107		0.011	0.032	mg/kg	B242910	S241181
2411145-36	Sb	Fish	dry	0.011	J	0.007	0.021	mg/kg	B242910	S241181
2411145-36	Se	Fish	dry	4.11		0.022	0.044	mg/kg	B242910	S241181
2411145-36	Zn	Fish	dry	142		0.971	3.53	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-071224-DV2										
2411145-37	%TS	Fish	NA	23.14		0.78	2.60	%	B243106	N/A
2411145-37	Al	Fish	dry	82.8		3.55	8.45	mg/kg	B242910	S241181
2411145-37	As	Fish	dry	0.105		0.008	0.034	mg/kg	B242910	S241181
2411145-37	Ba	Fish	dry	4.16		0.016	0.084	mg/kg	B242910	S241181
2411145-37	Be	Fish	dry	≤ 0.025	U	0.025	0.076	mg/kg	B242910	S241181
2411145-37	Cd	Fish	dry	0.428		0.009	0.030	mg/kg	B242910	S241181
2411145-37	Cr	Fish	dry	0.906		0.211	0.633	mg/kg	B242910	S241181
2411145-37	Cu	Fish	dry	2.46		0.127	0.845	mg/kg	B242910	S241181
2411145-37	Fe	Fish	dry	157		1.52	3.38	mg/kg	B242910	S241181
2411145-37	Hg	Fish	dry	65.5		3.37	8.42	ng/g	B242914	S241189
2411145-37	MeHg	Fish	dry	64.7		4.4	13.1	ng/g	B242807	S241176
2411145-37	Mn	Fish	dry	8.16		0.042	0.084	mg/kg	B242910	S241181
2411145-37	Ni	Fish	dry	0.387	J	0.215	1.52	mg/kg	B242910	S241181
2411145-37	Pb	Fish	dry	0.046		0.010	0.030	mg/kg	B242910	S241181
2411145-37	Sb	Fish	dry	0.008	J	0.007	0.020	mg/kg	B242910	S241181
2411145-37	Se	Fish	dry	3.36		0.021	0.042	mg/kg	B242910	S241181
2411145-37	Zn	Fish	dry	131		0.929	3.38	mg/kg	B242910	S241181
ORO1-071224-DV3										
2411145-38	%TS	Fish	NA	23.16		0.04	0.14	%	B243106	N/A
2411145-38	Al	Fish	dry	49.6		3.53	8.39	mg/kg	B242910	S241181
2411145-38	As	Fish	dry	0.101		0.008	0.034	mg/kg	B242910	S241181
2411145-38	Ba	Fish	dry	6.13		0.016	0.084	mg/kg	B242910	S241181
2411145-38	Be	Fish	dry	≤ 0.025	U	0.025	0.076	mg/kg	B242910	S241181
2411145-38	Cd	Fish	dry	0.292		0.009	0.029	mg/kg	B242910	S241181
2411145-38	Cr	Fish	dry	0.496	J	0.210	0.630	mg/kg	B242910	S241181
2411145-38	Cu	Fish	dry	2.46		0.126	0.839	mg/kg	B242910	S241181
2411145-38	Fe	Fish	dry	103		1.51	3.36	mg/kg	B242910	S241181
2411145-38	Hg	Fish	dry	85.4		0.691	1.73	ng/g	B242914	S241189
2411145-38	MeHg	Fish	dry	79.6		4.3	12.8	ng/g	B242807	S241176
2411145-38	Mn	Fish	dry	7.18		0.042	0.084	mg/kg	B242910	S241181
2411145-38	Ni	Fish	dry	0.261	J	0.214	1.51	mg/kg	B242910	S241181
2411145-38	Pb	Fish	dry	0.579		0.010	0.030	mg/kg	B242910	S241181
2411145-38	Sb	Fish	dry	0.008	J	0.007	0.020	mg/kg	B242910	S241181
2411145-38	Se	Fish	dry	3.24		0.021	0.042	mg/kg	B242910	S241181
2411145-38	Zn	Fish	dry	321		4.62	16.8	mg/kg	B242910	S241186



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-071224-DV4										
2411145-39	%TS	Fish	NA	22.05		0.08	0.27	%	B243106	N/A
2411145-39	Al	Fish	dry	895		2.96	7.05	mg/kg	B242910	S241181
2411145-39	As	Fish	dry	0.227		0.007	0.028	mg/kg	B242910	S241181
2411145-39	Ba	Fish	dry	10.7		0.013	0.071	mg/kg	B242910	S241181
2411145-39	Be	Fish	dry	0.037	J	0.021	0.063	mg/kg	B242910	S241181
2411145-39	Cd	Fish	dry	0.974		0.008	0.025	mg/kg	B242910	S241181
2411145-39	Cr	Fish	dry	1.83		0.176	0.529	mg/kg	B242910	S241181
2411145-39	Cu	Fish	dry	4.12		0.106	0.705	mg/kg	B242910	S241181
2411145-39	Fe	Fish	dry	1040		1.27	2.82	mg/kg	B242910	S241181
2411145-39	Hg	Fish	dry	97.3		0.730	1.83	ng/g	B242914	S241189
2411145-39	MeHg	Fish	dry	72.5		4.5	13.5	ng/g	B242807	S241176
2411145-39	Mn	Fish	dry	27.1		0.035	0.071	mg/kg	B242910	S241181
2411145-39	Ni	Fish	dry	1.24	J	0.180	1.27	mg/kg	B242910	S241181
2411145-39	Pb	Fish	dry	0.858		0.008	0.025	mg/kg	B242910	S241181
2411145-39	Sb	Fish	dry	0.017	J	0.006	0.017	mg/kg	B242910	S241181
2411145-39	Se	Fish	dry	3.66		0.018	0.035	mg/kg	B242910	S241181
2411145-39	Zn	Fish	dry	319		3.88	14.1	mg/kg	B242910	S241186
ORO1-081524-DV5										
2411145-40	%TS	Fish	NA	22.40		0.04	0.15	%	B243106	N/A
2411145-40	Al	Fish	dry	9.95		3.07	7.32	mg/kg	B242910	S241181
2411145-40	As	Fish	dry	0.071		0.007	0.029	mg/kg	B242910	S241181
2411145-40	Ba	Fish	dry	3.89		0.014	0.073	mg/kg	B242910	S241181
2411145-40	Be	Fish	dry	≤ 0.022	U	0.022	0.066	mg/kg	B242910	S241181
2411145-40	Cd	Fish	dry	0.501		0.008	0.026	mg/kg	B242910	S241181
2411145-40	Cr	Fish	dry	0.643		0.183	0.549	mg/kg	B242910	S241181
2411145-40	Cu	Fish	dry	2.91		0.110	0.732	mg/kg	B242910	S241181
2411145-40	Fe	Fish	dry	104		1.32	2.93	mg/kg	B242910	S241181
2411145-40	Hg	Fish	dry	115		0.717	1.79	ng/g	B242914	S241189
2411145-40	MeHg	Fish	dry	119		4.5	13.4	ng/g	B242807	S241176
2411145-40	Mn	Fish	dry	8.31	N	0.037	0.073	mg/kg	B242910	S241181
2411145-40	Ni	Fish	dry	0.376	J	0.187	1.32	mg/kg	B242910	S241181
2411145-40	Pb	Fish	dry	0.012	J	0.009	0.026	mg/kg	B242910	S241181
2411145-40	Sb	Fish	dry	≤ 0.006	U	0.006	0.018	mg/kg	B242910	S241181
2411145-40	Se	Fish	dry	5.25		0.018	0.037	mg/kg	B242910	S241181
2411145-40	Zn	Fish	dry	157		0.805	2.93	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-081524-DV6										
2411145-41	%TS	Fish	NA	23.24		0.04	0.13	%	B243106	N/A
2411145-41	Al	Fish	dry	13.4		2.97	7.07	mg/kg	B242910	S241181
2411145-41	As	Fish	dry	0.126		0.007	0.028	mg/kg	B242910	S241181
2411145-41	Ba	Fish	dry	1.78		0.013	0.071	mg/kg	B242910	S241181
2411145-41	Be	Fish	dry	≤ 0.021	U	0.021	0.064	mg/kg	B242910	S241181
2411145-41	Cd	Fish	dry	0.278		0.008	0.025	mg/kg	B242910	S241181
2411145-41	Cr	Fish	dry	0.567		0.177	0.530	mg/kg	B242910	S241181
2411145-41	Cu	Fish	dry	2.78		0.106	0.707	mg/kg	B242910	S241181
2411145-41	Fe	Fish	dry	82.2		1.27	2.83	mg/kg	B242910	S241181
2411145-41	Hg	Fish	dry	85.0		0.687	1.72	ng/g	B242914	S241189
2411145-41	MeHg	Fish	dry	82.8		4.3	13.0	ng/g	B242807	S241176
2411145-41	Mn	Fish	dry	5.08		0.035	0.071	mg/kg	B242910	S241181
2411145-41	Ni	Fish	dry	0.272	J	0.180	1.27	mg/kg	B242910	S241181
2411145-41	Pb	Fish	dry	0.016	J	0.008	0.025	mg/kg	B242910	S241181
2411145-41	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-41	Se	Fish	dry	5.03		0.018	0.035	mg/kg	B242910	S241181
2411145-41	Zn	Fish	dry	140		0.777	2.83	mg/kg	B242910	S241181
ORO1-081524-DV7										
2411145-42	%TS	Fish	NA	24.13		0.04	0.13	%	B243106	N/A
2411145-42	Al	Fish	dry	111		2.78	6.61	mg/kg	B242910	S241181
2411145-42	As	Fish	dry	0.153		0.007	0.026	mg/kg	B242910	S241181
2411145-42	Ba	Fish	dry	2.32		0.012	0.066	mg/kg	B242910	S241181
2411145-42	Be	Fish	dry	≤ 0.020	U	0.020	0.060	mg/kg	B242910	S241181
2411145-42	Cd	Fish	dry	0.426		0.007	0.023	mg/kg	B242910	S241181
2411145-42	Cr	Fish	dry	0.857		0.165	0.496	mg/kg	B242910	S241181
2411145-42	Cu	Fish	dry	2.70		0.099	0.661	mg/kg	B242910	S241181
2411145-42	Fe	Fish	dry	293		1.19	2.65	mg/kg	B242910	S241181
2411145-42	Hg	Fish	dry	81.4		0.660	1.65	ng/g	B242914	S241189
2411145-42	MeHg	Fish	dry	82.6		4.1	12.3	ng/g	B242807	S241176
2411145-42	Mn	Fish	dry	9.00		0.033	0.066	mg/kg	B242910	S241181
2411145-42	Ni	Fish	dry	0.429	J	0.169	1.19	mg/kg	B242910	S241181
2411145-42	Pb	Fish	dry	0.076		0.008	0.024	mg/kg	B242910	S241181
2411145-42	Sb	Fish	dry	0.008	J	0.005	0.016	mg/kg	B242910	S241181
2411145-42	Se	Fish	dry	4.61		0.017	0.033	mg/kg	B242910	S241181
2411145-42	Zn	Fish	dry	120		0.727	2.65	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-081524-DV8										
2411145-43	%TS	Fish	NA	22.89		0.03	0.12	%	B243106	N/A
2411145-43	Al	Fish	dry	23.4		3.34	7.95	mg/kg	B242910	S241181
2411145-43	As	Fish	dry	0.091		0.008	0.032	mg/kg	B242910	S241181
2411145-43	Ba	Fish	dry	1.75		0.015	0.079	mg/kg	B242910	S241181
2411145-43	Be	Fish	dry	≤ 0.024	U	0.024	0.072	mg/kg	B242910	S241181
2411145-43	Cd	Fish	dry	0.238		0.009	0.028	mg/kg	B242910	S241181
2411145-43	Cr	Fish	dry	0.299	J	0.199	0.596	mg/kg	B242910	S241181
2411145-43	Cu	Fish	dry	2.45		0.119	0.795	mg/kg	B242910	S241181
2411145-43	Fe	Fish	dry	83.0		1.43	3.18	mg/kg	B242910	S241181
2411145-43	Hg	Fish	dry	103		0.700	1.75	ng/g	B242914	S241189
2411145-43	MeHg	Fish	dry	95.0		4.4	13.1	ng/g	B242807	S241176
2411145-43	Mn	Fish	dry	5.01		0.040	0.079	mg/kg	B242910	S241181
2411145-43	Ni	Fish	dry	0.229	J	0.203	1.43	mg/kg	B242910	S241181
2411145-43	Pb	Fish	dry	0.016	J	0.010	0.029	mg/kg	B242910	S241181
2411145-43	Sb	Fish	dry	0.009	J	0.006	0.019	mg/kg	B242910	S241181
2411145-43	Se	Fish	dry	6.04		0.020	0.040	mg/kg	B242910	S241181
2411145-43	Zn	Fish	dry	134		0.874	3.18	mg/kg	B242910	S241181
ORO1-081524-DV9										
2411145-44	%TS	Fish	NA	24.20		0.04	0.12	%	B243106	N/A
2411145-44	Al	Fish	dry	8.29		2.96	7.06	mg/kg	B242910	S241181
2411145-44	As	Fish	dry	0.092		0.007	0.028	mg/kg	B242910	S241181
2411145-44	Ba	Fish	dry	1.63		0.013	0.071	mg/kg	B242910	S241181
2411145-44	Be	Fish	dry	≤ 0.021	U	0.021	0.064	mg/kg	B242910	S241181
2411145-44	Cd	Fish	dry	0.283		0.008	0.025	mg/kg	B242910	S241181
2411145-44	Cr	Fish	dry	0.574		0.176	0.529	mg/kg	B242910	S241181
2411145-44	Cu	Fish	dry	2.65		0.106	0.706	mg/kg	B242910	S241181
2411145-44	Fe	Fish	dry	87.0		1.27	2.82	mg/kg	B242910	S241181
2411145-44	Hg	Fish	dry	78.4		0.663	1.66	ng/g	B242914	S241189
2411145-44	MeHg	Fish	dry	60.2		4.1	12.4	ng/g	B242807	S241176
2411145-44	Mn	Fish	dry	5.26		0.035	0.071	mg/kg	B242910	S241181
2411145-44	Ni	Fish	dry	0.248	J	0.180	1.27	mg/kg	B242910	S241181
2411145-44	Pb	Fish	dry	0.013	J	0.008	0.025	mg/kg	B242910	S241181
2411145-44	Sb	Fish	dry	≤ 0.006	U	0.006	0.017	mg/kg	B242910	S241181
2411145-44	Se	Fish	dry	4.87		0.018	0.035	mg/kg	B242910	S241181
2411145-44	Zn	Fish	dry	123		0.776	2.82	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-081524-DV10										
2411145-45	%TS	Fish	NA	24.35		0.04	0.13	%	B243106	N/A
2411145-45	Al	Fish	dry	8.91		2.59	6.16	mg/kg	B242910	S241181
2411145-45	As	Fish	dry	0.079		0.006	0.025	mg/kg	B242910	S241181
2411145-45	Ba	Fish	dry	1.24		0.012	0.062	mg/kg	B242910	S241181
2411145-45	Be	Fish	dry	≤ 0.018	U	0.018	0.055	mg/kg	B242910	S241181
2411145-45	Cd	Fish	dry	0.272		0.007	0.022	mg/kg	B242910	S241181
2411145-45	Cr	Fish	dry	0.243	J	0.154	0.462	mg/kg	B242910	S241181
2411145-45	Cu	Fish	dry	2.21		0.092	0.616	mg/kg	B242910	S241181
2411145-45	Fe	Fish	dry	46.0		1.11	2.46	mg/kg	B242910	S241181
2411145-45	Hg	Fish	dry	94.2		0.658	1.65	ng/g	B242914	S241189
2411145-45	MeHg	Fish	dry	94.5		4.1	12.3	ng/g	B242807	S241176
2411145-45	Mn	Fish	dry	2.49		0.031	0.062	mg/kg	B242910	S241181
2411145-45	Ni	Fish	dry	0.183	J	0.157	1.11	mg/kg	B242910	S241181
2411145-45	Pb	Fish	dry	0.010	J	0.007	0.022	mg/kg	B242910	S241181
2411145-45	Sb	Fish	dry	≤ 0.005	U	0.005	0.015	mg/kg	B242910	S241181
2411145-45	Se	Fish	dry	5.79		0.015	0.031	mg/kg	B242910	S241181
2411145-45	Zn	Fish	dry	95.8		0.677	2.46	mg/kg	B242910	S241181
ORO1-081524-DV11										
2411145-46	%TS	Fish	NA	22.65		0.04	0.13	%	B243106	N/A
2411145-46	Al	Fish	dry	14.6		3.21	7.65	mg/kg	B242910	S241181
2411145-46	As	Fish	dry	0.114		0.008	0.031	mg/kg	B242910	S241181
2411145-46	Ba	Fish	dry	2.64		0.014	0.076	mg/kg	B242910	S241181
2411145-46	Be	Fish	dry	≤ 0.023	U	0.023	0.069	mg/kg	B242910	S241181
2411145-46	Cd	Fish	dry	0.213		0.008	0.027	mg/kg	B242910	S241181
2411145-46	Cr	Fish	dry	0.333	J	0.191	0.574	mg/kg	B242910	S241181
2411145-46	Cu	Fish	dry	2.91		0.115	0.765	mg/kg	B242910	S241181
2411145-46	Fe	Fish	dry	73.2		1.38	3.06	mg/kg	B242910	S241181
2411145-46	Hg	Fish	dry	75.1		0.704	1.76	ng/g	B242914	S241189
2411145-46	MeHg	Fish	dry	79.0		4.4	13.2	ng/g	B242807	S241176
2411145-46	Mn	Fish	dry	8.51		0.038	0.076	mg/kg	B242910	S241181
2411145-46	Ni	Fish	dry	0.217	J	0.195	1.38	mg/kg	B242910	S241181
2411145-46	Pb	Fish	dry	0.028	J	0.009	0.028	mg/kg	B242910	S241181
2411145-46	Sb	Fish	dry	≤ 0.006	U	0.006	0.018	mg/kg	B242910	S241181
2411145-46	Se	Fish	dry	5.05		0.019	0.038	mg/kg	B242910	S241181
2411145-46	Zn	Fish	dry	131		0.841	3.06	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-081524-DV12										
2411145-47	%TS	Fish	NA	22.37		0.04	0.14	%	B243106	N/A
2411145-47	Al	Fish	dry	90.6		3.45	8.22	mg/kg	B242910	S241181
2411145-47	As	Fish	dry	0.121		0.008	0.033	mg/kg	B242910	S241181
2411145-47	Ba	Fish	dry	2.38		0.015	0.082	mg/kg	B242910	S241181
2411145-47	Be	Fish	dry	≤ 0.025	U	0.025	0.074	mg/kg	B242910	S241181
2411145-47	Cd	Fish	dry	0.319		0.009	0.029	mg/kg	B242910	S241181
2411145-47	Cr	Fish	dry	0.588	J	0.206	0.617	mg/kg	B242910	S241181
2411145-47	Cu	Fish	dry	3.18		0.123	0.822	mg/kg	B242910	S241181
2411145-47	Fe	Fish	dry	176		1.48	3.29	mg/kg	B242910	S241181
2411145-47	Hg	Fish	dry	90.5		0.719	1.80	ng/g	B242914	S241189
2411145-47	MeHg	Fish	dry	99.0		4.4	13.3	ng/g	B242807	S241176
2411145-47	Mn	Fish	dry	6.69		0.041	0.082	mg/kg	B242910	S241181
2411145-47	Ni	Fish	dry	0.406	J	0.210	1.48	mg/kg	B242910	S241181
2411145-47	Pb	Fish	dry	0.051		0.010	0.030	mg/kg	B242910	S241181
2411145-47	Sb	Fish	dry	5.24		0.007	0.020	mg/kg	B242910	S241181
2411145-47	Se	Fish	dry	5.24		0.021	0.041	mg/kg	B242910	S241181
2411145-47	Zn	Fish	dry	112		0.904	3.29	mg/kg	B242910	S241181
ORO1-081524-DV13										
2411145-48	%TS	Fish	NA	23.62		0.07	0.23	%	B243106	N/A
2411145-48	Al	Fish	dry	7.62	J	3.51	8.35	mg/kg	B242910	S241181
2411145-48	As	Fish	dry	0.081		0.008	0.033	mg/kg	B242910	S241181
2411145-48	Ba	Fish	dry	3.40		0.016	0.084	mg/kg	B242910	S241181
2411145-48	Be	Fish	dry	≤ 0.025	U	0.025	0.075	mg/kg	B242910	S241181
2411145-48	Cd	Fish	dry	0.215		0.009	0.029	mg/kg	B242910	S241181
2411145-48	Cr	Fish	dry	0.473	J	0.209	0.626	mg/kg	B242910	S241181
2411145-48	Cu	Fish	dry	2.92		0.125	0.835	mg/kg	B242910	S241181
2411145-48	Fe	Fish	dry	63.1		1.50	3.34	mg/kg	B242910	S241181
2411145-48	Hg	Fish	dry	71.2		0.676	1.69	ng/g	B242914	S241189
2411145-48	MeHg	Fish	dry	73.8		4.2	12.7	ng/g	B242807	S241176
2411145-48	Mn	Fish	dry	5.33		0.042	0.084	mg/kg	B242910	S241181
2411145-48	Ni	Fish	dry	0.214	J	0.213	1.50	mg/kg	B242910	S241181
2411145-48	Pb	Fish	dry	0.014	J	0.010	0.030	mg/kg	B242910	S241181
2411145-48	Sb	Fish	dry	≤ 0.007	U	0.007	0.020	mg/kg	B242910	S241181
2411145-48	Se	Fish	dry	4.88		0.021	0.042	mg/kg	B242910	S241181
2411145-48	Zn	Fish	dry	105		0.919	3.34	mg/kg	B242910	S241181



Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
ORO1-081524-DV14										
2411145-49	%TS	Fish	NA	23.46		0.07	0.22	%	B243106	N/A
2411145-49	Al	Fish	dry	96.3	M N	3.37	8.03	mg/kg	B242910	S241181
2411145-49	As	Fish	dry	0.132		0.008	0.032	mg/kg	B242910	S241181
2411145-49	Ba	Fish	dry	2.16	M	0.015	0.080	mg/kg	B242910	S241181
2411145-49	Be	Fish	dry	≤ 0.024	U	0.024	0.072	mg/kg	B242910	S241181
2411145-49	Cd	Fish	dry	0.286		0.009	0.028	mg/kg	B242910	S241181
2411145-49	Cr	Fish	dry	0.690		0.201	0.602	mg/kg	B242910	S241181
2411145-49	Cu	Fish	dry	2.63		0.120	0.803	mg/kg	B242910	S241181
2411145-49	Fe	Fish	dry	263	M	1.44	3.21	mg/kg	B242910	S241181
2411145-49	Hg	Fish	dry	65.9		0.681	1.70	ng/g	B242914	S241189
2411145-49	MeHg	Fish	dry	68.0		4.3	13.0	ng/g	B242807	S241176
2411145-49	Mn	Fish	dry	6.81	M N	0.040	0.080	mg/kg	B242910	S241181
2411145-49	Ni	Fish	dry	0.363	J	0.205	1.44	mg/kg	B242910	S241181
2411145-49	Pb	Fish	dry	0.031		0.010	0.029	mg/kg	B242910	S241181
2411145-49	Sb	Fish	dry	≤ 0.006	U	0.006	0.019	mg/kg	B242910	S241181
2411145-49	Se	Fish	dry	4.60		0.020	0.040	mg/kg	B242910	S241181
2411145-49	Zn	Fish	dry	96.3	M	0.883	3.21	mg/kg	B242910	S241181



Accuracy & Precision Summary

Batch: B242806
 Lab Matrix: Biota
 Method: EPA 1630 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242806-SRM1	Reference Material (2220020, TORT-3) MeHg		137.0	148.3	ng/g	108% 65-135	
B242806-SRM2	Reference Material (2220020, TORT-3) MeHg		137.0	119.3	ng/g	87% 65-135	
B242806-DUP1	Duplicate (2411145-02) MeHg	173.9		179.3	ng/g		3% 35
B242806-MS1	Matrix Spike (2411145-02) MeHg	173.9	1741	1992	ng/g	104% 65-135	
B242806-MSD1	Matrix Spike Duplicate (2411145-02) MeHg	173.9	1716	2477	ng/g	134% 65-135	25% 35
B242806-DUP2	Duplicate (2411145-07) MeHg	89.7		93.8	ng/g		5% 35
B242806-MS2	Matrix Spike (2411145-07) MeHg	89.7	1450	1662	ng/g	108% 65-135	
B242806-MSD2	Matrix Spike Duplicate (2411145-07) MeHg	89.7	1458	1913	ng/g	125% 65-135	14% 35
B242806-DUP3	Duplicate (2411145-13) MeHg	74.4		67.8	ng/g		9% 35
B242806-MS3	Matrix Spike (2411145-13) MeHg	74.4	1602	1770	ng/g	106% 65-135	
B242806-MSD3	Matrix Spike Duplicate (2411145-13) MeHg	74.4	1610	2068	ng/g	124% 65-135	16% 35



Accuracy & Precision Summary

Batch: B242806
 Lab Matrix: Biota
 Method: EPA 1630 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242806-DUP4	Duplicate (2411145-18) MeHg	93.7		101.2	ng/g		8% 35
B242806-MS4	Matrix Spike (2411145-18) MeHg	93.7	1497	1920	ng/g	122% 65-135	
B242806-MSD4	Matrix Spike Duplicate (2411145-18) MeHg	93.7	1510	1888	ng/g	119% 65-135	3% 35



Accuracy & Precision Summary

Batch: B242807
Lab Matrix: Biota
Method: EPA 1630 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242807-SRM1	Reference Material (2220020, TORT-3) MeHg		137.0	141.4	ng/g	103% 65-135	
B242807-SRM2	Reference Material (2220020, TORT-3) MeHg		137.0	136.4	ng/g	100% 65-135	
B242807-DUP1	Duplicate (2411145-40) MeHg	118.7		112.0	ng/g		6% 35
B242807-MS1	Matrix Spike (2411145-40) MeHg	118.7	1117	1386	ng/g	113% 65-135	
B242807-MSD1	Matrix Spike Duplicate (2411145-40) MeHg	118.7	1117	1241	ng/g	101% 65-135	12% 35
B242807-DUP2	Duplicate (2411145-43) MeHg	95.0		86.0	ng/g		10% 35
B242807-MS2	Matrix Spike (2411145-43) MeHg	95.0	1094	1285	ng/g	109% 65-135	
B242807-MSD2	Matrix Spike Duplicate (2411145-43) MeHg	95.0	1093	1292	ng/g	109% 65-135	0.7% 35
B242807-DUP3	Duplicate (2411145-45) MeHg	94.5		97.7	ng/g		3% 35
B242807-MS3	Matrix Spike (2411145-45) MeHg	94.5	1022	1159	ng/g	104% 65-135	
B242807-MSD3	Matrix Spike Duplicate (2411145-45) MeHg	94.5	1025	1141	ng/g	102% 65-135	2% 35



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-BS1	Blank Spike, (2449007)						
		Al		20.00	19.35	mg/kg	97% 75-125
		As		2.000	1.854	mg/kg	93% 75-125
		Ba		2.000	1.902	mg/kg	95% 75-125
		Be		2.000	1.933	mg/kg	97% 75-125
		Cd		0.2000	0.186	mg/kg	93% 75-125
		Cr		2.000	1.863	mg/kg	93% 75-125
		Cu		2.000	2.022	mg/kg	101% 75-125
		Fe		20.00	18.19	mg/kg	91% 75-125
		Mn		2.000	1.681	mg/kg	84% 75-125
		Ni		2.000	1.593	mg/kg	80% 75-125
		Pb		0.2000	0.185	mg/kg	92% 75-125
		Sb		0.2000	0.191	mg/kg	95% 75-125
		Se		2.000	1.764	mg/kg	88% 75-125
		Zn		2.000	2.008	mg/kg	100% 75-125
B242910-BS2	Blank Spike, (2449007)						
		Al		20.00	19.96	mg/kg	100% 75-125
		As		2.000	1.856	mg/kg	93% 75-125
		Ba		2.000	1.910	mg/kg	95% 75-125
		Be		2.000	1.903	mg/kg	95% 75-125
		Cd		0.2000	0.185	mg/kg	93% 75-125
		Cr		2.000	1.870	mg/kg	93% 75-125
		Cu		2.000	2.086	mg/kg	104% 75-125
		Fe		20.00	18.41	mg/kg	92% 75-125
		Mn		2.000	1.732	mg/kg	87% 75-125
		Ni		2.000	1.635	mg/kg	82% 75-125
		Pb		0.2000	0.186	mg/kg	93% 75-125
		Sb		0.2000	0.192	mg/kg	96% 75-125
		Se		2.000	1.836	mg/kg	92% 75-125
		Zn		2.000	1.848	mg/kg	92% 75-125



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-BS3	Blank Spike, (2449007)						
		Al		20.00	21.11	mg/kg	106% 75-125
		As		2.000	1.848	mg/kg	92% 75-125
		Ba		2.000	1.980	mg/kg	99% 75-125
		Be		2.000	1.918	mg/kg	96% 75-125
		Cd		0.2000	0.186	mg/kg	93% 75-125
		Cr		2.000	1.948	mg/kg	97% 75-125
		Cu		2.000	2.074	mg/kg	104% 75-125
		Fe		20.00	19.39	mg/kg	97% 75-125
		Mn		2.000	1.705	mg/kg	85% 75-125
		Ni		2.000	1.622	mg/kg	81% 75-125
		Pb		0.2000	0.184	mg/kg	92% 75-125
		Sb		0.2000	0.190	mg/kg	95% 75-125
		Se		2.000	1.774	mg/kg	89% 75-125
		Zn		2.000	1.848	mg/kg	92% 75-125
B242910-SRM1	Reference Material (2429003, DORM-5 - Fish Protein)						
		Al		250.0	223.1	mg/kg	89% 75-125
		As		13.30	12.41	mg/kg	93% 75-125
		Cd		0.1480	0.147	mg/kg	99% 75-125
		Cr		0.5150	0.471	mg/kg	91% 75-125
		Cu		3.300	2.979	mg/kg	90% 75-125
		Fe		113.0	102.5	mg/kg	91% 75-125
		Mn		1.060	0.860	mg/kg	81% 75-125
		Pb		0.05800	0.057	mg/kg	98% 75-125
		Sb		0.006200	0.006	mg/kg	96% N/A
		Se		2.400	2.378	mg/kg	99% 75-125
		Zn		28.70	28.58	mg/kg	100% 75-125



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-SRM2	Reference Material (2429003, DORM-5 - Fish Protein)						
	Al		250.0	237.6	mg/kg	95% 75-125	
	As		13.30	12.36	mg/kg	93% 75-125	
	Ba		0.3960	0.444	mg/kg	112% 75-125	
	Cd		0.1480	0.141	mg/kg	95% 75-125	
	Cr		0.5150	0.496	mg/kg	96% 75-125	
	Cu		3.300	3.264	mg/kg	99% 75-125	
	Fe		113.0	105.3	mg/kg	93% 75-125	
	Mn		1.060	0.853	mg/kg	80% 75-125	
	Pb		0.05800	0.055	mg/kg	95% 75-125	
	Sb		0.006200	0.007	mg/kg	115% N/A	
	Se		2.400	2.111	mg/kg	88% 75-125	
	Zn		28.70	27.32	mg/kg	95% 75-125	
B242910-SRM3	Reference Material (2429003, DORM-5 - Fish Protein)						
	Al		250.0	190.9	mg/kg	76% 75-125	
	As		13.30	12.36	mg/kg	93% 75-125	
	Ba		0.3960	0.319	mg/kg	80% 75-125	
	Cd		0.1480	0.138	mg/kg	93% 75-125	
	Cr		0.5150	0.428	mg/kg	83% 75-125	
	Cu		3.300	2.995	mg/kg	91% 75-125	
	Fe		113.0	96.63	mg/kg	86% 75-125	
	Pb		0.05800	0.053	mg/kg	91% 75-125	
	Sb		0.006200	0.007	mg/kg	107% N/A	
	Se		2.400	2.105	mg/kg	88% 75-125	
	Zn		28.70	26.39	mg/kg	92% 75-125	
	B242910-SRM4	Reference Material (2429003, DORM-5 - Fish Protein)					
Mn			1.060	0.796	mg/kg	75% 75-125	



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-DUP1	Duplicate, (2411145-07)						
	Al	9.362		9.295	mg/kg		0.7% 30
	As	0.117		0.121	mg/kg		4% 30
	Ba	0.987		0.982	mg/kg		0.4% 30
	Be	ND		ND	mg/kg		N/C 30
	Cd	0.082		0.080	mg/kg		2% 30
	Cr	0.294		ND	mg/kg		N/C 30
	Cu	3.294		3.387	mg/kg		3% 30
	Fe	62.16		59.76	mg/kg		4% 30
	Mn	3.400		2.952	mg/kg		14% 30
	Ni	ND		ND	mg/kg		N/C 30
	Pb	0.025		0.027	mg/kg		8% 30
	Sb	0.087		ND	mg/kg		N/C 30
	Se	4.063		3.584	mg/kg		13% 30
	Zn	115.8		105.8	mg/kg		9% 30
	B242910-MS1	Matrix Spike, (2411145-07)					
Al		9.362	73.44	89.66	mg/kg	109% 70-130	
As		0.117	7.344	7.136	mg/kg	96% 70-130	
Ba		0.987	7.344	8.240	mg/kg	99% 70-130	
Be		ND	7.344	7.624	mg/kg	104% 70-130	
Cd		0.082	0.7344	0.804	mg/kg	98% 70-130	
Cr		0.294	7.344	7.294	mg/kg	95% 70-130	
Cu		3.294	7.344	11.22	mg/kg	108% 70-130	
Fe		62.16	73.44	135.6	mg/kg	100% 70-130	
Mn		3.400	7.344	10.13	mg/kg	92% 70-130	
Ni		ND	7.344	6.298	mg/kg	86% 70-130	
Pb		0.025	0.7344	0.756	mg/kg	100% 70-130	
Sb		0.087	0.7344	0.734	mg/kg	88% 70-130	
Se		4.063	7.344	10.59	mg/kg	89% 70-130	
Zn		115.8	7.344	113.2	mg/kg	NR 70-130	



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-MSD1	Matrix Spike Duplicate, (2411145-07)						
	Al	9.362	79.78	84.92	mg/kg	95% 70-130	14% 30
	As	0.117	7.978	5.703	mg/kg	70% 70-130	31% 30
	Ba	0.987	7.978	6.527	mg/kg	69% 70-130	35% 30
	Be	ND	7.978	6.141	mg/kg	77% 70-130	30% 30
	Cd	0.082	0.7978	0.671	mg/kg	74% 70-130	28% 30
	Cr	0.294	7.978	5.702	mg/kg	68% 70-130	34% 30
	Cu	3.294	7.978	9.219	mg/kg	74% 70-130	37% 30
	Fe	62.16	79.78	135.5	mg/kg	92% 70-130	8% 30
	Mn	3.400	7.978	8.204	mg/kg	60% 70-130	41% 30
	Ni	ND	7.978	5.148	mg/kg	65% 70-130	28% 30
	Pb	0.025	0.7978	0.599	mg/kg	72% 70-130	32% 30
	Sb	0.087	0.7978	0.802	mg/kg	90% 70-130	2% 30
	Se	4.063	7.978	9.424	mg/kg	67% 70-130	28% 30
	Zn	115.8	7.978	108.5	mg/kg	NR 70-130	N/C 30
	B242910-DUP2	Duplicate, (2411145-18)					
Al		8.696		9.827	mg/kg		12% 30
As		0.132		0.116	mg/kg		13% 30
Ba		1.081		1.210	mg/kg		11% 30
Be		ND		ND	mg/kg		N/C 30
Cd		0.628		0.640	mg/kg		2% 30
Cr		0.238		0.217	mg/kg		9% 30
Cu		3.493		3.590	mg/kg		3% 30
Fe		82.34		83.29	mg/kg		1% 30
Mn		8.373		9.669	mg/kg		14% 30
Ni		0.309		0.287	mg/kg		7% 30
Pb		0.009		0.015	mg/kg		200% 30
Sb		0.005		ND	mg/kg		N/C 30
Se	7.924		7.639	mg/kg		4% 30	
Zn	136.5		142.5	mg/kg		4% 30	



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits	
B242910-MS2	Matrix Spike, (2411145-18)							
		Al	8.696	67.71	83.47	mg/kg	110% 70-130	
		As	0.132	6.771	6.697	mg/kg	97% 70-130	
		Ba	1.081	6.771	8.208	mg/kg	105% 70-130	
		Be	ND	6.771	6.620	mg/kg	98% 70-130	
		Cd	0.628	0.6771	1.306	mg/kg	100% 70-130	
		Cr	0.238	6.771	7.394	mg/kg	106% 70-130	
		Cu	3.493	6.771	10.90	mg/kg	109% 70-130	
		Fe	82.34	67.71	156.8	mg/kg	110% 70-130	
		Mn	8.373	6.771	15.32	mg/kg	103% 70-130	
		Ni	0.309	6.771	6.403	mg/kg	90% 70-130	
		Pb	0.009	0.6771	0.653	mg/kg	95% 70-130	
		Sb	ND	0.6771	0.689	mg/kg	102% 70-130	
		Se	7.924	6.771	14.50	mg/kg	97% 70-130	
		Zn	136.5	6.771	144.1	mg/kg	NR 70-130	
	B242910-MSD2	Matrix Spike Duplicate, (2411145-18)						
		Al	8.696	81.46	99.89	mg/kg	112% 70-130	1% 30
		As	0.132	8.146	8.089	mg/kg	98% 70-130	0.7% 30
		Ba	1.081	8.146	9.312	mg/kg	101% 70-130	4% 30
		Be	ND	8.146	7.837	mg/kg	96% 70-130	2% 30
		Cd	0.628	0.8146	1.446	mg/kg	100% 70-130	0.4% 30
		Cr	0.238	8.146	8.246	mg/kg	98% 70-130	7% 30
		Cu	3.493	8.146	11.99	mg/kg	104% 70-130	5% 30
		Fe	82.34	81.46	165.6	mg/kg	102% 70-130	7% 30
		Mn	8.373	8.146	15.71	mg/kg	90% 70-130	13% 30
		Ni	0.309	8.146	7.329	mg/kg	86% 70-130	4% 30
		Pb	ND	0.8146	0.793	mg/kg	97% 70-130	2% 30
		Sb	ND	0.8146	0.812	mg/kg	100% 70-130	2% 30
		Se	7.924	8.146	15.56	mg/kg	94% 70-130	3% 30
		Zn	136.5	8.146	142.3	mg/kg	NR 70-130	N/C 30



