AtkinsRéalis

Webequie Supply Road Project

Webequie First Nation

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APPENDIX O: WEBEQUIE SUPPLY ROAD – COUNTRY FOODS ASSESSMENT

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Executive Summary

AtkinsRéalis was retained by the Webequie First Nation to conduct a Comprehensive Environmental Assessment (EA) for the Webequie Supply Road Project ("the Project", WSR) under the Ontario *Environmental Assessment Act* as well as an Impact Assessment (IA) to meet the requirements of the federal *Impact Assessment Act*. The proposed WSR is a new all-season road of approximately 107 km in length from Webequie First Nation to the mineral deposit area near McFaulds Lake (also referred to as the Ring of Fire). To support the EA/IA, a baseline and cumulative effects human health risk assessment (HHRA) is to be completed. As the WSR and Webequie First Nation area is used by the community for hunting, fishing and harvesting activities, a baseline country foods (or "traditional foods", as per HC, 2023) study was conducted to assess baseline concentrations of contaminants in berries, game birds, small and large mammals and fish. To complete the country foods evaluation in the HHRA, a Country Foods Consumption and Use Survey was conducted from December 2022 and January 2023 in the Webequie community, the results of which are supplemented with information available from the First Nations Food, Nutrition and Environment Study (FNFNES) community data (Chan et al., 2014; 2019; 2021).

The Webequie First Nation identified a series of country foods species of importance to the community. AtkinsRéalis collected vegetation samples (where available) and fish samples in 2020, while the Webequie First Nation provided mammal and bird samples to AtkinsRéalis in 2020 and 2021.

This document provides detailed information obtained from the Country Foods Consumption and Use Survey undertaken by AtkinsRéalis for the WSR and from the review of the FNFNES. Community-specific country foods consumption rates and pattern data have been identified herein for the Webequie First Nation, which will be incorporated into the HHRA to reduce uncertainty in risk evaluation scenarios for the WSR. Inorganics analytical data for the country foods samples available for analysis are also provided in this study, including the identification of exposure point concentrations to be used in the baseline HHRA.

Acronym List

Ag	Silver
As	Arsenic
B	Boron
Ba	Barium
Be	Beryllium
Bi	Bismuth
BV	Bureau Veritas Laboratory
Ca	Calcium
CALA	Canadian Association of Laboratory Accreditation
Cd	Cadmium
cm^3	Cubic Centimetres
Co	Cobalt
CoC	Chain of Custody
COPC	Contaminant/Chemical of Potential Concern
Cr VI	Hexavalent chromium or $chromium^{6+}$
Cs	Cesium
Cr	Chromium
Cu	Copper
EPC	Exposure Point Concentration
EA	Environmental Assessment
FAO	Food and Agriculture Organization
Fe	Iron
FNFNES	First Nations Food, Nutrition and Environment Study
GoC	Government of Canada
g	Grams
g/cm^3	Grams per cubic centimetre
Hg	Mercury
HHRA	Human Health Risk Assessment
ICE	Indigenous and Community Engagement
K	Potassium
L	Litres
MECP	Ontario Ministry of the Environment, Conservation and Parks

Mg	Magnesium
Mn	Manganese
Mo	Molybdenum
MOE	Ontario Ministry of Environment
mL	Millilitre
Na	Sodium
Ni	Nickel
OCAP	Indigenous Ownership, Control, Access and Possession
P	Phosphorous
Pb	Lead
QA	Quality Assurance
QC	Quality Control
RDL	Reportable Detection Limit
Sb	Antimony
SCC	Standards Council of Canada
Se	Selenium
Sn	Tin
Sr	Strontium
Ti	Titanium
Tl	Thallium
total Cr	Total Chromium
U	Uranium
UCLM	Upper Confidence Limit of the Mean
µg/g	Micrograms per gram
US EPA	United States Environmental Protection Agency
V	Vanadium
WSR	Webequie Supply Road
Zn	Zinc

