Technical Report No. 24-08

Baseline Aquatic Studies for the Johnson Tract Project - 2023

by

Josh M. Brekken, Ron C. Benkert, and Andrew C. Kastning

April 2024

Alaska Department of Fish and Game **Habitat Section**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in reports by the Divisions of Habitat, Sport Fish, and Commercial Fisheries. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figures or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not detected	N
no data	ND
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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Cover photo: Upper Johnson River looking south (at approximately 550 cfs).

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EXECUTIVE SUMMARY

The Alaska Department of Fish and Game (ADF&G), Habitat Section, conducted fish presence and absence surveys in the Johnson Tract (JT) project area in 2022 as well as collected water quality data. In 2023, ADF&G initiated an aquatic biomonitoring program and conducted additional fish surveys in the project area. Monitoring sites (or reaches) were established on the upper Johnson River and lower Kona Creek, downstream of and adjacent to the JT ore deposit. At each site, water quality, periphyton, benthic macroinvertebrate, fish (for whole body element concentrations), and sediment samples were collected. The goal of the biomonitoring program was to collect baseline data at established monitoring locations that can be used to assess biological conditions and monitor changes over time.

Streamflow in the region is dynamic and is affected by the proximity of Cook Inlet and the marine climate, as well as glacial melt, varying substrate size, and steep terrain. Ideally, sampling is conducted in late summer (early to mid-August) when water levels are lower from reduced glacial melt, but before fall storms bring intense rainfall (and high-water levels) to the region.

Mean chlorophyll-a concentrations (periphyton) ranged from 1.60 to 7.58 mg/m^2 in the Johnson River and 2.88 to 6.94 mg/m^2 in Kona Creek. Mean concentrations were similar between sites with Kona Creek averaging 5.11 mg/m^2 from 8 samples and Johnson River averaging 4.72 mg/m^2 from 10 samples.

The benthic macroinvertebrate community was sampled at both sites using a Hess Sampler. The order Diptera was the most prevalent order represented in both sampling reaches, represented almost entirely by the family Chironomidae. Taxa richness (number of unique taxa) was 24 in the Kona Creek reach and 10 in the Johnson River reach. The Ephemeroptera, Plecoptera, and Tricoptera (EPT) taxa richness was 11 in the Kona Creek reach and 3 in the Johnson River reach.

Juvenile Dolly Varden (*Salvelinus malma*) were sampled from each stream reach and analyzed for whole-body element concentrations. Mean concentrations of most elements in Dolly Varden were similar between sites but were generally higher in the Johnson River.

Sediment samples were collected at each monitoring site and analyzed for element concentrations. Element concentrations in sediments were similar between sites for aluminum, iron, and zinc. Concentrations of arsenic, copper, and mercury in sediments were higher in the Johnson River, while concentrations of cadmium, lead, selenium, and silver were higher in Kona Creek sediments. All elements at both sites were below the National Oceanic and Atmospheric Administration's (NOAA) Threshold Effects Concentration (TEC) and Probable Effects Concentration (PEC) values except for copper and arsenic in the Johnson River reach, which exceed their respective TEC but are below their respective PEC.

Populations of anadromous Dolly Varden have been documented in the Johnson River, the Double Glacier Fork, and Kona Creek. The Johnson River also supports populations of chum (*Onchorynchus keta*), coho (*O. kisutch*), and pink salmon (*O. gorbuscha*) lower in the drainage. An anadromous population of Dolly Varden was documented in Hungryman Creek (north of the Johnson River drainage), which also supports chum salmon. One anadromous Dolly Varden was captured in Bear Creek (north of the Johnson River drainage), which also supports coho and chum salmon. Pink salmon were also documented in Difficult Creek (north of Johnson River drainage), which also supports chum salmon.

Resident fish species observed in freshwater includes Dolly Varden, slimy sculpin (*Cottus cognatus*), coastrange sculpin (*C. aleuticus*), ninespine stickleback (*Pungitius pungitius*), and threespine stickleback (*Gasterosteus aculeatus*).

INTRODUCTION

The Johnson Tract Project (Johnson Tract) is a poly-metallic project located near tidewater in Southcentral Alaska between Tuxedni and Chinitna Bays. The tract is currently being explored by HighGold Mining Inc. (HighGold) under a lease agreement with Cook Inlet Region, Inc. (CIRI) which has mineral and surface rights in the upper Johnson River watershed and in adjacent drainages. In addition to mineral and surface rights, CIRI was also granted port and transportation easements across adjoining parkland (Lake Clark National Park) to support the extraction of minerals. The Johnson Tract, originally explored from 1982 to1995, was inactive for almost 25 years prior to acquisition by HighGold in 2019. HighGold has conducted seasonal exploration surface drilling programs from 2019 to 2023 with a focus on delineating the high-grade Johnson Tract ore deposit (JT Deposit).

The project area is on the east side of the Chigmit Mountains and within the subpolar marine climate of Cook Inlet. This coastal area is often foggy and wet, with an average annual rainfall of 40 to 80 inches.

The Alaska Department of Fish and Game (ADF&G), Habitat Section, developed a monitoring program focused on collecting baseline data on a select number of parameters that reflect stream conditions in the Johnson Tract lease area. Two biomonitoring sites (or reaches) were established near the JT Deposit. One site is located in the mainstem Johnson River, about one mile downstream of the JT Deposit. The second site is located in Kona Creek which is a tributary of the Johnson River. Kona Creek flanks the east side of the JT Deposit. This site is separated hydrogeologically from the JT Deposit by a tight fault, known as the Dacite Fault. The monitoring site is about a mile upstream from the confluence with the Johnson River. The streams at the monitoring sites are both located in anadromous reaches, both near the upper extent of anadromy for Dolly Varden. The sites are on relatively stable stream reaches and are wadeable at all but the highest flows. Collecting aquatic baseline data and preparing a technical report will provide useful information for future permit applications and to monitor changes over time.

The Johnson River was gaged by the U.S. Geological Society (USGS) from 1995 to 2004, although readings were primarily from May through October. Only during 2002/2003 were measurements recorded through a full year. July had the highest average discharge (783 cfs) while March had the lowest average discharge (50 cfs). The highest mean daily discharge, during the period of record, was approximately 11,000 cfs in early October 2003 and the lowest daily discharge occurred in May 1999 (1.5 cfs).

Biomonitoring site locations are presented in Table 1. Overviews of the biomonitoring reaches are presented in Figures 1 and 2. The upper Johnson River watershed with biomonitoring sites and existing infrastructure are shown in Figure 3.

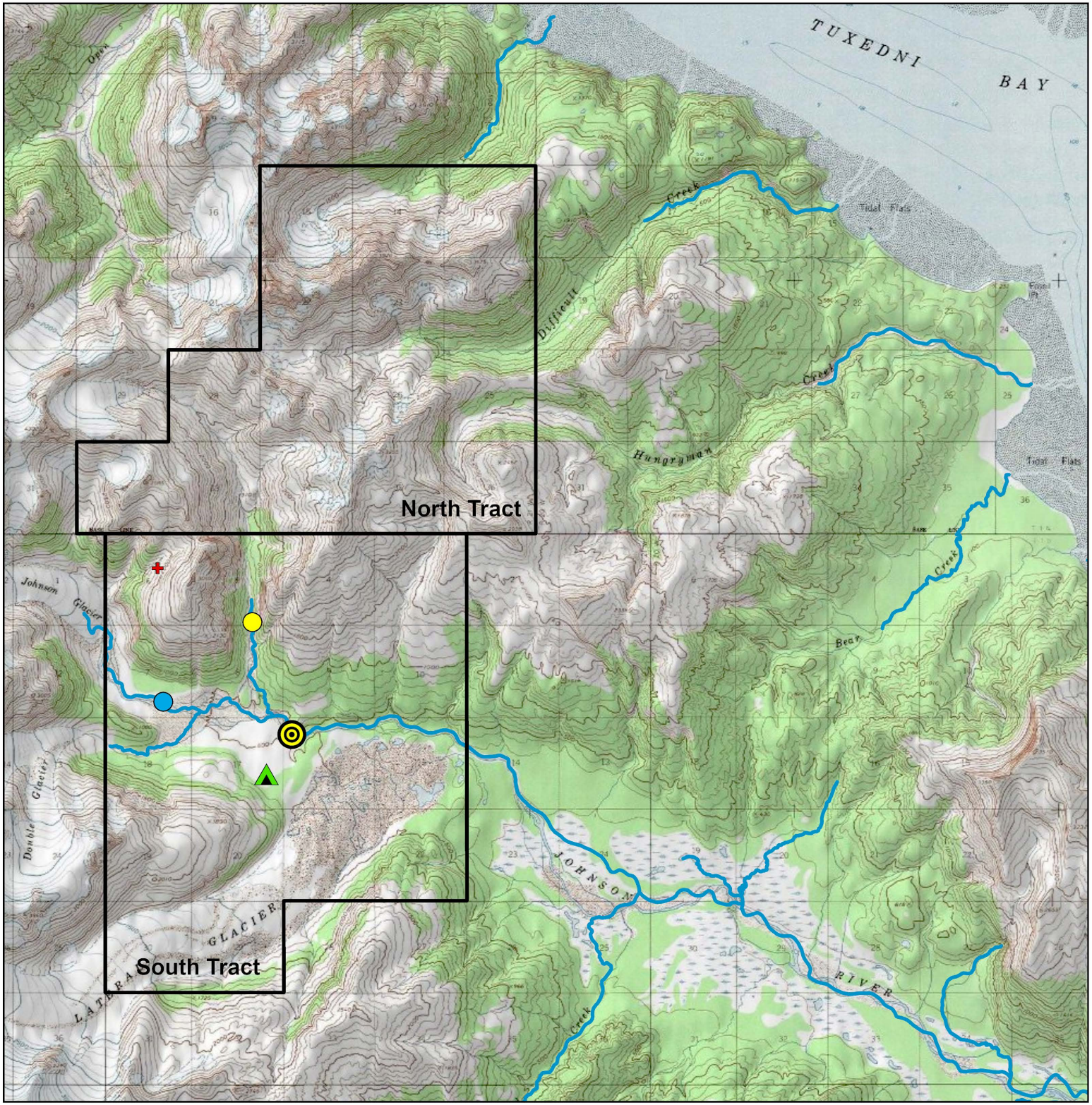
Table 1. Johnson Tract biomonitoring locations

Site	Longitude	Latitude	Elevation
Johnson River	60.09986 N	152.951146 W	148 ft.
Kona Creek	60.11238 N	152.922986 W	161 ft.

Periphyton and macroinvertebrate sampling occurred within 100 feet and minnow traps were set within 750 feet of these locations.

Figure 1. Johnson River biomonitoring reach looking upstream. August 8, 2023.

Figure 2. Kona Creek biomonitoring reach looking upstream. August 8, 2023.



Johnson Tract Watershed Overview

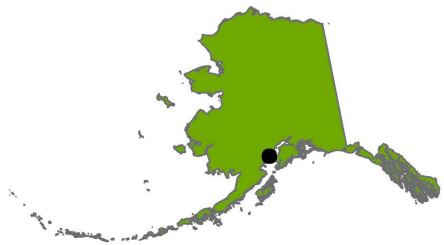
Figure 3

ADF&G Biomonitoring Locations

- Johnson River
- Kona Creek

- Streamgage
- Johnson Tract Camp
- Anadromous Waters
- Johnson Tract Lease Boundaries
- Johnson Tract Deposit

Map Produced by
the Department of Fish & Game
4/15/2024



METHODS

WATER QUALITY

Water quality data were collected at both biomonitoring sites in 2022 and 2023 using a hand-held YSI Pro Plus multiparameter meter (temperature, dissolved oxygen (DO), pH, and conductivity) and a Hach 2100Q meter (turbidity, 2023 only). The objective was to document the naturally occurring conditions in the surface water, albeit a one-time late-summer snapshot of the water quality, which likely varies throughout the year.

PERIPHYTON

Periphyton were sampled directly from submerged cobbles, located in a riffle section of the stream. Sampling was scheduled during a time of moderate to low flow to ensure that the submerged cobble had been wetted continuously for the previous 30 days. The USEPA Rapid Bioassessment Protocols for use in Streams and Wadeable Rivers were followed, but with more replicates per site to increase sample precision (Barbour et al. 1999). This modified approach is described below and follows the protocols as detailed in Bradley (2017).

Ten flat rocks, larger than 25 cm^2, were collected from a submerged riffle area of the streambed. A 5 cm by 5 cm square of high-density flexible foam was placed in the middle portion of the rock. All material around the foam square was scrubbed with a toothbrush and rinsed from the rock with clean water from the stream. The scrubbing process was repeated twice, with the toothbrush being rinsed clean between each step. The foam square was removed from the rock, and algae remaining on the rock were brushed with a clean toothbrush and rinsed with water into a filter receptacle with a 0.45 µm glass fiber filter. The material on the toothbrush was also rinsed onto the filter with stream water. The foam square and toothbrush were cleaned in between samples. Water was removed from the filter using a hand vacuum pump. After extracting most of the water (i.e., ¼ inch of water remains above the glass fiber filter), 3 to 5 drops of saturated $MgCO_3$ were added (no solid $MgCO_3$) while gently swirling the filter receptacle to ensure the entire sample received a light coating. Pumping continued until the water was gone and the filter was dry. The $MgCO_3$ was added to prevent acidification and additional conversion of chlorophyll-a to phaeophytin. If the water was not moved through the filter within a few minutes, then a second glass fiber filter with another vacuum pump was used and excess water transferred to the second filter receptacle. Each filter required to collect the sample was preserved with $MgCO_3$ as outlined above.

The receptacle on top of the vacuum pump was then removed and the glass filter folded over, so the sample material was protected on the inside of the filter (Figure 4). The glass fiber filter(s) were then placed on a paper coffee filter and the coffee filter was folded to entirely cover the fiber filter(s). The dry coffee filters were used to absorb any residual water that may have been present. The filters were then placed in a properly labeled, sealable plastic bag, with silica gel desiccant added. The sample bag was then placed in a cooler with ice. Immediately upon return to the Johnson Tract base camp, the samples were frozen and kept frozen until analyzed. Periphyton samples were sent to the ADF&G office in Fairbanks and were processed in the manner described in Ott et al. (2010). In short, samples were analyzed using a spectrophotometer and a standardized reference solution derived from fresh spinach leaves. Total chlorophyll-a, -b, and -c were calculated using the tri-chromatic equation (American Public Health Association 2012).

Additionally, phaeophytin was calculated to determine if any chlorophyll-a conversion occurred, and to correct concentrations for the presence of phaeophytin. Phaeophytin-corrected chlorophyll-a (mg/m^2) results were used for data analysis.

Periphyton biomass sampling was conducted on August 8, 2023. Samples were collected during moderate to low flow conditions. Ten samples were analyzed from the Johnson River reach while only 8 samples were analyzed from the Kona Creek reach (one sample was lost and one was not included due to lab error).

Figure 4. ADF&G station for processing periphyton samples. August 8, 2023.

AQUATIC INVERTEBRATES

ADF&G used a Hess Sampler to collect aquatic benthic macroinvertebrate samples. Personnel approached the sampling location from downstream to avoid disturbing the sampling area. Five replicate samples were collected from one riffle within each reach. The diameter of the Hess Sampler is 331 mm, encompassing an area of 0.086 m^2 and the mesh size is 243 µm. A riffle with adequate area (water depth <50 cm) was chosen. The sampler was pushed into the substrate and held in place (with the cod end of the net trailing downstream) while rocks were scrubbed in the water column which flowed into the trailing net. Large cobbles were scrubbed thoroughly inside

the sampler and then discarded downstream. The rest of the substrate was worked and scrubbed inside the sampler with cobbles and larger gravels examined for invertebrates. The substrate was scrubbed for a couple of minutes ensuring the entire substrate to approximately 10 cm depth inside the sampler was thoroughly disturbed (Figure 5). After removing the sampler from the stream, the net was washed from the outside to ensure that no organisms were clinging or stuck to the net. The contents of the net were rinsed into a 500-mL sample jar using isopropyl alcohol from a squirt bottle. More alcohol was added to the sample jar to ensure the entire sample was submerged. A second jar was used if necessary. The sampler was removed and rinsed before a subsequent sample was collected slightly upstream and laterally adjacent to the previous sample.

In the lab the macroinvertebrate samples were rinsed over a #35 screen (0.447mm) to remove fine sediments and organisms were identified to the lowest practical taxonomic level using McCafferty (1998), Merritt and Cummings (1996), Pennak (1989), and Stewart and Oswood (2006). Typically identification was to genus for Ephemeroptera, Plecoptera, and Trichoptera; to family (in the case of Chironomidae and Simulidae) or genus if possible for Diptera; to order in the case of terrestrial adult insects, phylum or class in the case of worms or other macrofauna. Invertebrate density was calculated by dividing the total number of macroinvertebrates (5 samples/site) by the total area sampled (0.43 m^2). Taxa richness is reported as the total number of unique taxon collected per site.

Figure 5. ADF&G staff collecting benthic macroinvertebrate samples in the Johnson River. August 8, 2023.

ELEMENT CONCENTRATIONS IN DOLLY VARDEN

Juvenile Dolly Varden were collected on August 9 and 10, 2023 at both monitoring reaches using minnow traps baited with salmon eggs. Traps were fished as close to 24 hours as logistics allowed. Dolly Varden, between 90 and 140-mm fork length (FL), were retained for whole body element analyses. Fish were selected from this length range to ensure minimum weight requirements for laboratory analyses, and to minimize age-related variability. Fish retained for element analyses were measured to fork length using a measuring board and weighed individually with a digital scale to the nearest tenth of a gram (Figure 6). Retained fish were handled with nitrile gloves and each fish was wrapped individually and stored in an insulated cooler with ice packs. Fish not retained were returned to the sample reach. The goal at each site was to retain and analyze 15 Dolly Varden in the appropriate size range.

Juvenile Dolly Varden were transported back to the Johnson Tract Camp where they were immediately frozen. The frozen fish were then brought to Anchorage where they were placed in the freezers at the ADF&G office. The fish were kept in their sealed bag in a sealed container in the freezer at ADF&G until prepared for shipment to the analytical lab for analysis. ADF&G maintained written chain of custody for the samples. At the laboratory, whole body fish samples were homogenized, freeze dried, and ground prior to element analyses.

Whole body analyses of juvenile Dolly Varden were tested for the following elements: arsenic, cadmium, copper, lead, mercury, selenium, silver, and zinc. Samples were shipped to ACZ Laboratories in Colorado for analysis. The full lab report with analytical results, methodology, and MDLs are presented in Appendix 3. Element concentrations were reported as wet weight concentrations from the lab and converted to a dry weight basis for this report (Appendix 3). Results below their respective Method Detection Limit (MDL) are depicted graphically as the average of the MDLs along with the results for analysis or comparison.

The elements selected for analysis are known to have negative effects on fish in high concentrations in the aquatic environment. There is particular concern with copper, cadmium, selenium, and zinc in the aquatic environment because of their potential toxicity to salmonids (Scannell 2009, United States Environmental Protection Agency (USEPA) 1987, Baldwin et al. 2003). The USEPA lists each of these elements as Priority Pollutants (USEPA 2002), and some activities can lead to increased concentrations in water (Eisler 1993, USEPA 2016, Mebane 2006). Arsenic can bioaccumulate and have acute and chronic toxicity (Kumari et al. 2017). Mercury toxicity has negative effects on fish, especially neurodevelopment of fertilized eggs and young developing fish (MacFarlane 2004). Lead can have acute and chronic effects on fish gills and their immune system as well as cause neurotoxicity. USEPA aquatic life criteria are reported as concentrations of pollutants in water and therefore cannot be directly compared to reported element concentrations based on whole body homogenization of juvenile Dolly Varden.

Fork lengths (mm) and weights (g) of fish measured were used to calculate Fulton's condition factor (K) using the equation given in Anderson and Neumann (1996), where the weight of each fish measured in grams (W) is divided by the cubed fork length of fish (L) measured in millimeters, and the product multiplied by 100,000, as follows:

$$K = \frac{W}{L^3} \times 100{,}000$$

The condition factor indicates the relative well-being of captured fish (i.e., higher *K* values indicate greater well-being) and allows for comparisons across seasons. In general, a salmonid with a Fulton's *K* value greater than or equal to 1 indicates a fish in good condition. Sampling fish provides a direct assessment of element concentrations and can be used to establish baseline concentrations in whole body fish prior to development. Late summer or early fall is the preferred time to sample, as it allows juvenile Dolly Varden to have the maximum residency time within the monitoring reach before moving to overwintering areas.

Figure 6. Set up for processing juvenile Dolly Varden. August 8, 2023.

ELEMENT CONCENTRATIONS IN SEDIMENT

Water bodies in the region of an ore deposit can exhibit higher than normal background element concentrations. Element concentrations can be monitored through sediments as erosion carries components of the local geology downstream. Monitoring the element concentration in sediments will provide baseline information on existing conditions prior to development.

Fine sediments (sand and silt with minor component of small gravels) were collected in each biomonitoring reach from a single location. Approximately 500 ml of fine sediment was scooped into HDPE wide mouth jars using latex gloves and disposable scoops from an actively flowing channel. Sediments were collected from the top 5 cm of the streambed. After collection, the samples were placed in a cooler with frozen icepacks and transported back to the Johnson Tract

Camp where they were placed in a freezer and later brought to Anchorage in a cooler with icepacks. Samples were stored in a freezer and shipped in a cooler packed with frozen icepacks until received by the analytical laboratory.

Sediment samples were analyzed for the following elements: aluminum, arsenic, cadmium, copper, iron, lead, mercury, selenium, silver, and zinc. Samples were shipped to ACZ Laboratories in Colorado for analysis. Samples were air dried and screened (2 mm sieve) at the lab. The full lab report with analytical results, methodology, and MDLs are presented in Appendix 3. Element concentrations were reported as wet weight concentrations from the lab and converted to dry weight for this report (Appendix 3). Results below their respective Method Detection Limit (MDL) are depicted graphically as the average of the MDLs along with the results for analysis or comparison.

The data are compared with the threshold effects concentrations (TEC) and the probable effects concentrations (PEC) for inorganics in freshwater sediment guidelines developed by the National Oceanic and Atmospheric Administration (NOAA; Buchman 2008). The guidelines are based on results of controlled laboratory bioassays, where element concentrations below the TECs rarely affect survival and growth of aquatic life, and element concentrations above the PECs can affect aquatic life survival and growth.

FISH PRESENCE AND DISTRIBUTION

To assess the use of aquatic habitats by resident and anadromous fish species, fish distribution surveys were conducted across the Johnson River watershed and in Bear Creek, Little Bear Creek, Hungryman Creek, Difficult Creek as well as unnamed smaller streams that flow directly into the Tuxedni Channel. Distribution was assessed through visual surveys (helicopter and ground based), backpack electrofishing (Figure 7), and minnow trapping. Fish were identified and measured (fork-length or total length (sculpin)) before being released. Surveys and sampling occurred from September 19 to September 22, 2022 and August 7 to August 10, 2023.

Figure 7. ADF&G staff electrofishing in Hungryman Creek. August 10, 2023.

RESULTS

WATER QUALITY

Water temperatures were warmer in Kona Creek than the Johnson River both years. Both systems are influenced by glacial input, but the proportion of glacial melt runoff is higher in the Johnson River. Cooler water temperatures at the Johnson River in 2023 compared to 2022 are likely a result of increased glacial melt input in early August versus late September, but year to year variability is expected due to weather and other factors.

Dissolved oxygen levels were high in both systems (>12.7 mg/L). Streams with a saturation value of 90% or greater, or greater than 9 mg/L are considered healthy (Bjornn and Reiser 1991). Water pH at both sites was close to neutral (6.82 - 7.45) and indicative of a healthy stream (pH 6.5 to 8.5, Brabets 2002). Conductivity was slightly higher in Kona Creek with a range of 36 to 47 µS/cm compared to 28 to 36 µS/cm in the Johnson River. Turbidity was higher in the Johnson River. Water quality results are depicted in Table 2.

Table 2. Water quality data at Johnson Tract biomonitoring sites.

Date	Temp. (°C)	DO (mg/L)	pH	Cond. (µS/cm)	Turbidity (NTU)
Johnson River					
September 22, 2022[1]	4.12	13.56	7.45	28	--
August 8, 2023	2.27	14.50	6.82	36	58.8
Kona Creek					
September 22, 2022	5.72	12.73	7.31	36	--
August 8, 2023	7.45	12.76	7.16	47	7.25

1 – collected 1 mile upstream of Biomonitoring Station

PERIPHYTON

Periphyton (attached microalgae) biomass samples were collected from Kona Creek and the Johnson River at the newly established biomonitoring reaches. Kona Creek (5.11 mg/m^2) had a higher average mean chlorophyll-a concentration than the Johnson River (4.72 mg/m^2) which showed more variability. Mean chlorophyll-a concentrations ranged from 1.60 to 7.58 mg/m^2 in the Johnson River and 2.88 to 6.94 mg/m^2 in Kona Creek. For comparison, chlorophyll-a concentrations from two sites in Glacier Creek (glacial stream near Haines) averaged 5.51 mg/m^2 and 4.26 mg/m^2 in 2023. Mean chlorophyll-a concentrations for both sampling reaches are presented in Figure 8. Individual chlorophyll-a concentrations from the Johnson Tract can be found in Appendix 1.