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-DUP3	Duplicate, (2411145-28)						
	Al	6.247		5.183	mg/kg		19% 30
	As	0.055		0.072	mg/kg		28% 30
	Ba	0.855		0.590	mg/kg		37% 30
	Be	ND		ND	mg/kg		N/C 30
	Cd	0.021		0.024	mg/kg		12% 30
	Cr	0.369		0.388	mg/kg		5% 30
	Cu	2.272		2.184	mg/kg		4% 30
	Fe	74.31		79.89	mg/kg		7% 30
	Mn	6.885		5.270	mg/kg		27% 30
	Ni	ND		ND	mg/kg		N/C 30
	Pb	ND		ND	mg/kg		N/C 30
	Sb	ND		ND	mg/kg		N/C 30
	Se	3.647		3.774	mg/kg		3% 30
	Zn	101.2		96.51	mg/kg		5% 30
	B242910-MS3	Matrix Spike, (2411145-28)					
Al		6.247	67.15	81.22	mg/kg	112% 70-130	
As		0.055	6.715	6.793	mg/kg	100% 70-130	
Ba		0.855	6.715	7.488	mg/kg	99% 70-130	
Be		ND	6.715	6.637	mg/kg	99% 70-130	
Cd		0.021	0.6715	0.717	mg/kg	104% 70-130	
Cr		0.369	6.715	6.980	mg/kg	98% 70-130	
Cu		2.272	6.715	9.352	mg/kg	105% 70-130	
Fe		74.31	67.15	142.9	mg/kg	102% 70-130	
Mn		6.885	6.715	13.10	mg/kg	93% 70-130	
Ni		ND	6.715	5.889	mg/kg	88% 70-130	
Pb		ND	0.6715	0.680	mg/kg	101% 70-130	
Sb		ND	0.6715	0.691	mg/kg	103% 70-130	
Se		3.647	6.715	9.957	mg/kg	94% 70-130	
Zn		101.2	6.715	110.8	mg/kg	NR 70-130	



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits	
B242910-MSD3	Matrix Spike Duplicate, (2411145-28)							
	Al	6.247	68.58	81.20	mg/kg	109% 70-130	2% 30	
	As	0.055	6.858	6.444	mg/kg	93% 70-130	7% 30	
	Ba	0.855	6.858	7.402	mg/kg	95% 70-130	3% 30	
	Be	ND	6.858	6.444	mg/kg	94% 70-130	5% 30	
	Cd	0.021	0.6858	0.666	mg/kg	94% 70-130	10% 30	
	Cr	0.369	6.858	6.718	mg/kg	93% 70-130	6% 30	
	Cu	2.272	6.858	8.946	mg/kg	97% 70-130	8% 30	
	Fe	74.31	68.58	137.8	mg/kg	93% 70-130	10% 30	
	Mn	6.885	6.858	13.19	mg/kg	92% 70-130	0.7% 30	
	Ni	ND	6.858	5.655	mg/kg	82% 70-130	6% 30	
	Pb	ND	0.6858	0.648	mg/kg	95% 70-130	7% 30	
	Sb	ND	0.6858	0.655	mg/kg	95% 70-130	7% 30	
	Se	3.647	6.858	9.773	mg/kg	89% 70-130	5% 30	
	Zn	101.2	6.858	109.8	mg/kg	NR 70-130	N/C 30	
	B242910-DUP4	Duplicate, (2411145-40)						
		Al	9.946		8.427	mg/kg		17% 30
As		0.071		0.074	mg/kg		4% 30	
Ba		3.894		2.948	mg/kg		28% 30	
Be		ND		ND	mg/kg		N/C 30	
Cd		0.501		0.496	mg/kg		0.9% 30	
Cr		0.643		0.463	mg/kg		33% 30	
Cu		2.911		2.981	mg/kg		2% 30	
Fe		104.0		110.3	mg/kg		6% 30	
Mn		8.312		6.268	mg/kg		28% 30	
Ni		0.376		0.328	mg/kg		14% 30	
Pb		0.012		0.011	mg/kg		11% 30	
Sb		ND		ND	mg/kg		N/C 30	
Se	5.247		5.803	mg/kg		10% 30		
Zn	156.8		153.7	mg/kg		2% 30		



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits	
B242910-MS4	Matrix Spike, (2411145-40)							
		Al	9.946	77.53	84.20	mg/kg	96% 70-130	
		As	0.071	7.753	7.103	mg/kg	91% 70-130	
		Ba	3.894	7.753	11.19	mg/kg	94% 70-130	
		Be	ND	7.753	7.461	mg/kg	96% 70-130	
		Cd	0.501	0.7753	1.230	mg/kg	94% 70-130	
		Cr	0.643	7.753	7.865	mg/kg	93% 70-130	
		Cu	2.911	7.753	10.76	mg/kg	101% 70-130	
		Fe	104.0	77.53	181.8	mg/kg	100% 70-130	
		Mn	8.312	7.753	13.11	mg/kg	62% 70-130	
		Ni	0.376	7.753	6.578	mg/kg	80% 70-130	
		Pb	0.012	0.7753	0.721	mg/kg	91% 70-130	
		Sb	ND	0.7753	0.758	mg/kg	98% 70-130	
		Se	5.247	7.753	12.29	mg/kg	91% 70-130	
		Zn	156.8	7.753	153.5	mg/kg	NR 70-130	
B242910-MSD4	Matrix Spike Duplicate, (2411145-40)							
		Al	9.946	80.86	85.29	mg/kg	93% 70-130	3% 30
		As	0.071	8.086	7.340	mg/kg	90% 70-130	0.9% 30
		Ba	3.894	8.086	9.863	mg/kg	74% 70-130	24% 30
		Be	ND	8.086	7.809	mg/kg	97% 70-130	0.3% 30
		Cd	0.501	0.8086	1.233	mg/kg	91% 70-130	4% 30
		Cr	0.643	8.086	7.691	mg/kg	87% 70-130	7% 30
		Cu	2.911	8.086	11.47	mg/kg	106% 70-130	4% 30
		Fe	104.0	80.86	179.4	mg/kg	93% 70-130	7% 30
		Mn	8.312	8.086	12.70	mg/kg	54% 70-130	13% 30
		Ni	0.376	8.086	7.136	mg/kg	84% 70-130	4% 30
		Pb	0.012	0.8086	0.748	mg/kg	91% 70-130	0.5% 30
		Sb	ND	0.8086	0.792	mg/kg	98% 70-130	0.2% 30
		Se	5.247	8.086	12.80	mg/kg	93% 70-130	3% 30
		Zn	156.8	8.086	151.3	mg/kg	NR 70-130	N/C 30



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-DUP5	Duplicate, (2411145-49)						
	Al	96.28		30.89	mg/kg		103% 30
	As	0.132		0.123	mg/kg		7% 30
	Ba	2.160		3.307	mg/kg		42% 30
	Be	ND		ND	mg/kg		N/C 30
	Cd	0.286		0.334	mg/kg		16% 30
	Cr	0.690		0.430	mg/kg		46% 30
	Cu	2.631		2.626	mg/kg		0.2% 30
	Fe	262.5		90.12	mg/kg		98% 30
	Mn	6.811		10.42	mg/kg		42% 30
	Ni	0.363		0.276	mg/kg		27% 30
	Pb	0.031		0.021	mg/kg		40% 30
	Sb	ND		ND	mg/kg		N/C 30
	Se	4.604		4.704	mg/kg		2% 30
	Zn	96.33		135.8	mg/kg		34% 30
B242910-MS5	Matrix Spike, (2411145-49)						
	Al	96.28	77.40	102.6	mg/kg	8% 70-130	
	As	0.132	7.740	6.754	mg/kg	86% 70-130	
	Ba	2.160	7.740	9.198	mg/kg	91% 70-130	
	Be	ND	7.740	6.948	mg/kg	90% 70-130	
	Cd	0.286	0.7740	0.992	mg/kg	91% 70-130	
	Cr	0.690	7.740	7.029	mg/kg	82% 70-130	
	Cu	2.631	7.740	10.05	mg/kg	96% 70-130	
	Fe	262.5	77.40	155.5	mg/kg	-138% 70-130	
	Mn	6.811	7.740	13.68	mg/kg	89% 70-130	
	Ni	0.363	7.740	6.172	mg/kg	75% 70-130	
	Pb	0.031	0.7740	0.694	mg/kg	86% 70-130	
	Sb	ND	0.7740	0.781	mg/kg	101% 70-130	
	Se	4.604	7.740	11.28	mg/kg	86% 70-130	
	Zn	96.33	7.740	136.3	mg/kg	NR 70-130	



Accuracy & Precision Summary

Batch: B242910
 Lab Matrix: Biota
 Method: EPA 6020B Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242910-MSD5	Matrix Spike Duplicate, (2411145-49)						
	Al	96.28	64.03	86.28	mg/kg	-16% 70-130	-645% 30
	As	0.132	6.403	6.077	mg/kg	93% 70-130	8% 30
	Ba	2.160	6.403	9.507	mg/kg	115% 70-130	23% 30
	Be	ND	6.403	6.430	mg/kg	100% 70-130	11% 30
	Cd	0.286	0.6403	0.973	mg/kg	107% 70-130	16% 30
	Cr	0.690	6.403	6.454	mg/kg	90% 70-130	9% 30
	Cu	2.631	6.403	9.093	mg/kg	101% 70-130	5% 30
	Fe	262.5	64.03	140.9	mg/kg	NR 70-130	N/C 30
	Mn	6.811	6.403	16.32	mg/kg	149% 70-130	50% 30
	Ni	0.363	6.403	5.445	mg/kg	79% 70-130	6% 30
	Pb	0.031	0.6403	0.625	mg/kg	93% 70-130	8% 30
	Sb	ND	0.6403	0.571	mg/kg	88% 70-130	13% 30
	Se	4.604	6.403	10.60	mg/kg	94% 70-130	8% 30
	Zn	96.33	6.403	146.9	mg/kg	NR 70-130	N/C 30



Accuracy & Precision Summary

Batch: B242914
 Lab Matrix: Biota
 Method: EPA 1631 Appendix

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242914-SRM1	Reference Material (2220020, TORT-3) Hg		292.0	291.3	ng/g	100% 75-125	
B242914-SRM2	Reference Material (2220020, TORT-3) Hg		292.0	300.3	ng/g	103% 75-125	
B242914-DUP3	Duplicate (2411145-34) Hg	129.0		130.9	ng/g		1% 30
B242914-MS3	Matrix Spike (2411145-34) Hg	129.0	848.4	1070	ng/g	111% 70-130	
B242914-MSD3	Matrix Spike Duplicate (2411145-34) Hg	129.0	845.2	1076	ng/g	112% 70-130	1% 30
B242914-DUP4	Duplicate (2411145-43) Hg	102.8		103.1	ng/g		0.3% 30
B242914-MS4	Matrix Spike (2411145-43) Hg	102.8	1092	1311	ng/g	111% 70-130	
B242914-MSD4	Matrix Spike Duplicate (2411145-43) Hg	102.8	1091	1262	ng/g	106% 70-130	4% 30



Accuracy & Precision Summary

Batch: B242983
 Lab Matrix: Biota
 Method: EPA 1631 Appendix

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242983-SRM1	Reference Material (2220020, TORT-3) Hg		292.0	282.9	ng/g	97% 75-125	
B242983-SRM2	Reference Material (2220020, TORT-3) Hg		292.0	286.5	ng/g	98% 75-125	
B242983-SRM3	Reference Material (2220020, TORT-3) Hg		292.0	278.1	ng/g	95% 75-125	
B242983-DUP1	Duplicate (2411145-02) Hg	157.1		162.5	ng/g		3% 30
B242983-MS1	Matrix Spike (2411145-02) Hg	157.1	1196	1337	ng/g	99% 70-130	
B242983-MSD1	Matrix Spike Duplicate (2411145-02) Hg	157.1	1210	1394	ng/g	102% 70-130	4% 30
B242983-DUP2	Duplicate (2411145-05) Hg	52.59		50.16	ng/g		5% 30
B242983-MS2	Matrix Spike (2411145-05) Hg	52.59	1181	1247	ng/g	101% 70-130	
B242983-MSD2	Matrix Spike Duplicate (2411145-05) Hg	52.59	1198	1241	ng/g	99% 70-130	2% 30
B242983-DUP3	Duplicate (2411145-07) Hg	90.99		90.98	ng/g		0.008% 30
B242983-MS3	Matrix Spike (2411145-07) Hg	90.99	992.9	1090	ng/g	101% 70-130	



Accuracy & Precision Summary

Batch: B242983
 Lab Matrix: Biota
 Method: EPA 1631 Appendix

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242983-MSD3	Matrix Spike Duplicate (2411145-07) Hg	90.99	1021	1115	ng/g	100% 70-130	0.4% 30
B242983-DUP4	Duplicate (2411145-17) Hg	89.35		94.81	ng/g		6% 30
B242983-MS4	Matrix Spike (2411145-17) Hg	89.35	1142	1225	ng/g	99% 70-130	
B242983-MSD4	Matrix Spike Duplicate (2411145-17) Hg	89.35	1131	1257	ng/g	103% 70-130	4% 30
B242983-DUP5	Duplicate (2411145-20) Hg	100.9		99.62	ng/g		1% 30
B242983-MS5	Matrix Spike (2411145-20) Hg	100.9	1093	1121	ng/g	93% 70-130	
B242983-MSD5	Matrix Spike Duplicate (2411145-20) Hg	100.9	1057	1179	ng/g	102% 70-130	9% 30



Accuracy & Precision Summary

Batch: B242984
 Lab Matrix: Biota
 Method: EPA 1630 Mod

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B242984-SRM1	Reference Material (2220020, TORT-3) MeHg		137.0	122.5	ng/g	89% 65-135	
B242984-SRM2	Reference Material (2220020, TORT-3) MeHg		137.0	104.5	ng/g	76% 65-135	
B242984-DUP1	Duplicate (2411145-22) MeHg	65.8		63.4	ng/g		4% 35
B242984-MS1	Matrix Spike (2411145-22) MeHg	65.8	912.6	1045	ng/g	107% 65-135	
B242984-MSD1	Matrix Spike Duplicate (2411145-22) MeHg	65.8	928.4	966.0	ng/g	97% 65-135	10% 35
B242984-DUP2	Duplicate (2411145-26) MeHg	271.1		268.3	ng/g		1% 35
B242984-MS2	Matrix Spike (2411145-26) MeHg	271.1	1179	1570	ng/g	110% 65-135	
B242984-MSD2	Matrix Spike Duplicate (2411145-26) MeHg	271.1	1172	1463	ng/g	102% 65-135	8% 35
B242984-DUP3	Duplicate (2411145-32) MeHg	195.0		188.2	ng/g		4% 35
B242984-MS3	Matrix Spike (2411145-32) MeHg	195.0	844.0	1032	ng/g	99% 65-135	
B242984-MSD3	Matrix Spike Duplicate (2411145-32) MeHg	195.0	757.1	974.5	ng/g	103% 65-135	4% 35



Accuracy & Precision Summary

Batch: B243106
Lab Matrix: Biota
Method: SOP BAL-0501

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B243106-DUP1	Duplicate, (2411145-02) %TS	20.71		20.85	%		0.7% 15
B243106-DUP2	Duplicate, (2411145-06) %TS	24.85		24.77	%		0.3% 15
B243106-DUP3	Duplicate, (2411145-07) %TS	24.97		24.77	%		0.8% 15
B243106-DUP4	Duplicate, (2411145-20) %TS	23.13		22.91	%		1% 15
B243106-DUP5	Duplicate, (2411145-25) %TS	22.79		22.86	%		0.3% 15



Method Blanks & Reporting Limits

Batch: B242806
Matrix: Biota
Method: EPA 1630 Mod
Analyte: MeHg

Sample	Result	Units
B242806-BLK1	-0.03	ng/g
B242806-BLK2	-0.02	ng/g
B242806-BLK3	-0.03	ng/g
B242806-BLK4	-0.002	ng/g

Average: 0.0
Limit: 3.0

Standard Deviation: 0.0
Limit: 1.0

MDL: 1.0
MRL: 3.0



Method Blanks & Reporting Limits

Batch: B242807
Matrix: Biota
Method: EPA 1630 Mod
Analyte: MeHg

Sample	Result	Units
B242807-BLK1	-0.02	ng/g
B242807-BLK2	-0.02	ng/g
B242807-BLK3	0.005	ng/g
B242807-BLK4	-0.001	ng/g

Average: 0.0
Limit: 3.0

Standard Deviation: 0.0
Limit: 1.0

MDL: 1.0
MRL: 3.0



Method Blanks & Reporting Limits

Batch: B242910
Matrix: Biota
Method: EPA 6020B Mod
Analyte: Al

Sample	Result	Units	
B242910-BLK1	0.038	mg/kg	
B242910-BLK2	0.036	mg/kg	
B242910-BLK3	0.026	mg/kg	
B242910-BLK4	0.051	mg/kg	
Average:	0.038		MDL: 0.840
Limit:	2.000		MRL: 2.00

Analyte: As

Sample	Result	Units	
B242910-BLK1	0.005	mg/kg	
B242910-BLK2	0.003	mg/kg	
B242910-BLK3	0.00005	mg/kg	
B242910-BLK4	0.003	mg/kg	
Average:	0.003		MDL: 0.002
Limit:	0.008		MRL: 0.008

Analyte: Ba

Sample	Result	Units	
B242910-BLK1	0.003	mg/kg	
B242910-BLK2	0.006	mg/kg	
B242910-BLK3	0.014	mg/kg	
B242910-BLK4	0.005	mg/kg	
Average:	0.007		MDL: 0.004
Limit:	0.020		MRL: 0.020



Method Blanks & Reporting Limits

Analyte: Be

Sample	Result	Units	
B242910-BLK1	0.0002	mg/kg	
B242910-BLK2	0.0004	mg/kg	
B242910-BLK3	0.00006	mg/kg	
B242910-BLK4	0.0001	mg/kg	
Average:	0.000		MDL: 0.006
Limit:	0.018		MRL: 0.018

Analyte: Cd

Sample	Result	Units	
B242910-BLK1	0.00002	mg/kg	
B242910-BLK2	0.00005	mg/kg	
B242910-BLK3	0.00002	mg/kg	
B242910-BLK4	0.00007	mg/kg	
Average:	0.000		MDL: 0.002
Limit:	0.007		MRL: 0.007