1. Introduction

AtkinsRéalis (formerly SNC-Lavalin Inc.) was retained by the Webequie First Nation to conduct a Comprehensive Environmental Assessment (EA) for the Webequie Supply Road Project ("the Project", WSR) under the Ontario *Environmental Assessment Act* (EA Act), as well as an Impact Assessment (IA) to meet the requirements of the federal *Impact Assessment Act*. The proposed WSR is a new all-season road of approximately 107 km in length from Webequie First Nation to the mineral deposit area near McFaulds Lake (also referred to as the Ring of Fire). The location of Webequie First Nation and the Webequie Supply Road (WSR) are identified on Figure 1. To support the EA/IA, a cumulative effects human health risk assessment (HHRA) is to be completed. As the WSR and Webequie First Nation area is used by the community for hunting, fishing and harvesting activities, a baseline traditional foods (or "country foods", as per HC, 2023) study was conducted to assess baseline concentrations of contaminants in berries, game birds, small and large mammals and fish. To support this country foods study, a country foods survey was conducted from December 2022 and January 2023 in the Webequie community, the results of which are supplemented with information available from the First Nations Food, Nutrition and Environment Study (FNFNES) community data (Chan et al., 2014, 2019, 2020). This report presents the results of the country foods study and survey, upon which the country foods assessment in the HHRA supporting the EA/IA will be based.

Country foods (also known as traditional foods) are often linked to the cultural identity of Indigenous peoples and consist of food items which are obtained by fishing, hunting, trapping, or harvesting (including for medicinal or ceremonial purposes). Country foods are not considered to include commercially produced and obtained foods (e.g., store bought food). Consumption of country foods leads to significantly improved nutrient intake; however, when country foods are impacted by contaminants, risks of consuming contaminated foods may outweigh the benefits.

1.1 Report Structure

Section 2 provides the objective of the country foods survey and study. Section 3 provides the methods used to conduct this assessment and evaluate the results of the country foods survey and study, while the results of the country foods survey and study and discussion of the findings are provided in Section 4. Section 5 provides a quality assurance and quality control discussion regarding analytical data collected as part of the country foods study. Section 6 summarizes country food consumption/intake characteristics, and a conclusion is provided in Section 7. References are provided in Section 8.

2. Study Area

The proposed WSR is located in northwestern Ontario, near Webequie First Nation, which is located approximately 525 km northeast of Thunder Bay. The WSR will represent a two lane, chip sealed surface, new all-season road of approximately 107 km in length from Webequie First Nation to the mineral deposit area near McFaulds Lake (also referred to as the Ring of Fire). The proposed road consists of a northwest-southeast segment running 51 km from Webequie First Nation to a 56 km segment running east before terminating near McFaulds Lake. A total of 17 km of the corridor is within Webequie First Nation Reserve lands.

The WSR will be constructed and operated as a facility that only provides a connection between Webequie First Nation and the McFaulds Lake area to serve mineral exploration and future mining development activities, with no connection to the provincial highway system, although it is anticipated that the WSR will ultimately be an all-season road connection between the McFaulds Lake area and the provincial highway system to ensure/maximize the viability of mine developments. The study area for the Human Health Risk Assessment (HHRA), which this country foods survey and study was completed to support, represents the WSR between the Webequie First Nation to the McFaulds Lake area.

The project area can generally be broken up into three components: the “Project Footprint”, the “Local Study Area” (LSA) and “Regional Study Area” (RSA). For the purposes of characterizing existing conditions, and for the prediction of effects, these study areas are described as follows:

- Project Footprint (PF) – the area of direct disturbance (i.e., the physical area required for Project construction and operations). The PF is defined as the 35 m right-of-way (ROW) of the WSR; and temporary or permanent areas needed to support the Project that include access roads, construction camps, laydown and storage yards, aggregate pits/quarries, and a Maintenance and Storage Facility (MSF).
- Local Study Area (LSA) – the area where largely direct, and indirect effects of the Project are likely to occur. The LSA is the combined LSAs for fish and fish habitat, surface water, vegetation, general wildlife, and air quality valued components. These components also correspond to human health and the traditional use of the land by Indigenous peoples. The LSA extends or buffers approximately 1 km from the centreline of the preliminary recommended preferred route of the WSR, and 500 metres (m) from the boundaries of temporary or permanent supportive infrastructure.
- Regional Study Area (RSA) – the area where potential, largely indirect and cumulative effects of the Project in the broader, regional context may occur. The RSA is the combined RSAs for fish and fish habitat, surface water, vegetation, and general wildlife valued components given that these components may be relied on by Indigenous peoples or others for land and resource use. The RSA extends on each side of the LSA to include quaternary watersheds crossed by the preliminary recommended preferred route of the WSR.