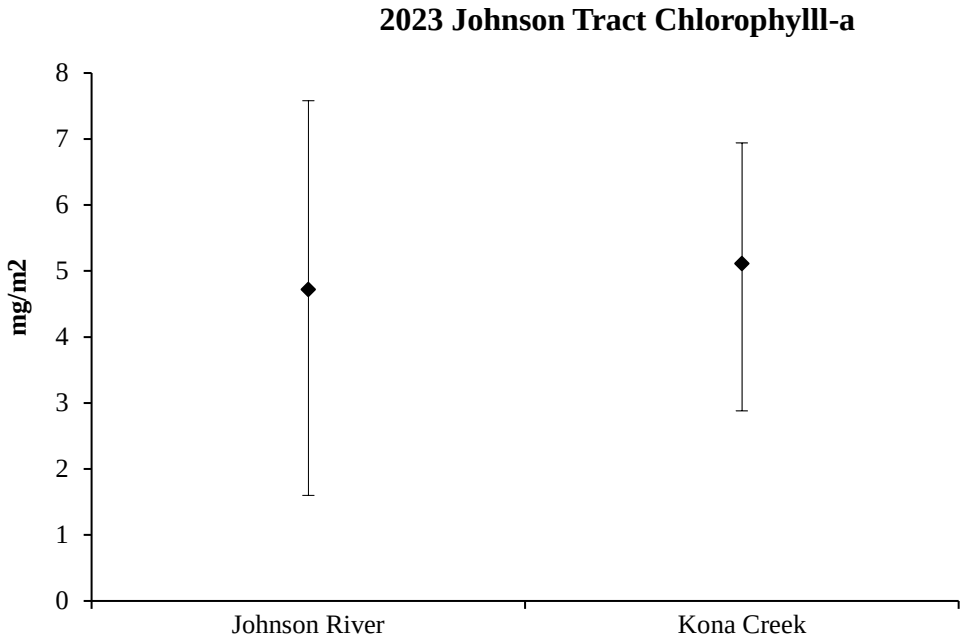


Figure 8. Mean chlorophyll-a concentrations (circles) with minimum and maximum values (bars) for Johnson River and Kona Creek monitoring reaches, 2023.

Periphyton are sensitive to changes in water quality and are used in monitoring studies to assess aquatic productivity (Barbour et al. 1999). Specific elements can negatively affect primary production in streams and may be detected by monitoring chlorophyll-a concentrations. For example, biomonitoring near Red Dog Mine has observed that the concentration of chlorophyll-a in Ikalukrok Creek (just upstream of Red Dog Creek) is typically higher when the zinc and cadmium concentrations are lower (Clawson, 2022).

AQUATIC INVERTEBRATES

Aquatic invertebrates are ubiquitous in streams and rivers. These invertebrates are an important food supply for fish, including salmonids (Groot and Margolis 1991) and are indicators of environmental conditions that could affect fish populations (Barbour et al. 1999; Hodkinson and Jackson 2005).

Results were similar between sites, but aquatic invertebrate mean densities were slightly higher in Kona Creek which also had a slightly higher percentage of EPT taxa (Table 3). Overall, EPT taxa made up a small portion of the invertebrate community in both reaches. The order Diptera was the most prevalent order represented (Figure 9), almost entirely composed of the family Chironomidae. Chironomids are fast/early colonizers, easily adapt to changing habitat, and can exercise more than one feeding strategy (Entrikin et al. 2007). Ephemeroptera (mayflies) was the most common order present in the EPT community (Figure 10).

Table 3. Estimated invertebrate density and percent composition of Ephemeroptera, Plecoptera, and Trichoptera (EPT), and dominant taxon from Hess Samples in 2023.

	Johnson River	Kona Creek
Mean Invertebrates/m^2	1,749	2,574
Range (inverts./sample)	117-189	127-385
EPT taxa	6.3%	8.7%
Ephemeroptera	5.7%	6.2%
Plecoptera	0.4%	1.72%
Trichoptera	0.1%	0.7%
Dominant taxon (Chironomidae)	91.6%	87.4%

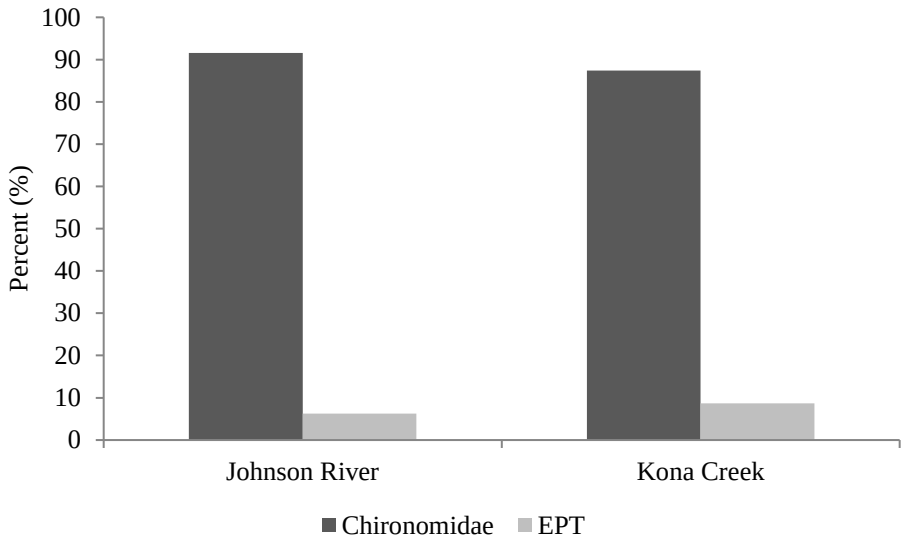


Figure 9. Percent Chironomidae and EPT for Johnson River and Kona Creek monitoring reaches, 2023 (total of 5 samples per site).

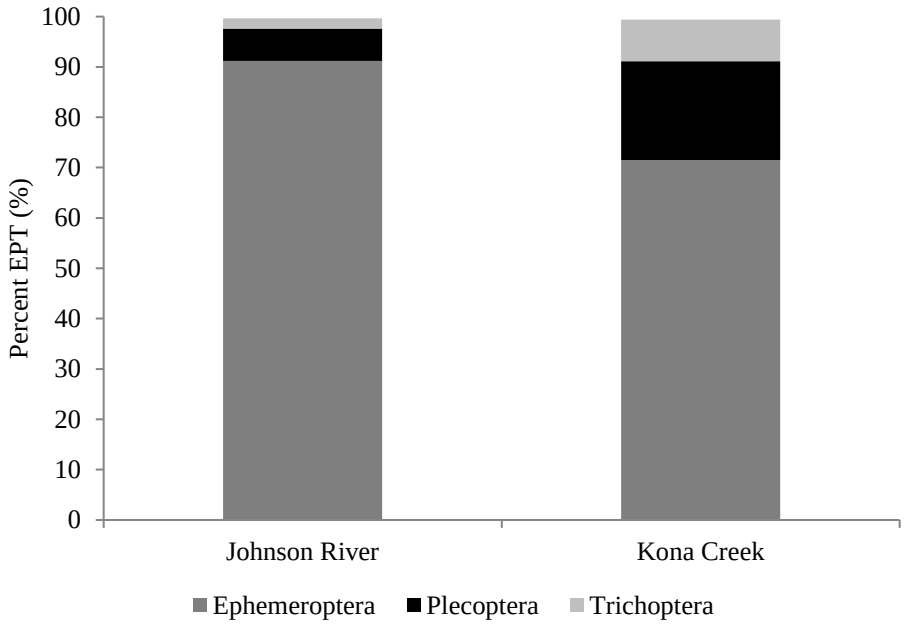


Figure 10. Percent of EPT community breakdown for Johnson River and Kona Creek monitoring reaches, 2023 (5 samples per site).

Taxa richness (number of unique taxa) was 24 in Kona Creek and 10 in Johnson River. The EPT taxa richness was 11 in Kona Creek and 3 in the Johnson River. In Kona Creek, 96 individual EPT invertebrates were captured and 43 were captured in the Johnson River reach. A full summary of macroinvertebrate sampling results can be found in Appendix 2.

ELEMENT CONCENTRATIONS IN DOLLY VARDEN

Fifteen (15) Dolly Varden were retained for analysis from Kona Creek and sixteen (16) were retained for analysis from the Johnson River (Figure 11). Dolly Varden were the only species captured at the two biomonitoring sites. Dolly Varden measuring 84 to 130 mm (FL) and 95 to 132 mm were retained for analysis from the Johnson River and Kona Creek, respectively. A summary of lengths, weights, and condition factor of fish retained for analysis is presented in Table 4. Dolly Varden weight-length data show similar fitness among the retained fish (1.0638 in the Johnson River and 1.0002 in Kona Creek) and fish in good condition (≥ 1). York and Milner (1999) reported juvenile Dolly Varden *K* values of 1.13 and 1.14 from a Southcentral Alaska stream, and Milner and Bailey (1989) reported a *K* value of 1.18 from a stream in the Glacier Bay area.

Mean concentrations of elements in Dolly Varden were similar between sites, but concentrations were generally higher in the Johnson River. Results for arsenic, copper, selenium, and zinc were similar between sites, while cadmium, lead, mercury, and silver concentrations were about twice as high in the Johnson River samples compared to Kona Creek.

Silver was not detected above the MDLs in either the Johnson River or Kona Creek samples (MDL range 0.05372 – 0.10360 mg/kg). Lead was not detected above the MDLs in the samples from Kona Creek (0.053372 – 0.09333 mg/kg) and not in six (out of 16) of the samples from the Johnson River (0.07974 – 0.10360 mg/kg). Cadmium was not detected above the MDL in one sample from the Johnson River (0.03987 mg/kg). Figures 12 through 19 depict the mean, minimum, and maximum dry weight concentrations of elements. When results were below their respective Method Detection Limit (MDL), the average MDL is presented instead of a minimum. The full laboratory report with analytical results, analysis methods, and MDLs can be found in Appendix 3.

Figure 11. Dolly Varden retained for element analysis from the Johnson River. August 9, 2023.

Table 4. Dolly Varden retained for analysis.

Identifier	Length (FL in mm)	Weight (g)	Fulton's Condition Factor
JR-1	122	18.3	1.0078
JR-2	122	17.1	0.9417
JR-3	125	18.9	0.9677
JR-4	118	15.9	0.9677
JR-5	126	20.1	1.0048
JR-6	128	24.5	1.1683
JR-7	84	6.9	1.1642
JR-8	129	22.5	1.0481
JR-9	130	28.6	1.3018
JR-10	114	17.7	1.1947
JR-11	110	11.6	0.8715
JR-12	90	9.0	1.2346
JR-13	87	7.9	1.1997
JR-14	122	19.3	1.0629
JR-15	109	11.5	0.8880
JR-16	113	14.4	0.9980
	Johnson River Average Condition Factor		1.0638
KC-1	130	20.3	0.9240
KC-2	111	10.1	0.7385
KC-3	113	15.1	1.0465
KC-4	115	15.3	1.0060
KC-5	115	14.6	0.9600
KC-6	118	16.6	1.0103
KC-7	125	20.1	1.0291
KC-8	119	17.0	1.0088
KC-9	128	20.0	0.9537
KC-10	111	13.4	0.9798
KC-11	108	13.2	1.0479
KC-12	113	15.9	1.1019
KC-13	122	20.0	1.1014
KC-14	132	23.5	1.0218
KC-15	95	9.2	1.0730
	Kona Creek Average Condition Factor		1.0002

JR – Johnson River Biomonitoring Site
KC – Kona Creek Biomonitoring Site

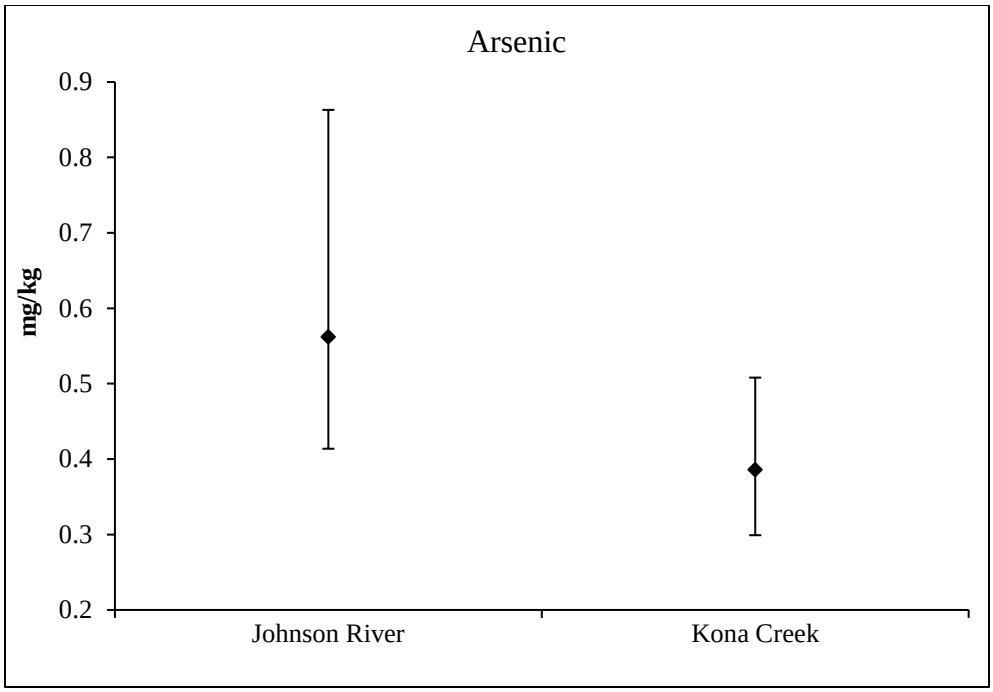


Figure 12. Mean whole body dry weight for arsenic (As) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches.

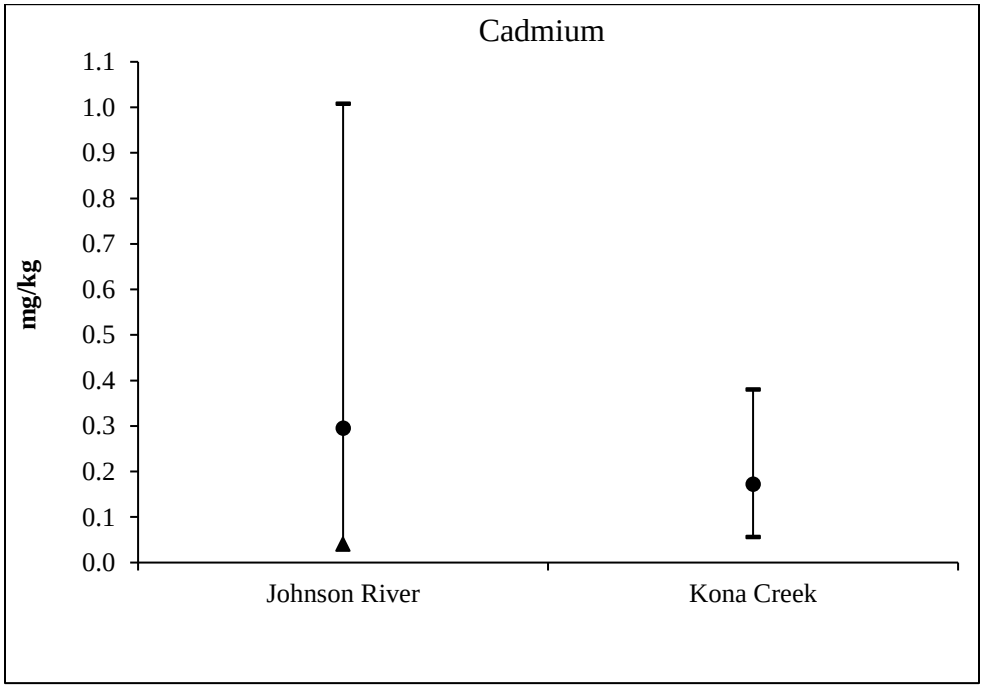


Figure 13. Mean whole body dry weight for cadmium (Cd) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches. Note: One result from Johnson River was below the MDL. Triangle represents MDL for sample result below MDL.

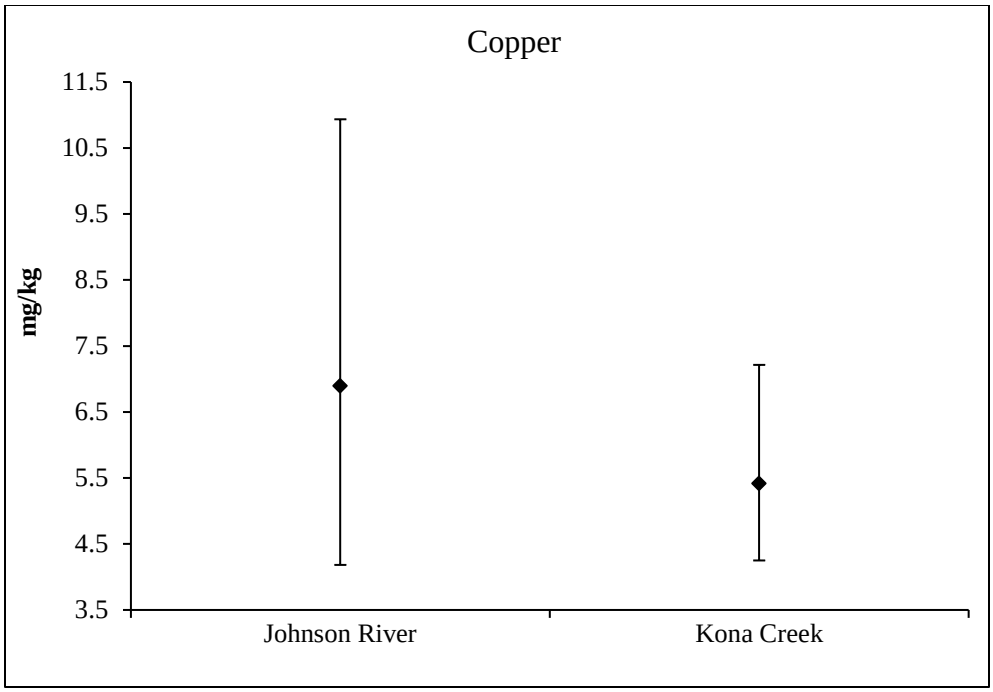


Figure 14. Mean whole body dry weight for copper (Cu) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches.

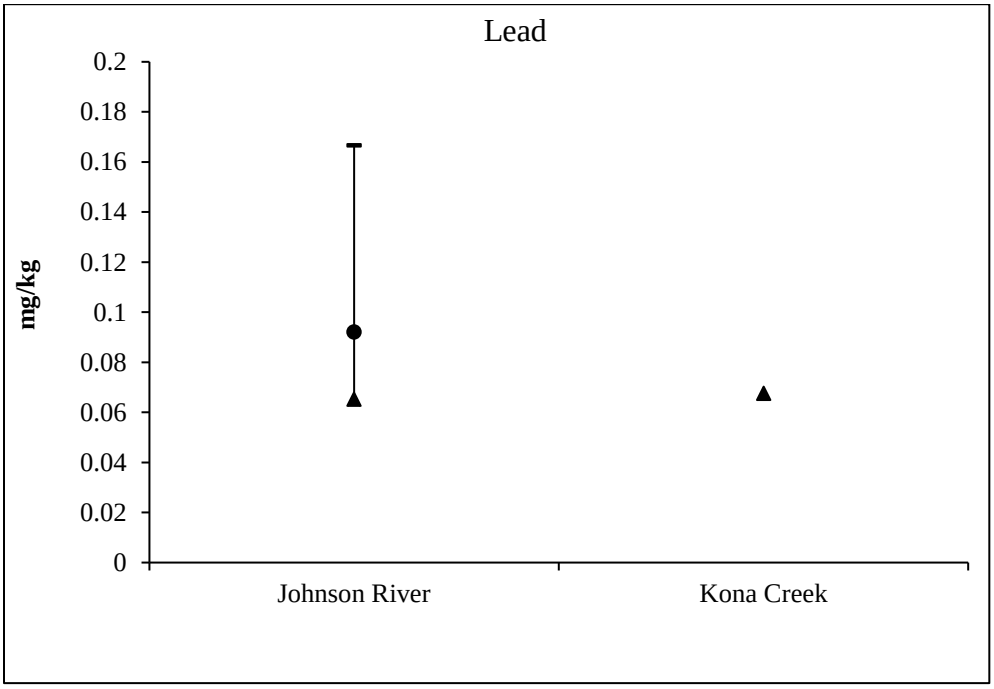


Figure 15. Mean whole body dry weight for lead (Pb) concentrations (circle) with min/max (bars) in juvenile Dolly Varden for the Johnson River monitoring reach and the average MDL for Kona Creek samples. Note: Six sample results from Johnson River were below MDLs and all results from Kona Creek were below MDLs. Triangles represent the average of MDLs when results were below MDL.

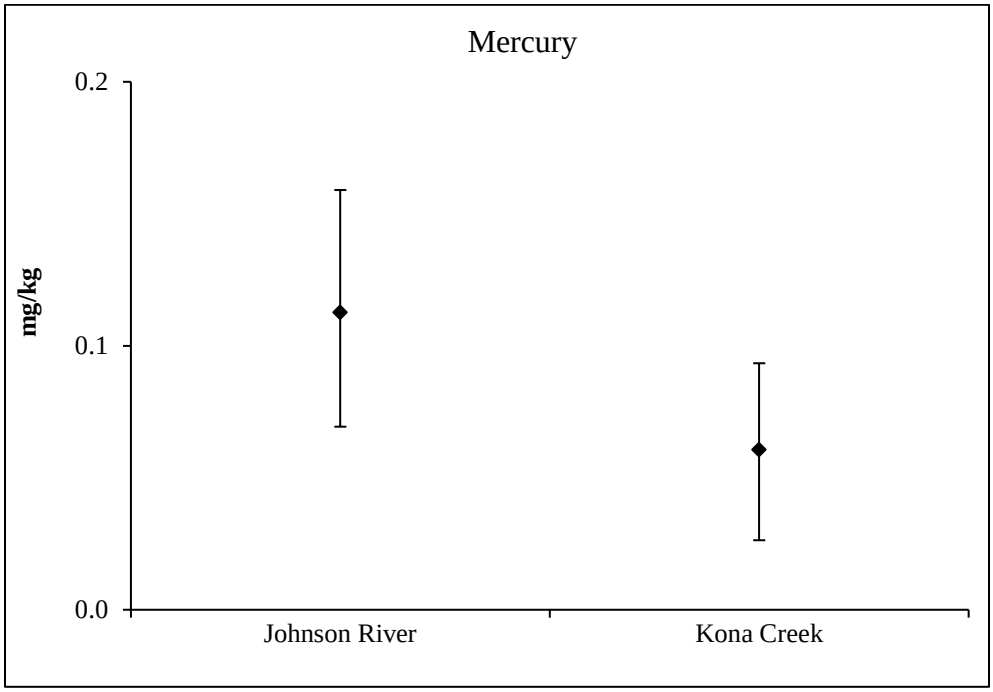


Figure 16. Mean whole body dry weight for mercury (Hg) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches.

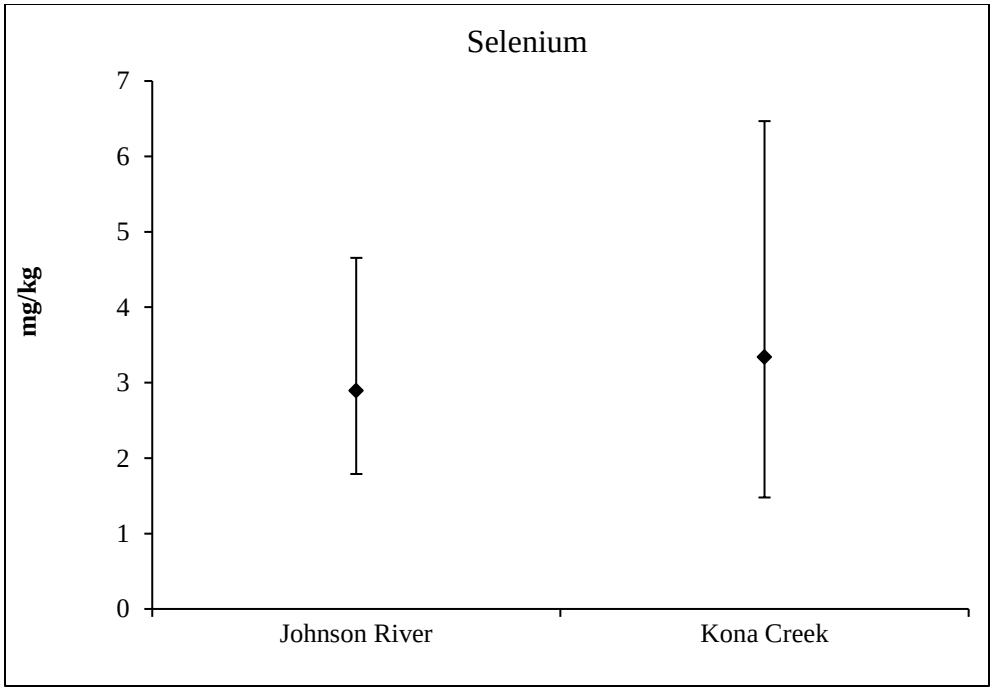


Figure 17. Mean whole body dry weight for selenium (Se) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches.