Analyte: Cr

Sample	Result	Units	
B242910-BLK1	0.0001	mg/kg	
B242910-BLK2	0.000008	mg/kg	
B242910-BLK3	0.002	mg/kg	
B242910-BLK4	0.0002	mg/kg	
Average:	0.001		MDL: 0.050
Limit:	0.150		MRL: 0.150

Analyte: Cu

Sample	Result	Units	
B242910-BLK1	0.003	mg/kg	
B242910-BLK2	0.006	mg/kg	
B242910-BLK3	0.001	mg/kg	
B242910-BLK4	0.002	mg/kg	
Average:	0.003		MDL: 0.030
Limit:	0.200		MRL: 0.200



Method Blanks & Reporting Limits

Analyte: Fe

Sample	Result	Units	
B242910-BLK1	0.060	mg/kg	
B242910-BLK2	0.016	mg/kg	
B242910-BLK3	0.039	mg/kg	
B242910-BLK4	0.026	mg/kg	
Average: 0.035			MDL: 0.360
Limit: 0.800			MRL: 0.800

Analyte: Mn

Sample	Result	Units	
B242910-BLK1	0.0006	mg/kg	
B242910-BLK2	0.001	mg/kg	
B242910-BLK3	0.0006	mg/kg	
B242910-BLK4	0.0005	mg/kg	
Average: 0.001			MDL: 0.010
Limit: 0.020			MRL: 0.020

Analyte: Ni

Sample	Result	Units	
B242910-BLK1	0.0003	mg/kg	
B242910-BLK2	0.0003	mg/kg	
B242910-BLK3	0.0009	mg/kg	
B242910-BLK4	0.0004	mg/kg	
Average: 0.000			Standard Deviation: 0.000
Limit: 0.360			Limit: 0.051
			MDL: 0.051
			MRL: 0.360

Analyte: Pb

Sample	Result	Units	
B242910-BLK1	0.0002	mg/kg	
B242910-BLK2	0.00005	mg/kg	
B242910-BLK3	0.00009	mg/kg	
B242910-BLK4	0.0001	mg/kg	
Average: 0.000			Standard Deviation: 0.000
Limit: 0.007			Limit: 0.002
			MDL: 0.002
			MRL: 0.007



Method Blanks & Reporting Limits

Analyte: Sb

Sample	Result	Units	
B242910-BLK1	0.0006	mg/kg	
B242910-BLK2	0.0004	mg/kg	
B242910-BLK3	0.001	mg/kg	
B242910-BLK4	0.0004	mg/kg	
Average: 0.001			MDL: 0.002
Limit: 0.005			MRL: 0.005

Analyte: Se

Sample	Result	Units	
B242910-BLK1	0.004	mg/kg	
B242910-BLK2	0.005	mg/kg	
B242910-BLK3	0.002	mg/kg	
B242910-BLK4	0.000004	mg/kg	
Average: 0.003		Standard Deviation: 0.002	MDL: 0.005
Limit: 0.010		Limit: 0.005	MRL: 0.010

Analyte: Zn

Sample	Result	Units	
B242910-BLK1	0.039	mg/kg	
B242910-BLK2	0.032	mg/kg	
B242910-BLK3	0.126	mg/kg	
B242910-BLK4	0.051	mg/kg	
Average: 0.062			MDL: 0.220
Limit: 0.800			MRL: 0.800



Method Blanks & Reporting Limits

Batch: B242914
Matrix: Biota
Method: EPA 1631 Appendix
Analyte: Hg

Sample	Result	Units			
B242914-BLK1	0.087	ng/g			
B242914-BLK2	0.103	ng/g			
B242914-BLK3	0.082	ng/g			
B242914-BLK4	0.060	ng/g			
Average:	0.083		Standard Deviation:	0.018	MDL: 0.160
Limit:	0.400		Limit:	0.160	MRL: 0.400



Method Blanks & Reporting Limits

Batch: B242983
Matrix: Biota
Method: EPA 1631 Appendix
Analyte: Hg

Sample	Result	Units			
B242983-BLK1	0.225	ng/g			
B242983-BLK2	0.061	ng/g			
B242983-BLK3	0.051	ng/g			
B242983-BLK4	0.053	ng/g			
Average:	0.098		Standard Deviation:	0.085	MDL: 0.160
Limit:	0.400		Limit:	0.160	MRL: 0.400



Method Blanks & Reporting Limits

Batch: B242984
Matrix: Biota
Method: EPA 1630 Mod
Analyte: MeHg

Sample	Result	Units
B242984-BLK1	-0.03	ng/g
B242984-BLK2	-0.04	ng/g
B242984-BLK3	-0.03	ng/g
B242984-BLK4	-0.04	ng/g

Average: 0.0
Limit: 3.0

Standard Deviation: 0.0
Limit: 1.0

MDL: 1.0
MRL: 3.0

Project ID: GRP-AL2001
PM: Amy Goodall



BAL Report 2411145
Client PM: William Morris
Client Project: Graphite Creek

Method Blanks & Reporting Limits

Batch: B243106
Matrix: Biota
Method: SOP BAL-0501
Analyte: %TS

Sample	Result	Units	
B243106-BLK1	0.01	%	
B243106-BLK2	0.01	%	
B243106-BLK3	0.02	%	
Average: 0.01			MDL: 0.01
Limit: 0.04			MRL: 0.04



Sample Containers

Lab ID: 2411145-01		Report Matrix: Fish				Collected: 08/15/2024	
Sample: COB1-081524-DV1		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-02		Report Matrix: Fish				Collected: 08/15/2024	
Sample: COB1-081524-DV2		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-03		Report Matrix: Fish				Collected: 08/15/2024	
Sample: COB1-081524-DV3		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-04		Report Matrix: Fish				Collected: 07/11/2024	
Sample: FAL1-071124-DV1		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145



Sample Containers

Lab ID: 2411145-05			Report Matrix: Fish			Collected: 07/11/2024		
Sample: FAL1-071124-DV2			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-06			Report Matrix: Fish			Collected: 08/14/2024		
Sample: FAL1-081424-DV3			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-07			Report Matrix: Fish			Collected: 08/14/2024		
Sample: FAL1-081424-DV4			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-08			Report Matrix: Fish			Collected: 07/15/2024		
Sample: WIN1-071524-DV1			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-09			Report Matrix: Fish			Collected: 07/15/2024		
Sample: WIN1-071524-DV2			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-10			Report Matrix: Fish			Collected: 07/15/2024		
Sample: WIN1-071524-DV3			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-11			Report Matrix: Fish			Collected: 07/15/2024		
Sample: WIN1-071524-DV4			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-12			Report Matrix: Fish			Collected: 08/12/2024		
Sample: WIN1-081224-DV5			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-13			Report Matrix: Fish			Collected: 08/12/2024		
Sample: WIN1-081224-DV6			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-14			Report Matrix: Fish			Collected: 08/12/2024		
Sample: WIN1-081224-DV7			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-15			Report Matrix: Fish			Collected: 07/15/2024		
Sample: USR1-071524-DV1			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-16			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV2			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-17			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV3			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-18			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV4			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-19			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV5			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-20			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV6			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-21			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV7			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-22			Report Matrix: Fish			Collected: 08/15/2024		
Sample: USR1-081524-DV8			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-23			Report Matrix: Fish			Collected: 07/11/2024		
Sample: 1MU16-071124-DV1			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-24			Report Matrix: Fish			Collected: 08/14/2024		
Sample: 1MU16-081424-DV2			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-25			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV1			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-26			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV2			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-27			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV3			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-28			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV4			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-29			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV5			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-30			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV6			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-31			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV7			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-32			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV8			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-33			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV9			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-34			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV10			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-35			Report Matrix: Fish			Collected: 07/15/2024		
Sample: COBT1-071424-DV11			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-36			Report Matrix: Fish			Collected: 07/12/2024		
Sample: ORO1-071224-DV1			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-37		Report Matrix: Fish				Collected: 07/12/2024	
Sample: ORO1-071224-DV2		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-38		Report Matrix: Fish				Collected: 07/12/2024	
Sample: ORO1-071224-DV3		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-39		Report Matrix: Fish				Collected: 07/12/2024	
Sample: ORO1-071224-DV4		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Lab ID: 2411145-40		Report Matrix: Fish				Collected: 08/15/2024	
Sample: ORO1-081524-DV5		Sample Type: Sample				Received: 11/13/2024	
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145



Sample Containers

Lab ID: 2411145-41			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV6			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-42			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV7			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-43			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV8			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-44			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV9			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	



Sample Containers

Lab ID: 2411145-45			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV10			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-46			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV11			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-47			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV12			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Lab ID: 2411145-48			Report Matrix: Fish			Collected: 08/15/2024		
Sample: ORO1-081524-DV13			Sample Type: Sample			Received: 11/13/2024		
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.	
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145	
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145	

Project ID: GRP-AL2001
PM: Amy Goodall



BAL Report 2411145
Client PM: William Morris
Client Project: Graphite Creek

Sample Containers

Lab ID: 2411145-49	Report Matrix: Fish	Collected: 08/15/2024					
Sample: ORO1-081524-DV14	Sample Type: Sample	Received: 11/13/2024					
Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Jar HDPE	N/A	N/A	None	N/A	N/A	Cooler - 2411145
B	XTRA_VOL	N/A	N/A	None	N/A	N/A	Cooler - 2411145

Shipping Containers

Cooler - 2411145

Received: November 13, 2024 11:40
Tracking No: - via Customer Drop-Off
Coolant Type: Blue Ice
Temperature: -1.3 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: R-IR-6

Custody seals present? No
Custody seals intact? No
COC present? Yes



Chain-of-Custody Form

BAL Report 2411145

Ship samples to:
 13751 Lake City Way NE, Suite 108
 Seattle, WA 98125

Received by: GLS For BAL use only Date: 11/13/24
 Work Order ID: _____ Time: 11:40
 Project ID: _____

Client: Graphite One, Inc. PO Number:
 Contact: Phone:
 Client Project ID: Email:
 Samples Collected By: M. Payne, A. Maijala, A. Robinson

Mailing Address:
 Email Receipt Confirmation? Yes
 BAL PM: Ben Wozniak

Requested TAT (business days) <input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15* <input type="checkbox"/> 10* <input type="checkbox"/> 5* <input type="checkbox"/> Other _____ <small>*Surcharges may apply to expedited TATs</small>	Collection		Client Sample Info				BAL Analyses Required								Comments Specify Here
	Date	Time	Matrix Type	Number of Containers	Field Filtered?	Preservation Type	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify)	Se Species (specify)	Filtration	Dry Weight Reporting	Other (specify here)	
Sample ID															
1	COB1-081524-DV1	8/15/24 12:00	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
2	COB1-081524-DV2		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
3	COB1-081524-DV3		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
4	FAL2-071124-DV1	7/11/24 13:30	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
5	FAL2-071124-DV2		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
6	FAL3-081424-DV3	8/14/24 14:55	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
7	FAL3-081424-DV4		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
8	WIN1-071524-DV1	7/15/24 16:15	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
9	WIN1-071524-DV2		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
10	WIN1-071524-DV3		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
Trip Blank (specify)															

Relinquished By:	Date:	Time:	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		



Chain-of-Custody Form

BAL Report 2411145

Ship samples to:
 13751 Lake City Way NE, Suite 108
 Seattle, WA 98125

Received by: GHS For BAL use only Date: 11/13/24

Work Order ID: _____ Time: 11:40

Project ID: _____

Mailing Address:

Email Receipt Confirmation? Yes

BAL PM: Ben Wozniak

Client: Graphite One, Inc.

PO Number:

Contact:

Phone:

Client Project ID:

Email:

Samples Collected By: M. Payne, A. Maijala, A. Robinson

Requested TAT (business days)	Collection		Client Sample Info				BAL Analyses Required							Comments	
	Date	Time	Matrix Type	Number of Containers	Field Filtered?	Preservation Type	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify)	Se Species (specify)	Filtration	Dry Weight Reporting		Other (specify here)
<input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15* <input type="checkbox"/> 10* <input type="checkbox"/> 5* <input type="checkbox"/> Other _____ <small>*Surcharges may apply to expedited TATs</small>	Specify Here														
Sample ID															
1	WIN1-071524-DV4	7/15/24 16:15	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
2	WIN1-081224-DV5	8/12/24 16:40	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
3	WIN1-081224-DV6		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
4	WIN1-081224-DV7		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
5	USR1-071524-DV1	7/15/24 11:15	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
6	USR1-081524-DV2	8/15/24 8:00	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
7	USR1-081524-DV3		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
8	USR1-081524-DV4		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
9	USR1-081524-DV5		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
10	USR1-081524-DV6		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
Trip Blank (specify) <input type="checkbox"/>															
Relinquished By:			Date:		Time:		Relinquished By:					Date:		Time:	
Received By:			Date:		Time:		Total Number of Packages:								



Chain-of-Custody Form

BAL Report 2411145

Received by: GHS For BAL use only Date: 11/13/24

Work Order ID: _____ Time: 11:40

Project ID: _____

Mailing Address: _____

Email Receipt Confirmation? Yes

BAL PM: Ben Wozniak

Client: Graphite One, Inc.

PO Number: _____

Contact: _____

Phone: _____

Client Project ID: _____

Email: _____

Samples Collected By: M. Payne, A. Maijala, A. Robinson

Requested TAT (business days)	Collection		Client Sample Info				BAL Analyses Required							Comments	
	Date	Time	Matrix Type	Number of Containers	Field Filtered?	Preservation Type	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify)	Se Species (specify)	Filtration	Dry Weight Reporting		Other (specify here)
<input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15* <input type="checkbox"/> 10* <input type="checkbox"/> 5* <input type="checkbox"/> Other _____ <small>*Surcharges may apply to expedited TATs</small>															
Sample ID	Specify Here														
1	US21-081524-DV7	8/15/24 8:00	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
2	US21-081524-DV8	8/15/24 8:00	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
3	MU16-071124-DV1	7/11/24 18:35	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
4	MU16-081424-DV2	8/14/24 13:05	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
5	COBT1-071424-DV1	7/19/24 17:40	Fish	1	No	None	✓	✓	✓	✓	✓		✓		
6	COBT1-071424-DV2		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
7	COBT1-071424-DV3		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
8	COBT1-071424-DV4		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
9	COBT1-071424-DV5		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
10	COBT1-071424-DV6		Fish	1	No	None	✓	✓	✓	✓	✓		✓		
Trip Blank (specify) <input type="checkbox"/>															
Relinquished By:		Date:	Time:	Relinquished By:			Date:	Time:							
Received By:		Date:	Time:	Total Number of Packages:											

Page 3 of 5

List Hazardous Contaminants: _____

samples@brooksapplied.com | brooksapplied.com

Print



Chain-of-Custody Form

BAL Report 2411145

Ship samples to:
 13751 Lake City Way NE, Suite 108
 Seattle, WA 98125

Received by: GHS For BAL use only Date: 11/13/24

Work Order ID: _____ Time: 11:40

Project ID: _____

Mailing Address:

Email Receipt Confirmation? Yes

BAL PM: Ben Wozniak

Client: Graphite One, Inc.

PO Number:

Contact:

Phone:

Client Project ID:

Email:

Samples Collected By: M. Payne, A. Majjala, A. Robinson

Requested TAT (business days) <input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15* <input type="checkbox"/> 10* <input type="checkbox"/> 5* <input type="checkbox"/> Other _____ <small>*Surcharges may apply to expedited TATs</small>	Collection		Client Sample Info				BAL Analyses Required							Comments	
	Date	Time	Matrix Type	Number of Containers	Field Filtered?	Preservation Type	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify)	Se Species (specify)	Filtration	Dry Weight Reporting	Other (specify here)	Specify Here
Sample ID															
1	CBT1-071424-DV7	7/15/24 17:40	Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
2	CBT1-071424-DV8		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
3	CBT1-071424-DV9		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
4	CBT1-071424-DV10		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
5	CBT1-071424-DV11		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
6	OPQ1-071224-DV1	7/12/24 15:40	Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
7	OPQ1-071224-DV2		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
8	OPQ1-071224-DV3		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
9	OPQ1-071224-DV4		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
10	OPQ1-081524-DV5	8/15/24 10:20	Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓		
Trip Blank (specify)															

Relinquished By:	Date:	Time:	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		

Page 4 of 5

List Hazardous Contaminants: _____

samples@brooksapplied.com | brooksapplied.com

Print



Chain-of-Custody Form

BAL Report 2411145

Ship samples to:
 13751 Lake City Way NE, Suite 108
 Seattle, WA 98125

Received by: GHS For BAL use only Date: 11/13/24
 Work Order ID: _____ Time: 11:40
 Project ID: _____

Client: Graphite One, Inc. PO Number:
 Contact: Phone:
 Client Project ID: Email:
 Samples Collected By: M. Payne, A. Majjala, A. Robinson

Mailing Address:
 Email Receipt Confirmation? Yes
 BAL PM: Ben Wozniak

Requested TAT (business days) <input checked="" type="checkbox"/> 20 (standard) <input type="checkbox"/> 15* <input type="checkbox"/> 10* <input type="checkbox"/> 5* <input type="checkbox"/> Other _____ <small>*Surcharges may apply to expedited TATs</small>	Collection		Client Sample Info				BAL Analyses Required							Comments	
	Date	Time	Matrix Type	Number of Containers	Field Filtered?	Preservation Type	Total Hg, EPA 1631	Methyl Hg, EPA 1630	ICP-MS Metals (specify)	As Species (specify)	Se Species (specify)	Filtration	Dry Weight Reporting		Other (specify here)
Sample ID															Specify Here
1	0801-081524-DV6	8/15/24 10:20	Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
2	0801-081524-DV7		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
3	0801-081524-DV8		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
4	0801-081524-DV9		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
5	0801-081524-DV10		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
6	0801-081524-DV11		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
7	0801-081524-DV12		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
8	0801-081524-DV13		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
9	0801-081524-DV14		Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
10			Fish	1	No	None	✓	✓	✓	✓	✓	✓	✓	✓	
Trip Blank (specify)															

Relinquished By:	Date:	Time:	Relinquished By:	Date:	Time:
Received By:	Date:	Time:	Total Number of Packages:		

Appendix F. Aerial survey data, 2019, 2021–2024.