3. Objective of the Country Foods Assessment

The potential human health risks associated with elevated levels of contaminants in country foods is being examined in the EA/IA for the WSR Project through a HHRA for country foods. The country foods HHRA will be used to estimate the exposure that individuals may receive from consumption of country foods and to identify whether there may be potential risks associated with that exposure, under baseline and Project-related scenarios, and accounting for the cumulative effects of the current and proposed projects.

Within the HHRA for the Project, ingestion of contaminants via food consumption can be a significant pathway of exposure, particularly when contaminants that may increase as a result of project activities possess the ability to bioaccumulate or biomagnify in the food chain, and/or when the consumption of country food may constitute a significant portion of an exposed person's diet.

Health Canada (2010a, Sec. 1.1) defines country foods as foods "that are produced in an agricultural (not for commercial sale) or backyard setting or harvested through hunting, gathering or fishing activities." For the purpose of the WSR human health risk evaluation, country foods consist of food items harvested from the wild and foods produced in a backyard type setting (home-produced food).

The objectives of the current country foods study and supporting survey was to determine community-specific country foods consumption rates and pattern data for Webequie First Nation that could then be used to reduce uncertainty in the baseline, construction case and operational case HHRA for the WSR. Another of the key objectives of the country foods study is to provide baseline inorganics concentration data for available country foods which the Webequie First Nation had identified as important to the community. The outcomes of the current country foods assessment will include the following:

- Identification of country foods consumption characteristics for the Webequie First Nation;
- Documentation of baseline concentrations of contaminants of potential concern (COPCs) measured in country foods; and
- Determination of exposure point concentrations (EPCs) for COPCs in country foods.

These results will be incorporated into the country foods component of the HHRA to support the EA/IA for the Project.

4. Methodology

The country foods assessment study and survey consisted of the following components:

- Survey Components:
  - Design of the survey; and
  - Administering of the survey.
- Study Components:
  - Compilation and evaluation of the data;
  - Identification of consumption patterns to be used in the HHRA; and
  - Country food sampling and analysis.

4.1 Country Food Survey Methodology

4.1.1 Survey Design

As identified in Section 2, the objective of the country foods survey was to capture consumption and use of country foods in Webequie First Nation. The survey is used in part to identify consumption patterns and quantities of foods consumed. Other studies which were completed to support the Project identify contaminant concentrations in country foods. The contaminant concentration results will be used with the food consumption data to evaluate baseline risks in the HHRA. This information will be used to maximize the potential benefits from the Project, while avoiding, limiting or mitigating/managing any potential negative effects. The country foods study methodology is discussed in Section 4.2.

The country foods survey was designed with the intent identifying the following:

- Which country foods are collected/consumed by the Webequie First Nation;
- How the country foods are processed for consumption;
- How much of a given country food is consumed over a specified period; and
- What parts of various country foods are consumed (i.e., muscle tissues, organs, plant leaves or roots).

The country foods survey was designed to be a baseline, individual-based, anonymous recall study but also contained elements of a household recall study. Reference periods were one year, broken down by season, with a further breakdown of weekly consumption patterns. This breakdown allows for identification of yearly ingestion rates of various country food items. Since the country foods survey questionnaire also included respondent age information, the data were intended to be age stratified to allow for assessment of risk to different age groups in the HHRA. The country foods survey questionnaire was structured to provide information to support the HHRA, regarding respondent demographics, consumption of traditional food components consisting of fish, aquatic and terrestrial mammals, migratory and non-migratory birds, wild berries, wild plants and tree foods, in addition to drinking/cooking water consumption and use patterns.

For each country food component addressed in the survey, the following information was collected, depending on whether the respondent completed the survey fully:

- How many days/season was a specific country food component consumed;
- How many meals/week was the specific country food component consumed;
- What is the common preparation method for the specific country food component;
- What is the typical number of servings, using a visual guide as to what constitutes a serving size; and

- On a yearly basis, how many country food component meals are consumed on a species-specific basis.