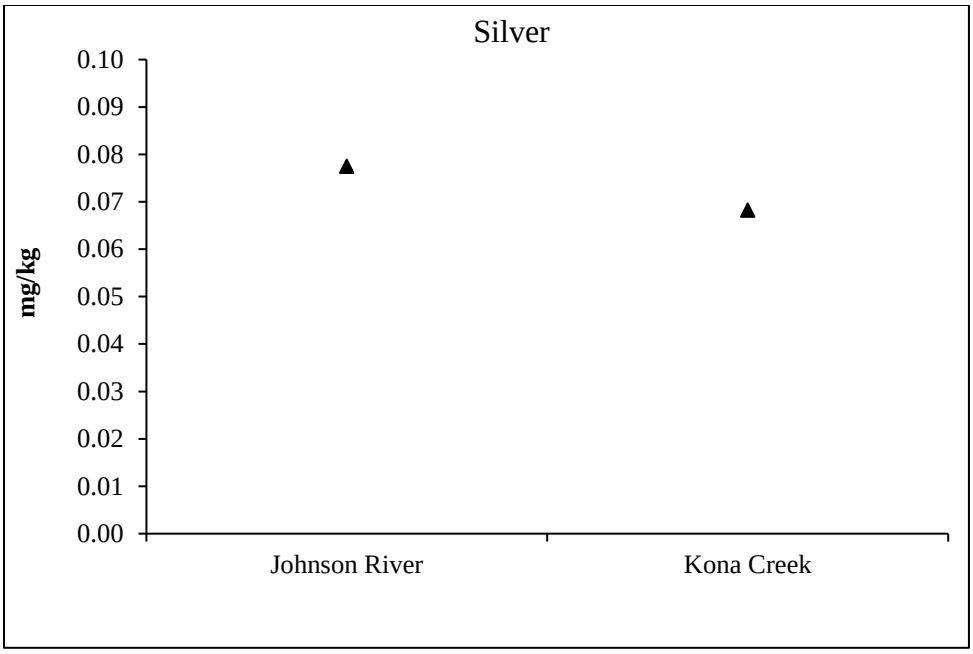


Figure 18. Average MDL for silver (Ag) concentrations in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches. Note: All sample results were below MDLs. Triangles represent the average of MDLs for results below MDL.

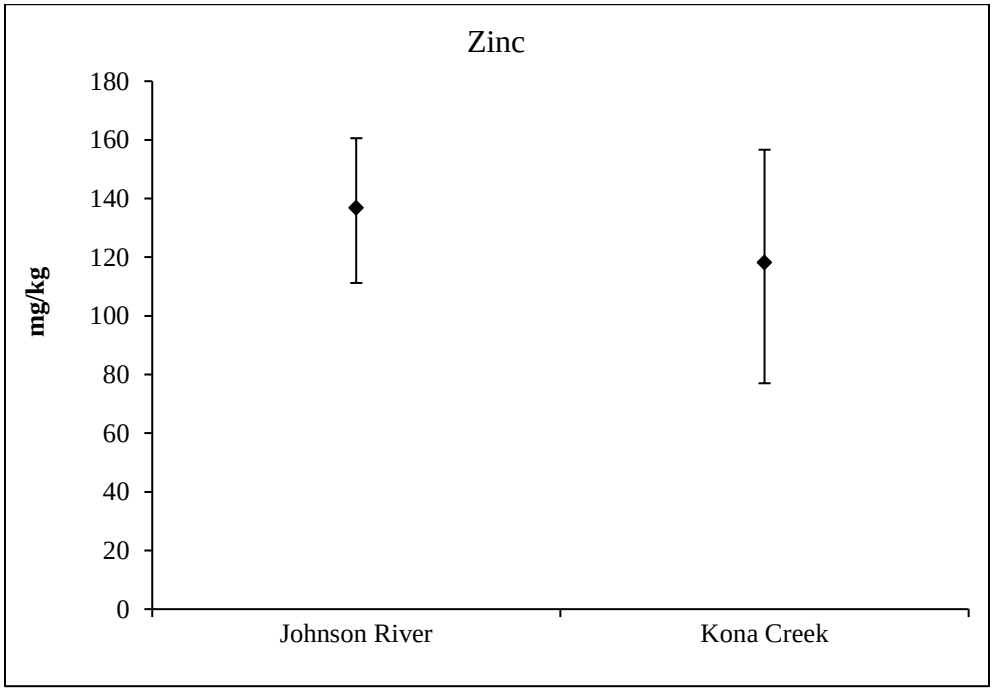


Figure 19. Mean whole body dry weight for zinc (Zn) concentrations (circles) with min/max (bars) in juvenile Dolly Varden for the Johnson River and Kona Creek monitoring reaches.

ELEMENT CONCENTRATIONS IN SEDIMENTS

Element concentrations in sediments were similar between sites for aluminum, iron, and zinc. Concentrations of arsenic, copper, and mercury in sediments were higher in the Johnson River, while concentrations of cadmium, lead, selenium, and silver were higher in Kona Creek sediments. A summary of the results is presented in Table 5.

All elements at both sites were below NOAA's TEC and PEC values except for copper and arsenic in the Johnson River reach, which exceed their respective TEC but are below their respective PEC. The analytical results, analysis methods, and full laboratory report can be found in Appendix 4.

Table 5. Sediment Element Concentrations, Johnson Tract 2023.

	Johnson River	Kona Creek	TEC	PEC
Aluminum (mg/kg)	27,945	28,747	-	-
Arsenic (mg/kg)	**10.81**	5.97	9.79	33
Cadmium (mg/kg)	0.278	0.613	0.99	4.98
Copper (mg/kg)	**57.5**	23.3	31.6	149
Iron (mg/kg)	36,301	28,378	-	-
Lead (mg/kg)	2.18	7.63	35.8	128
Mercury (ng/g)	64.5	9.91	180	1,060
Selenium (mg/kg)	0.179	0.297	-	-
Silver (mg/kg)	0.088	0.163	-	-
Zinc (mg/kg)	57.3	73.1	121	459

TEC = Threshold Effects Concentration; PEC = Probable Effects Concentration
Bolded values exceed NOAA TEC or PEC

FISH PRESENCE AND DISTRIBUTION

Fish distribution surveys over the past two summers have extended the known habitat use of anadromous and resident fish species in the area. Surveys have extended known anadromous fish habitat in the Johnson River by 11 km and have added anadromous stream habitat in Kona Creek (~2 km) and Double Glacier River (~2 km) for Dolly Varden. Anadromous Dolly Varden (Figure 20) were documented in the Bear Creek (1 fish) and Hungryman Creek drainages. Pink salmon were found in Difficult Creek. About 2.5 km of anadromous stream-habitat was added in Johnson River tributaries and a 1.5 km was added in coastal streams north of the Johnson River for coho salmon. About 5 km of coho and chum habitat was documented in an unnamed stream that parallels the Johnson River in the lower valley.

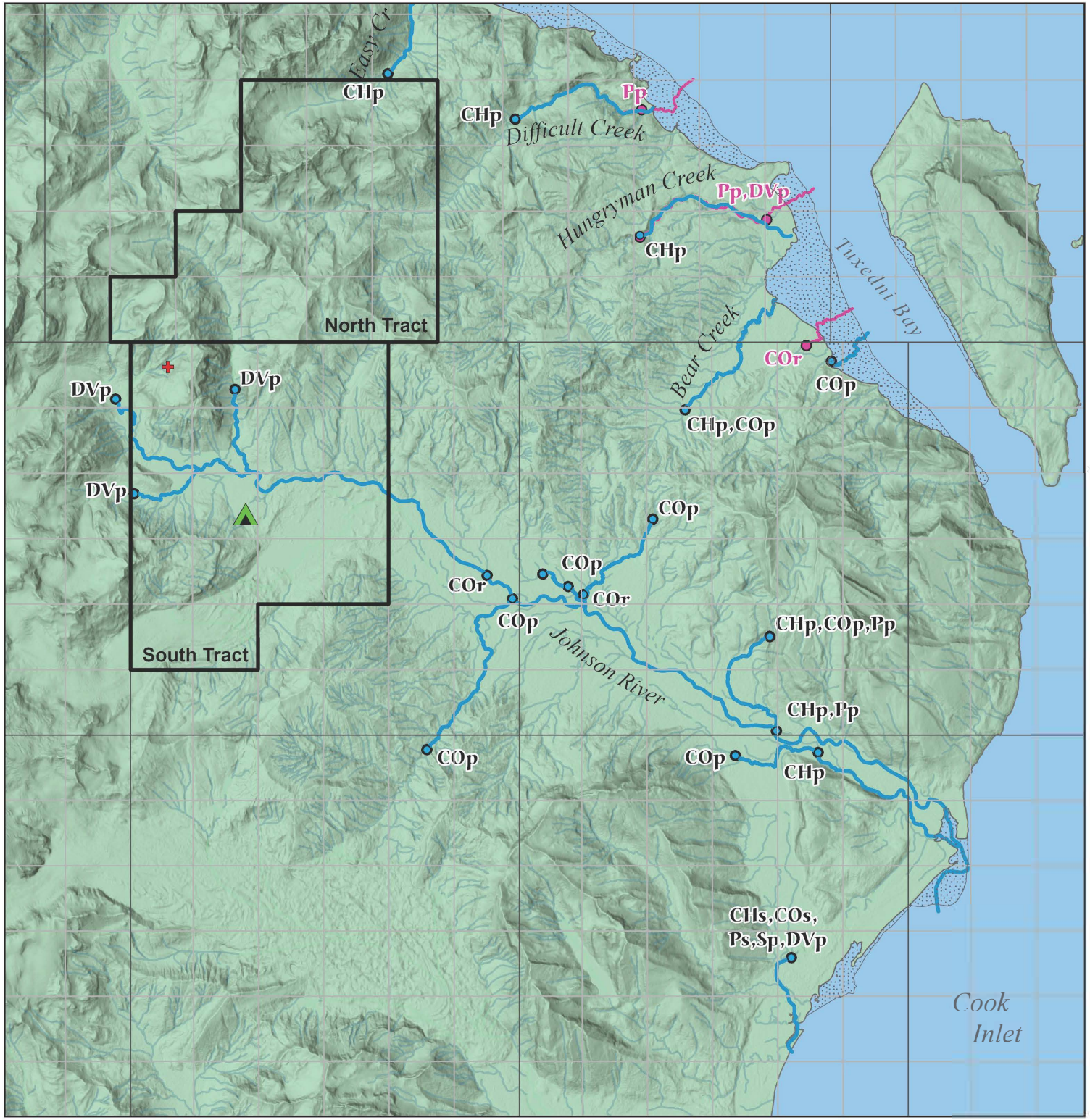
Pink, chum, and coho salmon have all been documented in the lower Johnson River. Bear Creek also supports chum and coho salmon, and Hungryman Creek and Difficult Creek support chum salmon.

Several km of stream and pond habitat supporting resident fish species (primarily Dolly Varden) were documented in the Johnson River valley and in coastal streams to the north. Fish species observed during surveys include: coho, chum, and pink salmon, Dolly Varden, threespine and ninespine stickleback, sculpin species (mostly unidentified to species but coastrange and slimy were captured), and flounder (unidentified). Dolly Varden had the greatest distribution and were the most commonly observed fish. Known fish distribution by species is presented in Figures 21 and 22.

Figure 20. Anadromous Male Dolly Varden from Double Glacier Creek. September 22, 2022.

Johnson Tract Known Anadromous Fish Habitat

Figure 21

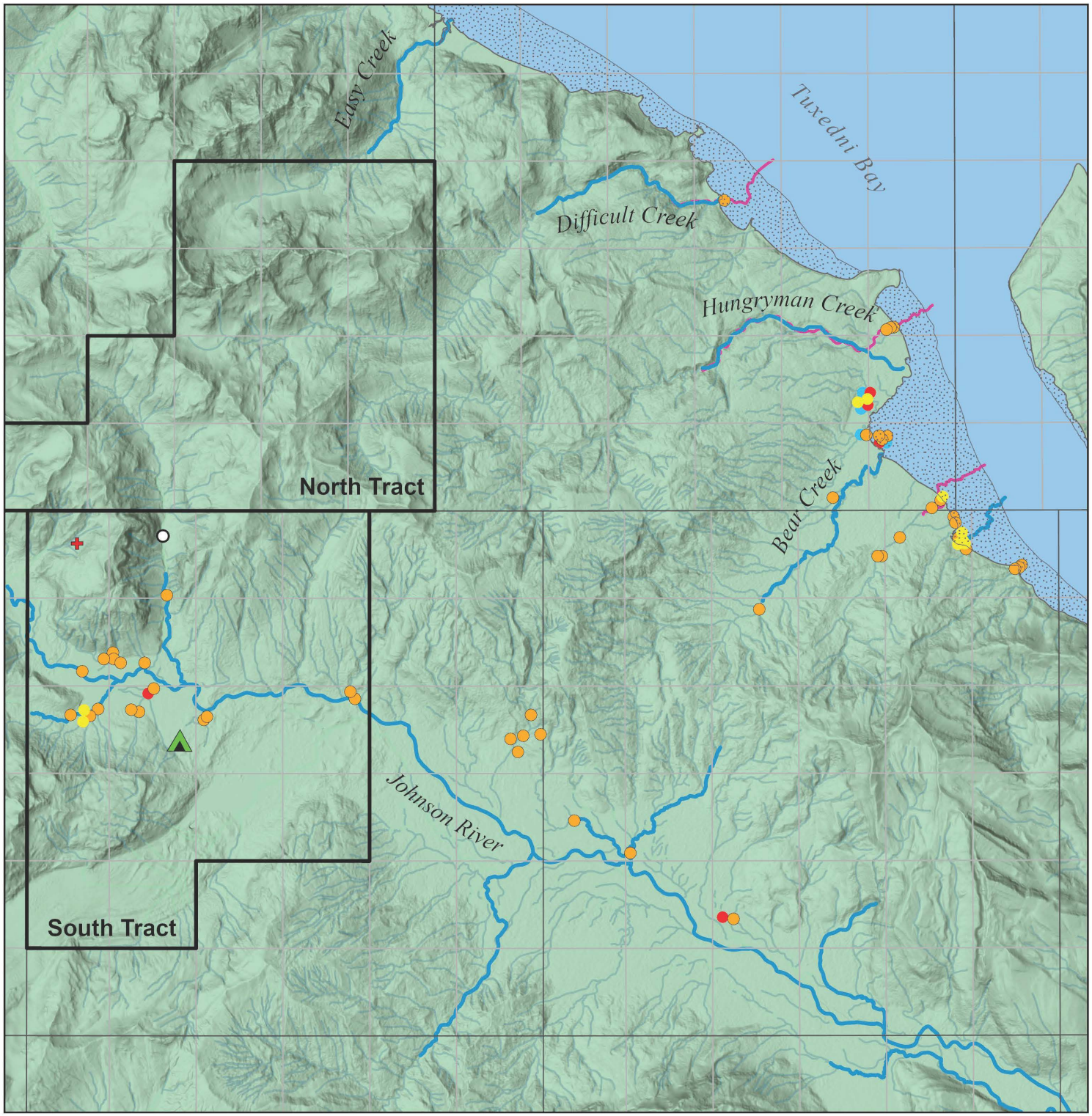


- Pending Anadromous Waters
- Anadromous Waters
- AWC upper extent
- Johnson Tract Camp
- Johnson Tract Lease Boundaries
- Johnson Tract Deposit

Map Produced by
the Department of Fish & Game
4/15/2024

Johnson Tract Resident/Juvenile Fish Presence Confirmed

Figure 22

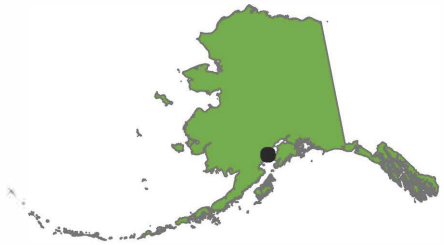


Fish Species

- Threespine stickleback
- Ninespine stickleback
- Dolly Varden
- sculpin
- no fish

- Pending Anadromous Waters
- Anadromous Waters
- Johnson Tract Lease Boundary
- Johnson Tract Camp
- Johnson Tract Deposit

Map Produced by
the Department of Fish & Game
4/15/2024



DISCUSSION

Water bodies in the Johnson Tract support resident and anadromous fish species. Dolly Varden are commonly found in most aquatic habitats throughout the area. Pink and chum salmon are likely relegated to the mid and lower reaches of the aquatic systems, closer to the coast. Coho salmon are found in a variety of habitats, including coastal areas, and streams, ponds, and side channels throughout the area, except for headwater areas and the upper drainages. Fish barriers were noted on Difficult and Hungryman Creek, limiting the anadromous habitat to the lower half of these systems.

Periphyton biomass was similar to levels in other glacial and dynamic systems. Diversity and abundance of aquatic invertebrates was low, comprised mostly of fast/early colonizers which is likely a result of turbidity, dynamic flows, and cold temperatures. Deglaciation of the area may also be a factor. Element concentrations in fish tissue and sediments were similar between biomonitoring sites and similar to concentrations found in other regions of Alaska.

ADF&G recommends that baseline aquatic sampling continue at Johnson Tract as long as exploration activities are ongoing. The value of baseline data grows with time, and multiple years of baseline data collection more accurately capture the natural variability in site conditions prior to development. ADF&G also recommends the collection of additional fish data such as spawning surveys in the upper reaches of the Johnson River to more accurately identify habitat usage by different fish species and life stages.

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APPENDIX 1. PERIPHYTON STANDING CROP, JOHNSON TRACT 2023.

Daily vial no.	Site	Date collected	Date analyzed	Vial chl-a	Chl-a (mg/m^2)	Chl-a[c] (mg/m^2)	664/665 Ratio	Chl-b (mg/m^2)	Chl-c (mg/m^2)
37	Kona Creek	8/8/23	12/11/23	1.26	5.03	**4.70**	1.67	0.00	0.47
39	Kona Creek	8/8/23	12/11/23	1.87	7.50	**6.94**	1.66	0.00	0.74
41	Kona Creek	8/8/23	12/11/23	1.22	4.89	**4.59**	1.67	0.00	0.59
43	Kona Creek	8/8/23	12/11/23	1.41	5.63	**5.34**	1.68	0.00	0.66
45	Kona Creek	8/8/23	12/11/23	0.79	3.15	**2.88**	1.64	0.00	0.43
47	Kona Creek	8/8/23	12/11/23	1.77	7.08	**6.51**	1.65	0.00	0.66
49	Kona Creek	8/8/23	12/11/23	1.18	4.71	**4.27**	1.63	0.00	0.55
51	Kona Creek	8/8/23	12/11/23	1.49	5.94	**5.66**	1.69	0.00	0.65
53	Johnson River	8/8/23	12/11/23	1.93	7.72	**7.37**	1.69	0.00	0.91
55	Johnson River	8/8/23	12/11/23	0.75	3.01	**2.78**	1.65	0.04	0.16
57	Johnson River	8/8/23	12/11/23	0.70	2.79	**2.67**	1.69	0.00	0.28
59	Johnson River	8/8/23	12/11/23	1.68	6.73	**6.51**	1.71	0.00	0.44
61	Johnson River	8/8/23	12/11/23	0.41	1.65	**1.60**	1.71	0.00	0.17
63	Johnson River	8/8/23	12/11/23	1.83	7.32	**7.05**	1.70	0.00	0.60
65	Johnson River	8/8/23	12/11/23	1.06	4.24	**3.95**	1.66	0.00	0.55
67	Johnson River	8/8/23	12/11/23	0.83	3.33	**3.10**	1.66	0.00	0.38
69	Johnson River	8/8/23	12/11/23	1.22	4.89	**4.59**	1.67	0.00	0.20
71	Johnson River	8/8/23	12/11/23	2.02	8.08	**7.58**	1.67	0.00	0.99

Notes:

No Chl-a results below detection limit (0.09 mg/m2) or above linear check (65.03 mg/m2) in 2023 samples.

One sample was lost from Kona Creek and another sample from Kona Creek was not processed due to insufficient preservation.

[a] Phaeophytin corrected.

APPENDIX 2. HESS BMI SAMPLE RESULTS, JOHNSON TRACT 2023.

	Monitoring reach	
	Johnson River	Kona Creek
Sample date	8/8/2023	8/8/2023
Aquatic invertebrate taxa richness/site	10	24
EPT taxa richness/site	3	11
% EPT	6.25%	8.67%
% Ephemeroptera	5.72%	6.23%
% Plecoptera	0.4%	1.72%
% Trichoptera	0.13%	0.72%
% Aquatic Diptera	92.2%	88.1%
% Aquatic Chironomidae	91.6%	87.4%
% Miscellaneous aquatic invertebrates	1.6%	3.3%
% Dominant aquatic taxon	91.6%	87.4%
Hess Sampler area total(m^2)	0.43	0.43
Area/Hess Sampler (m^2)	0.09	0.09
Estimated total invertebrates/m^2	1,749	2,574
Standard deviation of aquatic invertebrate density	363	1,131
Total abundance of invertebrates[a]	752	1,107
Total abundance Ephemeroptera[a]	43	69
Total abundance Plecoptera[a]	3	19
Total abundance Trichoptera[a]	1	8
Total abundance Diptera[a]	693	975
Total abundance misc. invertebrates[a]	12	36
Average number invertebrates/Hess[b]	150	221
Average number Ephemeroptera/Hess[b]	9	14
Average number Plecoptera/Hess[b]	1	4
Average number Trichoptera/Hess[b]	0	2
Average number Diptera/Hess[b]	139	195
Average number misc. invertebrates/Hess[b]	2	7
Standard deviation invertebrates/Hess[b]	31	97
Total larval fish/site[b]	0	0

Notes:
[a] Corrected for subsampling.
[b] Five Hess samples per site.

Data Sheet – Johnson River

Hess Samples from 2023: Number of invertebrates by family								
Site:	**Upper**							
Date:	August 8,	Sampled by:	J. Brekken, J. Alas, A.					
			Area (m^2) =	0.09	0.09	0.09	0.09	0.09
	Taxon		Sample Net =	1	2	3	4	5
Insecta	Ephemeropte	Baetidae	*Baetis*	10	20	1	4	8
			Acentrella					
		Heptageniida	*Cinygmula*					
			Epeorus					
		Ameletidae	*Ameletus*					
		Ephemerellid	*Drunella*					
			Ephemerella					
	Plecoptera	Capniidae	*Capnia*					
			Eucapnopsis					
			Isocapnia					
			Paracapnia					
		Leutridae	Despaxia					
		Chloroperlida	*Kathroperla*					
			Suwallia					
			Not				2	
		Nemouridae	*Nemoura*					
			Ostrocerca					
			Podmosta					
			Zapada					
		Perlodidae	*Alloperla*					
			Isoperla					
			Perlomyia					
		Not						1
	Trichoptera	Brachycentri	*Brachycentru*					
		Limnephilida	*Ecclosomyia*					
		Glossosomati						
		Ryachophilii	Ryachophilia	1				
	Diptera	Chironomida		144	99	112	157	177
		Empididae	*Chelifera*					
			Clinocera					
			Oreogeton					
		Psychodidae						
		Tabanidae						
		Tipulidae	*Tipula*					
			Gonomyodes					
			Rhabdomasti					
			Hexatoma					
		Simuliidae	*Simulium*			1	3	
		Ceratopogoni						
	Coleoptera	Carabidae						
		Chrysomelid						
		Curculionida						
		Dytiscidae						
		Hydrophilida						
		Hydroscaphi						
		Staphylinidae						
Miscellaneo	Collembola	Entomobryid						
		Neanuridae						
		Sminthuridae	*Sminthurus*					
		Poduridae						
		Isotomidae						
	Lepidoptera	Pyralidae						
	Hymenoptera							

Hess Samples from 2023: Number of invertebrates by family or genus (all life stages) (cont.)

Site: **Upper**

Date: August 8, Sampled by: J. Brekken, J. Alas, A.