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2019	Early August	Cobblestone River	0	100	200	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	0.5	575	305	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	1	1,700	1,200	150	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	1.5	4,500	900	175	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	2	1,350	150	50	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	2.5	1,050	170	25	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	3	1,200	235	50	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	3.5	500	100	10	0	0	0	5	0	0	0
2019	Early August	Cobblestone River	4	1,050	140	20	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	4.5	2,300	1,650	50	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	5	3,700	5,400	115	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	5.5	1,200	600	25	0	10	0	0	2	0	0
2019	Early August	Cobblestone River	6	4,100	630	10	0	15	0	1	0	0	0
2019	Early August	Cobblestone River	6.5	3,100	1,400	30	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	7	2,200	1,350	40	0	16	0	0	0	0	0
2019	Early August	Cobblestone River	7.5	3,750	1,600	90	0	0	0	1	0	0	0
2019	Early August	Cobblestone River	8	650	1,350	15	0	5	0	0	0	0	0
2019	Early August	Cobblestone River	8.5	4,100	1,900	25	0	1	0	0	0	0	0
2019	Early August	Cobblestone River	9	1,700	3,900	35	0	5	0	0	0	0	0
2019	Early August	Cobblestone River	9.5	9,400	7,500	255	0	20	0	0	0	0	0
2019	Early August	Cobblestone River	10	5,500	4,900	210	3	11	0	0	0	0	0
2019	Early August	Cobblestone River	10.5	4,500	4,900	85	2	10	0	5	0	0	0
2019	Early August	Cobblestone River	11	5,000	5,400	150	2	15	0	0	0	0	0
2019	Early August	Cobblestone River	11.5	6,000	7,800	75	4	5	0	7	0	100	0
2019	Early August	Cobblestone River	12	4,750	4,200	125	1	16	0	22	0	0	0
2019	Early August	Cobblestone River	12.5	5,500	4,800	85	1	0	0	5	0	0	0
2019	Early August	Cobblestone River	13	3,000	5,750	75	0	0	0	5	0	0	0
2019	Early August	Cobblestone River	13.5	4,500	6,300	200	0	0	0	7	0	0	0
2019	Early August	Cobblestone River	14	4,525	1,950	75	2	3	0	0	1	0	0
2019	Early August	Cobblestone River	14.5	3,075	1,050	60	0	0	0	0	1	0	0
2019	Early August	Cobblestone River	15	3,750	1,050	60	1	5	0	0	0	0	0
2019	Early August	Cobblestone River	15.5	2,600	2,030	60	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	16	3,600	1,200	40	0	10	0	10	1	0	0
2019	Early August	Cobblestone River	16.5	3,400	1,120	80	0	0	0	27	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2019	Early August	Cobblestone River	17	1,600	505	35	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	17.5	150	75	10	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	18	475	133	10	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	18.5	165	45	8	0	5	0	0	0	0	0
2019	Early August	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Cobblestone River	22.66	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	2	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	4	0	0	0	0	0	0	0	0	0	0
2019	Early August	GLA 1.0	4.22	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	0	1,350	345	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	0.5	1,700	250	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	1	2,700	150	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	1.5	700	35	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	2	70	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	2.5	70	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	3	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	4	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	4.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2019	Early August	Glacier Creek	5.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	6	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	6.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	Glacier Creek	6.7	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 10.0	0.37	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 11.0	0	65	8	0	0	0	0	0	0	0	0
2019	Early August	IMU 11.0	0.5	0	2	0	0	0	0	0	0	0	0
2019	Early August	IMU 11.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 11.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 11.0	1.58	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	0	1,250	1,380	38	0	8	0	1	0	0	0
2019	Early August	IMU 12.0	0.5	525	250	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	1	155	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	4	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 12.0	4.28	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	0	650	346	0	0	0	0	2	0	0	0
2019	Early August	IMU 13.0	0.5	1,000	395	0	0	2	0	0	1	0	0
2019	Early August	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	2	22	16	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 13.0	3.61	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 14.0	0	45	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 14.0	0.24	292	240	0	0	0	0	0	0	0	0
2019	Early August	IMU 15.0	0	75	29	5	1	0	0	0	0	0	0
2019	Early August	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Carcass	
2019	Early August	IMU 15.0		1	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 15.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 15.0		2	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 15.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 15.0		2.84	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		0	25	54	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		0.5	1,300	445	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		1	150	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		2	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		3	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 16.0		3.11	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		0	3	2	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		0.5	0	4	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		1	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		2	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		3	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		3.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 17.0		3.85	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 19.0		0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 19.0		0.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 19.0		1	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 19.0		1.51	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		0.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		1	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		1.5	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		2	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0A		2.21	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0B		0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 21.0B		0.5	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2019	Early August	IMU 21.0B	0.88	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 6.0	0	10	10	2	0	0	0	0	0	0	0
2019	Early August	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 6.0	0.56	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	0	200	246	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	0.5	1,400	940	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	1	130	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 8.0	5.22	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 9.0	0	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 9.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early August	IMU 9.0	0.77	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	0	0	500	0	20	80	0	0	0	0	0
2019	Early September	Cobblestone River	0.5	0	750	0	30	225	0	0	0	0	0
2019	Early September	Cobblestone River	1	0	1,500	0	70	250	0	0	0	0	0
2019	Early September	Cobblestone River	1.5	0	500	0	20	50	0	0	0	0	0
2019	Early September	Cobblestone River	2	0	20	0	2	0	0	0	0	0	0
2019	Early September	Cobblestone River	2.5	0	50	0	5	0	0	0	0	0	0
2019	Early September	Cobblestone River	3	0	50	0	5	0	0	0	0	0	0
2019	Early September	Cobblestone River	3.5	0	150	0	1	0	0	0	0	0	0
2019	Early September	Cobblestone River	4	0	300	0	25	7	0	0	0	0	0
2019	Early September	Cobblestone River	4.5	0	180	4	11	0	0	3	0	0	0
2019	Early September	Cobblestone River	5	0	100	6	10	4	0	1	0	0	0
2019	Early September	Cobblestone River	5.5	0	100	0	10	0	0	1	0	0	0
2019	Early September	Cobblestone River	6	0	100	0	10	20	0	2	0	0	0
2019	Early September	Cobblestone River	6.5	0	500	0	30	2	0	0	0	0	0
2019	Early September	Cobblestone River	7	0	200	2	6	4	0	4	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden	
												Live	Carcass	
2019	Early September	Cobblestone River	7.5	0	3,500	0	200	5	0	0	58	0	0	0
2019	Early September	Cobblestone River	8	0	1,500	1	35	0	0	0	8	0	0	0
2019	Early September	Cobblestone River	8.5	0	600	0	25	10	0	0	13	0	0	0
2019	Early September	Cobblestone River	9	0	750	1	15	0	0	0	5	0	0	0
2019	Early September	Cobblestone River	9.5	0	550	0	15	0	0	0	3	0	0	0
2019	Early September	Cobblestone River	10	0	1,050	1	60	0	0	0	4	0	0	0
2019	Early September	Cobblestone River	10.5	0	200	1	7	1	0	0	1	0	0	0
2019	Early September	Cobblestone River	11	0	250	0	20	0	0	0	13	0	0	0
2019	Early September	Cobblestone River	11.5	0	500	0	35	2	0	0	4	0	0	0
2019	Early September	Cobblestone River	12	0	250	1	50	1	0	0	1	0	0	0
2019	Early September	Cobblestone River	12.5	0	220	0	30	1	0	0	8	0	0	0
2019	Early September	Cobblestone River	13	0	800	0	100	1	0	0	4	0	0	0
2019	Early September	Cobblestone River	13.5	0	550	0	80	0	0	0	5	0	0	0
2019	Early September	Cobblestone River	14	0	55	1	2	0	0	0	2	0	0	0
2019	Early September	Cobblestone River	14.5	0	5	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	Cobblestone River	22.66	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0	0.5	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2019	Early September	GLA 1.0		1	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		2	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		3	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		3.5	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		4	0	0	0	0	0	0	0	0	0
2019	Early September	GLA 1.0		4.22	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		0	0	200	0	50	10	0	8	0	0
2019	Early September	Glacier Creek		0.5	0	300	0	10	3	0	1	0	0
2019	Early September	Glacier Creek		1	0	700	2	50	4	0	12	0	0
2019	Early September	Glacier Creek		1.5	0	50	0	0	1	0	0	0	0
2019	Early September	Glacier Creek		2	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		3	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		3.5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		4	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		4.5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		5.5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		6	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		6.5	0	0	0	0	0	0	0	0	0
2019	Early September	Glacier Creek		6.7	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 10.0		0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 10.0		0.37	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 11.0		0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 11.0		0.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 11.0		1	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 11.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 11.0		1.58	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		0	0	900	0	50	20	0	1	0	0
2019	Early September	IMU 12.0		0.5	0	500	0	13	0	0	0	0	0
2019	Early September	IMU 12.0		1	0	75	0	5	0	0	0	0	0
2019	Early September	IMU 12.0		1.5	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2019	Early September	IMU 12.0		2	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		3	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		3.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		4	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 12.0		4.28	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		0	0	88	0	4	0	0	0	0	0
2019	Early September	IMU 13.0		0.5	0	495	0	5	0	0	0	0	0
2019	Early September	IMU 13.0		1	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		2	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		3	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		3.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 13.0		3.61	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 14.0		0	0	260	0	21	0	0	0	0	0
2019	Early September	IMU 14.0		0.24	0	175	0	3	0	0	0	0	0
2019	Early September	IMU 15.0		0	0	10	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		0.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		1	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		1.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		2	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 15.0		2.84	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 16.0		0	0	200	0	20	0	0	0	0	0
2019	Early September	IMU 16.0		0.5	0	200	0	20	0	0	0	0	0
2019	Early September	IMU 16.0		1	0	250	0	20	0	0	0	0	0
2019	Early September	IMU 16.0		1.5	7	370	0	28	0	0	0	0	0
2019	Early September	IMU 16.0		2	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 16.0		2.5	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 16.0		3	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 16.0		3.11	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0		0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0		0.5	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Carcass	
2019	Early September	IMU 17.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	2	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 17.0	3.85	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 19.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 19.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 19.0	1.51	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	1	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	2	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0A	2.21	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 21.0B	0.88	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 6.0	0	0	6	0	3	0	0	0	0	0	0
2019	Early September	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 6.0	0.56	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	0	0	280	0	15	0	0	0	0	0	0
2019	Early September	IMU 8.0	0.5	0	225	0	3	0	0	0	0	0	0
2019	Early September	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2019	Early September	IMU 8.0	5.22	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 9.0	0	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 9.0	0.5	0	0	0	0	0	0	0	0	0	0
2019	Early September	IMU 9.0	0.77	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	0	39	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	0.5	1,800	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	1	700	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	1.5	30	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	2	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	3	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	5	0	0	0	0	0	0	0	0	45	0
2021	July	Cobblestone River	5.5	0	0	0	0	0	0	0	0	30	0
2021	July	Cobblestone River	6	0	0	0	0	0	0	0	0	24	0
2021	July	Cobblestone River	6.5	0	0	0	0	0	0	0	0	48	0
2021	July	Cobblestone River	7	0	0	0	0	0	0	0	0	46	0
2021	July	Cobblestone River	7.5	0	0	0	0	0	0	0	0	4	0
2021	July	Cobblestone River	8	0	0	0	0	0	0	0	0	27	0
2021	July	Cobblestone River	8.5	0	0	0	0	0	0	0	0	5	0
2021	July	Cobblestone River	9	0	0	0	0	0	0	0	0	70	0
2021	July	Cobblestone River	9.5	0	0	0	0	0	0	0	0	50	0
2021	July	Cobblestone River	10	0	0	0	0	0	0	0	0	19	0
2021	July	Cobblestone River	10.5	0	0	0	0	0	0	0	0	80	0
2021	July	Cobblestone River	11	0	0	0	0	0	0	0	0	85	0
2021	July	Cobblestone River	11.5	0	0	0	0	0	0	0	0	84	0
2021	July	Cobblestone River	12	0	0	0	0	0	0	0	0	11	0
2021	July	Cobblestone River	12.5	0	0	0	0	0	0	0	0	10	0
2021	July	Cobblestone River	13	0	0	0	0	0	0	0	0	12	0
2021	July	Cobblestone River	13.5	0	0	0	0	0	0	0	0	2	0
2021	July	Cobblestone River	14	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	14.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0
2021	July	Cobblestone River	22.7	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	2	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	3	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	8	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	Fall Creek	9	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	10	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	11	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	July	Fall Creek	12	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 10.0	0.4	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 11.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 11.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 11.0	1.6	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	4	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 12.0	4.3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	0	0	0	0	0	0	0	0	0	7	0
2021	July	IMU 13.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 13.0	3.6	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 14.0	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	IMU 14.0	0.2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 15.0	2.8	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 16.0	3.1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 17.0	3.9	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 19.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 19.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 19.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0A	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0A	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0A	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0A	2	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2021	July	IMU 21.0A	2.2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0B	0.8	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 21.0B	0.9	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 6.0	0	21	0	0	0	0	0	0	0	0	0
2021	July	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 6.0	0.6	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	0	9	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0
2021	July	IMU 8.0	5.2	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	3	0
2021	July	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2021	July	Oro Grande Creek	9.4	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	0.5	3	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	1	6	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	1.5	0	0	0	0	0	0	0	0	31	0
2021	July	Pond Creek	2	0	0	0	0	0	0	0	0	27	0
2021	July	Pond Creek	2.5	0	0	0	0	0	0	0	0	7	0
2021	July	Pond Creek	3	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	4	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	10	0	0	0	0	0	0	0	0	0	0
2021	July	Pond Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	0	0	0	0	0	0	0	0	0	16	0
2021	July	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	3	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	Upper Sinuk River	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	5.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	6	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	6.5	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	7	0	0	0	0	0	0	0	0	0	0
2021	July	Upper Sinuk River	7.1	0	0	0	0	0	0	0	0	0	0
2021	July	White River	0.5	1	0	0	0	0	0	0	0	0	0
2021	July	White River	1	0	0	0	0	0	0	0	0	0	0
2021	July	White River	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	2	0	0	0	0	0	0	0	0	0	0
2021	July	White River	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	3	0	0	0	0	0	0	0	0	0	0
2021	July	White River	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	4	0	0	0	0	0	0	0	0	0	0
2021	July	White River	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	5.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	6	0	0	0	0	0	0	0	0	0	0
2021	July	White River	6.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	7	0	0	0	0	0	0	0	0	0	0
2021	July	White River	7.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	8	0	0	0	0	0	0	0	0	0	0
2021	July	White River	8.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	9	0	0	0	0	0	0	0	0	0	0
2021	July	White River	9.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	10	0	0	0	0	0	0	0	0	0	0
2021	July	White River	10.5	0	0	0	0	0	0	0	0	0	0
2021	July	White River	11	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	1	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	July	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	2	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	3	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	4	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	July	Windy Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	0.5	100	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	8	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	10	100	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	10.5	1,580	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	11	770	0	41	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	11.5	352	0	45	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	12	17	0	13	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	12.5	372	2	45	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2021	Early August	Cobblestone River	13	169	0	4	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	13.5	51	0	2	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	14	422	0	10	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	14.5	255	0	16	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	15	4	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	15.5	17	0	2	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	16	1	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	16.5	0	0	1	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Cobblestone River	22.7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	3	2	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early August	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	11	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Fall Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	11	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early August	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	23	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	24.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	25	2	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Early August	Headwaters Canyon Creek	28.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	29	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	29.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Headwaters Canyon Creek	30	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 10.0	0.4	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 11.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 11.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 11.0	1.6	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	0	549	1	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	0.5	9	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 12.0	4.3	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	0	22	0	1	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	0.5	1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 13.0	3.6	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 14.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 14.0	0.2	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2021	Early August	IMU 15.0		1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0		1.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0		2	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0		2.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 15.0		2.8	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		0.5	5	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		1.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		2	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		2.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		3	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 16.0		3.1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		0.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		1.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		2	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		2.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		3	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		3.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 17.0		3.9	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 19.0		0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 19.0		0.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 19.0		1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 19.0		1.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		0.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		1	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		1.5	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		2	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0A		2.2	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0B		0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0B		0.5	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Early August	IMU 21.0B	0.8	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 21.0B	0.9	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 6.0	0.6	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	0	105	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	0.5	105	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	IMU 8.0	5.2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early August	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	Oro Grande Creek	9.4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	1.5	53	1	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	2	360	1	2	0	0	0	0	0	0	0
2021	Early August	Pond Creek	2.5	1,425	2	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	3	428	0	1	0	0	0	0	0	0	0
2021	Early August	Pond Creek	3.5	78	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	4	11	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early August	Pond Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early August	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	Upper Sinuk River	7.1	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	3	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	4	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	6	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	7	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	8	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	9	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	10	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	White River	11	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Early August	Windy Creek		3	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek		3.5	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek		4	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek		4.5	0	0	0	0	0	0	0	0	0
2021	Early August	Windy Creek		5	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		0	0	285	1	0	0	0	0	0	0
2021	Early September	Cobblestone River		0.5	0	520	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		1	0	300	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		1.5	0	16	2	0	0	0	0	0	0
2021	Early September	Cobblestone River		2	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		2.5	0	1	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		3	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		3.5	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		4	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		4.5	0	5	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		5	0	55	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		5.5	0	230	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		6	0	5	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		6.5	0	95	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		7	0	135	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		7.5	0	12	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		8	0	20	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		8.5	0	10	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		9	0	266	0	0	4	0	2	0	0
2021	Early September	Cobblestone River		9.5	0	335	0	0	15	0	0	0	0
2021	Early September	Cobblestone River		10	0	500	2	0	19	0	0	0	0
2021	Early September	Cobblestone River		10.5	0	30	0	0	7	0	0	0	0
2021	Early September	Cobblestone River		11	0	45	0	0	3	0	0	0	0
2021	Early September	Cobblestone River		11.5	0	0	10	0	4	0	0	0	0
2021	Early September	Cobblestone River		12	0	0	1	0	2	0	0	0	0
2021	Early September	Cobblestone River		12.5	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		13	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River		13.5	0	0	0	0	3	0	1	0	0
2021	Early September	Cobblestone River		14	0	0	0	0	14	0	4	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	Cobblestone River	14.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Cobblestone River	22.7	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	8	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2021	Early September	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	11	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Fall Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	11	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	23	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	24.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	25	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	27	0	2	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	28.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	29	0	0	0	0	0	0	0	0	0	0
2021	Early September	Headwaters Canyon Creek	29.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Early September	Headwaters Canyon Creek	30	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 10.0	0.4	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 11.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 11.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 11.0	1.6	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	0	0	120	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 12.0	4.3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	0	0	2	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 13.0	3.6	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 14.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 14.0	0.2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	2	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	IMU 15.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 15.0	2.8	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 16.0	3.1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 17.0	3.9	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 19.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 19.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 19.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0A	2.2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0B	0.8	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 21.0B	0.9	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 6.0	0.6	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	0	0	68	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	0.5	0	15	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	IMU 8.0	5.2	0	0	0	0	0	0	0	0	0	0
2021	Early September	Oro Grande Creek	0	0	0	0	0	0	0	0	0	3	0
2021	Early September	Pond Creek	0.5	0	32	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	1	0	77	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	1.5	0	295	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	2	0	205	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	2.5	0	280	10	0	0	0	0	0	0	0
2021	Early September	Pond Creek	3	0	15	5	0	0	0	0	0	0	0
2021	Early September	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	9.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	Pond Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Early September	Pond Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	3	0	0	0	0	4	0	0	0	0	0
2021	Early September	Upper Sinuk River	3.5	0	0	0	0	2	0	0	0	0	0
2021	Early September	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	6	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	7	0	0	0	0	0	0	0	0	0	0
2021	Early September	Upper Sinuk River	7.1	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	6	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	7	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	7.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	8	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Early September	White River	8.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	9	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	9.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	10	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	10.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	White River	11	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	0	0	10	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Early September	Windy Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	7	0	0	0	0	0	0	0	0	8	0
2021	Late September	Cobblestone River	7.5	0	0	0	0	0	0	0	0	2	0
2021	Late September	Cobblestone River	8	0	0	0	0	1	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Late September	Cobblestone River	8.5	0	0	0	0	4	0	0	0	0	0
2021	Late September	Cobblestone River	9	0	0	2	0	0	0	0	0	3	0
2021	Late September	Cobblestone River	9.5	0	0	3	0	15	0	0	0	45	0
2021	Late September	Cobblestone River	10	0	0	0	0	56	0	0	0	3	0
2021	Late September	Cobblestone River	10.5	0	0	0	0	105	0	0	0	0	0
2021	Late September	Cobblestone River	11	0	0	0	0	5	0	0	0	0	0
2021	Late September	Cobblestone River	11.5	0	0	0	0	145	0	0	0	0	0
2021	Late September	Cobblestone River	12	0	0	0	0	19	0	0	0	0	0
2021	Late September	Cobblestone River	12.5	0	0	0	0	35	0	0	0	5	0
2021	Late September	Cobblestone River	13	0	0	0	0	10	0	0	0	13	0
2021	Late September	Cobblestone River	13.5	0	0	0	0	3	0	0	0	0	0
2021	Late September	Cobblestone River	14	0	0	0	0	10	0	0	0	0	0
2021	Late September	Cobblestone River	14.5	0	0	0	0	7	0	0	0	0	0
2021	Late September	Cobblestone River	15	0	0	0	0	4	0	0	0	0	0
2021	Late September	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	19.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	20	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	20.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	21	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	21.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	22	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	22.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Cobblestone River	22.7	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	0.5	0	0	0	0	2	0	0	0	0	0
2021	Late September	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	2	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Late September	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	11	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Fall Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	1.5	0	19	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	2.5	0	33	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	3	0	2	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	3.5	0	4	0	0	1	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	5.5	0	0	0	0	3	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	6	0	0	0	0	4	0	0	0	3	0
2021	Late September	Headwaters Canyon Creek	6.5	0	0	0	0	2	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Late September	Headwaters Canyon Creek	7	0	0	0	0	2	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	7.5	0	0	0	0	30	0	0	0	2	0
2021	Late September	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	33	0
2021	Late September	Headwaters Canyon Creek	8.5	0	0	0	0	0	0	0	0	5	0
2021	Late September	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	11	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	23	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2021	Late September	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	24.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	25	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	28.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	29	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	29.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Headwaters Canyon Creek	30	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 10.0	0.4	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 11.0	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 11.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 11.0	1.6	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	0	0	10	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 12.0	4.3	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Late September	IMU 13.0		2	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0		2.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0		3	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0		3.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 13.0		3.6	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 14.0		0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 14.0		0.2	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		0.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		1	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		1.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		2	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		2.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 15.0		2.8	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		0.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		1	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		1.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		2	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		2.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		3	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 16.0		3.1	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		0.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		1	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		1.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		2	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		2.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		3	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		3.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 17.0		3.9	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 19.0		0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 19.0		0.5	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 19.0		1	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2021	Late September	IMU 19.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0A	2.2	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0B	0.8	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 21.0B	0.9	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 6.0	0.6	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	IMU 8.0	5.2	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2021	Late September	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Late September	Oro Grande Creek	9.4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	0.5	0	5	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	1	0	22	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	1.5	0	40	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	2	0	15	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	2.5	0	0	0	0	0	0	0	0	4	0
2021	Late September	Pond Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	9.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	10	0	0	0	0	0	0	0	0	0	0
2021	Late September	Pond Creek	10.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	0	0	0	0	0	8	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Late September	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	3	0	0	0	0	6	0	0	0	0	0
2021	Late September	Upper Sinuk River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	7	0	0	0	0	0	0	0	0	0	0
2021	Late September	Upper Sinuk River	7.1	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	2	0	0	0	0	1	0	0	0	0	0
2021	Late September	White River	2.5	0	0	0	0	3	0	0	0	0	0
2021	Late September	White River	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	5.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	6	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	6.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	7	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	7.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	8	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	8.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	9	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	9.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2021	Late September	White River	10	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	10.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	White River	11	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	2	0	0	0	0	8	0	0	0	0	0
2021	Late September	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	3	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	3.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	4	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	4.5	0	0	0	0	0	0	0	0	0	0
2021	Late September	Windy Creek	5	0	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	0	76	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	0.5	100	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	1	2,900	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	1.5	370	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	2	40	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	2.5	16	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	3	90	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	3.5	35	0	1	0	0	0	0	0	0	0
2023	July	Cobblestone River	4.5	230	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	5	140	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	5.5	360	0	2	0	0	0	0	0	0	0
2023	July	Cobblestone River	6	210	0	2	0	0	0	0	0	0	0
2023	July	Cobblestone River	6.5	21	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	7	45	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	7.5	80	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	8	11	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	8.5	6	0	1	0	0	0	0	0	0	0
2023	July	Cobblestone River	9	4	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	9.5	210	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	10	90	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly	
												Varden Live	Varden Carcass	
2023	July	Cobblestone River	10.5	190	0	0	0	0	0	0	3	0	0	0
2023	July	Cobblestone River	11	41	0	0	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	11.5	0	0	55	0	0	0	0	1	0	5	0
2023	July	Cobblestone River	12	0	0	20	0	0	0	0	0	0	4	0
2023	July	Cobblestone River	12.5	0	0	20	0	0	0	0	0	0	2	0
2023	July	Cobblestone River	13	0	0	6	0	0	0	0	1	0	4	0
2023	July	Cobblestone River	14.5	0	0	19	0	0	0	0	0	0	0	0
2023	July	Cobblestone River	16	0	0	0	0	0	0	0	0	0	1	0
2023	July	Cobblestone River	16.5	0	0	3	0	0	0	0	0	0	0	0
2023	July	Fall Creek	0	5	0	1	0	0	0	0	0	0	0	0
2023	July	Fall Creek	0.5	750	0	30	0	0	0	0	0	0	0	0
2023	July	Fall Creek	1	525	0	9	0	0	0	0	0	0	0	0
2023	July	Fall Creek	1.5	46	1	0	0	0	0	0	0	0	0	0
2023	July	Fall Creek	5	0	0	0	0	0	0	0	0	0	2	0
2023	July	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	2	0
2023	July	Fall Creek	6	0	0	0	0	0	0	0	0	0	4	0
2023	July	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0	0
2023	July	GLA 1.130	0	0	0	0	0	0	0	0	0	0	0	0
2023	July	Glacier Creek	0	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	5	0	0	1	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	6	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0	0
2023	July	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	0	0	0	0
2023	July	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0	0
2023	July	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0	0
2023	July	IMU 12.0	0	0	0	9	0	0	0	0	0	0	0	0
2023	July	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2023	July	IMU 14.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 15.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 16.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 17.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 19.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 21.0A		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 21.0B		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 6.0		0	14	0	2	0	0	0	0	0	0
2023	July	IMU 8.0		0	0	0	0	0	0	0	0	0	0
2023	July	IMU 9.0		0	0	0	0	0	0	0	0	0	0
2023	July	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	5	0
2023	July	Pond Creek	0	5	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek	1	7	0	1	0	0	0	0	0	0	0
2023	July	Pond Creek	1.5	102	0	2	0	0	0	0	0	0	0
2023	July	Pond Creek	2	94	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek	2.5	275	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek	3	216	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek	3.5	25	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2023	July	Pond Creek Trib	0	0	0	0	0	0	0	0	0	0	0
2023	July	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2023	July	White River	0	0	0	0	0	0	0	0	0	0	0
2023	July	White River	1.5	4	0	0	0	0	0	0	0	0	0
2023	July	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	Cobblestone River	0	0	0	4	0	0	0	0	0	0	0
2023	Early September	Cobblestone River	0.5	0	20	806	0	0	0	0	0	0	0
2023	Early September	Cobblestone River	1	0	55	50	0	0	0	0	0	0	0
2023	Early September	Cobblestone River	3	0	0	0	0	0	0	1	0	0	0
2023	Early September	Cobblestone River	3.5	0	0	0	0	0	0	1	0	0	0
2023	Early September	Cobblestone River	4.5	0	0	0	0	0	0	0	0	1	0
2023	Early September	Cobblestone River	5.5	0	0	0	0	0	0	2	0	4	0
2023	Early September	Cobblestone River	6.5	0	45	0	0	0	0	2	0	6	0
2023	Early September	Cobblestone River	7.5	0	0	0	0	0	0	4	0	7	0
2023	Early September	Cobblestone River	8	0	25	0	0	0	0	0	0	1	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden		
												Live	Carcass	
2023	Early September	Cobblestone River	8.5	0	0	0	0	0	0	0	4	0	0	0
2023	Early September	Cobblestone River	9	0	20	0	0	50	0	2	0	3	0	0
2023	Early September	Cobblestone River	9.5	0	0	70	0	3	0	3	0	12	0	0
2023	Early September	Cobblestone River	10	0	0	6	0	8	0	1	0	16	0	0
2023	Early September	Cobblestone River	10.5	0	0	0	0	17	0	1	0	10	0	0
2023	Early September	Cobblestone River	11	0	0	0	0	12	0	0	0	5	0	0
2023	Early September	Cobblestone River	11.5	0	0	0	0	4	0	0	0	3	0	0
2023	Early September	Cobblestone River	12	0	0	0	0	1	0	0	0	5	0	0
2023	Early September	Cobblestone River	12.5	0	0	0	0	0	0	0	0	3	0	0
2023	Early September	Cobblestone River	13	0	0	3	0	6	0	0	0	0	0	0
2023	Early September	Cobblestone River	14	0	0	0	0	8	0	0	0	0	0	0
2023	Early September	Cobblestone River	14.5	0	0	0	0	4	0	0	0	0	0	0
2023	Early September	Cobblestone River	15	0	0	0	0	0	0	0	0	2	0	0
2023	Early September	Cobblestone River	15.5	0	0	0	0	4	0	0	0	0	0	0
2023	Early September	Cobblestone River	16	0	0	0	0	3	0	0	0	1	0	0
2023	Early September	Cobblestone River	16.5	0	0	0	0	19	0	0	0	0	0	0
2023	Early September	Cobblestone River	18	0	0	0	0	1	0	0	0	1	0	0
2023	Early September	Fall Creek	0	0	12	0	0	0	0	0	0	0	0	0
2023	Early September	Fall Creek	1	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Fall Creek	5	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Fall Creek	6	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Fall Creek	6.5	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Glacier Creek	0.5	0	0	0	0	0	0	0	0	4	0	0
2023	Early September	Headwaters Canyon Creek	7	0	0	1	0	0	0	0	0	0	0	0
2023	Early September	Headwaters Canyon Creek	7.5	0	0	0	3	0	0	0	0	0	0	0
2023	Early September	Headwaters Canyon Creek	8	0	0	1	0	0	0	0	0	0	0	0
2023	Early September	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	1	0	0
2023	Early September	Headwaters Canyon Creek	19	0	0	0	0	0	0	1	0	0	0	0
2023	Early September	Headwaters Canyon Creek	19.5	0	0	0	0	4	0	0	0	0	0	0
2023	Early September	Headwaters Canyon Creek	20.5	0	0	0	0	1	0	0	0	0	0	0
2023	Early September	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	2	0	0	0	0
2023	Early September	Headwaters Canyon Creek	22	0	0	0	0	4	0	0	0	16	0	0
2023	Early September	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	33	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2023	Early September	Headwaters Canyon Creek	23	0	0	0	0	2	0	0	0	5	0
2023	Early September	Headwaters Canyon Creek	24	0	0	0	0	3	0	0	0	6	0
2023	Early September	Headwaters Canyon Creek	25	0	0	0	0	11	0	1	0	2	0
2023	Early September	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	0	1	0
2023	Early September	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	2	0
2023	Early September	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	4	0
2023	Early September	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	1	0
2023	Early September	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 12.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 8.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 8.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	IMU 9.0	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	1	0	0	0	0	2	0	0	0	0	0
2023	Early September	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	4	0
2023	Early September	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	2	0
2023	Early September	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2023	Early September	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	7	0	0	0	0	0	0	0	0	2	0
2023	Early September	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2023	Early September	Pond Creek	0	0	6	0	2	0	0	0	0	0	0
2023	Early September	Pond Creek	1	0	4	0	0	0	0	0	0	0	0
2023	Early September	Pond Creek	1.5	0	6	0	0	0	0	0	0	0	0
2023	Early September	Pond Creek	2	0	0	0	0	0	0	0	0	5	0
2023	Early September	Pond Creek	2.5	0	0	0	3	0	0	0	0	0	0
2023	Early September	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2023	Early September	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	White River	0	0	0	0	0	0	0	0	0	0	0
2023	Early September	Windy Creek	0	0	0	0	0	3	0	0	0	0	0
2023	Late September	Cobblestone River	0.5	0	0	0	0	0	0	0	0	2	0
2023	Late September	Cobblestone River	1	0	0	0	0	0	0	0	0	2	0
2023	Late September	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2023	Late September	Cobblestone River	6	0	0	0	0	2	0	0	0	5	0
2023	Late September	Cobblestone River	6.5	0	0	0	0	1	0	0	0	0	0
2023	Late September	Cobblestone River	7	0	0	0	0	0	0	0	0	0	0
2023	Late September	Cobblestone River	7.5	0	0	0	0	12	0	0	0	0	0
2023	Late September	Cobblestone River	8	0	0	0	0	0	0	0	0	0	0
2023	Late September	Cobblestone River	8.5	0	0	0	0	7	0	0	0	0	0
2023	Late September	Cobblestone River	9	0	0	0	0	7	0	0	0	0	0
2023	Late September	Cobblestone River	9.5	0	0	0	0	16	0	0	0	11	0
2023	Late September	Cobblestone River	10	0	0	0	0	13	0	0	0	5	0
2023	Late September	Cobblestone River	10.5	0	0	0	0	18	0	0	0	10	0
2023	Late September	Cobblestone River	11	0	0	0	0	10	0	0	0	5	0
2023	Late September	Cobblestone River	11.5	0	0	0	0	10	0	0	0	20	0
2023	Late September	Cobblestone River	12	0	0	0	0	0	0	0	0	7	0
2023	Late September	Cobblestone River	12.5	0	0	0	0	2	1	0	0	10	0
2023	Late September	Cobblestone River	13.5	0	0	0	0	5	0	0	0	0	0
2023	Late September	Cobblestone River	14	0	0	0	0	12	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2023	Late September	Fall Creek	0.5	0	0	0	0	3	0	0	0	0	0
2023	Late September	Fall Creek	1	0	0	0	0	5	0	0	0	0	0
2023	Late September	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	7.5	0	0	0	0	0	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	2	0
2023	Late September	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	1	0
2023	Late September	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	10	0
2023	Late September	Headwaters Canyon Creek	11	0	0	0	0	1	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	16	0	0	0	0	2	0	0	0	4	0
2023	Late September	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	1	0
2023	Late September	Headwaters Canyon Creek	18	0	0	0	0	5	0	0	0	4	0
2023	Late September	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	3	0
2023	Late September	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	8	0
2023	Late September	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	2	0
2023	Late September	Headwaters Canyon Creek	20.5	0	0	0	0	8	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	2	0
2023	Late September	Headwaters Canyon Creek	21.5	0	0	0	0	6	0	3	0	1	0
2023	Late September	Headwaters Canyon Creek	22	0	0	0	0	3	0	4	0	5	0
2023	Late September	Headwaters Canyon Creek	22.5	0	0	0	0	4	0	0	0	10	0
2023	Late September	Headwaters Canyon Creek	23	0	0	0	0	5	0	1	0	5	0
2023	Late September	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	1	0
2023	Late September	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	5	0
2023	Late September	Headwaters Canyon Creek	24.5	0	0	0	0	5	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	25	0	0	0	0	2	0	4	0	3	0
2023	Late September	Headwaters Canyon Creek	25.5	0	0	0	0	1	0	0	0	0	0
2023	Late September	Headwaters Canyon Creek	26.5	0	0	0	0	3	0	0	0	0	0
2023	Late September	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2023	Late September	Oro Grande Creek	4.5	0	0	0	0	1	0	0	0	0	0
2023	Late September	Pond Creek	2.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2023	Late September	Pond Creek Trib		0	0	0	0	0	0	0	0	0	0
2023	Late September	Upper Sinuk River	2.5	0	0	0	0	4	0	0	0	0	0
2023	Late September	Upper Sinuk River	3	0	0	0	0	1	0	0	0	0	0
2023	Late September	White River	1.5	0	0	0	0	1	0	0	0	0	0
2023	Late September	White River	2.5	0	0	0	0	3	0	0	0	0	0
2023	Late September	Windy Creek	2	0	0	0	0	1	0	1	0	0	0
2024	Mid August	Cobblestone River	0	3	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	0.5	10	5	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	1	390	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	1.5	200	20	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	2	6	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	2.5	4	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	3	10	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	5	20	1	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	5.5	45	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	6	22	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	6.5	0	7	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	7	7	1	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	7.5	70	1	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	8	1	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	8.5	4	1	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	9	3	18	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	9.5	252	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	10	60	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	10.5	205	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	11	10	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	11.5	90	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	12	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	12.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	13	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	13.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Carcass	
2024	Mid August	Cobblestone River	14	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	14.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Cobblestone River	19	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	0	25	19	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	0.5	188	7	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	1	29	1	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid August	GLA 1.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	GLA 1.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	GLA 1.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Glacier Creek	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	
												Live	Carcass
2024	Mid August	Glacier Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Glacier Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Glacier Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Glacier Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Glacier Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	0.5	2	3	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	1	0	1	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	1.5	1	2	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	2	0	4	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	2.5	1	9	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	3	0	1	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	3.5	10	5	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	4	1	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	4.5	0	50	1	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	5	1	55	0	1	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	5.5	76	88	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	6	190	225	0	1	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	6.5	140	50	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	7	790	200	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	7.5	220	110	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	8	45	15	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	8.5	17	10	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	9	29	21	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	9.5	3	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	10	0	1	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	11	1	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	3	0
2024	Mid August	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	3	0
2024	Mid August	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	1	0
2024	Mid August	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid August	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	1	0
2024	Mid August	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	1	0
2024	Mid August	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	17	0	2	0	0	0	0	0	0	1	0
2024	Mid August	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	4	0
2024	Mid August	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	23	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	24.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	25	0	0	2	0	0	0	5	0	0	0
2024	Mid August	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	6	0	0	0
2024	Mid August	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Headwaters Canyon Creek	28.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 12.0	0	40	24	0	0	0	0	0	0	0	0
2024	Mid August	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2024	Mid August	IMU 6.0		0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0		0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 9.0		0	0	0	0	0	0	0	0	0	0
2024	Mid August	IMU 9.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	1	0
2024	Mid August	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Pond Creek		0	0	4	0	0	0	0	0	0	0
2024	Mid August	Pond Creek	1	0	0	4	0	0	0	0	0	0	0
2024	Mid August	Pond Creek	1.5	52	24	0	0	0	0	0	0	0	0
2024	Mid August	Pond Creek	2	84	3	0	0	0	0	0	0	0	0
2024	Mid August	Pond Creek	2.5	192	5	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Carcass	
2024	Mid August	Pond Creek	3	128	0	0	0	0	0	0	0	0	0
2024	Mid August	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	0	0	0	0	0	0	0	0	0	4	0
2024	Mid August	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	3	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	0	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	1	13	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	1.5	1	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	2	8	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	2.5	1	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	3	1	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	4	0	0	0	0	0	0	0	0	1	0
2024	Mid August	White River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	6	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	7	0	0	0	0	0	0	0	0	0	0
2024	Mid August	White River	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	2	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid August	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid August	Windy Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	0.5	0	40	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	1	0	10	0	0	30	0	0	0	0	0
2024	Late August	Cobblestone River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	2.5	0	1	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	4.5	0	1	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	5	0	5	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	6.5	0	5	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	7	0	7	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	7.5	0	4	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	8	0	1	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	8.5	0	0	0	0	1	0	0	0	0	0
2024	Late August	Cobblestone River	9	0	8	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	9.5	0	10	6	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	10	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	10.5	1	1	0	0	3	0	0	0	0	0
2024	Late August	Cobblestone River	11	0	0	0	0	1	0	0	0	0	0
2024	Late August	Cobblestone River	11.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	12	0	0	0	0	0	0	4	0	0	0
2024	Late August	Cobblestone River	12.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	13	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Late August	Cobblestone River	13.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	14	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	14.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	16	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	16.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2024	Late August	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	0	20	43	0	0	4	0	0	0	0	0
2024	Late August	Fall Creek	0.5	0	9	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Fall Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Late August	GLA 1.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	GLA 1.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	GLA 1.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	GLA 1.0	1.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Late August	GLA 1.0	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Glacier Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	0	0	3	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	2.5	0	4	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	3	0	10	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	4	0	11	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	4.5	0	56	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	5	0	32	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	5.5	0	45	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	6	0	71	0	0	4	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	6.5	1	0	0	0	10	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	7	0	31	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	9	0	1	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	10	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	11	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Late August	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	21	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	21.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	22	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	22.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	23	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	23.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	24	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	24.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	25	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	25.5	0	0	0	0	0	0	0	1	0	0
2024	Late August	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2024	Late August	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 12.0	0	0	2	0	0	0	0	0	0	0	0
2024	Late August	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 13.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 14.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 15.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 15.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 16.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 16.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 17.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 19.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 8.0	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 9.0	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	IMU 9.0	0.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Late August	Oro Grande Creek		0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	1	0	8	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	1.5	0	4	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	2	1	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2024	Late August	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Pond Creek Trib	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	7	0	0	0	0	0	0	0	0	0	0
2024	Late August	Upper Sinuk River	7.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	0	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	3.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Late August	White River	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	7	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	7.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	8	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	8.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	White River	9	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	0	0	0	0	0	0	0	0	0	1	0
2024	Late August	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Late August	Windy Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	3.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2024	Mid September	Cobblestone River	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	6	0	0	5	0	0	0	0	0	3	0
2024	Mid September	Cobblestone River	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	7	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	7.5	0	0	0	0	8	0	0	0	3	0
2024	Mid September	Cobblestone River	8	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	9	0	0	0	0	7	0	0	0	0	0
2024	Mid September	Cobblestone River	9.5	0	0	0	0	33	0	0	0	10	0
2024	Mid September	Cobblestone River	10	0	0	1	0	3	0	0	0	4	0
2024	Mid September	Cobblestone River	10.5	0	0	0	0	4	0	0	0	12	0
2024	Mid September	Cobblestone River	11	0	0	0	0	1	0	0	0	0	0
2024	Mid September	Cobblestone River	11.5	0	0	0	0	2	0	7	0	0	0
2024	Mid September	Cobblestone River	12	0	0	0	0	0	0	2	0	0	0
2024	Mid September	Cobblestone River	12.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	13	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	13.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	14	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	14.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	15	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	15.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	16	0	0	0	0	4	0	0	0	0	0
2024	Mid September	Cobblestone River	16.5	0	0	0	0	0	0	0	0	3	0
2024	Mid September	Cobblestone River	17	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	17.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	18	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Cobblestone River	18.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek	0.5	0	0	0	0	5	0	0	0	0	0
2024	Mid September	Fall Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek	1.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid September	Fall Creek		2	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		2.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		3	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		3.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		4	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		4.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		5.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		6	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		6.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		7	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		7.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		8	0	0	0	0	0	0	0	0	0
2024	Mid September	Fall Creek		8.5	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		0	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		0.5	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		1	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		1.5	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		2	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		2.5	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.0		3	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.130		0	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.130		0.5	0	0	0	0	0	0	0	0	0
2024	Mid September	GLA 1.130		1	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		0	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		0.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		1	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		1.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		2	0	0	0	0	0	0	0	0	0
2024	Mid September	Glacier Creek		2.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek		0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek		0.5	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek		1	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek		1.5	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid September	Headwaters Canyon Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	5.5	0	0	0	0	0	0	0	0	3	0
2024	Mid September	Headwaters Canyon Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	7	0	0	0	0	2	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	9.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	10	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	10.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	11	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	11.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	12	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	12.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	13	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	13.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	14	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	14.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	15	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	15.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	16	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	16.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	17	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	17.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	18	0	0	0	0	0	0	0	0	3	0
2024	Mid September	Headwaters Canyon Creek	18.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid September	Headwaters Canyon Creek	19	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	19.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	20	0	0	0	0	0	0	0	0	1	0
2024	Mid September	Headwaters Canyon Creek	20.5	0	0	0	0	0	0	0	0	1	0
2024	Mid September	Headwaters Canyon Creek	21	0	0	0	0	3	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	21.5	0	0	0	0	1	0	0	0	1	0
2024	Mid September	Headwaters Canyon Creek	22	0	0	0	0	3	0	0	0	3	0
2024	Mid September	Headwaters Canyon Creek	22.5	0	0	0	0	7	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	23	0	0	0	0	5	0	0	0	2	0
2024	Mid September	Headwaters Canyon Creek	23.5	0	0	0	0	2	0	0	0	1	0
2024	Mid September	Headwaters Canyon Creek	24	0	0	0	0	2	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	24.5	0	0	0	0	3	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	25	0	0	0	0	4	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	25.5	0	0	0	0	4	0	5	0	0	0
2024	Mid September	Headwaters Canyon Creek	26	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	26.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	27	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	27.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Headwaters Canyon Creek	28	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 10.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 11.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 11.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 12.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 12.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 12.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 12.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 12.0	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 13.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 13.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 13.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 13.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 14.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 15.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 15.0	0.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly Varden	Dolly Varden
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2024	Mid September	IMU 15.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 15.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 16.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 16.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 16.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 16.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 17.0	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 19.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 19.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 19.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 21.0A	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 21.0A	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 21.0B	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 21.0B	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 6.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 6.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 8.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 8.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 8.0	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 8.0	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 8.0	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 9.0	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	IMU 9.0	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	2.5	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly	Dolly
												Varden Live	Varden Carcass
2024	Mid September	Oro Grande Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Oro Grande Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	2.5	0	0	0	0	0	0	0	0	1	0
2024	Mid September	Pond Creek	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	6	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	7	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	8	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	9	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek	9.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	1	0	0	0	0	0	0	0	0	0	0