Misc. (cont.)	Taxon		Sample Net =	1	2	3	4	5
	Acari	Acarina						
	Oligochaeta							
	Ostracoda						1	
	Copepoda	Cyclopoida						
		Calanoida						
		Harpacticoid						
	Terrestrial							
	Terrestrial			2		2		2
	Misc. Terr.			1				
	Nematoda				1	1		1
	Platyhelmint						1	
	Nematomorp							
	Fish larvae	*Thymallus*						
		Salvelinus						
		Cottus						

Data Summary Sheet							
Site:	**Upper Johnson River**						
Date: 08-Aug-23	AVG	Net 1	Net 2	Net 3	Net 4	Net 5
Total invertebrates counted		158	120	117	168	189
Total aquatic invert taxa/site	10	5	3	5	6	4
Total Ephemeroptera	9	10	20	1	4	8
Total. Plecoptera (corrected for subsampling)	1	0	0	0	2	1
Total Trichoptera (corrected for subsampling)	0	1	0	0	0	0
Total Aq. Diptera (corrected for subsampling)	139	144	99	113	160	177
Misc.aquatic.species. (corrected for subsampling)	2	3	1	3	2	3
% Misc aquatic species	1.6%	1.9%	0.8%	2.6%	1.2%	1.6%
% Ephemeroptera	5.7%	6.3%	16.7%	0.9%	2.4%	4.2%
% Plecoptera	0.4%	0.0%	0.0%	0.0%	1.2%	0.5%
% Trichoptera	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%
% Aq. Diptera	92.2%	91.1%	82.5%	96.6%	95.2%	93.7%
Total Aq. Chironomidae (corrected for subsampling)		144	99	112	157	177
% EPT	6.3%	7.0%	16.7%	0.9%	3.6%	4.8%
% Aq. Chironomidae	91.6%	91.1%	82.5%	95.7%	93.5%	93.7%
Dominant taxon (corrected for subsampling)		144	99	112	157	177
% Aq. Dominant Taxon	91.6%	97.2%	98.8%	96.5%	96.9%	98.3%
Area (m^2)	0.43	0.09	0.09	0.09	0.09	0.09
Estimated total inverts/m^2	1748.8	1837.21	1395.35	1360.47	1953.49	2197.67
StDev of Invert Density	362.95					
Total invertebrates (corrected for subsampling)	150	158	120	117	168	189
StDev of Inv./Hess	31					
Total larval fish/site	0					

Data Sheet – Kona Creek

Hess Samples from 2023: Number of invertebrates by family or genus (all life stages)								
Site:	**Kona Creek**							
Date:	August 8, 2023	Sampled by:	J. Brekken, J. Alas, A. Kastning					
			Area (m^2) =	0.09	0.09	0.09	0.09	0.09
	Taxon		Sample Net =	1	2	3	4	5
Insecta	Ephemeroptera	Baetidae	*Baetis*		3	4	9	8
			Acentrella	4			5	
			Not determined	1				
		Heptageniidae	*Cinygmula*	2			1	
			Epeorus		6	5	5	9
		Ameletidae	*Ameletus*	1	1		5	
		Ephemerellidae	*Drunella*					
			Ephemerella					
	Plecoptera	Capniidae	*Capnia*					
			Eucapnopsis					
			Isocapnia					
			Paracapnia					
		Leutridae	Despaxia					
		Chloroperlidae	*Kathroperla*				4	
			Suwallia					1
			Not determined		1		1	
		Nemouridae	*Nemoura*					
			Ostrocerca					
			Podmosta					
			Zapada	1		2	2	
		Perlodidae	*Alloperla*					
			Isoperla			4		
			Perlomyia					
		Not Determined		1		1	1	
	Trichoptera	Brachycentridae	*Brachycentrus*					
		Limnephilidae	*Ecclosomyia*					
			Not determined			1		
		Glossosomatidae						
		Ryachophiliide	Ryachophilia		1	1	1	
		Not determined			3		1	
	Diptera	Chironomidae		108	191	170	342	157
		Empididae	*Chelifera*					
			Clinocera				1	
			Oreogeton			1		
		Psychodidae						
		Tabanidae						
		Tipulidae	*Tipula*				2	
			Gonomyodes	1			1	
			Rhabdomastix					
			Hexatoma					
		Simuliidae	*Simulium*					
		Ceratopogonidae		1				
	Coleoptera	Carabidae						
		Chrysomelidae						
		Curculionidae						
		Dytiscidae						
		Hydrophilidae						
		Hydroscaphidae						
		Staphylinidae						
Miscellaneous	Collembola	Entomobryidae						
		Neanuridae						
		Sminthuridae	*Sminthurus*					
		Poduridae				1		

Hess Samples from 2023: Number of invertebrates by family or genus (all life stages) (cont.)

Site: **Kona Creek**

Date: August 8, 2023 Sampled by: J. Brekken, J. Alas, A. Kastning

Misc. (cont.)	Taxon		Sample Net =	1	2	3	4	5
		Isotomidae						
	Lepidoptera	Pyralidae						
	Hymenoptera:Symphyta							
	Acari	Acarina		1	2	1	2	
	Oligochaeta			4	4		2	
	Ostracoda			1				
	Copepoda	Cyclopoida						
		Calanoida						
		Harpacticoida						
	Terrestrial Flies				2	3	4	5
	Terrestrial Wasps							
	Misc. Terr. Arthropods					1		
	Nematoda							
	Platyhelminthes			1			1	1
	Nematomorpha							
	Fish larvae	*Thymallus arcticus*						
		Salvelinus alpinus						
		Cottus cognatus						

Data Summary Sheet						
Site:	**Kona Creek**					
Date: 08-Aug-23	AVG	Net 1	Net 2	Net 3	Net 4	Net 5
Total invertebrates counted		127	214	200	385	181
Total aquatic invert taxa/site	24	11	9	12	16	6
Total Ephemeroptera	8	10	14	20	17	8
Total. Plecoptera (corrected for subsampling)	2	1	7	8	1	2
Total Trichoptera (corrected for subsampling)	0	4	2	2	0	0
Total Aq. Diptera (corrected for subsampling)	110	191	171	346	157	110
Misc.aquatic.species. (corrected for subsampling)	7	8	6	9	6	7
% Misc aquatic species	5.5%	3.7%	3.0%	2.3%	3.3%	5.5%
% Ephemeroptera	6.3%	4.7%	7.0%	5.2%	9.4%	6.3%
% Plecoptera	1.6%	0.5%	3.5%	2.1%	0.6%	1.6%
% Trichoptera	0.0%	1.9%	1.0%	0.5%	0.0%	0.0%
% Aq. Diptera	86.6%	89.3%	85.5%	89.9%	86.7%	86.6%
Total Aq. Chironomidae (corrected for subsampling)		108	191	170	342	157
% EPT	8.7%	7.9%	7.0%	11.5%	7.8%	9.9%
% Aq. Chironomidae	87.4%	85.0%	89.3%	85.0%	88.8%	86.7%
Dominant taxon (corrected for subsampling)		108	191	170	342	157
% Aq. Dominant Taxon	87.4%	85.0%	89.3%	85.0%	88.8%	86.7%
Area (m^2)	0.43	0.09	0.09	0.09	0.09	0.09
Estimated total inverts/m^2	2574.4	1476.74	2488.37	2325.58	4476.74	2104.65
StDev of Invert Density	1130.68					
Total invertebrates (corrected for subsampling)	221	127	214	200	385	181
StDev of Inv./Hess	97					
Total larval fish/site	0					

APPENDIX 3. ANALYTICAL LABORATORY REPORTS FOR WHOLE FISH AND SEDIMENT ANALYSIS, JOHNSON TRACT 2023.

Wet Weight to Dry Weight Conversion Table – Fish Tissue

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM DV1	Johnson	Arsenic, total (3050)	0.210	**0.854**		mg/Kg	0.04	0.162601626	0.2	24.60
JR-BM DV1	Johnson	Cadmium, total (3050)	0.122	**0.496**		mg/Kg	0.01	0.040650407	0.05	24.60
JR-BM DV1	Johnson	Copper, total (3050)	2.69	**10.935**		mg/Kg	0.16	0.650406504	0.4	24.60
JR-BM DV1	Johnson	Lead, total (3050)	0.0410	**0.167**	B	mg/Kg	0.02	0.081300813	0.1	24.60
JR-BM DV1	Johnson	Mercury by Direct Combustion AA	27.5	**111.789**	H	ng/g	3.15	12.80487805	15.75	24.60
JR-BM DV1	Johnson	Moisture Content	75.4			%	0.1		0.5	24.60
JR-BM DV1	Johnson	Selenium, total (3050)	0.941	**3.825**		mg/Kg	0.02	0.081300813	0.05	24.60
JR-BM DV1	Johnson	Silver, total (3050)		**0.081**	U	mg/Kg	0.02	0.081300813	0.1	24.60
JR-BM DV1	Johnson	Zinc, total (3050)	39.5	**160.569**		mg/Kg	1.2	4.87804878	3	24.60
JR-BM DV10	Johnson	Arsenic, total (3050)	0.208	**0.863**		mg/Kg	0.028	0.116182573	0.14	24.10
JR-BM DV10	Johnson	Cadmium, total (3050)	0.202	**0.838**		mg/Kg	0.007	0.029045643	0.035	24.10
JR-BM DV10	Johnson	Copper, total (3050)	1.26	**5.228**		mg/Kg	0.112	0.46473029	0.28	24.10
JR-BM DV10	Johnson	Lead, total (3050)	0.0157	**0.065**	B	mg/Kg	0.014	0.058091286	0.07	24.10
JR-BM DV10	Johnson	Mercury by Direct Combustion AA	25.9	**107.469**	H	ng/g	2.55	10.58091286	12.75	24.10
JR-BM DV10	Johnson	Moisture Content	75.9			%	0.1		0.5	24.10
JR-BM DV10	Johnson	Selenium, total (3050)	0.747	**3.100**		mg/Kg	0.014	0.058091286	0.035	24.10
JR-BM DV10	Johnson	Silver, total (3050)		**0.058**	U	mg/Kg	0.014	0.058091286	0.07	24.10
JR-BM DV10	Johnson	Zinc, total (3050)	37.8	**156.846**		mg/Kg	0.84	3.485477178	2.1	24.10
JR-BM DV11	Johnson	Arsenic, total (3050)	0.149	**0.668**	B	mg/Kg	0.038	0.170403587	0.19	22.30
JR-BM DV11	Johnson	Cadmium, total (3050)	0.0335	**0.150**	B	mg/Kg	0.0095	0.042600897	0.0475	22.30
JR-BM DV11	Johnson	Copper, total (3050)	1.78	**7.982**		mg/Kg	0.152	0.68161435	0.38	22.30
JR-BM DV11	Johnson	Lead, total (3050)		**0.085**	U	mg/Kg	0.019	0.085201794	0.095	22.30
JR-BM DV11	Johnson	Mercury by Direct Combustion AA	35	**156.951**	H	ng/g	3.1	13.90134529	15.5	22.30
JR-BM DV11	Johnson	Moisture Content	77.7			%	0.1		0.5	22.30
JR-BM DV11	Johnson	Selenium, total (3050)	0.664	**2.978**		mg/Kg	0.019	0.085201794	0.0475	22.30
JR-BM DV11	Johnson	Silver, total (3050)		**0.085**	U	mg/Kg	0.019	0.085201794	0.095	22.30
JR-BM DV11	Johnson	Zinc, total (3050)	24.8	**111.211**		mg/Kg	1.14	5.112107623	2.85	22.30
JR-BM DV12	Johnson	Arsenic, total (3050)	0.102	**0.440**	B	mg/Kg	0.046	0.198275862	0.23	23.20
JR-BM DV12	Johnson	Cadmium, total (3050)	0.0549	**0.237**	B	mg/Kg	0.0115	0.049568966	0.0575	23.20
JR-BM DV12	Johnson	Copper, total (3050)	1.42	**6.121**		mg/Kg	0.184	0.793103448	0.46	23.20
JR-BM DV12	Johnson	Lead, total (3050)	0.0234	**0.101**	B	mg/Kg	0.023	0.099137931	0.115	23.20

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM DV12	Johnson	Mercury by Direct Combustion AA	26.4	**113.793**	H	ng/g	2.65	11.42241379	13.25	23.20
JR-BM DV12	Johnson	Moisture Content	76.8			%	0.1		0.5	23.20
JR-BM DV12	Johnson	Selenium, total (3050)	0.696	**3.000**		mg/Kg	0.023	0.099137931	0.0575	23.20
JR-BM DV12	Johnson	Silver, total (3050)		**0.099**	U	mg/Kg	0.023	0.099137931	0.115	23.20
JR-BM DV12	Johnson	Zinc, total (3050)	37.2	**160.345**		mg/Kg	1.38	5.948275862	3.45	23.20
JR-BM DV13	Johnson	Arsenic, total (3050)	0.163	**0.731**	B	mg/Kg	0.045	0.201793722	0.225	22.30
JR-BM DV13	Johnson	Cadmium, total (3050)	0.0261	**0.117**	B	mg/Kg	0.0113	0.050672646	0.0563	22.30
JR-BM DV13	Johnson	Copper, total (3050)	1.30	**5.830**		mg/Kg	0.18	0.807174888	0.45	22.30
JR-BM DV13	Johnson	Lead, total (3050)		**0.101**	U	mg/Kg	0.0225	0.100896861	0.113	22.30
JR-BM DV13	Johnson	Mercury by Direct Combustion AA	20.3	**91.031**	H	ng/g	2.65	11.88340807	13.25	22.30
JR-BM DV13	Johnson	Moisture Content	77.7			%	0.1		0.5	22.30
JR-BM DV13	Johnson	Selenium, total (3050)	0.399	**1.789**		mg/Kg	0.0225	0.100896861	0.0563	22.30
JR-BM DV13	Johnson	Silver, total (3050)		**0.101**	U	mg/Kg	0.0225	0.100896861	0.113	22.30
JR-BM DV13	Johnson	Zinc, total (3050)	27.6	**123.767**		mg/Kg	1.35	6.053811659	3.38	22.30
JR-BM DV14	Johnson	Arsenic, total (3050)	0.162	**0.653**	B	mg/Kg	0.044	0.177419355	0.22	24.80
JR-BM DV14	Johnson	Cadmium, total (3050)	0.0315	**0.127**	B	mg/Kg	0.011	0.044354839	0.055	24.80
JR-BM DV14	Johnson	Copper, total (3050)	1.30	**5.242**		mg/Kg	0.176	0.709677419	0.44	24.80
JR-BM DV14	Johnson	Lead, total (3050)		**0.089**	U	mg/Kg	0.022	0.088709677	0.11	24.80
JR-BM DV14	Johnson	Mercury by Direct Combustion AA	17.2	**69.355**	H	ng/g	2.86	11.53225806	14.3	24.80
JR-BM DV14	Johnson	Moisture Content	75.2			%	0.1		0.5	24.80
JR-BM DV14	Johnson	Selenium, total (3050)	0.599	**2.415**		mg/Kg	0.022	0.088709677	0.055	24.80
JR-BM DV14	Johnson	Silver, total (3050)		**0.089**	U	mg/Kg	0.022	0.088709677	0.11	24.80
JR-BM DV14	Johnson	Zinc, total (3050)	33.1	**133.468**		mg/Kg	1.32	5.322580645	3.3	24.80
JR-BM DV15	Johnson	Arsenic, total (3050)	0.0960	**0.414**	B	mg/Kg	0.037	0.159482759	0.185	23.20
JR-BM DV15	Johnson	Cadmium, total (3050)		**0.000**	U	mg/Kg	0.00925	0.03987069	0.0463	23.20
JR-BM DV15	Johnson	Copper, total (3050)	1.18	**5.086**		mg/Kg	0.148	0.637931034	0.37	23.20
JR-BM DV15	Johnson	Lead, total (3050)		**0.080**	U	mg/Kg	0.0185	0.079741379	0.0925	23.20
JR-BM DV15	Johnson	Mercury by Direct Combustion AA	26.4	**113.793**	H	ng/g	3.28	14.13793103	16.4	23.20
JR-BM DV15	Johnson	Moisture Content	76.8			%	0.1		0.5	23.20
JR-BM DV15	Johnson	Selenium, total (3050)	1.08	**4.655**		mg/Kg	0.0185	0.079741379	0.0463	23.20
JR-BM DV15	Johnson	Silver, total (3050)		**0.080**	U	mg/Kg	0.0185	0.079741379	0.0925	23.20
JR-BM DV15	Johnson	Zinc, total (3050)	32.0	**137.931**		mg/Kg	1.11	4.784482759	2.78	23.20
JR-BM DV16	Johnson	Arsenic, total (3050)	0.109	**0.498**	B	mg/Kg	0.028	0.127853881	0.14	21.90
JR-BM DV16	Johnson	Cadmium, total (3050)	0.0309	**0.141**	B	mg/Kg	0.007	0.03196347	0.035	21.90
JR-BM DV16	Johnson	Copper, total (3050)	0.916	**4.183**		mg/Kg	0.112	0.511415525	0.28	21.90

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM DV16	Johnson	Lead, total (3050)	0.0144	**0.066**	B	mg/Kg	0.014	0.063926941	0.07	21.90
JR-BM DV16	Johnson	Mercury by Direct Combustion AA	27.6	**126.027**	H	ng/g	2.67	12.19178082	13.35	21.90
JR-BM DV16	Johnson	Moisture Content	78.1			%	0.1		0.5	21.90
JR-BM DV16	Johnson	Selenium, total (3050)	0.700	**3.196**		mg/Kg	0.014	0.063926941	0.035	21.90
JR-BM DV16	Johnson	Silver, total (3050)		**0.064**	U	mg/Kg	0.014	0.063926941	0.07	21.90
JR-BM DV16	Johnson	Zinc, total (3050)	29.6	**135.160**		mg/Kg	0.84	3.835616438	2.1	21.90
JR-BM DV2	Johnson	Arsenic, total (3050)	0.109	**0.434**	B	mg/Kg	0.027	0.107569721	0.135	25.10
JR-BM DV2	Johnson	Cadmium, total (3050)	0.253	**1.008**		mg/Kg	0.00675	0.02689243	0.0338	25.10
JR-BM DV2	Johnson	Copper, total (3050)	1.80	**7.171**		mg/Kg	0.108	0.430278884	0.27	25.10
JR-BM DV2	Johnson	Lead, total (3050)	0.0213	**0.085**	B	mg/Kg	0.0135	0.053784861	0.0675	25.10
JR-BM DV2	Johnson	Mercury by Direct Combustion AA	28.1	**111.952**	H	ng/g	2.76	10.99601594	13.8	25.10
JR-BM DV2	Johnson	Moisture Content	74.9			%	0.1		0.5	25.10
JR-BM DV2	Johnson	Selenium, total (3050)	0.680	**2.709**		mg/Kg	0.0135	0.053784861	0.0338	25.10
JR-BM DV2	Johnson	Silver, total (3050)		**0.054**	U	mg/Kg	0.0135	0.053784861	0.0675	25.10
JR-BM DV2	Johnson	Zinc, total (3050)	40.3	**160.558**		mg/Kg	0.81	3.227091633	2.03	25.10
JR-BM DV3	Johnson	Arsenic, total (3050)	0.0953	**0.429**	B	mg/Kg	0.029	0.130630631	0.145	22.20
JR-BM DV3	Johnson	Cadmium, total (3050)	0.0202	**0.091**	B	mg/Kg	0.00725	0.032657658	0.0363	22.20
JR-BM DV3	Johnson	Copper, total (3050)	1.48	**6.667**		mg/Kg	0.116	0.522522523	0.29	22.20
JR-BM DV3	Johnson	Lead, total (3050)	0.0152	**0.068**	B	mg/Kg	0.0145	0.065315315	0.0725	22.20
JR-BM DV3	Johnson	Mercury by Direct Combustion AA	15.5	**69.820**	H	ng/g	2.99	13.46846847	14.95	22.20
JR-BM DV3	Johnson	Moisture Content	77.8			%	0.1		0.5	22.20
JR-BM DV3	Johnson	Selenium, total (3050)	0.549	**2.473**		mg/Kg	0.0145	0.065315315	0.0363	22.20
JR-BM DV3	Johnson	Silver, total (3050)		**0.065**	U	mg/Kg	0.0145	0.065315315	0.0725	22.20
JR-BM DV3	Johnson	Zinc, total (3050)	27.3	**122.973**		mg/Kg	0.87	3.918918919	2.18	22.20
JR-BM DV4	Johnson	Arsenic, total (3050)	0.103	**0.419**	B	mg/Kg	0.038	0.154471545	0.19	24.60
JR-BM DV4	Johnson	Cadmium, total (3050)	0.0273	**0.111**	B	mg/Kg	0.0095	0.038617886	0.0475	24.60
JR-BM DV4	Johnson	Copper, total (3050)	1.45	**5.894**		mg/Kg	0.152	0.617886179	0.38	24.60
JR-BM DV4	Johnson	Lead, total (3050)	0.0243	**0.099**	B	mg/Kg	0.019	0.077235772	0.095	24.60
JR-BM DV4	Johnson	Mercury by Direct Combustion AA	20.8	**84.553**	H	ng/g	2.14	8.699186992	10.7	24.60
JR-BM DV4	Johnson	Moisture Content	75.4			%	0.1		0.5	24.60
JR-BM DV4	Johnson	Selenium, total (3050)	0.622	**2.528**		mg/Kg	0.019	0.077235772	0.0475	24.60
JR-BM DV4	Johnson	Silver, total (3050)		**0.077**	U	mg/Kg	0.019	0.077235772	0.095	24.60
JR-BM DV4	Johnson	Zinc, total (3050)	33.7	**136.992**		mg/Kg	1.14	4.634146341	2.85	24.60
JR-BM DV5	Johnson	Arsenic, total (3050)	0.117	**0.509**	B	mg/Kg	0.033	0.143478261	0.165	23.00
JR-BM DV5	Johnson	Cadmium, total (3050)	0.0776	**0.337**		mg/Kg	0.00825	0.035869565	0.0413	23.00

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM DV5	Johnson	Copper, total (3050)	1.63	**7.087**		mg/Kg	0.132	0.573913043	0.33	23.00
JR-BM DV5	Johnson	Lead, total (3050)	0.0236	**0.103**	B	mg/Kg	0.0165	0.07173913	0.0825	23.00
JR-BM DV5	Johnson	Mercury by Direct Combustion AA	34.6	**150.435**	H	ng/g	3.01	13.08695652	15.05	23.00
JR-BM DV5	Johnson	Moisture Content	77.0			%	0.1		0.5	23.00
JR-BM DV5	Johnson	Selenium, total (3050)	0.725	**3.152**		mg/Kg	0.0165	0.07173913	0.0413	23.00
JR-BM DV5	Johnson	Silver, total (3050)		**0.072**	U	mg/Kg	0.0165	0.07173913	0.0825	23.00
JR-BM DV5	Johnson	Zinc, total (3050)	29.6	**128.696**		mg/Kg	0.99	4.304347826	2.48	23.00
JR-BM DV6	Johnson	Arsenic, total (3050)	0.134	**0.538**	B	mg/Kg	0.035	0.140562249	0.175	24.90
JR-BM DV6	Johnson	Cadmium, total (3050)	0.132	**0.530**		mg/Kg	0.00875	0.035140562	0.0438	24.90
JR-BM DV6	Johnson	Copper, total (3050)	1.87	**7.510**		mg/Kg	0.14	0.562248996	0.35	24.90
JR-BM DV6	Johnson	Lead, total (3050)	0.0216	**0.087**	B	mg/Kg	0.0175	0.070281124	0.0875	24.90
JR-BM DV6	Johnson	Mercury by Direct Combustion AA	34.3	**137.751**	H	ng/g	2.31	9.277108434	11.55	24.90
JR-BM DV6	Johnson	Moisture Content	75.1			%	0.1		0.5	24.90
JR-BM DV6	Johnson	Selenium, total (3050)	0.604	**2.426**		mg/Kg	0.0175	0.070281124	0.0438	24.90
JR-BM DV6	Johnson	Silver, total (3050)		**0.070**	U	mg/Kg	0.0175	0.070281124	0.0875	24.90
JR-BM DV6	Johnson	Zinc, total (3050)	29.5	**118.474**		mg/Kg	1.05	4.21686747	2.63	24.90
JR-BM DV7	Johnson	Arsenic, total (3050)	0.0935	**0.421**	B	mg/Kg	0.046	0.207207207	0.23	22.20
JR-BM DV7	Johnson	Cadmium, total (3050)	0.0220	**0.099**	B	mg/Kg	0.0115	0.051801802	0.0575	22.20
JR-BM DV7	Johnson	Copper, total (3050)	2.22	**10.000**		mg/Kg	0.184	0.828828829	0.46	22.20
JR-BM DV7	Johnson	Lead, total (3050)		**0.104**	U	mg/Kg	0.023	0.103603604	0.115	22.20
JR-BM DV7	Johnson	Mercury by Direct Combustion AA	35.3	**159.009**	H	ng/g	3.1	13.96396396	15.5	22.20
JR-BM DV7	Johnson	Moisture Content	77.8			%	0.1		0.5	22.20
JR-BM DV7	Johnson	Selenium, total (3050)	0.660	**2.973**		mg/Kg	0.023	0.103603604	0.0575	22.20
JR-BM DV7	Johnson	Silver, total (3050)		**0.104**	U	mg/Kg	0.023	0.103603604	0.115	22.20
JR-BM DV7	Johnson	Zinc, total (3050)	30.3	**136.486**		mg/Kg	1.38	6.216216216	3.45	22.20
JR-BM DV8	Johnson	Arsenic, total (3050)	0.111	**0.481**	B	mg/Kg	0.028	0.121212121	0.14	23.10
JR-BM DV8	Johnson	Cadmium, total (3050)	0.0264	**0.114**	B	mg/Kg	0.007	0.03030303	0.035	23.10
JR-BM DV8	Johnson	Copper, total (3050)	1.70	**7.359**		mg/Kg	0.112	0.484848485	0.28	23.10
JR-BM DV8	Johnson	Lead, total (3050)	0.0172	**0.074**	B	mg/Kg	0.014	0.060606061	0.07	23.10
JR-BM DV8	Johnson	Mercury by Direct Combustion AA	22	**95.238**	H	ng/g	3.03	13.11688312	15.15	23.10
JR-BM DV8	Johnson	Moisture Content	76.9			%	0.1		0.5	23.10
JR-BM DV8	Johnson	Selenium, total (3050)	0.569	**2.463**		mg/Kg	0.014	0.060606061	0.035	23.10
JR-BM DV8	Johnson	Silver, total (3050)		**0.061**	U	mg/Kg	0.014	0.060606061	0.07	23.10
JR-BM DV8	Johnson	Zinc, total (3050)	26.8	**116.017**		mg/Kg	0.84	3.636363636	2.1	23.10
JR-BM DV9	Johnson	Arsenic, total (3050)	0.148	**0.643**	B	mg/Kg	0.046	0.2	0.23	23.00