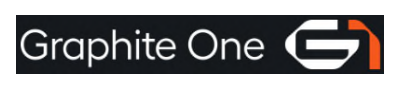
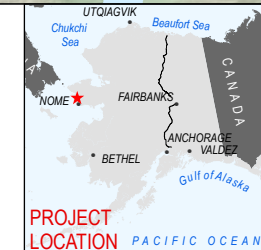
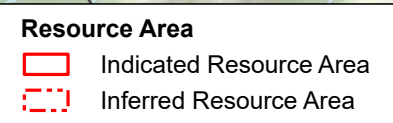
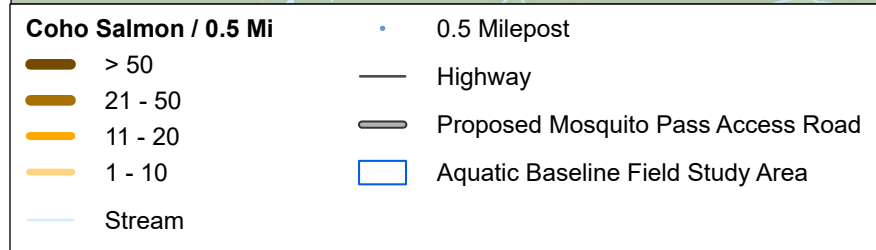
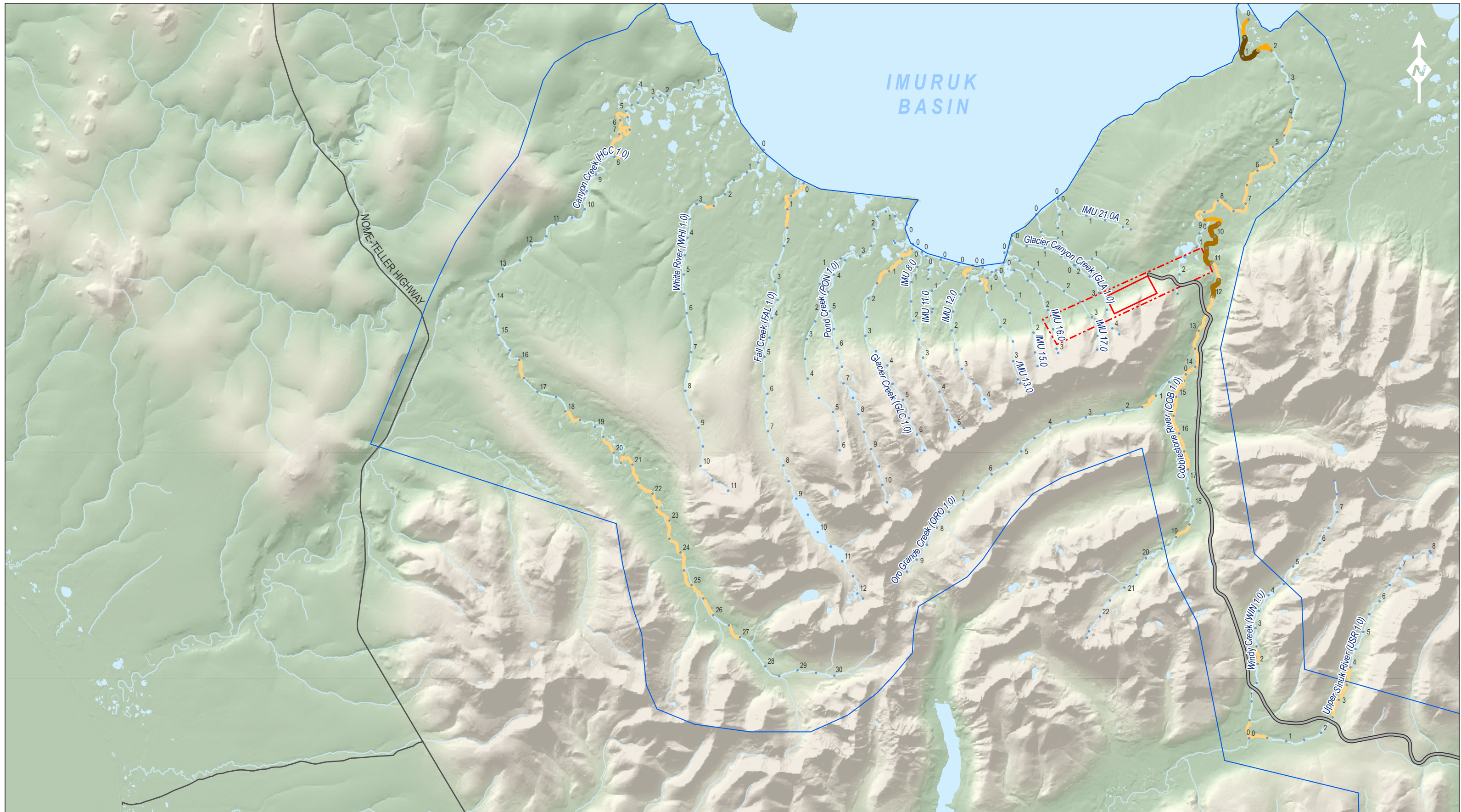
Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink Live	Pink Carcass	Chum Live	Chum Carcass	Coho Live	Coho Carcass	Sockeye Live	Chinook Live	Dolly Varden	Dolly Varden
												Live	Carcass
2024	Mid September	Pond Creek Trib	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Pond Creek Trib	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	3.5	0	0	0	0	3	0	0	0	0	0
2024	Mid September	Upper Sinuk River	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Upper Sinuk River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	3	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	3.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	4	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	4.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	5.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	6	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	6.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	7	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	7.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	8	0	0	0	0	0	0	0	0	0	0