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM DV9	Johnson	Cadmium, total (3050)	0.0754	**0.328**		mg/Kg	0.0115	0.05	0.0575	23.00
JR-BM DV9	Johnson	Copper, total (3050)	1.85	**8.043**		mg/Kg	0.184	0.8	0.46	23.00
JR-BM DV9	Johnson	Lead, total (3050)		**0.100**	U	mg/Kg	0.023	0.1	0.115	23.00
JR-BM DV9	Johnson	Mercury by Direct Combustion AA	23.9	**103.913**	H	ng/g	2.94	12.7826087	14.7	23.00
JR-BM DV9	Johnson	Moisture Content	77.0			%	0.1		0.5	23.00
JR-BM DV9	Johnson	Selenium, total (3050)	0.599	**2.604**		mg/Kg	0.023	0.1	0.0575	23.00
JR-BM DV9	Johnson	Silver, total (3050)		**0.100**	U	mg/Kg	0.023	0.1	0.115	23.00
JR-BM DV9	Johnson	Zinc, total (3050)	34.4	**149.565**		mg/Kg	1.38	6	3.45	23.00
KC-BM DV1	Kona	Arsenic, total (3050)	0.0934	**0.374**	B	mg/Kg	0.029	0.116	0.145	25.00
KC-BM DV1	Kona	Cadmium, total (3050)	0.0258	**0.103**	B	mg/Kg	0.00725	0.029	0.0363	25.00
KC-BM DV1	Kona	Copper, total (3050)	1.30	**5.200**		mg/Kg	0.116	0.464	0.29	25.00
KC-BM DV1	Kona	Lead, total (3050)		**0.058**	U	mg/Kg	0.0145	0.058	0.0725	25.00
KC-BM DV1	Kona	Mercury by Direct Combustion AA	13.4	**53.600**	H	ng/g	2.67	10.68	13.35	25.00
KC-BM DV1	Kona	Moisture Content	75.0			%	0.1		0.5	25.00
KC-BM DV1	Kona	Selenium, total (3050)	0.790	**3.160**		mg/Kg	0.0145	0.058	0.0363	25.00
KC-BM DV1	Kona	Silver, total (3050)		**0.058**	U	mg/Kg	0.0145	0.058	0.0725	25.00
KC-BM DV1	Kona	Zinc, total (3050)	29.4	**117.600**		mg/Kg	0.87	3.48	2.18	25.00
KC-BM DV10	Kona	Arsenic, total (3050)	0.126	**0.508**	B	mg/Kg	0.035	0.141129032	0.175	24.80
KC-BM DV10	Kona	Cadmium, total (3050)	0.0423	**0.171**	B	mg/Kg	0.00875	0.035282258	0.0438	24.80
KC-BM DV10	Kona	Copper, total (3050)	1.07	**4.315**		mg/Kg	0.14	0.564516129	0.35	24.80
KC-BM DV10	Kona	Lead, total (3050)		**0.071**	U	mg/Kg	0.0175	0.070564516	0.0875	24.80
KC-BM DV10	Kona	Mercury by Direct Combustion AA	8.74	**35.242**	BH	ng/g	3.13	12.62096774	15.65	24.80
KC-BM DV10	Kona	Moisture Content	75.2			%	0.1		0.5	24.80
KC-BM DV10	Kona	Selenium, total (3050)	0.857	**3.456**		mg/Kg	0.0175	0.070564516	0.0438	24.80
KC-BM DV10	Kona	Silver, total (3050)		**0.071**	U	mg/Kg	0.0175	0.070564516	0.0875	24.80
KC-BM DV10	Kona	Zinc, total (3050)	19.1	**77.016**		mg/Kg	1.05	4.233870968	2.63	24.80
KC-BM DV11	Kona	Arsenic, total (3050)	0.0842	**0.351**	B	mg/Kg	0.031	0.129166667	0.155	24.00
KC-BM DV11	Kona	Cadmium, total (3050)	0.0209	**0.087**	B	mg/Kg	0.00775	0.032291667	0.0388	24.00
KC-BM DV11	Kona	Copper, total (3050)	1.02	**4.250**		mg/Kg	0.124	0.516666667	0.31	24.00
KC-BM DV11	Kona	Lead, total (3050)		**0.065**	U	mg/Kg	0.0155	0.064583333	0.0775	24.00
KC-BM DV11	Kona	Mercury by Direct Combustion AA	14.2	**59.167**	BH	ng/g	2.96	12.33333333	14.8	24.00
KC-BM DV11	Kona	Moisture Content	76.0			%	0.1		0.5	24.00
KC-BM DV11	Kona	Selenium, total (3050)	0.588	**2.450**		mg/Kg	0.0155	0.064583333	0.0388	24.00
KC-BM DV11	Kona	Silver, total (3050)		**0.065**	U	mg/Kg	0.0155	0.064583333	0.0775	24.00
KC-BM DV11	Kona	Zinc, total (3050)	32.5	**135.417**		mg/Kg	0.93	3.875	2.33	24.00

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
KC-BM DV12	Kona	Arsenic, total (3050)	0.109	**0.441**	B	mg/Kg	0.029	0.117408907	0.145	24.70
KC-BM DV12	Kona	Cadmium, total (3050)	0.0938	**0.380**		mg/Kg	0.00725	0.029352227	0.0363	24.70
KC-BM DV12	Kona	Copper, total (3050)	1.34	**5.425**		mg/Kg	0.116	0.469635628	0.29	24.70
KC-BM DV12	Kona	Lead, total (3050)		**0.059**	U	mg/Kg	0.0145	0.058704453	0.0725	24.70
KC-BM DV12	Kona	Mercury by Direct Combustion AA	10.4	**42.105**	BH	ng/g	3.28	13.27935223	16.4	24.70
KC-BM DV12	Kona	Moisture Content	75.3			%	0.1		0.5	24.70
KC-BM DV12	Kona	Selenium, total (3050)	0.844	**3.417**		mg/Kg	0.0145	0.058704453	0.0363	24.70
KC-BM DV12	Kona	Silver, total (3050)		**0.059**	U	mg/Kg	0.0145	0.058704453	0.0725	24.70
KC-BM DV12	Kona	Zinc, total (3050)	27.8	**112.551**		mg/Kg	0.87	3.522267206	2.18	24.70
KC-BM DV13	Kona	Arsenic, total (3050)	0.0883	**0.355**	B	mg/Kg	0.028	0.112449799	0.14	24.90
KC-BM DV13	Kona	Cadmium, total (3050)	0.0266	**0.107**	B	mg/Kg	0.007	0.02811245	0.035	24.90
KC-BM DV13	Kona	Copper, total (3050)	1.12	**4.498**		mg/Kg	0.112	0.449799197	0.28	24.90
KC-BM DV13	Kona	Lead, total (3050)		**0.056**	U	mg/Kg	0.014	0.0562249	0.07	24.90
KC-BM DV13	Kona	Mercury by Direct Combustion AA	12.1	**48.594**	H	ng/g	2.35	9.437751004	11.75	24.90
KC-BM DV13	Kona	Moisture Content	75.1			%	0.1		0.5	24.90
KC-BM DV13	Kona	Selenium, total (3050)	0.686	**2.755**		mg/Kg	0.014	0.0562249	0.035	24.90
KC-BM DV13	Kona	Silver, total (3050)		**0.056**	U	mg/Kg	0.014	0.0562249	0.07	24.90
KC-BM DV13	Kona	Zinc, total (3050)	23.8	**95.582**		mg/Kg	0.84	3.373493976	2.1	24.90
KC-BM DV14	Kona	Arsenic, total (3050)	0.0820	**0.323**	B	mg/Kg	0.029	0.114173228	0.145	25.40
KC-BM DV14	Kona	Cadmium, total (3050)	0.0224	**0.088**	B	mg/Kg	0.00725	0.028543307	0.0363	25.40
KC-BM DV14	Kona	Copper, total (3050)	1.77	**6.969**		mg/Kg	0.116	0.456692913	0.29	25.40
KC-BM DV14	Kona	Lead, total (3050)		**0.057**	U	mg/Kg	0.0145	0.057086614	0.0725	25.40
KC-BM DV14	Kona	Mercury by Direct Combustion AA	6.69	**26.339**	BH	ng/g	2.86	11.25984252	14.3	25.40
KC-BM DV14	Kona	Moisture Content	74.6			%	0.1		0.5	25.40
KC-BM DV14	Kona	Selenium, total (3050)	0.749	**2.949**		mg/Kg	0.0145	0.057086614	0.0363	25.40
KC-BM DV14	Kona	Silver, total (3050)		**0.057**	U	mg/Kg	0.0145	0.057086614	0.0725	25.40
KC-BM DV14	Kona	Zinc, total (3050)	25.8	**101.575**		mg/Kg	0.87	3.42519685	2.18	25.40
KC-BM DV15	Kona	Arsenic, total (3050)	0.0896	**0.396**	B	mg/Kg	0.04	0.17699115	0.2	22.60
KC-BM DV15	Kona	Cadmium, total (3050)	0.0484	**0.214**	B	mg/Kg	0.01	0.044247788	0.05	22.60
KC-BM DV15	Kona	Copper, total (3050)	1.12	**4.956**		mg/Kg	0.16	0.707964602	0.4	22.60
KC-BM DV15	Kona	Lead, total (3050)		**0.088**	U	mg/Kg	0.02	0.088495575	0.1	22.60
KC-BM DV15	Kona	Mercury by Direct Combustion AA	16.7	**73.894**	H	ng/g	2.76	12.21238938	13.8	22.60
KC-BM DV15	Kona	Moisture Content	77.4			%	0.1		0.5	22.60
KC-BM DV15	Kona	Selenium, total (3050)	0.769	**3.403**		mg/Kg	0.02	0.088495575	0.05	22.60
KC-BM DV15	Kona	Silver, total (3050)		**0.088**	U	mg/Kg	0.02	0.088495575	0.1	22.60

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
KC-BM DV15	Kona	Zinc, total (3050)	35.4	**156.637**		mg/Kg	1.2	5.309734513	3	22.60
KC-BM DV2	Kona	Arsenic, total (3050)	0.0952	**0.423**	B	mg/Kg	0.042	0.186666667	0.21	22.50
KC-BM DV2	Kona	Cadmium, total (3050)	0.0152	**0.068**	B	mg/Kg	0.0105	0.046666667	0.0525	22.50
KC-BM DV2	Kona	Copper, total (3050)	1.39	**6.178**		mg/Kg	0.168	0.746666667	0.42	22.50
KC-BM DV2	Kona	Lead, total (3050)		**0.093**	U	mg/Kg	0.021	0.093333333	0.105	22.50
KC-BM DV2	Kona	Mercury by Direct Combustion AA	19.2	**85.333**	H	ng/g	2.27	10.08888889	11.35	22.50
KC-BM DV2	Kona	Moisture Content	77.5			%	0.1		0.5	22.50
KC-BM DV2	Kona	Selenium, total (3050)	0.799	**3.551**		mg/Kg	0.021	0.093333333	0.0525	22.50
KC-BM DV2	Kona	Silver, total (3050)		**0.093**	U	mg/Kg	0.021	0.093333333	0.105	22.50
KC-BM DV2	Kona	Zinc, total (3050)	30.2	**134.222**		mg/Kg	1.26	5.6	3.15	22.50
KC-BM DV3	Kona	Arsenic, total (3050)	0.0807	**0.333**	B	mg/Kg	0.026	0.107438017	0.13	24.20
KC-BM DV3	Kona	Cadmium, total (3050)	0.0384	**0.159**		mg/Kg	0.0065	0.026859504	0.0325	24.20
KC-BM DV3	Kona	Copper, total (3050)	1.13	**4.669**		mg/Kg	0.104	0.429752066	0.26	24.20
KC-BM DV3	Kona	Lead, total (3050)		**0.054**	U	mg/Kg	0.013	0.053719008	0.065	24.20
KC-BM DV3	Kona	Mercury by Direct Combustion AA	22.6	**93.388**	H	ng/g	2.4	9.917355372	12	24.20
KC-BM DV3	Kona	Moisture Content	75.8			%	0.1		0.5	24.20
KC-BM DV3	Kona	Selenium, total (3050)	0.873	**3.607**		mg/Kg	0.013	0.053719008	0.0325	24.20
KC-BM DV3	Kona	Silver, total (3050)		**0.054**	U	mg/Kg	0.013	0.053719008	0.065	24.20
KC-BM DV3	Kona	Zinc, total (3050)	30.2	**124.793**		mg/Kg	0.78	3.223140496	1.95	24.20
KC-BM DV4	Kona	Arsenic, total (3050)	0.0762	**0.323**	B	mg/Kg	0.026	0.110169492	0.13	23.60
KC-BM DV4	Kona	Cadmium, total (3050)	0.0360	**0.153**		mg/Kg	0.0065	0.027542373	0.0325	23.60
KC-BM DV4	Kona	Copper, total (3050)	1.13	**4.788**		mg/Kg	0.104	0.440677966	0.26	23.60
KC-BM DV4	Kona	Lead, total (3050)		**0.055**	U	mg/Kg	0.013	0.055084746	0.065	23.60
KC-BM DV4	Kona	Mercury by Direct Combustion AA	13.6	**57.627**	BH	ng/g	2.86	12.11864407	14.3	23.60
KC-BM DV4	Kona	Moisture Content	76.4			%	0.1		0.5	23.60
KC-BM DV4	Kona	Selenium, total (3050)	0.809	**3.428**		mg/Kg	0.013	0.055084746	0.0325	23.60
KC-BM DV4	Kona	Silver, total (3050)		**0.055**	U	mg/Kg	0.013	0.055084746	0.065	23.60
KC-BM DV4	Kona	Zinc, total (3050)	30.0	**127.119**		mg/Kg	0.78	3.305084746	1.95	23.60
KC-BM DV5	Kona	Arsenic, total (3050)	0.102	**0.436**	B	mg/Kg	0.043	0.183760684	0.215	23.40
KC-BM DV5	Kona	Cadmium, total (3050)	0.0648	**0.277**		mg/Kg	0.0108	0.046153846	0.0538	23.40
KC-BM DV5	Kona	Copper, total (3050)	1.45	**6.197**		mg/Kg	0.172	0.735042735	0.43	23.40
KC-BM DV5	Kona	Lead, total (3050)		**0.092**	U	mg/Kg	0.0215	0.091880342	0.108	23.40
KC-BM DV5	Kona	Mercury by Direct Combustion AA	12	**51.282**	BH	ng/g	2.65	11.32478632	13.25	23.40
KC-BM DV5	Kona	Moisture Content	76.6			%	0.1		0.5	23.40
KC-BM DV5	Kona	Selenium, total (3050)	0.748	**3.197**		mg/Kg	0.0215	0.091880342	0.0538	23.40

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
KC-BM DV5	Kona	Silver, total (3050)		0.092	U	mg/Kg	0.0215	0.091880342	0.108	23.40
KC-BM DV5	Kona	Zinc, total (3050)	25.7	109.829		mg/Kg	1.29	5.512820513	3.23	23.40
KC-BM DV6	Kona	Arsenic, total (3050)	0.118	0.502	B	mg/Kg	0.037	0.157446809	0.185	23.50
KC-BM DV6	Kona	Cadmium, total (3050)	0.0776	0.330		mg/Kg	0.00925	0.039361702	0.0463	23.50
KC-BM DV6	Kona	Copper, total (3050)	1.45	6.170		mg/Kg	0.148	0.629787234	0.37	23.50
KC-BM DV6	Kona	Lead, total (3050)		0.079	U	mg/Kg	0.0185	0.078723404	0.0925	23.50
KC-BM DV6	Kona	Mercury by Direct Combustion AA	12.8	54.468	H	ng/g	2.37	10.08510638	11.85	23.50
KC-BM DV6	Kona	Moisture Content	76.5			%	0.1		0.5	23.50
KC-BM DV6	Kona	Selenium, total (3050)	1.52	6.468		mg/Kg	0.0185	0.078723404	0.0463	23.50
KC-BM DV6	Kona	Silver, total (3050)		0.079	U	mg/Kg	0.0185	0.078723404	0.0925	23.50
KC-BM DV6	Kona	Zinc, total (3050)	30.3	128.936		mg/Kg	1.11	4.723404255	2.78	23.50
KC-BM DV7	Kona	Arsenic, total (3050)	0.104	0.397	B	mg/Kg	0.029	0.110687023	0.145	26.20
KC-BM DV7	Kona	Cadmium, total (3050)	0.0564	0.215		mg/Kg	0.00725	0.027671756	0.0363	26.20
KC-BM DV7	Kona	Copper, total (3050)	1.89	7.214		mg/Kg	0.116	0.442748092	0.29	26.20
KC-BM DV7	Kona	Lead, total (3050)		0.055	U	mg/Kg	0.0145	0.055343511	0.0725	26.20
KC-BM DV7	Kona	Mercury by Direct Combustion AA	24	91.603	H	ng/g	3.08	11.75572519	15.4	26.20
KC-BM DV7	Kona	Moisture Content	73.8			%	0.1		0.5	26.20
KC-BM DV7	Kona	Selenium, total (3050)	0.991	3.782		mg/Kg	0.0145	0.055343511	0.0363	26.20
KC-BM DV7	Kona	Silver, total (3050)		0.055	U	mg/Kg	0.0145	0.055343511	0.0725	26.20
KC-BM DV7	Kona	Zinc, total (3050)	23.7	90.458		mg/Kg	0.87	3.320610687	2.18	26.20
KC-BM DV8	Kona	Arsenic, total (3050)	0.0766	0.332	B	mg/Kg	0.027	0.116883117	0.135	23.10
KC-BM DV8	Kona	Cadmium, total (3050)	0.0400	0.173		mg/Kg	0.00675	0.029220779	0.0338	23.10
KC-BM DV8	Kona	Copper, total (3050)	1.11	4.805		mg/Kg	0.108	0.467532468	0.27	23.10
KC-BM DV8	Kona	Lead, total (3050)		0.058	U	mg/Kg	0.0135	0.058441558	0.0675	23.10
KC-BM DV8	Kona	Mercury by Direct Combustion AA	17.3	74.892	H	ng/g	2.6	11.25541126	13	23.10
KC-BM DV8	Kona	Moisture Content	76.9			%	0.1		0.5	23.10
KC-BM DV8	Kona	Selenium, total (3050)	0.690	2.987		mg/Kg	0.0135	0.058441558	0.0338	23.10
KC-BM DV8	Kona	Silver, total (3050)		0.058	U	mg/Kg	0.0135	0.058441558	0.0675	23.10
KC-BM DV8	Kona	Zinc, total (3050)	30.2	130.736		mg/Kg	0.81	3.506493506	2.03	23.10
KC-BM DV9	Kona	Arsenic, total (3050)	0.0670	0.299	B	mg/Kg	0.033	0.147321429	0.165	22.40
KC-BM DV9	Kona	Cadmium, total (3050)	0.0126	0.056	B	mg/Kg	0.00825	0.036830357	0.0413	22.40
KC-BM DV9	Kona	Copper, total (3050)	1.27	5.670		mg/Kg	0.132	0.589285714	0.33	22.40
KC-BM DV9	Kona	Lead, total (3050)		0.074	U	mg/Kg	0.0165	0.073660714	0.0825	22.40
KC-BM DV9	Kona	Mercury by Direct Combustion AA	14.2	63.393	H	ng/g	2.76	12.32142857	13.8	22.40
KC-BM DV9	Kona	Moisture Content	77.6			%	0.1		0.5	22.40

CLIENTID	Sample Site	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
KC-BM DV9	Kona	Selenium, total (3050)	0.331	**1.478**		mg/Kg	0.0165	0.073660714	0.0413	22.40
KC-BM DV9	Kona	Silver, total (3050)		**0.074**	U	mg/Kg	0.0165	0.073660714	0.0825	22.40
KC-BM DV9	Kona	Zinc, total (3050)	29.0	**129.464**		mg/Kg	0.99	4.419642857	2.48	22.40

Wet Weight to Dry Weight Conversion Table – Sediment

CLIENTID	ANALYTE	RESULT	Dry Wt Result	QUAL	UNITS	MDL	Dry Wt MDL	PQL	% Solid
JR-BM-23-SED	Aluminum, total (3050)	20400	**27,945.205**		mg/Kg	5	6.849315068	25	73.000
JR-BM-23-SED	Arsenic, total (3050)	7.89	**10.808**		mg/Kg	0.1	0.136986301	0.5	73.000
JR-BM-23-SED	Cadmium, total (3050)	0.203	**0.278**		mg/Kg	0.025	0.034246575	0.125	73.000
JR-BM-23-SED	Copper, total (3050)	42.0	**57.534**		mg/Kg	0.4	0.547945205	1	73.000
JR-BM-23-SED	Iron, total (3050)	26500	**36,301.370**		mg/Kg	6	8.219178082	15	73.000
JR-BM-23-SED	Lead, total (3050)	1.59	**2.178**		mg/Kg	0.05	0.068493151	0.25	73.000
JR-BM-23-SED	Mercury by Direct Combustion AA	47.1	**64.521**	H	ng/g	3.6	4.931506849	18	73.000
JR-BM-23-SED	Selenium, total (3050)	0.131	**0.179**		mg/Kg	0.05	0.068493151	0.125	73.000
JR-BM-23-SED	Silver, total (3050)	0.0644	**0.088**	B	mg/Kg	0.05	0.068493151	0.25	73.000
JR-BM-23-SED	Zinc, total (3050)	41.8	**57.260**		mg/Kg	2	2.739726027	5	73.000
JR-BM-23-SED	Solids, Percent	**73.0**			%	0.1		0.5	
KR-BM-23-SED	Aluminum, total (3050)	23400	**28,746.929**		mg/Kg	5.05	6.203931204	25.3	81.400
KR-BM-23-SED	Arsenic, total (3050)	4.86	**5.971**		mg/Kg	0.101	0.124078624	0.505	81.400
KR-BM-23-SED	Cadmium, total (3050)	0.499	**0.613**		mg/Kg	0.0253	0.031081081	0.126	81.400
KR-BM-23-SED	Copper, total (3050)	18.9	**23.219**		mg/Kg	0.404	0.496314496	1.01	81.400
KR-BM-23-SED	Iron, total (3050)	23100	**28,378.378**		mg/Kg	6.06	7.444717445	15.2	81.400
KR-BM-23-SED	Lead, total (3050)	6.21	**7.629**		mg/Kg	0.0505	0.062039312	0.253	81.400
KR-BM-23-SED	Mercury by Direct Combustion AA	8.07	**9.914**	BH	ng/g	2.94	3.611793612	14.7	81.400
KR-BM-23-SED	Selenium, total (3050)	0.242	**0.297**		mg/Kg	0.0505	0.062039312	0.126	81.400
KR-BM-23-SED	Silver, total (3050)	0.133	**0.163**	B	mg/Kg	0.0505	0.062039312	0.253	81.400
KR-BM-23-SED	Zinc, total (3050)	59.5	**73.096**		mg/Kg	2.02	2.481572482	5.05	81.400
KR-BM-23-SED	Solids, Percent	**81.4**			%	0.1		0.5	81.400

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 11, 2023

Report to:
Devin den Boer
HighGold Mining Inc.
405-375 Water Street
Vancouver, BC V6B 5C6

cc: Josh Brekken

Bill to:
Devin den Boer
HighGold Mining Inc.
405-375 Water Street
Vancouver, BC V6B 5C6

Project ID:
ACZ Project ID: L83021

Devin den Boer:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 07, 2023. This project has been assigned to ACZ's project number, L83021. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L83021. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 10, 2023. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

HighGold Mining Inc.