Appendix F. Total aerial survey counts of live fish and carcasses for the five species of Pacific salmon and Dolly Varden in each stream reach of each river surveyed, 2019–2024, Graphite One, 2024.

Year	Period	Stream	Stream Reach (mi)	Pink	Pink	Chum	Chum	Coho	Coho	Sockeye	Chinook	Dolly	Dolly
				Live	Carcass	Live	Carcass	Live	Carcass	Live	Live	Live	Carcass
2024	Mid September	White River	8.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	9	0	0	0	0	0	0	0	0	0	0
2024	Mid September	White River	9.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	0	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	0.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	1	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	1.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	2	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	2.5	0	0	0	0	0	0	0	0	0	0
2024	Mid September	Windy Creek	3	0	0	0	0	0	0	0	0	0	0

Appendix G. Pacific salmon density, 2019, 2021–2024.



2024 AQUATIC BASELINE STUDIES

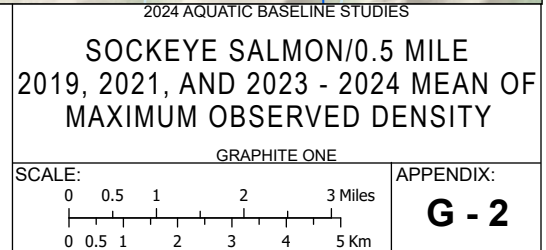
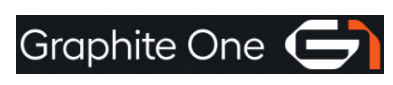
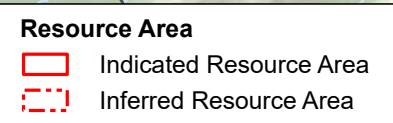
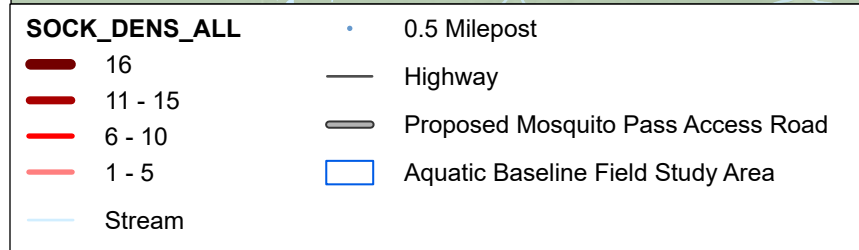
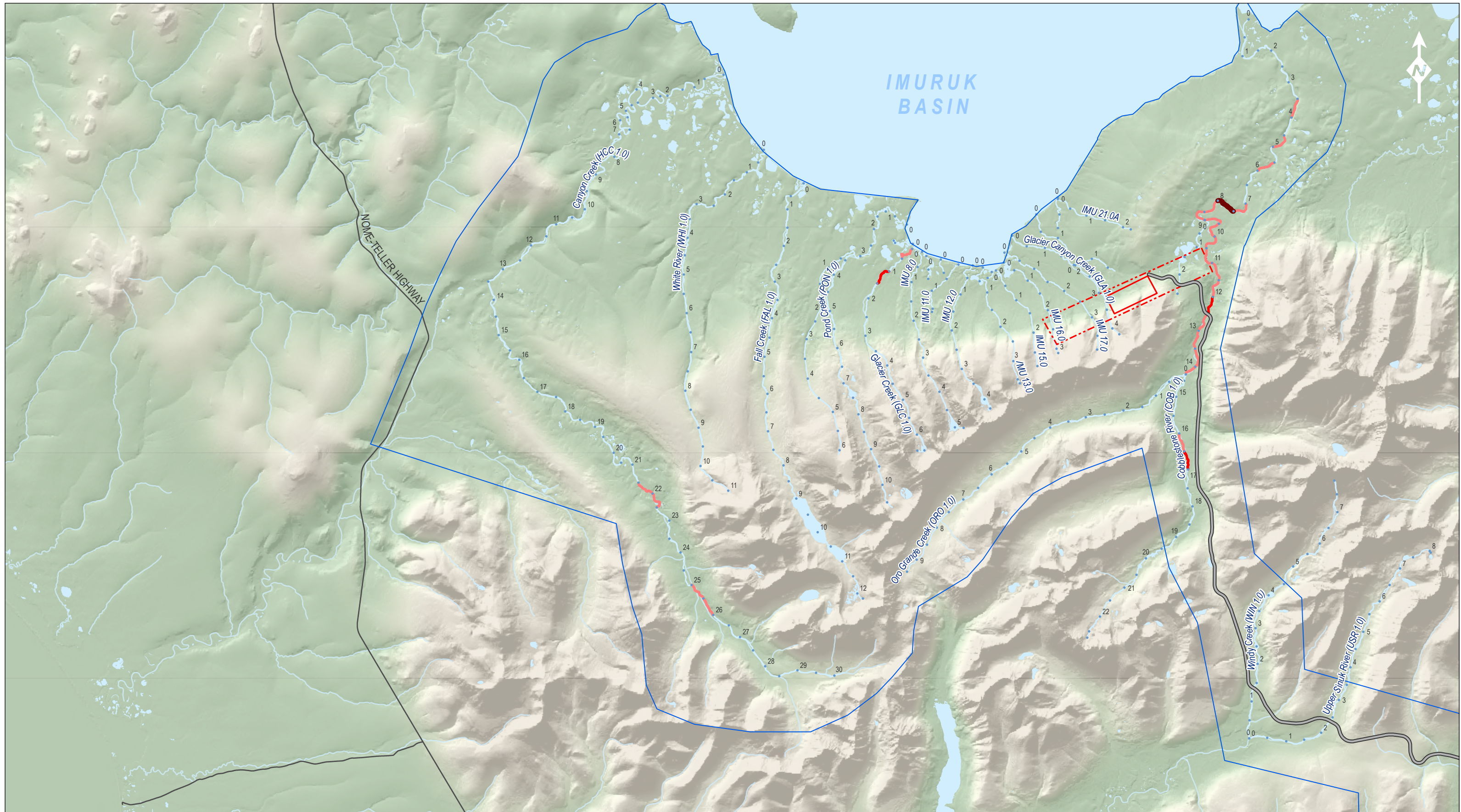
**COHO SALMON/0.5 MILE
2019, 2021, AND 2023 - 2024 MEAN OF
MAXIMUM OBSERVED DENSITY**