October 11, 2023

Project ID:
ACZ Project ID: L83021

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 31 fish tissue samples from HighGold Mining Inc. on September 7, 2023. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L83021. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times except for parameters flagged with an "H3", received after the hold time had expired.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further detail not provided by the Extended Qualifier Report:

1. The below is from WG576035, Qualifier: B1, Applies to: L83021-01 through 20/COPPER - Trace levels of Cu detected in method blank above method limits. Samples may be redigested and reanalyzed at client's request.

2. The below is from WG576035, Qualifier: N1, Applies to: L83021-01 through -20/COPPER - The Laboratory Fortified Blank and Duplicate (LFB/D) had recovery greater than method limits. The LCSS and matrix spike and spike duplicate had recoveries and RPD within method limits, demonstrating precision and accuracy on the test matrix.

3. The below is from WG576036, Qualifier: B1, Applies to: L83021-21 through -31 /COPPER - Trace levels of Cu detected in method blank above method limits. Samples may be redigested and reanalyzed at client's request.

4. The below is from WG576036, Qualifier: N1, Applies to: L83021-21 through -31/ZINC - The Laboratory Fortified Blank (LFB) had recovery for Zn greater than method limits. The LCSS, LFBD, and matrix spike had recoveries and RPD within method limits, demonstrating precision and accuracy on the test matrix.

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV1

ACZ Sample ID: ***L83021-01***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	200	0.210			mg/Kg	0.04	0.2	10/05/23 22:39	kja
Cadmium, total (3050)	M6020B ICP-MS	200	0.122		*	mg/Kg	0.01	0.05	10/02/23 21:44	kja
Copper, total (3050)	M6020B ICP-MS	200	2.69		*	mg/Kg	0.16	0.4	10/06/23 21:02	kja
Lead, total (3050)	M6020B ICP-MS	200	0.0410	B	*	mg/Kg	0.02	0.1	10/04/23 20:35	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	27.5	H	*	ng/g	3.15	15.75	10/03/23 9:30	mlh
Selenium, total (3050)	M6020B ICP-MS	200	0.941		*	mg/Kg	0.02	0.05	10/04/23 20:35	kja
Silver, total (3050)	M6020B ICP-MS	200	<0.02	U	*	mg/Kg	0.02	0.1	10/02/23 21:44	kja
Zinc, total (3050)	M6020B ICP-MS	200	39.5		*	mg/Kg	1.2	3	10/04/23 20:35	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.4		*	%	0.1	0.5	10/05/23 14:35	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 9:14	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/21/23 14:00	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV2

ACZ Sample ID: ***L83021-02***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	135	0.109	B		mg/Kg	0.027	0.135	10/05/23 22:41	kja
Cadmium, total (3050)	M6020B ICP-MS	135	0.253		*	mg/Kg	0.00675	0.0338	10/02/23 21:46	kja
Copper, total (3050)	M6020B ICP-MS	135	1.80		*	mg/Kg	0.108	0.27	10/06/23 21:04	kja
Lead, total (3050)	M6020B ICP-MS	135	0.0213	B	*	mg/Kg	0.0135	0.0675	10/04/23 20:37	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	28.1	H	*	ng/g	2.76	13.8	10/03/23 9:46	mlh
Selenium, total (3050)	M6020B ICP-MS	135	0.680		*	mg/Kg	0.0135	0.0338	10/04/23 20:37	kja
Silver, total (3050)	M6020B ICP-MS	135	<0.0135	U	*	mg/Kg	0.0135	0.0675	10/02/23 21:46	kja
Zinc, total (3050)	M6020B ICP-MS	135	40.3		*	mg/Kg	0.81	2.03	10/04/23 20:37	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	74.9		*	%	0.1	0.5	10/05/23 15:29	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 9:28	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/21/23 20:18	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV3

ACZ Sample ID: ***L83021-03***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	145	0.0953	B		mg/Kg	0.029	0.145	10/05/23 22:43	kja
Cadmium, total (3050)	M6020B ICP-MS	145	0.0202	B	*	mg/Kg	0.00725	0.0363	10/02/23 21:48	kja
Copper, total (3050)	M6020B ICP-MS	145	1.48		*	mg/Kg	0.116	0.29	10/06/23 21:06	kja
Lead, total (3050)	M6020B ICP-MS	145	0.0152	B	*	mg/Kg	0.0145	0.0725	10/04/23 20:39	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	15.5	H	*	ng/g	2.99	14.95	10/03/23 10:02	mlh
Selenium, total (3050)	M6020B ICP-MS	145	0.549		*	mg/Kg	0.0145	0.0363	10/04/23 20:39	kja
Silver, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/02/23 21:48	kja
Zinc, total (3050)	M6020B ICP-MS	145	27.3		*	mg/Kg	0.87	2.18	10/04/23 20:39	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.8		*	%	0.1	0.5	10/05/23 16:24	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 9:41	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/22/23 2:36	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV4

ACZ Sample ID: ***L83021-04***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	190	0.103	B		mg/Kg	0.038	0.19	10/05/23 22:48	kja
Cadmium, total (3050)	M6020B ICP-MS	190	0.0273	B	*	mg/Kg	0.0095	0.0475	10/02/23 21:53	kja
Copper, total (3050)	M6020B ICP-MS	190	1.45		*	mg/Kg	0.152	0.38	10/06/23 21:12	kja
Lead, total (3050)	M6020B ICP-MS	190	0.0243	B	*	mg/Kg	0.019	0.095	10/04/23 20:44	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	20.8	H	*	ng/g	2.14	10.7	10/03/23 10:10	mlh
Selenium, total (3050)	M6020B ICP-MS	190	0.622		*	mg/Kg	0.019	0.0475	10/04/23 20:44	kja
Silver, total (3050)	M6020B ICP-MS	190	<0.019	U	*	mg/Kg	0.019	0.095	10/02/23 21:53	kja
Zinc, total (3050)	M6020B ICP-MS	190	33.7		*	mg/Kg	1.14	2.85	10/04/23 20:44	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.4		*	%	0.1	0.5	10/05/23 17:19	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 9:55	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/22/23 8:54	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV5

ACZ Sample ID: ***L83021-05***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	165	0.117	B		mg/Kg	0.033	0.165	10/05/23 22:50	kja
Cadmium, total (3050)	M6020B ICP-MS	165	0.0776		*	mg/Kg	0.00825	0.0413	10/02/23 21:55	kja
Copper, total (3050)	M6020B ICP-MS	165	1.63		*	mg/Kg	0.132	0.33	10/06/23 21:14	kja
Lead, total (3050)	M6020B ICP-MS	165	0.0236	B	*	mg/Kg	0.0165	0.0825	10/04/23 20:46	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	34.6	H	*	ng/g	3.01	15.05	10/03/23 10:18	mlh
Selenium, total (3050)	M6020B ICP-MS	165	0.725		*	mg/Kg	0.0165	0.0413	10/04/23 20:46	kja
Silver, total (3050)	M6020B ICP-MS	165	<0.0165	U	*	mg/Kg	0.0165	0.0825	10/02/23 21:55	kja
Zinc, total (3050)	M6020B ICP-MS	165	29.6		*	mg/Kg	0.99	2.48	10/04/23 20:46	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.0		*	%	0.1	0.5	10/05/23 18:14	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 10:08	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/22/23 15:12	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV6

ACZ Sample ID: ***L83021-06***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	175	0.134	B		mg/Kg	0.035	0.175	10/05/23 22:52	kja
Cadmium, total (3050)	M6020B ICP-MS	175	0.132		*	mg/Kg	0.00875	0.0438	10/02/23 21:57	kja
Copper, total (3050)	M6020B ICP-MS	175	1.87		*	mg/Kg	0.14	0.35	10/06/23 21:15	kja
Lead, total (3050)	M6020B ICP-MS	175	0.0216	B	*	mg/Kg	0.0175	0.0875	10/04/23 20:48	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	34.3	H	*	ng/g	2.31	11.55	10/03/23 11:09	mlh
Selenium, total (3050)	M6020B ICP-MS	175	0.604		*	mg/Kg	0.0175	0.0438	10/04/23 20:48	kja
Silver, total (3050)	M6020B ICP-MS	175	<0.0175	U	*	mg/Kg	0.0175	0.0875	10/02/23 21:57	kja
Zinc, total (3050)	M6020B ICP-MS	175	29.5		*	mg/Kg	1.05	2.63	10/04/23 20:48	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.1		*	%	0.1	0.5	10/05/23 19:08	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 10:22	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/22/23 21:30	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV7

ACZ Sample ID: ***L83021-07***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	230	0.0935	B		mg/Kg	0.046	0.23	10/05/23 22:54	kja
Cadmium, total (3050)	M6020B ICP-MS	230	0.0220	B	*	mg/Kg	0.0115	0.0575	10/02/23 21:59	kja
Copper, total (3050)	M6020B ICP-MS	230	2.22		*	mg/Kg	0.184	0.46	10/06/23 21:17	kja
Lead, total (3050)	M6020B ICP-MS	230	<0.023	U	*	mg/Kg	0.023	0.115	10/04/23 20:50	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	35.3	H	*	ng/g	3.1	15.5	10/03/23 11:17	mlh
Selenium, total (3050)	M6020B ICP-MS	230	0.660		*	mg/Kg	0.023	0.0575	10/04/23 20:50	kja
Silver, total (3050)	M6020B ICP-MS	230	<0.023	U	*	mg/Kg	0.023	0.115	10/02/23 21:59	kja
Zinc, total (3050)	M6020B ICP-MS	230	30.3		*	mg/Kg	1.38	3.45	10/04/23 20:50	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.8		*	%	0.1	0.5	10/05/23 20:58	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 10:36	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/23/23 3:48	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV8

ACZ Sample ID: ***L83021-08***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	140	0.111	B		mg/Kg	0.028	0.14	10/05/23 22:55	kja
Cadmium, total (3050)	M6020B ICP-MS	140	0.0264	B	*	mg/Kg	0.007	0.035	10/02/23 22:00	kja
Copper, total (3050)	M6020B ICP-MS	140	1.70		*	mg/Kg	0.112	0.28	10/06/23 21:19	kja
Lead, total (3050)	M6020B ICP-MS	140	0.0172	B	*	mg/Kg	0.014	0.07	10/04/23 20:52	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	22	H	*	ng/g	3.03	15.15	10/03/23 11:25	mlh
Selenium, total (3050)	M6020B ICP-MS	140	0.569		*	mg/Kg	0.014	0.035	10/04/23 20:52	kja
Silver, total (3050)	M6020B ICP-MS	140	<0.014	U	*	mg/Kg	0.014	0.07	10/02/23 22:00	kja
Zinc, total (3050)	M6020B ICP-MS	140	26.8		*	mg/Kg	0.84	2.1	10/04/23 20:52	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.9		*	%	0.1	0.5	10/05/23 21:53	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 10:49	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/23/23 10:07	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV9

ACZ Sample ID: ***L83021-09***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	230	0.148	B		mg/Kg	0.046	0.23	10/05/23 22:57	kja
Cadmium, total (3050)	M6020B ICP-MS	230	0.0754		*	mg/Kg	0.0115	0.0575	10/02/23 22:02	kja
Copper, total (3050)	M6020B ICP-MS	230	1.85		*	mg/Kg	0.184	0.46	10/06/23 21:21	kja
Lead, total (3050)	M6020B ICP-MS	230	<0.023	U	*	mg/Kg	0.023	0.115	10/04/23 20:54	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	23.9	H	*	ng/g	2.94	14.7	10/03/23 11:33	mlh
Selenium, total (3050)	M6020B ICP-MS	230	0.599		*	mg/Kg	0.023	0.0575	10/04/23 20:54	kja
Silver, total (3050)	M6020B ICP-MS	230	<0.023	U	*	mg/Kg	0.023	0.115	10/02/23 22:02	kja
Zinc, total (3050)	M6020B ICP-MS	230	34.4		*	mg/Kg	1.38	3.45	10/04/23 20:54	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.0		*	%	0.1	0.5	10/05/23 22:47	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 11:03	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/23/23 16:25	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV10

ACZ Sample ID: ***L83021-10***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	140	0.208			mg/Kg	0.028	0.14	10/02/23 22:08	kja
Cadmium, total (3050)	M6020B ICP-MS	140	0.202		*	mg/Kg	0.007	0.035	10/02/23 22:08	kja
Copper, total (3050)	M6020B ICP-MS	140	1.26		*	mg/Kg	0.112	0.28	10/06/23 21:26	kja
Lead, total (3050)	M6020B ICP-MS	140	0.0157	B	*	mg/Kg	0.014	0.07	10/04/23 20:59	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	25.9	H	*	ng/g	2.55	12.75	10/03/23 11:41	mlh
Selenium, total (3050)	M6020B ICP-MS	140	0.747		*	mg/Kg	0.014	0.035	10/04/23 20:59	kja
Silver, total (3050)	M6020B ICP-MS	140	<0.014	U	*	mg/Kg	0.014	0.07	10/02/23 22:08	kja
Zinc, total (3050)	M6020B ICP-MS	140	37.8		*	mg/Kg	0.84	2.1	10/04/23 20:59	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.9		*	%	0.1	0.5	10/05/23 23:42	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 11:44	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/23/23 22:43	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV11

ACZ Sample ID: ***L83021-11***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	190	0.149	B		mg/Kg	0.038	0.19	10/05/23 23:05	kja
Cadmium, total (3050)	M6020B ICP-MS	190	0.0335	B	*	mg/Kg	0.0095	0.0475	10/02/23 22:10	kja
Copper, total (3050)	M6020B ICP-MS	190	1.78		*	mg/Kg	0.152	0.38	10/06/23 21:28	kja
Lead, total (3050)	M6020B ICP-MS	190	<0.019	U	*	mg/Kg	0.019	0.095	10/04/23 21:01	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	35	H	*	ng/g	3.1	15.5	10/03/23 11:49	mlh
Selenium, total (3050)	M6020B ICP-MS	190	0.664		*	mg/Kg	0.019	0.0475	10/04/23 21:01	kja
Silver, total (3050)	M6020B ICP-MS	190	<0.019	U	*	mg/Kg	0.019	0.095	10/02/23 22:10	kja
Zinc, total (3050)	M6020B ICP-MS	190	24.8		*	mg/Kg	1.14	2.85	10/04/23 21:01	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.7		*	%	0.1	0.5	10/06/23 0:37	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 11:57	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/24/23 5:01	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV12

ACZ Sample ID: ***L83021-12***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	230	0.102	B		mg/Kg	0.046	0.23	10/05/23 23:10	kja
Cadmium, total (3050)	M6020B ICP-MS	230	0.0549	B	*	mg/Kg	0.0115	0.0575	10/02/23 22:15	kja
Copper, total (3050)	M6020B ICP-MS	230	1.42		*	mg/Kg	0.184	0.46	10/06/23 21:34	kja
Lead, total (3050)	M6020B ICP-MS	230	0.0234	B	*	mg/Kg	0.023	0.115	10/04/23 21:06	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	26.4	H	*	ng/g	2.65	13.25	10/03/23 11:57	mlh
Selenium, total (3050)	M6020B ICP-MS	230	0.696		*	mg/Kg	0.023	0.0575	10/04/23 21:06	kja
Silver, total (3050)	M6020B ICP-MS	230	<0.023	U	*	mg/Kg	0.023	0.115	10/02/23 22:15	kja
Zinc, total (3050)	M6020B ICP-MS	230	37.2		*	mg/Kg	1.38	3.45	10/04/23 21:06	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.8		*	%	0.1	0.5	10/06/23 1:32	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 12:11	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/24/23 11:19	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV13

ACZ Sample ID: ***L83021-13***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	225	0.163	B		mg/Kg	0.045	0.225	10/05/23 23:12	kja
Cadmium, total (3050)	M6020B ICP-MS	225	0.0261	B	*	mg/Kg	0.0113	0.0563	10/02/23 22:17	kja
Copper, total (3050)	M6020B ICP-MS	225	1.30		*	mg/Kg	0.18	0.45	10/06/23 21:36	kja
Lead, total (3050)	M6020B ICP-MS	225	<0.0225	U	*	mg/Kg	0.0225	0.113	10/04/23 21:08	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	20.3	H	*	ng/g	2.65	13.25	10/03/23 12:05	mlh
Selenium, total (3050)	M6020B ICP-MS	225	0.399		*	mg/Kg	0.0225	0.0563	10/04/23 21:08	kja
Silver, total (3050)	M6020B ICP-MS	225	<0.0225	U	*	mg/Kg	0.0225	0.113	10/02/23 22:17	kja
Zinc, total (3050)	M6020B ICP-MS	225	27.6		*	mg/Kg	1.35	3.38	10/04/23 21:08	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.7		*	%	0.1	0.5	10/06/23 2:26	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 12:24	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/24/23 17:37	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV14

ACZ Sample ID: ***L83021-14***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	220	0.162	B		mg/Kg	0.044	0.22	10/05/23 23:14	kja
Cadmium, total (3050)	M6020B ICP-MS	220	0.0315	B	*	mg/Kg	0.011	0.055	10/02/23 22:19	kja
Copper, total (3050)	M6020B ICP-MS	220	1.30		*	mg/Kg	0.176	0.44	10/06/23 21:38	kja
Lead, total (3050)	M6020B ICP-MS	220	<0.022	U	*	mg/Kg	0.022	0.11	10/04/23 21:10	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	17.2	H	*	ng/g	2.86	14.3	10/03/23 12:30	mlh
Selenium, total (3050)	M6020B ICP-MS	220	0.599		*	mg/Kg	0.022	0.055	10/04/23 21:10	kja
Silver, total (3050)	M6020B ICP-MS	220	<0.022	U	*	mg/Kg	0.022	0.11	10/02/23 22:19	kja
Zinc, total (3050)	M6020B ICP-MS	220	33.1		*	mg/Kg	1.32	3.3	10/04/23 21:10	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.2		*	%	0.1	0.5	10/06/23 3:21	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 12:38	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/24/23 23:55	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV15

ACZ Sample ID: ***L83021-15***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	185	0.0960	B		mg/Kg	0.037	0.185	10/05/23 23:16	kja
Cadmium, total (3050)	M6020B ICP-MS	185	<0.00925	U	*	mg/Kg	0.00925	0.0463	10/02/23 22:21	kja
Copper, total (3050)	M6020B ICP-MS	185	1.18		*	mg/Kg	0.148	0.37	10/06/23 21:39	kja
Lead, total (3050)	M6020B ICP-MS	185	<0.0185	U	*	mg/Kg	0.0185	0.0925	10/04/23 21:12	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	26.4	H	*	ng/g	3.28	16.4	10/03/23 12:38	mlh
Selenium, total (3050)	M6020B ICP-MS	185	1.08		*	mg/Kg	0.0185	0.0463	10/04/23 21:12	kja
Silver, total (3050)	M6020B ICP-MS	185	<0.0185	U	*	mg/Kg	0.0185	0.0925	10/02/23 22:21	kja
Zinc, total (3050)	M6020B ICP-MS	185	32.0		*	mg/Kg	1.11	2.78	10/04/23 21:12	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.8		*	%	0.1	0.5	10/06/23 4:16	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 12:52	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/25/23 6:14	rsh

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM DV16

ACZ Sample ID: ***L83021-16***
Date Sampled: *08/09/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	140	0.109	B		mg/Kg	0.028	0.14	10/05/23 23:18	kja
Cadmium, total (3050)	M6020B ICP-MS	140	0.0309	B	*	mg/Kg	0.007	0.035	10/02/23 22:23	kja
Copper, total (3050)	M6020B ICP-MS	140	0.916		*	mg/Kg	0.112	0.28	10/06/23 21:41	kja
Lead, total (3050)	M6020B ICP-MS	140	0.0144	B	*	mg/Kg	0.014	0.07	10/04/23 21:14	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	27.6	H	*	ng/g	2.67	13.35	10/03/23 12:47	mlh
Selenium, total (3050)	M6020B ICP-MS	140	0.700		*	mg/Kg	0.014	0.035	10/04/23 21:14	kja
Silver, total (3050)	M6020B ICP-MS	140	<0.014	U	*	mg/Kg	0.014	0.07	10/02/23 22:23	kja
Zinc, total (3050)	M6020B ICP-MS	140	29.6		*	mg/Kg	0.84	2.1	10/04/23 21:14	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	78.1		*	%	0.1	0.5	10/06/23 5:11	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 13:05	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/25/23 12:32	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV1

ACZ Sample ID: ***L83021-17***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	145	0.0934	B		mg/Kg	0.029	0.145	10/05/23 23:19	kja
Cadmium, total (3050)	M6020B ICP-MS	145	0.0258	B	*	mg/Kg	0.00725	0.0363	10/02/23 22:25	kja
Copper, total (3050)	M6020B ICP-MS	145	1.30		*	mg/Kg	0.116	0.29	10/06/23 21:43	kja
Lead, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/04/23 21:16	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	13.4	H	*	ng/g	2.67	13.35	10/03/23 12:55	mlh
Selenium, total (3050)	M6020B ICP-MS	145	0.790		*	mg/Kg	0.0145	0.0363	10/04/23 21:16	kja
Silver, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/02/23 22:25	kja
Zinc, total (3050)	M6020B ICP-MS	145	29.4		*	mg/Kg	0.87	2.18	10/04/23 21:16	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.0		*	%	0.1	0.5	10/06/23 6:06	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 13:19	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/25/23 18:50	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV2

ACZ Sample ID: ***L83021-18***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	210	0.0952	B		mg/Kg	0.042	0.21	10/05/23 23:21	kja
Cadmium, total (3050)	M6020B ICP-MS	210	0.0152	B	*	mg/Kg	0.0105	0.0525	10/02/23 22:26	kja
Copper, total (3050)	M6020B ICP-MS	210	1.39		*	mg/Kg	0.168	0.42	10/06/23 21:45	kja
Lead, total (3050)	M6020B ICP-MS	210	<0.021	U	*	mg/Kg	0.021	0.105	10/04/23 21:17	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	19.2	H	*	ng/g	2.27	11.35	10/03/23 13:03	mlh
Selenium, total (3050)	M6020B ICP-MS	210	0.799		*	mg/Kg	0.021	0.0525	10/04/23 21:17	kja
Silver, total (3050)	M6020B ICP-MS	210	<0.021	U	*	mg/Kg	0.021	0.105	10/02/23 22:26	kja
Zinc, total (3050)	M6020B ICP-MS	210	30.2		*	mg/Kg	1.26	3.15	10/04/23 21:17	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.5		*	%	0.1	0.5	10/06/23 7:00	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 13:32	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 1:08	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV3

ACZ Sample ID: ***L83021-19***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	130	0.0807	B		mg/Kg	0.026	0.13	10/05/23 23:25	kja
Cadmium, total (3050)	M6020B ICP-MS	130	0.0384		*	mg/Kg	0.0065	0.0325	10/02/23 22:30	kja
Copper, total (3050)	M6020B ICP-MS	130	1.13		*	mg/Kg	0.104	0.26	10/06/23 21:49	kja
Lead, total (3050)	M6020B ICP-MS	130	<0.013	U	*	mg/Kg	0.013	0.065	10/04/23 21:21	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	22.6	H	*	ng/g	2.4	12	10/03/23 13:11	mlh
Selenium, total (3050)	M6020B ICP-MS	130	0.873		*	mg/Kg	0.013	0.0325	10/04/23 21:21	kja
Silver, total (3050)	M6020B ICP-MS	130	<0.013	U	*	mg/Kg	0.013	0.065	10/02/23 22:30	kja
Zinc, total (3050)	M6020B ICP-MS	130	30.2		*	mg/Kg	0.78	1.95	10/04/23 21:21	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.8		*	%	0.1	0.5	10/06/23 7:55	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 13:46	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 7:26	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV4

ACZ Sample ID: ***L83021-20***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	130	0.0762	B		mg/Kg	0.026	0.13	10/05/23 23:27	kja
Cadmium, total (3050)	M6020B ICP-MS	130	0.0360		*	mg/Kg	0.0065	0.0325	10/02/23 22:32	kja
Copper, total (3050)	M6020B ICP-MS	130	1.13		*	mg/Kg	0.104	0.26	10/06/23 21:50	kja
Lead, total (3050)	M6020B ICP-MS	130	<0.013	U	*	mg/Kg	0.013	0.065	10/04/23 21:23	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	13.6	BH	*	ng/g	2.86	14.3	10/03/23 13:19	mlh
Selenium, total (3050)	M6020B ICP-MS	130	0.809		*	mg/Kg	0.013	0.0325	10/04/23 21:23	kja
Silver, total (3050)	M6020B ICP-MS	130	<0.013	U	*	mg/Kg	0.013	0.065	10/02/23 22:32	kja
Zinc, total (3050)	M6020B ICP-MS	130	30.0		*	mg/Kg	0.78	1.95	10/04/23 21:23	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.4		*	%	0.1	0.5	10/06/23 8:50	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								09/29/23 14:00	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 13:44	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV5

ACZ Sample ID: ***L83021-21***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	215	0.102	B		mg/Kg	0.043	0.215	10/06/23 0:22	kja
Cadmium, total (3050)	M6020B ICP-MS	215	0.0648			mg/Kg	0.0108	0.0538	10/06/23 0:22	kja
Copper, total (3050)	M6020B ICP-MS	215	1.45		*	mg/Kg	0.172	0.43	10/06/23 22:46	kja
Lead, total (3050)	M6020B ICP-MS	215	<0.0215	U		mg/Kg	0.0215	0.108	10/06/23 0:22	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	12	BH	*	ng/g	2.65	13.25	10/03/23 14:17	mlh
Selenium, total (3050)	M6020B ICP-MS	215	0.748		*	mg/Kg	0.0215	0.0538	10/06/23 0:22	kja
Silver, total (3050)	M6020B ICP-MS	215	<0.0215	U	*	mg/Kg	0.0215	0.108	10/06/23 0:22	kja
Zinc, total (3050)	M6020B ICP-MS	215	25.7		*	mg/Kg	1.29	3.23	10/06/23 22:46	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.6		*	%	0.1	0.5	10/04/23 12:38	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 11:07	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 14:00	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV6

ACZ Sample ID: ***L83021-22***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	185	0.118	B		mg/Kg	0.037	0.185	10/06/23 0:24	kja
Cadmium, total (3050)	M6020B ICP-MS	185	0.0776			mg/Kg	0.00925	0.0463	10/06/23 0:24	kja
Copper, total (3050)	M6020B ICP-MS	185	1.45		*	mg/Kg	0.148	0.37	10/06/23 22:48	kja
Lead, total (3050)	M6020B ICP-MS	185	<0.0185	U		mg/Kg	0.0185	0.0925	10/06/23 0:24	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	12.8	H	*	ng/g	2.37	11.85	10/03/23 14:33	mlh
Selenium, total (3050)	M6020B ICP-MS	185	1.52		*	mg/Kg	0.0185	0.0463	10/06/23 0:24	kja
Silver, total (3050)	M6020B ICP-MS	185	<0.0185	U	*	mg/Kg	0.0185	0.0925	10/06/23 0:24	kja
Zinc, total (3050)	M6020B ICP-MS	185	30.3		*	mg/Kg	1.11	2.78	10/06/23 22:48	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.5		*	%	0.1	0.5	10/04/23 14:26	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 11:31	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 15:58	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV7

ACZ Sample ID: ***L83021-23***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	145	0.104	B		mg/Kg	0.029	0.145	10/06/23 0:26	kja
Cadmium, total (3050)	M6020B ICP-MS	145	0.0564			mg/Kg	0.00725	0.0363	10/06/23 0:26	kja
Copper, total (3050)	M6020B ICP-MS	145	1.89		*	mg/Kg	0.116	0.29	10/06/23 22:50	kja
Lead, total (3050)	M6020B ICP-MS	145	<0.0145	U		mg/Kg	0.0145	0.0725	10/06/23 0:26	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	24	H	*	ng/g	3.08	15.4	10/03/23 14:49	mlh
Selenium, total (3050)	M6020B ICP-MS	145	0.991		*	mg/Kg	0.0145	0.0363	10/06/23 0:26	kja
Silver, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/06/23 0:26	kja
Zinc, total (3050)	M6020B ICP-MS	145	23.7		*	mg/Kg	0.87	2.18	10/06/23 22:50	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	73.8		*	%	0.1	0.5	10/04/23 16:15	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 11:56	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 17:57	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV8

ACZ Sample ID: ***L83021-24***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	135	0.0766	B		mg/Kg	0.027	0.135	10/06/23 0:32	kja
Cadmium, total (3050)	M6020B ICP-MS	135	0.0400			mg/Kg	0.00675	0.0338	10/06/23 0:32	kja
Copper, total (3050)	M6020B ICP-MS	135	1.11		*	mg/Kg	0.108	0.27	10/06/23 22:55	kja
Lead, total (3050)	M6020B ICP-MS	135	<0.0135	U		mg/Kg	0.0135	0.0675	10/06/23 0:32	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	17.3	H	*	ng/g	2.6	13	10/03/23 14:58	mlh
Selenium, total (3050)	M6020B ICP-MS	135	0.690		*	mg/Kg	0.0135	0.0338	10/06/23 0:32	kja
Silver, total (3050)	M6020B ICP-MS	135	<0.0135	U	*	mg/Kg	0.0135	0.0675	10/06/23 0:32	kja
Zinc, total (3050)	M6020B ICP-MS	135	30.2		*	mg/Kg	0.81	2.03	10/06/23 22:55	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.9		*	%	0.1	0.5	10/04/23 18:03	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 12:20	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 19:55	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV9

ACZ Sample ID: ***L83021-25***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	165	0.0670	B		mg/Kg	0.033	0.165	10/06/23 0:34	kja
Cadmium, total (3050)	M6020B ICP-MS	165	0.0126	B		mg/Kg	0.00825	0.0413	10/06/23 0:34	kja
Copper, total (3050)	M6020B ICP-MS	165	1.27		*	mg/Kg	0.132	0.33	10/06/23 22:57	kja
Lead, total (3050)	M6020B ICP-MS	165	<0.0165	U		mg/Kg	0.0165	0.0825	10/06/23 0:34	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	14.2	H	*	ng/g	2.76	13.8	10/03/23 15:06	mlh
Selenium, total (3050)	M6020B ICP-MS	165	0.331		*	mg/Kg	0.0165	0.0413	10/06/23 0:34	kja
Silver, total (3050)	M6020B ICP-MS	165	<0.0165	U	*	mg/Kg	0.0165	0.0825	10/06/23 0:34	kja
Zinc, total (3050)	M6020B ICP-MS	165	29.0		*	mg/Kg	0.99	2.48	10/06/23 22:57	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.6		*	%	0.1	0.5	10/04/23 19:51	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 12:44	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 21:54	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV10

ACZ Sample ID: ***L83021-26***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	175	0.126	B		mg/Kg	0.035	0.175	10/06/23 0:35	kja
Cadmium, total (3050)	M6020B ICP-MS	175	0.0423	B		mg/Kg	0.00875	0.0438	10/06/23 0:35	kja
Copper, total (3050)	M6020B ICP-MS	175	1.07		*	mg/Kg	0.14	0.35	10/06/23 22:59	kja
Lead, total (3050)	M6020B ICP-MS	175	<0.0175	U		mg/Kg	0.0175	0.0875	10/06/23 0:35	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	8.74	BH	*	ng/g	3.13	15.65	10/03/23 15:14	mlh
Selenium, total (3050)	M6020B ICP-MS	175	0.857		*	mg/Kg	0.0175	0.0438	10/06/23 0:35	kja
Silver, total (3050)	M6020B ICP-MS	175	<0.0175	U	*	mg/Kg	0.0175	0.0875	10/06/23 0:35	kja
Zinc, total (3050)	M6020B ICP-MS	175	19.1		*	mg/Kg	1.05	2.63	10/06/23 22:59	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.2		*	%	0.1	0.5	10/04/23 23:28	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 13:09	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/26/23 23:52	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV11

ACZ Sample ID: ***L83021-27***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	155	0.0842	B		mg/Kg	0.031	0.155	10/06/23 0:39	kja
Cadmium, total (3050)	M6020B ICP-MS	155	0.0209	B		mg/Kg	0.00775	0.0388	10/06/23 0:39	kja
Copper, total (3050)	M6020B ICP-MS	155	1.02		*	mg/Kg	0.124	0.31	10/06/23 23:03	kja
Lead, total (3050)	M6020B ICP-MS	155	<0.0155	U		mg/Kg	0.0155	0.0775	10/06/23 0:39	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	14.2	BH	*	ng/g	2.96	14.8	10/03/23 15:22	mlh
Selenium, total (3050)	M6020B ICP-MS	155	0.588		*	mg/Kg	0.0155	0.0388	10/06/23 0:39	kja
Silver, total (3050)	M6020B ICP-MS	155	<0.0155	U	*	mg/Kg	0.0155	0.0775	10/06/23 0:39	kja
Zinc, total (3050)	M6020B ICP-MS	155	32.5		*	mg/Kg	0.93	2.33	10/06/23 23:03	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	76.0		*	%	0.1	0.5	10/05/23 1:16	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 13:33	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/27/23 1:51	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV12

ACZ Sample ID: ***L83021-28***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	145	0.109	B		mg/Kg	0.029	0.145	10/06/23 0:41	kja
Cadmium, total (3050)	M6020B ICP-MS	145	0.0938			mg/Kg	0.00725	0.0363	10/06/23 0:41	kja
Copper, total (3050)	M6020B ICP-MS	145	1.34		*	mg/Kg	0.116	0.29	10/06/23 23:05	kja
Lead, total (3050)	M6020B ICP-MS	145	<0.0145	U		mg/Kg	0.0145	0.0725	10/06/23 0:41	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	10.4	BH	*	ng/g	3.28	16.4	10/03/23 15:30	mlh
Selenium, total (3050)	M6020B ICP-MS	145	0.844		*	mg/Kg	0.0145	0.0363	10/06/23 0:41	kja
Silver, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/06/23 0:41	kja
Zinc, total (3050)	M6020B ICP-MS	145	27.8		*	mg/Kg	0.87	2.18	10/06/23 23:05	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.3		*	%	0.1	0.5	10/05/23 3:05	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 13:58	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/27/23 3:49	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV13

ACZ Sample ID: ***L83021-29***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	140	0.0883	B		mg/Kg	0.028	0.14	10/06/23 0:43	kja
Cadmium, total (3050)	M6020B ICP-MS	140	0.0266	B		mg/Kg	0.007	0.035	10/06/23 0:43	kja
Copper, total (3050)	M6020B ICP-MS	140	1.12		*	mg/Kg	0.112	0.28	10/06/23 23:06	kja
Lead, total (3050)	M6020B ICP-MS	140	<0.014	U		mg/Kg	0.014	0.07	10/06/23 0:43	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	12.1	H	*	ng/g	2.35	11.75	10/03/23 15:55	mlh
Selenium, total (3050)	M6020B ICP-MS	140	0.686		*	mg/Kg	0.014	0.035	10/06/23 0:43	kja
Silver, total (3050)	M6020B ICP-MS	140	<0.014	U	*	mg/Kg	0.014	0.07	10/06/23 0:43	kja
Zinc, total (3050)	M6020B ICP-MS	140	23.8		*	mg/Kg	0.84	2.1	10/06/23 23:06	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	75.1		*	%	0.1	0.5	10/05/23 4:53	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 14:22	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/27/23 5:48	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV14

ACZ Sample ID: ***L83021-30***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	145	0.0820	B		mg/Kg	0.029	0.145	10/06/23 0:45	kja
Cadmium, total (3050)	M6020B ICP-MS	145	0.0224	B		mg/Kg	0.00725	0.0363	10/06/23 0:45	kja
Copper, total (3050)	M6020B ICP-MS	145	1.77		*	mg/Kg	0.116	0.29	10/06/23 23:08	kja
Lead, total (3050)	M6020B ICP-MS	145	<0.0145	U		mg/Kg	0.0145	0.0725	10/06/23 0:45	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	6.69	BH	*	ng/g	2.86	14.3	10/03/23 16:03	mlh
Selenium, total (3050)	M6020B ICP-MS	145	0.749		*	mg/Kg	0.0145	0.0363	10/06/23 0:45	kja
Silver, total (3050)	M6020B ICP-MS	145	<0.0145	U	*	mg/Kg	0.0145	0.0725	10/06/23 0:45	kja
Zinc, total (3050)	M6020B ICP-MS	145	25.8		*	mg/Kg	0.87	2.18	10/06/23 23:08	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	74.6		*	%	0.1	0.5	10/05/23 6:41	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 14:46	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/27/23 7:46	rsh

HighGold Mining Inc.
Project ID:
Sample ID: KC-BM DV15

ACZ Sample ID: ***L83021-31***
Date Sampled: *08/09/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Fish Tissue*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	200	0.0896	B		mg/Kg	0.04	0.2	10/06/23 0:54	kja
Cadmium, total (3050)	M6020B ICP-MS	200	0.0484	B		mg/Kg	0.01	0.05	10/06/23 0:54	kja
Copper, total (3050)	M6020B ICP-MS	200	1.12		*	mg/Kg	0.16	0.4	10/06/23 23:17	kja
Lead, total (3050)	M6020B ICP-MS	200	<0.02	U		mg/Kg	0.02	0.1	10/06/23 0:54	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	16.7	H	*	ng/g	2.76	13.8	10/03/23 16:11	mlh
Selenium, total (3050)	M6020B ICP-MS	200	0.769		*	mg/Kg	0.02	0.05	10/06/23 0:54	kja
Silver, total (3050)	M6020B ICP-MS	200	<0.02	U	*	mg/Kg	0.02	0.1	10/06/23 0:54	kja
Zinc, total (3050)	M6020B ICP-MS	200	35.4		*	mg/Kg	1.2	3	10/06/23 23:17	kja

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Moisture Content	D2216-80	1	77.4		*	%	0.1	0.5	10/05/23 8:30	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Digestion - Hot Plate	M3050B ICP-MS								10/02/23 15:59	rsh
Fish Tissue Pulverization	EPA 600/4-81-055								09/27/23 9:45	rsh

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

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ACZ Project ID: ***L83021***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575578													
WG575578ICV	ICV	10/02/23 21:25	MS230908-1	.05		.05127	mg/L	103	90	110			
WG575578ICB	ICB	10/02/23 21:27				U	mg/L		-0.0006	0.0006			
WG575404PBS	PBS	10/02/23 21:36				.14015	mg/Kg		-0.3	0.3			
WG575404LCSS	LCSS	10/02/23 21:38	PCN62776	34.6		33.61643	mg/Kg		27.68	41.52			
WG575926													
WG575926ICV	ICV	10/05/23 22:20	MS230908-1	.05		.05205	mg/L	104	90	110			
WG575926ICB	ICB	10/05/23 22:22				U	mg/L		-0.0006	0.0006			
WG575404PBS	PBS	10/05/23 22:31				U	mg/Kg		-0.3	0.3			
WG575404LCSS	LCSS	10/05/23 22:33	PCN62776	34.6		31.63856	mg/Kg		27.68	41.52			
WG575404LFB	LFB	10/05/23 22:35	MS230807-4	.0501		.0502	mg/Kg	100	80	120			
WG575404LFBD	LFBD	10/05/23 22:37	MS230807-4	.0501		.05226	mg/Kg	104	80	120	4	20	
L83021-09MS	MS	10/05/23 22:59	MS230807-4	11.2725	.148	11.66506	mg/Kg	102	75	125			
L83021-09MSD	MSD	10/05/23 23:01	MS230807-4	11.2725	.148	11.20117	mg/Kg	98	75	125	4	20	
WG575927													
WG575927ICV	ICV	10/06/23 0:04	MS230908-1	.05		.05072	mg/L	101	90	110			
WG575927ICB	ICB	10/06/23 0:06				U	mg/L		-0.0006	0.0006			
WG575509PBS	PBS	10/06/23 0:15				U	mg/Kg		-0.3	0.3			
WG575509LCSS	LCSS	10/06/23 0:17	PCN62776	34.6		30.24387	mg/Kg		27.68	41.52			
WG575509LFB	LFB	10/06/23 0:19	MS230807-4	.0501		.05324	mg/Kg	106	80	120			
WG575509LFBD	LFBD	10/06/23 0:21	MS230807-4	.0501		.05111	mg/Kg	102	80	120	4	20	
L83021-30MS	MS	10/06/23 0:47	MS230807-4	7.2645	.082	8.07193	mg/Kg	110	75	125			
L83021-30MSD	MSD	10/06/23 0:48	MS230807-4	7.2645	.082	7.94519	mg/Kg	108	75	125	2	20	

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575578													
WG575578ICV	ICV	10/02/23 21:25	MS230908-1	.05		.052774	mg/L	106	90	110			
WG575578ICB	ICB	10/02/23 21:27				U	mg/L		-0.00015	0.00015			
WG575404PBS	PBS	10/02/23 21:36				.048755	mg/Kg		-0.075	0.075			
WG575404LCSS	LCSS	10/02/23 21:38	PCN62776	14.5		13.951093	mg/Kg		11.6	17.4			
WG575404LFB	LFB	10/02/23 21:40	MS230807-4	.05005		.053898	mg/Kg	108	80	120			
WG575404LFBD	LFBD	10/02/23 21:42	MS230807-4	.05005		.059993	mg/Kg	120	80	120	11	20	
L83021-09MS	MS	10/02/23 22:04	MS230807-4	11.26125	.0754	13.902326	mg/Kg	123	75	125			
L83021-09MSD	MSD	10/02/23 22:06	MS230807-4	11.26125	.0754	14.368916	mg/Kg	127	75	125	3	20	MA
WG575927													
WG575927ICV	ICV	10/06/23 0:04	MS230908-1	.05		.052342	mg/L	105	90	110			
WG575927ICB	ICB	10/06/23 0:06				U	mg/L		-0.00015	0.00015			
WG575509PBS	PBS	10/06/23 0:15				U	mg/Kg		-0.075	0.075			
WG575509LCSS	LCSS	10/06/23 0:17	PCN62776	14.5		12.759733	mg/Kg		11.6	17.4			
WG575509LFB	LFB	10/06/23 0:19	MS230807-4	.05005		.051184	mg/Kg	102	80	120			
WG575509LFBD	LFBD	10/06/23 0:21	MS230807-4	.05005		.050177	mg/Kg	100	80	120	2	20	
L83021-30MS	MS	10/06/23 0:47	MS230807-4	7.25725	.0224	7.602993	mg/Kg	104	75	125			
L83021-30MSD	MSD	10/06/23 0:48	MS230807-4	7.25725	.0224	7.368022	mg/Kg	101	75	125	3	20	

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ACZ Project ID: ***L83021***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG576035													
WG576035ICV	ICV	10/06/23 20:44	MS230908-1	.05		.05383	mg/L	108	90	110			
WG576035ICB	ICB	10/06/23 20:46				U	mg/L		-0.0024	0.0024			
WG575404PBS	PBS	10/06/23 20:55				6.9835	mg/Kg		-1.2	1.2			B1
WG575404LCSS	LCSS	10/06/23 20:57	PCN62776	35		41.7591	mg/Kg		28	42			
WG575404LFB	LFB	10/06/23 20:59	MS230807-4	.05005		.06419	mg/Kg	128	80	120			N1
WG575404LFBD	LFBD	10/06/23 21:01	MS230807-4	.05005		.06159	mg/Kg	123	80	120	4	20	N1
L83021-09MS	MS	10/06/23 21:23	MS230807-4	11.26125	1.85	14.81021	mg/Kg	115	75	125			
L83021-09MSD	MSD	10/06/23 21:25	MS230807-4	11.26125	1.85	12.9788	mg/Kg	99	75	125	13	20	
WG576036													
WG576036ICV	ICV	10/06/23 22:27	MS230908-1	.05		.05449	mg/L	109	90	110			
WG576036ICB	ICB	10/06/23 22:29				U	mg/L		-0.0024	0.0024			
WG575509PBS	PBS	10/06/23 22:39				2.73197	mg/Kg		-1.2	1.2			B1
WG575509LCSS	LCSS	10/06/23 22:40	PCN62776	35		35.68206	mg/Kg		28	42			
WG575509LFB	LFB	10/06/23 22:42	MS230807-4	.05005		.0555	mg/Kg	111	80	120			
WG575509LFBD	LFBD	10/06/23 22:44	MS230807-4	.05005		.05416	mg/Kg	108	80	120	2	20	
L83021-30MS	MS	10/06/23 23:10	MS230807-4	7.25725	1.77	10.09277	mg/Kg	115	75	125			
L83021-30MSD	MSD	10/06/23 23:12	MS230807-4	7.25725	1.77	9.94695	mg/Kg	113	75	125	1	20	

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575699													
WG575699ICV	ICV	10/04/23 20:17	MS230908-1	.05		.05261	mg/L	105	90	110			
WG575699ICB	ICB	10/04/23 20:19				U	mg/L		-0.0003	0.0003			
WG575404PBS	PBS	10/04/23 20:28				.11047	mg/Kg		-0.15	0.15			
WG575404LFB	LFB	10/04/23 20:32	MS230807-4	.05005		.0538	mg/Kg	107	80	120			
WG575404LFBD	LFBD	10/04/23 20:34	MS230807-4	.05005		.05197	mg/Kg	104	80	120	3	20	
L83021-09MS	MS	10/04/23 20:55	MS230807-4	11.26125	U	12.75486	mg/Kg	113	75	125			
L83021-09MSD	MSD	10/04/23 20:57	MS230807-4	11.26125	U	13.57894	mg/Kg	121	75	125	6	20	
WG575927													
WG575927ICV	ICV	10/06/23 0:04	MS230908-1	.05		.05263	mg/L	105	90	110			
WG575927ICB	ICB	10/06/23 0:06				U	mg/L		-0.0003	0.0003			
WG575509PBS	PBS	10/06/23 0:15				U	mg/Kg		-0.15	0.15			
WG575509LCSS	LCSS	10/06/23 0:17	PCN62776	.162		.15749	mg/Kg		0.1296	0.1944			
WG575509LFB	LFB	10/06/23 0:19	MS230807-4	.05005		.05152	mg/Kg	103	80	120			
WG575509LFBD	LFBD	10/06/23 0:21	MS230807-4	.05005		.0503	mg/Kg	100	80	120	2	20	
L83021-30MS	MS	10/06/23 0:47	MS230807-4	7.25725	U	7.51365	mg/Kg	104	75	125			
L83021-30MSD	MSD	10/06/23 0:48	MS230807-4	7.25725	U	7.47201	mg/Kg	103	75	125	1	20	

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ACZ Project ID: ***L83021***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury by Direct Combustion AA M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG573058													
WG573058ICV1	ICV	08/28/23 12:34	HG230801-2	100		98.3	ng/g	98	90	110			
WG573058ICV2	ICV	08/28/23 12:41	HG230801-2	100		99.7	ng/g	100	90	110			
WG573058ICV3	ICV	08/28/23 12:48	HG230801-3	1000		1020	ng/g	102	90	110			
WG573058ICV4	ICV	08/28/23 12:55	HG230801-4	10000		10100	ng/g	101	90	110			
WG575505													
WG575505ICV1	ICV	10/03/23 8:15	HG230912-2	100		92.1	ng/g	92	90	110			
WG575505ICV2	ICV	10/03/23 8:21	HG230912-2	100		99.7	ng/g	100	90	110			
WG575505ICV3	ICV	10/03/23 8:33	HG230912-3	1000		1000	ng/g	100	90	110			
WG575505ICV4	ICV	10/03/23 8:40	HG230912-4	10000		10000	ng/g	100	90	110			
WG575505PBS	PBS	10/03/23 8:57				U	ng/g		-5.76	5.76			
L83021-01MS	MS	10/03/23 9:38	HG230912-3				ng/g	87	80	120			
L83021-02DUP	DUP	10/03/23 9:54			28.1	24.5	ng/g				14	20	
WG575505LCSS	LCSS	10/03/23 10:44	PCN65989	316		323	ng/g		80	120			
WG575505LCSSD	LCSSD	10/03/23 11:00	PCN65989	316		309	ng/g		80	120	4	20	
WG575505PBS1	PBS	10/03/23 13:28				U	ng/g		-5.7	5.7			
WG575505LCSS1	LCSS	10/03/23 13:35	PCN65989	316		320	ng/g		80	120			
WG575505LCSSD1	LCSSD	10/03/23 13:51	PCN65989	316		302	ng/g		80	120	6	20	
L83021-21MS	MS	10/03/23 14:25	HG230912-3				ng/g	90	80	120			
L83021-22DUP	DUP	10/03/23 14:41			12.8	12.1	ng/g				6	20	RA

Moisture Content D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575741													
L83021-25DUP	DUP	10/04/23 21:40			77.6	77.1	%				1	20	
WG575740													
L83021-06DUP	DUP	10/05/23 20:03			75.1	76.7	%				2	20	