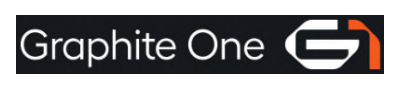
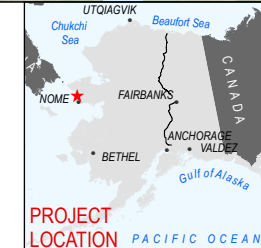
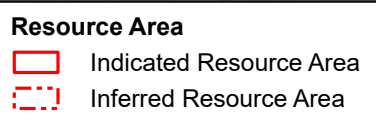
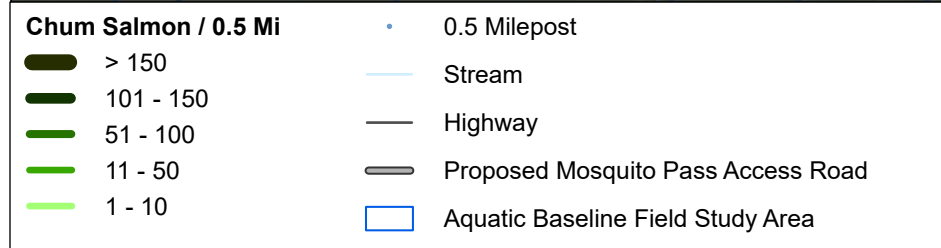
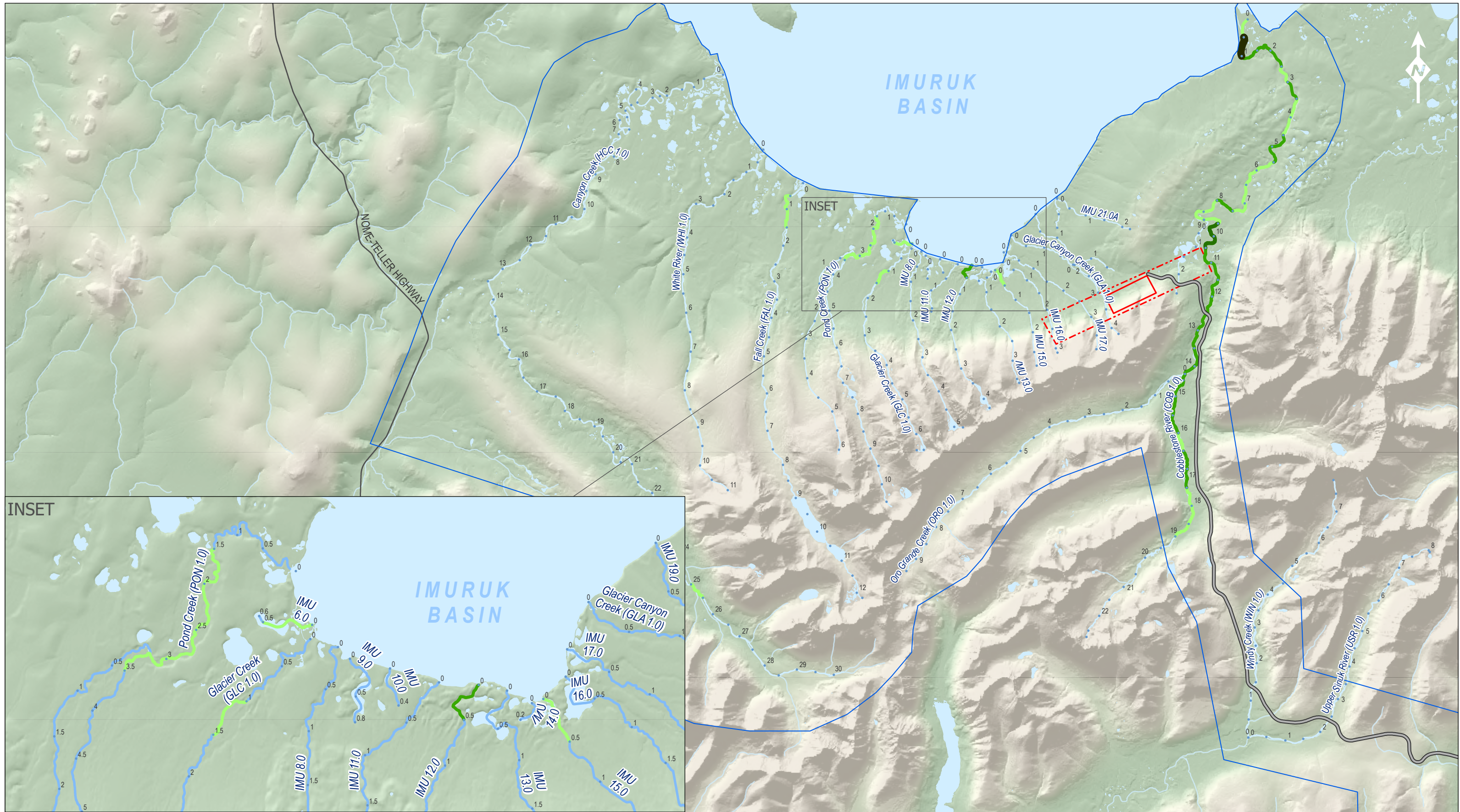
GRAPHITE ONE

SCALE: 0 0.5 1 2 3 Miles
0 0.5 1 2 3 4 5 Km

APPENDIX:
G - 1

GRA087.aprx, 1/24/2025 10:33 AM, R02





2024 AQUATIC BASELINE STUDIES

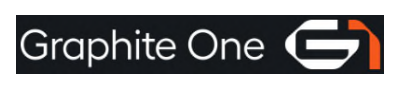
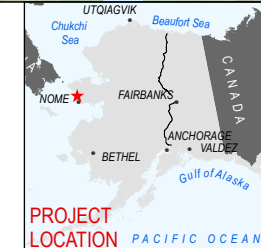
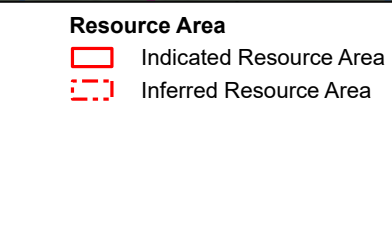
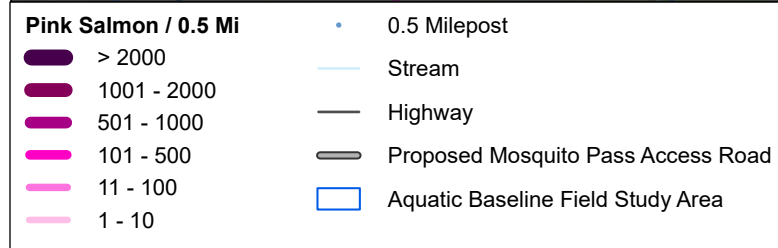
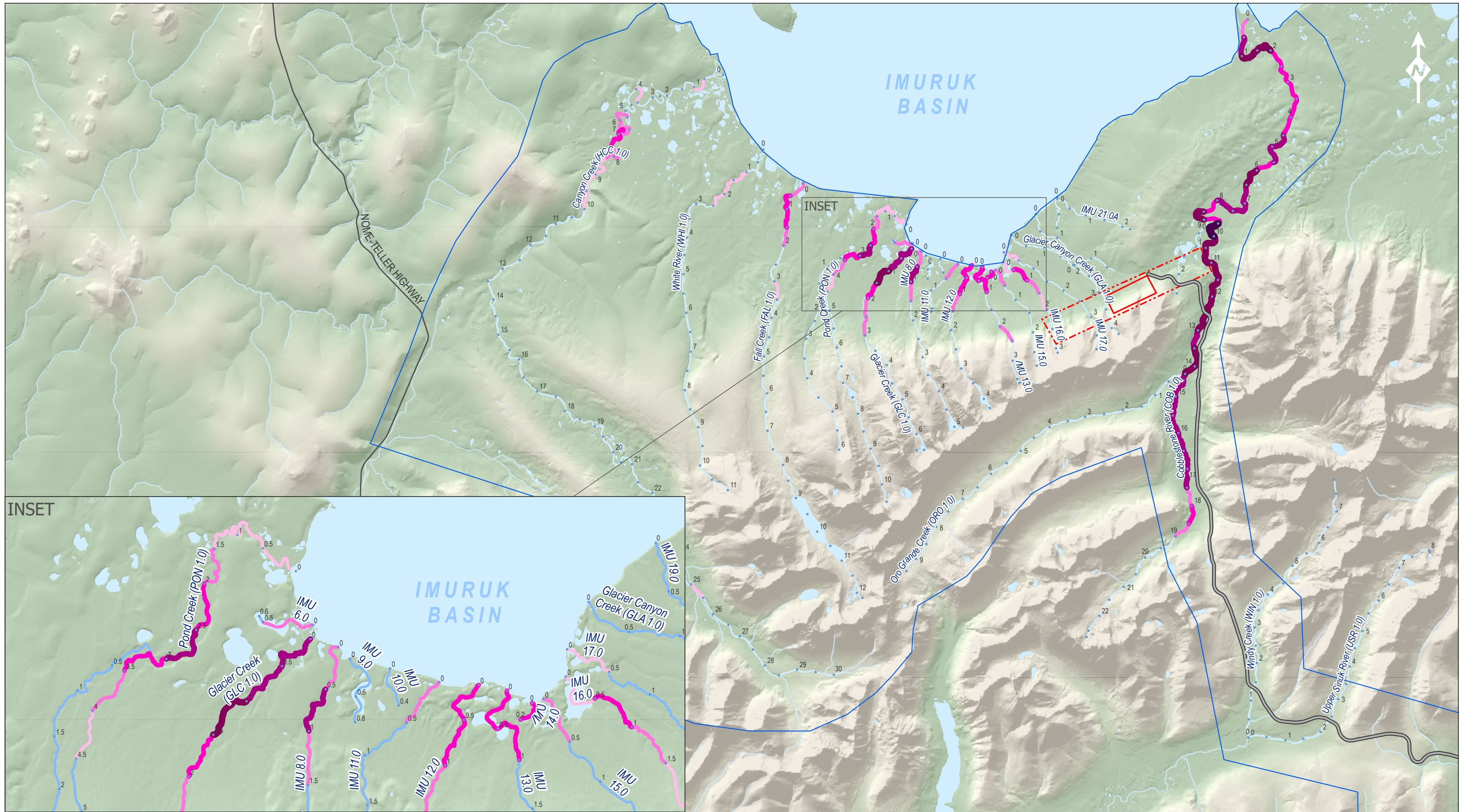
CHUM SALMON/0.5 MILE
2019, 2021, AND 2023 - 2024 MEAN OF
MAXIMUM OBSERVED DENSITY

GRAPHITE ONE

SCALE: 0 0.5 1 2 3 Miles
0 0.5 1 2 3 4 5 Km

APPENDIX:
G - 3

GRA089 aprx, 1/24/2025 10:55 AM, R03



2024 AQUATIC BASELINE STUDIES

PINK SALMON/0.5 MILE
2019, 2021, AND 2023 - 2024 MEAN OF
MAXIMUM OBSERVED DENSITY

GRAPHITE ONE

SCALE: 0 0.5 1 2 3 Miles
0 0.5 1 2 3 4 5 Km

APPENDIX:
G - 4

GRA090 aprx, 1/24/2025 10:41 AM, R02

Appendix H. Dolly Varden spawner sampling data, 2021–2024.

Appendix H. Location and date sampled, length, sex, and maturity state for all Dolly Varden sampled in 2021–2024 spawning surveys using rod and reel sampling methods, Graphite One, 2024.

Year	Site ¹	Latitude	Longitude	Date	Length (mm)	Sex	Maturity
2021	COB AN 4	65.041212	-165.47525	9/4/21	575	Male	Green
2021	COB AN 4	65.041212	-165.47525	9/4/21	620	Male	Green
2021	HCC AN 3	64.93155	-165.91370	9/5/21	560	Female	Green
2021	HCC AN 3	64.93155	-165.91370	9/5/21	545	Female	Green
2021	HCC AN 3	64.93155	-165.91370	9/5/21	490	Female	Green
2021	HCC AN 3	64.93155	-165.91370	9/5/21	470	Female	Spent
2021	HCC AN 3	64.93155	-165.91370	9/5/21	595	Female	Spent
2021	HCC AN 3	64.93155	-165.91370	9/5/21	480	Female	Non-spawner
2021	HCC AN 3	64.93155	-165.91370	9/5/21	560	Female	Spent
2021	HCC AN 3	64.93155	-165.91370	9/5/21	530	Female	Non-spawner
2021	HCC AN 3	64.93155	-165.91370	9/5/21	490	Female	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	610	Female	Spent
2021	COB AN 4	65.041212	-165.47525	9/6/21	650	Male	Green
2021	COB AN 4	65.041212	-165.47525	9/6/21	570	Female	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	--	Unknown	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	--	Unknown	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	--	Unknown	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	580	Male	Non-spawner
2021	COB AN 4	65.041212	-165.47525	9/6/21	520	Female	Non-spawner
2022	COB AN 2	65.056009	-165.47420	9/4/22	467	Female	Spent
2022	COB AN 3	65.050435	-165.48137	9/4/22	466	Female	Spent
2022	COB AN 3	65.050435	-165.48137	9/4/22	586	Female	Ripe
2022	COB AN 3	65.050435	-165.48137	9/5/22	555	Female	Spent
2022	COB AN 3	65.050435	-165.48137	9/5/22	568	Male	Green
2022	COB AN 3	65.050435	-165.48137	9/5/22	570	Female	Green
2022	COB AN 3	65.050435	-165.48137	9/5/22	575	Female	Spent
2022	COB AN 5	65.043245	-165.47104	9/5/22	569	Female	Spent
2022	COB AN 5	65.043245	-165.47104	9/5/22	530	Female	Spent
2022	COB AN 5	65.043245	-165.47104	9/6/22	410	Female	Spent
2022	COB AN 5	65.043245	-165.47104	9/6/22	549	Female	Spent
2023	COB AN 4	65.041212	-165.47525	9/4/23	--	Female	Spent
2023	COB 1	65.062967	-165.47294	9/8/23	612	Female	Ripe
2023	COB 1	65.062967	-165.47294	9/8/23	645	Male	Ripe
2023	COB 1	65.062967	-165.47294	9/8/23	544	Unknown	Non-spawner
2023	COB AN 4	65.041212	-165.47525	9/9/23	456	Female	Non-spawner
2023	COB AN 7	65.059852	-165.47619	9/9/23	586	Female	Ripe
2023	COB AN 7	65.059852	-165.47619	9/9/23	526	Female	Spent
2023	COB AN 7	65.059852	-165.47619	9/9/23	528	Female	Green
2023	COB AN 7	65.059852	-165.47619	9/10/23	500	Female	Green
2023	COB AN 7	65.059852	-165.47619	9/10/23	528	Female	Ripe
2023	COB AN 10	65.062735	-165.47283	9/27/23	590	Female	Spent
2023	COB AN 10	65.062735	-165.47283	9/27/23	520	Female	Non-spawner
2023	COB AN 11	65.049345	-165.47711	9/27/23	480	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	470	Female	Non-spawner
2023	COB AN 11	65.049345	-165.47711	9/27/23	430	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	480	Female	Non-spawner
2023	COB AN 11	65.049345	-165.47711	9/27/23	430	Female	Non-spawner
2023	COB AN 11	65.049345	-165.47711	9/27/23	450	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	520	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	520	Female	Spent

Appendix H. Location and date sampled, length, sex, and maturity state for all Dolly Varden sampled in 2021–2024 spawning surveys using rod and reel sampling methods, Graphite One, 2024.

Year	Site ¹	Latitude	Longitude	Date	Length (mm)	Sex	Maturity
2023	COB AN 11	65.049345	-165.47711	9/27/23	520	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	330	Female	Spent
2023	COB AN 11	65.049345	-165.47711	9/27/23	470	Female	Non-spawner
2023	COB AN 11	65.049345	-165.47711	9/27/23	540	Female	Spent
2023	COB AN 4	65.041212	-165.47525	9/28/23	610	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	560	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	560	Male	Ripe
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	560	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	550	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	510	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	420	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	460	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	440	Male	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	560	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	510	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	480	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Male	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	440	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	460	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	520	Male	Non-spawner
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	560	Female	Non-spawner
2023	COB AN 5	65.043245	-165.47104	9/28/23	570	Female	Spent
2023	COB AN 5	65.043245	-165.47104	9/28/23	540	Female	Non-spawner
2023	COB AN 5	65.043245	-165.47104	9/28/23	550	Male	Non-spawner
2023	COB AN 12	65.029637	-165.48345	9/28/23	450	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	560	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	550	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	510	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	530	Female	Non-spawner
2023	COB AN 12	65.029637	-165.48345	9/28/23	540	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	490	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	460	Female	Spent
2023	COB AN 12	65.029637	-165.48345	9/28/23	560	Female	Non-spawner
2023	COB AN 12	65.029637	-165.48345	9/28/23	480	Female	Spent
2024	COB AN 14	65.047593	-165.47354	8/31/24	620	Female	Spent
2024	COB AN 7	65.059852	-165.47619	8/31/24	460	Male	Non-spawner
2024	IMB GN 3-13 ²	65.049062	-165.68000	8/26/24	334	Male	Ripe
2024	IMB FN 1 ³	65.072092	-165.72654	8/28/24	430	Female	Green
2024	IMB FN 2 ³	65.047203	-165.66160	8/28/24	452	Unknown	Green
2024	IMB FN 2 ³	65.047203	-165.66160	8/30/24	320	Female	Ripe
2024	COB AN 4	65.041212	-165.47525	9/16/24	490	Female	Non-spawner
2024	COB AN 10	65.062735	-165.47283	9/16/24	630	Female	Green
2024	COB AN 11	65.049345	-165.47711	9/17/24	355	Female	Non-spawner
2024	COB AN 11	65.049345	-165.47711	9/17/24	430	Male	Spent
2024	COB AN 11	65.049345	-165.47711	9/17/24	490	Female	Non-spawner

Appendix H. Location and date sampled, length, sex, and maturity state for all Dolly Varden sampled in 2021–2024 spawning surveys using rod and reel sampling methods, Graphite One, 2024.

Year	Site¹	Latitude	Longitude	Date	Length (mm)	Sex	Maturity
2024	COB AN 11	65.049345	-165.47711	9/17/24	515	Male	Ripe
2024	COB AN 11	65.049345	-165.47711	9/17/24	370	Female	Non-spawner
2024	COB AN 10	65.062735	-165.47283	9/17/24	440	Male	Non-spawner
2024	COB AN 4	65.041212	-165.47525	9/18/24	560	Female	Spent
2024	COB AN 10	65.062735	-165.47283	9/18/24	480	Female	Spent
2024	COB AN 10	65.062735	-165.47283	9/18/24	540	Female	Ripe
2024	COB AN 11	65.049345	-165.47711	9/18/24	430	Female	Ripe

¹AN (rod and reel) sites and FN (fyke net) and GN (gill net) sites may be viewed on figures 1 and 2.

²IMB GN 3-13 was a gillnet set where Dolly Varden were captured.

³IMB FN1 and IMB FN2 were fyke net sets where Dolly Varden were captured.