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575699													
WG575699ICV	ICV	10/04/23 20:17	MS230908-1	.05		.05175	mg/L	104	90	110			
WG575699ICB	ICB	10/04/23 20:19				U	mg/L		-0.0003	0.0003			
WG575404PBS	PBS	10/04/23 20:28				.09094	mg/Kg		-0.15	0.15			
WG575404LCSS	LCSS	10/04/23 20:30	PCN62776	8.3		8.13103	mg/Kg		6.64	9.96			
WG575404LFB	LFB	10/04/23 20:32	MS230807-4	.025025		.02708	mg/Kg	108	80	120			
WG575404LFBD	LFBD	10/04/23 20:34	MS230807-4	.025025		.02559	mg/Kg	102	80	120	6	20	
L83021-09MS	MS	10/04/23 20:55	MS230807-4	5.630625	.599	7.27428	mg/Kg	119	75	125			
L83021-09MSD	MSD	10/04/23 20:57	MS230807-4	5.630625	.599	7.87554	mg/Kg	129	75	125	8	20	MA
WG575927													
WG575927ICV	ICV	10/06/23 0:04	MS230908-1	.05		.05184	mg/L	104	90	110			
WG575927ICB	ICB	10/06/23 0:06				U	mg/L		-0.0003	0.0003			
WG575509PBS	PBS	10/06/23 0:15				.06081	mg/Kg		-0.15	0.15			
WG575509LCSS	LCSS	10/06/23 0:17	PCN62776	8.3		7.53718	mg/Kg		6.64	9.96			
WG575509LFB	LFB	10/06/23 0:19	MS230807-4	.025025		.02556	mg/Kg	102	80	120			
WG575509LFBD	LFBD	10/06/23 0:21	MS230807-4	.025025		.02513	mg/Kg	100	80	120	2	20	
L83021-30MS	MS	10/06/23 0:47	MS230807-4	3.628625	.749	4.79367	mg/Kg	111	75	125			
L83021-30MSD	MSD	10/06/23 0:48	MS230807-4	3.628625	.749	4.71802	mg/Kg	109	75	125	2	20	

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ACZ Project ID: ***L83021***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silver, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575578													
WG575578ICV	ICV	10/02/23 21:25	MS230908-1	.02		.02116	mg/L	106	90	110			
WG575578ICB	ICB	10/02/23 21:27				U	mg/L		-0.0003	0.0003			
WG575404PBS	PBS	10/02/23 21:36				U	mg/Kg		-0.15	0.15			
WG575404LCSS	LCSS	10/02/23 21:38	PCN62776	2.05		1.94977	mg/Kg		1.64	2.46			
WG575404LFB	LFB	10/02/23 21:40	MS230807-4	.01001		.01051	mg/Kg	105	80	120			
WG575404LFBD	LFBD	10/02/23 21:42	MS230807-4	.01001		.01171	mg/Kg	117	80	120	11	20	
L83021-09MS	MS	10/02/23 22:04	MS230807-4	2.25225	U	2.6752	mg/Kg	119	75	125			
L83021-09MSD	MSD	10/02/23 22:06	MS230807-4	2.25225	U	2.71422	mg/Kg	121	75	125	1	20	
WG575927													
WG575927ICV	ICV	10/06/23 0:04	MS230908-1	.02		.02095	mg/L	105	90	110			
WG575927ICB	ICB	10/06/23 0:06				U	mg/L		-0.0003	0.0003			
WG575509PBS	PBS	10/06/23 0:15				U	mg/Kg		-0.15	0.15			
WG575509LCSS	LCSS	10/06/23 0:17	PCN62776	2.05		1.73449	mg/Kg		1.64	2.46			
WG575509LFB	LFB	10/06/23 0:19	MS230807-4	.01001		.01	mg/Kg	100	80	120			
WG575509LFBD	LFBD	10/06/23 0:21	MS230807-4	.01001		.00978	mg/Kg	98	80	120	2	20	
L83021-30MS	MS	10/06/23 0:47	MS230807-4	1.45145	U	1.46487	mg/Kg	101	75	125			
L83021-30MSD	MSD	10/06/23 0:48	MS230807-4	1.45145	U	1.44508	mg/Kg	100	75	125	1	20	

Zinc, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG575699													
WG575699ICV	ICV	10/04/23 20:17	MS230908-1	.05		.0521	mg/L	104	90	110			
WG575699ICB	ICB	10/04/23 20:19				U	mg/L		-0.018	0.018			
WG575404PBS	PBS	10/04/23 20:28				U	mg/Kg		-9	9			
WG575404LCSS	LCSS	10/04/23 20:30	PCN62776	105.3		103.1834	mg/Kg		84.24	126.36			
WG575404LFB	LFB	10/04/23 20:32	MS230807-4	.050015		.055	mg/Kg	110	80	120			
WG575404LFBD	LFBD	10/04/23 20:34	MS230807-4	.050015		.0536	mg/Kg	107	80	120	3	20	
L83021-09MS	MS	10/04/23 20:55	MS230807-4	11.253375	34.4	50.0545	mg/Kg	139	75	125			M1
L83021-09MSD	MSD	10/04/23 20:57	MS230807-4	11.253375	34.4	54.4574	mg/Kg	178	75	125	8	20	M1
WG576036													
WG576036ICV	ICV	10/06/23 22:27	MS230908-1	.05		.0518	mg/L	104	90	110			
WG576036ICB	ICB	10/06/23 22:29				U	mg/L		-0.018	0.018			
WG575509PBS	PBS	10/06/23 22:39				6.3318	mg/Kg		-9	9			
WG575509LCSS	LCSS	10/06/23 22:40	PCN62776	105.3		100.2075	mg/Kg		84.24	126.36			
WG575509LFB	LFB	10/06/23 22:42	MS230807-4	.050015		.0606	mg/Kg	121	80	120			N1
WG575509LFBD	LFBD	10/06/23 22:44	MS230807-4	.050015		.0543	mg/Kg	109	80	120	11	20	
L83021-30MS	MS	10/06/23 23:10	MS230807-4	7.252175	25.8	34.5768	mg/Kg	121	75	125			
L83021-30MSD	MSD	10/06/23 23:12	MS230807-4	7.252175	25.8	36.469	mg/Kg	147	75	125	5	20	M3

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-01	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-02	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ Project ID: ***L83021***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-03	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-04	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ Project ID: ***L83021***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-05	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-06	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-07	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-08	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-09	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-10	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-11	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-12	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-13	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-14	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-15	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-16	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-17	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-18	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-19	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L83021-20	WG575578	Cadmium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG576035	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575699	Lead, total (3050)	M6020B ICP-MS	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
	WG575699	Selenium, total (3050)	M6020B ICP-MS	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Zinc, total (3050)	M6020B ICP-MS	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-21	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-22	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-23	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-24	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-25	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-26	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-27	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-28	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-29	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83021-30	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
L83021-31	WG576036	Copper, total (3050)	M6020B ICP-MS	B1	Target analyte detected in prep / method blank at or above the method reporting limit. See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG575505	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG575927	Selenium, total (3050)	M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG576036	Zinc, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6020B ICP-MS	N1	See Case Narrative.
			M6020B ICP-MS	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Mercury by Direct Combustion AA	M7473 CVAAS
Selenium, total (3050)	M6020B ICP-MS
Silver, total (3050)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Moisture Content	D2216-80

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

HighGold Mining Inc.

ACZ Project ID: L83021
Date Received: 09/07/2023 15:17
Received By:
Date Printed: 9/11/2023

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA41189	0.6	NA	15	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

HighGold Mining Inc.

ACZ Project ID:	L83021
Date Received:	09/07/2023 15:17
Received By:	
Date Printed:	9/11/2023

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ LABORATORIES | Accredited Environmental Testing | 2773 Downhill Drive, Steamboat Springs, CO 80487, (970) 879-6590 | L83021

CHAIN of CUSTODY

Report to:

Name: Devin den Boer	Address: 405-375 Water Street
Company: High Gold	Vancouver, BC Canada V6B 5C6
E-mail: ddenboer@highgoldmining.com	Telephone: +1 (250) 551-4007

Copy of Report to:

Name: Josh Brekken	E-mail: josh.brekken@alaska.gov
Company: Alaska Department of Fish and Game	Telephone: (907) 267-2113

Invoice to:

Name: Devin den Boer	Address: 405-375 Water Street
Company: High Gold	Vancouver, BC Canada V6B 5C6
E-mail: ddenboer@highgoldmining.com	Telephone: +1 (250) 551-4007

Copy of Invoice to:

Name: Allegra Cairns	Address: 405-375 Water Street
Company: High Gold	Vancouver, BC Canada V6B 5C6
E-mail: acairns@highgoldmining.com	Telephone: +1 (604) 629-1165

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes No ✓
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Josh Brekken Sampler's Site Information State Alaska Zip code 99518 Time Zone AKTZ

*Sampler's Signature: Josh Brekken Digitally signed by Josh Brekken Date: 2023.09.07 10:17:54 -08'00'

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#:
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Metals	(see quote)						
JR-BM-23-Sed	8/8/2023 08:30	Sed	1	✓							
KR-BM-23-Sed	8/8/2023 11:00	Sed	1	✓							
JR-BM-23-WF	8/9/2023 08:30	Fish	1	✓							
KC-BM-23-WF	8/9/2023 11:00	Fish	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

1 — 16
17 — 24

REMARKS

Fish are individually wrapped in foil and batched in a Ziploc from each site/day. Tags for each fish are present inside the folded foil but separated from the fish.
Metals analysis for sediment samples should include: Ag, Al, As, Cd, Cu, Fe, Hg, Pb, Se, and Zn
Metals analysis for whole fish samples should include: Ag, Cd, Cu, Hg, Pb, Se, As, and Zn
Fish were weighed and measured at time of collection and these numbers can be provided to the lab upon request.
The JR sample for whole fish contains an extra fish (16 total). If only using 15 of the fish, #7 can be considered the extra.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
J. Brekken	9/6/23: 1002		9/8/23 1517

Qualtrax ID: 1984 Revision #: 2 White - Return with sample. Yellow - Retain for your records.

L83021 Chain of Custod

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 28, 2023

Report to:
Devin den Boer
HighGold Mining Inc.
405-375 Water Street
Vancouver, BC V6B 5C6

cc: Josh Brekken, Allegra Cairns

Bill to:
Devin den Boer
HighGold Mining Inc.
405-375 Water Street
Vancouver, BC V6B 5C6

Project ID:
ACZ Project ID: L83026

Devin den Boer:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 07, 2023. This project has been assigned to ACZ's project number, L83026. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L83026. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 28, 2023. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

HighGold Mining Inc.
Project ID:
Sample ID: JR-BM-23-SED

ACZ Sample ID: ***L83026-01***
Date Sampled: *08/08/23 08:30*
Date Received: *09/07/23*
Sample Matrix: *Sediment*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6010D ICP	100	20400		*	mg/Kg	5	25	09/22/23 0:51	aeh
Arsenic, total (3050)	M6020B ICP-MS	500	7.89			mg/Kg	0.1	0.5	09/21/23 18:54	kja
Cadmium, total (3050)	M6020B ICP-MS	500	0.203		*	mg/Kg	0.025	0.125	09/21/23 18:54	kja
Copper, total (3050)	M6020B ICP-MS	500	42.0			mg/Kg	0.4	1	09/21/23 18:54	kja
Iron, total (3050)	M6010D ICP	100	26500		*	mg/Kg	6	15	09/22/23 0:51	aeh
Lead, total (3050)	M6020B ICP-MS	500	1.59			mg/Kg	0.05	0.25	09/21/23 18:54	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	47.1	H	*	ng/g	3.6	18	09/14/23 14:37	mlh
Selenium, total (3050)	M6020B ICP-MS	500	0.131			mg/Kg	0.05	0.125	09/21/23 18:54	kja
Silver, total (3050)	M6020B ICP-MS	500	0.0644	B	*	mg/Kg	0.05	0.25	09/21/23 18:54	kja
Zinc, total (3050)	M6010D ICP	100	41.8			mg/Kg	2	5	09/22/23 0:51	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	73.0		*	%	0.1	0.5	09/20/23 17:03	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								09/13/23 10:00	rsh
Digestion - Hot Plate	M3050B ICP-MS								09/20/23 9:48	rsh
Digestion - Hot Plate	M3050B ICP								09/20/23 9:48	rsh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								09/18/23 13:00	lfp

HighGold Mining Inc.
Project ID:
Sample ID: KR-BM-23-SED

ACZ Sample ID: ***L83026-02***
Date Sampled: *08/08/23 11:00*
Date Received: *09/07/23*
Sample Matrix: *Sediment*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, total (3050)	M6010D ICP	101	23400		*	mg/Kg	5.05	25.3	09/22/23 1:02	aeh
Arsenic, total (3050)	M6020B ICP-MS	505	4.86			mg/Kg	0.101	0.505	09/21/23 18:56	kja
Cadmium, total (3050)	M6020B ICP-MS	505	0.499		*	mg/Kg	0.0253	0.126	09/21/23 18:56	kja
Copper, total (3050)	M6020B ICP-MS	505	18.9			mg/Kg	0.404	1.01	09/21/23 18:56	kja
Iron, total (3050)	M6010D ICP	101	23100		*	mg/Kg	6.06	15.2	09/22/23 1:02	aeh
Lead, total (3050)	M6020B ICP-MS	505	6.21			mg/Kg	0.0505	0.253	09/21/23 18:56	kja
Mercury by Direct Combustion AA	M7473 CVAAS	1	8.07	BH	*	ng/g	2.94	14.7	09/14/23 14:45	mlh
Selenium, total (3050)	M6020B ICP-MS	505	0.242			mg/Kg	0.0505	0.126	09/21/23 18:56	kja
Silver, total (3050)	M6020B ICP-MS	505	0.133	B	*	mg/Kg	0.0505	0.253	09/21/23 18:56	kja
Zinc, total (3050)	M6010D ICP	101	59.5			mg/Kg	2.02	5.05	09/22/23 1:02	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Solids, Percent	D2216-80	1	81.4		*	%	0.1	0.5	09/20/23 18:24	rsh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								09/13/23 10:03	rsh
Digestion - Hot Plate	M3050B ICP-MS								09/20/23 10:41	rsh
Digestion - Hot Plate	M3050B ICP								09/20/23 10:41	rsh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								09/18/23 13:05	lfp

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

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ACZ Project ID: ***L83026***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Aluminum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574808													
WG574808ICV	ICV	09/22/23 0:12	II230905-1	2		2.048	mg/L	102	90	110			
WG574808ICB	ICB	09/22/23 0:15				U	mg/L		-0.15	0.15			
WG574651PBS	PBS	09/22/23 0:39				U	mg/Kg		-15	15			
WG574651LCSS	LCSS	09/22/23 0:43	PCN624759	8040		8750	mg/Kg		3830	12200			
WG574651LCSSD	LCSSD	09/22/23 0:47	PCN624759	8040		8732	mg/Kg		3830	12200	0	20	
L83026-01MS	MS	09/22/23 0:55	II230907-5	100.1	20400	24220	mg/Kg	3816	75	125			M3
L83026-01MSD	MSD	09/22/23 0:58	II230907-5	100.1	20400	24200	mg/Kg	3796	75	125	0	20	M3

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.05		.0513	mg/L	103	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.0006	0.0006			
WG574651PBS	PBS	09/21/23 18:48				U	mg/Kg		-0.3	0.3			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	183		194.76787	mg/Kg		152	214			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	183		195.04984	mg/Kg		152	214	0	20	
L83031-01MS	MS	09/21/23 18:59	MS230807-4	25.05	.415	27.26323	mg/Kg	107	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	25.05	.415	27.29977	mg/Kg	107	75	125	0	20	

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.05		.051646	mg/L	103	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.00015	0.00015			
WG574651PBS	PBS	09/21/23 18:48				U	mg/Kg		-0.075	0.075			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	221		241.14325	mg/Kg		182	259			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	221		268.82514	mg/Kg		182	259	11	20	RL
L83031-01MS	MS	09/21/23 18:59	MS230807-4	25.025	.0452	26.002774	mg/Kg	104	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	25.025	.0452	26.007895	mg/Kg	104	75	125	0	20	

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.05		.05278	mg/L	106	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.0024	0.0024			
WG574651PBS	PBS	09/21/23 18:48				U	mg/Kg		-1.2	1.2			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	136		141.61227	mg/Kg		114	158			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	136		150.1096	mg/Kg		114	158	6	20	
L83031-01MS	MS	09/21/23 18:59	MS230807-4	25.025	.954	27.88589	mg/Kg	108	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	25.025	.954	28.00475	mg/Kg	108	75	125	0	20	

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ACZ Project ID: ***L83026***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574808													
WG574808ICV	ICV	09/22/23 0:12	II230905-1	2		1.977	mg/L	99	90	110			
WG574808ICB	ICB	09/22/23 0:15				U	mg/L		-0.18	0.18			
WG574651PBS	PBS	09/22/23 0:39				15.5	mg/Kg		-18	18			
WG574651LCSS	LCSS	09/22/23 0:43	PCN624759	14000		13540	mg/Kg		8420	19600			
WG574651LCSSD	LCSSD	09/22/23 0:47	PCN624759	14000		12800	mg/Kg		8420	19600	6	20	
L83026-01MS	MS	09/22/23 0:55	II230907-5	100.4	26500	27510	mg/Kg	1006	75	125			M3
L83026-01MSD	MSD	09/22/23 0:58	II230907-5	100.4	26500	27340	mg/Kg	837	75	125	1	20	M3

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.05		.05173	mg/L	103	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.0003	0.0003			
WG574651PBS	PBS	09/21/23 18:48				.05581	mg/Kg		-0.15	0.15			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	257		270.1987	mg/Kg		211	303			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	257		263.29814	mg/Kg		211	303	3	20	
L83031-01MS	MS	09/21/23 18:59	MS230807-4	25.025	2.01	27.11517	mg/Kg	100	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	25.025	2.01	27.44163	mg/Kg	102	75	125	1	20	

Mercury by Direct Combustion AA M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG573058													
WG573058ICV1	ICV	08/28/23 12:34	HG230801-2	100		98.3	ng/g	98	90	110			
WG573058ICV2	ICV	08/28/23 12:41	HG230801-2	100		99.7	ng/g	100	90	110			
WG573058ICV3	ICV	08/28/23 12:48	HG230801-3	1000		1020	ng/g	102	90	110			
WG573058ICV4	ICV	08/28/23 12:55	HG230801-4	10000		10100	ng/g	101	90	110			
WG574232													
WG574232ICV1	ICV	09/14/23 11:34	HG230912-2	100		98.5	ng/g	99	90	110			
WG574232ICV2	ICV	09/14/23 11:41	HG230912-2	100		99.1	ng/g	99	90	110			
WG574232ICV3	ICV	09/14/23 11:51	HG230912-3	1000		983	ng/g	98	90	110			
WG574232ICV4	ICV	09/14/23 11:58	HG230912-4	10000		9830	ng/g	98	90	110			
WG574232PBS	PBS	09/14/23 12:15				U	ng/g		-5.82	5.82			
WG574232LCSS	LCSS	09/14/23 12:23	PCN60050	90		84.1	ng/g		80	120			
WG574232LCSSD	LCSSD	09/14/23 12:41	PCN60050	90		77.3	ng/g		80	120	8	20	
L82889-01MS	MS	09/14/23 13:28	HG230912-3				ng/g	12	80	120			M2
L82889-03DUP	DUP	09/14/23 14:05			45.2	33.9	ng/g				29	20	RD

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.05		.0512	mg/L	102	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.0003	0.0003			
WG574651PBS	PBS	09/21/23 18:48				U	mg/Kg		-0.15	0.15			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	217		241.81291	mg/Kg		172	263			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	217		244.79875	mg/Kg		172	263	1	20	
L83031-01MS	MS	09/21/23 18:59	MS230807-4	12.5125	U	12.97835	mg/Kg	104	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	12.5125	U	13.32054	mg/Kg	106	75	125	3	20	

HIGHGOLDMINING

ACZ Project ID: ***L83026***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Silver, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574831													
WG574831ICV	ICV	09/21/23 18:37	MS230908-1	.02		.02065	mg/L	103	90	110			
WG574831ICB	ICB	09/21/23 18:39				U	mg/L		-0.0003	0.0003			
WG574651PBS	PBS	09/21/23 18:48				U	mg/Kg		-0.15	0.15			
WG574651LCSS	LCSS	09/21/23 18:50	PCN624759	67.8		71.97551	mg/Kg		54.1	81.4			
WG574651LCSSD	LCSSD	09/21/23 18:52	PCN624759	67.8		70.43344	mg/Kg		54.1	81.4	2	20	
L83031-01MS	MS	09/21/23 18:59	MS230807-4	5.005	U	4.99849	mg/Kg	100	75	125			
L83031-01MSD	MSD	09/21/23 19:05	MS230807-4	5.005	U	5.13479	mg/Kg	103	75	125	3	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574656													
WG574656PBS	PBS	09/20/23 14:20				U	%		-0.1	0.1			
L83026-02DUP	DUP	09/20/23 19:46			81.4	83.1	%				2	20	

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG574808													
WG574808ICV	ICV	09/22/23 0:12	II230905-1	2		1.979	mg/L	99	90	110			
WG574808ICB	ICB	09/22/23 0:15				U	mg/L		-0.06	0.06			
WG574651PBS	PBS	09/22/23 0:39				U	mg/Kg		-6	6			
WG574651LCSS	LCSS	09/22/23 0:43	PCN624759	224		235.8	mg/Kg		180	268			
WG574651LCSSD	LCSSD	09/22/23 0:47	PCN624759	224		233.1	mg/Kg		180	268	1	20	
L83026-01MS	MS	09/22/23 0:55	II230907-5	50.045	41.8	93.19	mg/Kg	103	75	125			
L83026-01MSD	MSD	09/22/23 0:58	II230907-5	50.045	41.8	92.86	mg/Kg	102	75	125	0	20	

Inorganic Extended Qualifier Report

HighGold Mining Inc.

ACZ Project ID: ***L83026***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L83026-01	WG574808	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG574831	Cadmium, total (3050)	M6020B ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG574808	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG574232	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M7473 CVAAS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
L83026-02	WG574808	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG574831	Cadmium, total (3050)	M6020B ICP-MS	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
			M6020B ICP-MS	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
	WG574808	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG574232	Mercury by Direct Combustion AA	M7473 CVAAS	H3	Sample was received and analyzed past holding time.
			M7473 CVAAS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M7473 CVAAS	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.

Certification Qualifiers

HighGold Mining Inc.

ACZ Project ID: ***L83026***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Silver, total (3050)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	D2216-80

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

HighGold Mining Inc.

ACZ Project ID: L83026
Date Received: 09/07/2023 15:17
Received By:
Date Printed: 9/11/2023

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?		X	

L83026-02 Container B2741905 (SJ INORG): The ID on the sample label is KC-BM-23-SED, and on the COC the ID is KR-BM-23-SED. The sample ID was entered per the COC.

11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA41189	0.6	<=6.0	15	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

REPAD LPII 2012-03

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

HighGold Mining Inc.

ACZ Project ID:	L83026
Date Received:	09/07/2023 15:17
Received By:	
Date Printed:	9/11/2023

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ LABORATORIES | Accredited Environmental Testing | 2773 Downhill Drive, Steamboat Springs, CO 80487, (970) 879-6590

L83026

CHAIN of CUSTODY

Report to:

Name: Devin den Boer
Company: High Gold
E-mail: ddenboer@highgoldmining.com
Address: 405-375 Water Street, Vancouver, BC Canada V6B 5C6
Telephone: +1 (250) 551-4007

Copy of Report to:

Name: Josh Brekken
Company: Alaska Department of Fish and Game
E-mail: josh.brekken@alaska.gov
Telephone: (907) 267-2113

Invoice to:

Name: Devin den Boer
Company: High Gold
E-mail: ddenboer@highgoldmining.com
Address: 405-375 Water Street, Vancouver, BC Canada V6B 5C6
Telephone: +1 (250) 551-4007

Copy of Invoice to:

Name: Allegra Cairns
Company: High Gold
E-mail: acairns@highgoldmining.com
Address: 405-375 Water Street, Vancouver, BC Canada V6B 5C6
Telephone: +1 (604) 629-1165

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes / No ✓
If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Josh Brekken **Sampler's Site Information** **State** Alaska **Zip code** 99518 **Time Zone** AKTZ

***Sampler's Signature:** Josh Brekken Digitally signed by Josh Brekken Date: 2023.09.17 10:17:58 -08'00'

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #:
PO#:
Reporting state for compliance testing:
Check box if samples include NRC licensed material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Metals	(see quote)							
JR-BM-23-Sed	8/8/2023 08:30	Sed	1	✓								
KR-BM-23-Sed	8/8/2023 11:00	Sed	1	✓								
JR-BM-23-WF	8/9/2023 08:30	Fish	1	✓								
KC-BM-23-WF	8/9/2023 11:00	Fish	1	✓								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Fish are individually wrapped in foil and batched in a Ziploc from each site/day. Tags for each fish are present inside the folded foil but separated from the fish.
Metals analysis for sediment samples should include: Ag, Al, As, Cd, Cu, Fe, Hg, Pb, Se, and Zn
Metals analysis for whole fish samples should include: Ag, Cd, Cu, Hg, Pb, Se, As, and Zn
Fish were weighed and measured at time of collection and these numbers can be provided to the lab upon request.
The JR sample for whole fish contains an extra fish (16 total). If only using 15 of the fish, #7 can be considered the extra.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
J. Brekken	9/6/23: 1000		9/7/23 15:17

Qualtrax ID: 1984 Revision #: 2 White - Return with sample. Yellow - Retain for your records.

L83026 Chain of Custod