4.1.2 Survey Communication and Administration

AtkinsRéalis, in conjunction with Intrinsik Corp. (Intrinsik), developed a country foods survey for the Webequie First Nation. A copy of the paper-based survey is provided in Attachment A. The country foods survey was administered between December 2022 and January 2023 to Webequie First Nation through two (2) means: online via Surveymonkey™, and paper-based data collection with surveys being completed in the Webequie First Nation. The survey was facilitated by Indigenous and Community Engagement (ICE) Inc. of Thunder Bay, Ontario. ICE trained two (2) members of Webequie First Nation to assist within the community to administer the paper-based survey. There was no direct community contact with members of the AtkinsRéalis team due to Webequie First Nation COVID limitations. The survey itself required approximately 45 minutes to 1 hour for an individual to complete. Individuals who completed the survey were volunteers who resided in Webequie First Nation Reserve.

Survey responses are confidential and information collection for the survey adhered to the Indigenous Ownership, Control, Access, and Possession (OCAP) principles (The First Nations Information Governance Centre 2021 https://fnigc.ca/ocap-training/) where:

- Ownership means that Webequie First Nation collectively owns the information from the survey;
- Control means that Webequie First Nation has the right to manage any and/or all aspects of the research;
- Access means that Webequie First Nation has the right to access the information from the survey regardless of where it is held/stored; and
- Possession means that Webequie First Nation has the right to physically control the information from the survey.

As such, survey raw data are not provided in this report and only summary statistics are provided.

4.2 Country Foods Study Methodology

4.2.1 Data Evaluation Approach

Available Project-specific information, including consumption characteristics and analytical tissue concentrations obtained from the survey and tissue analytical data from the country foods sampling program, respectively, was supplemented and/or pooled with additional information and data obtained from the FNFNES (Chan et al., 2014).

Tissue concentration data for various contaminants and country foods was available from the FNFNES and was used to supplement country food sampling program results, as outlined in Section 4.2.1.1, below.

In the evaluation of country foods consumption characteristics, information obtained from the electronic and paper surveys were pooled for analysis. As a result of the low Webequie First Nation survey uptake (a total of fourteen (14) respondents), survey data was also subsequently pooled with data available from the Webequie First Nation FNFNES (Chan et al., 2014) for data collected in 2011/2012, which was obtained by AtkinsRéalis team following permission to release the information from the FNFNES study group by Webequie First Nation. Section 4.2.1.2 describes how the survey results and the FNFNES results were pooled and evaluated to obtain country foods consumption information for the current assessment. Additionally, the evaluation of the results of the country foods survey applied a Gender-

based analysis plus (GBA Plus) to identify any differential aspects on collection and consumption of country foods of diverse population groups within Webequie First Nation.

4.2.1.1 Country Foods Tissue Concentration Data

A country foods sampling program for the Project was developed and initiated, as described in Section 4.2.2. Additionally, the FNFNES was consulted to identify supplemental tissue concentration information that could support the evaluation of baseline country foods tissue concentrations within the relevant Project study areas. The FNFNES study (Chan et al., 2014) provides chemical analytical data for the following:

- Fish – dioxins and furans (PCDDFs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs); polybrominated diphenyl ethers (PBDEs), organochlorine pesticides (OCPs), poly- and perfluoralkyl substances (PFAS) and metals;
- Moose – PCDDFs, PCBs, PAHs, PBDEs, OCPs, PFAS and metals;
- Beaver – PCBs, OCPs and metals;
- Ducks – PCDDFs, PCBs, PAHs, PBDEs, OCPs and metals;
- Geese – PCDDFs, PCBs, PAHs, PBDEs, OCPs, PFAS and metals; and
- Ruffed grouse – PCBs, OCPs and metals.

It is noted that the majority of the above listed contaminants, except for metals/inorganics, are not anticipated to be associated with the Project. While the data has been summarized herein, only those contaminants with the potential to be associated with the Project will be considered in the HHRA.

Where equivalent species were sampled in 2022/2023, data from Chan et al. (2014) was pooled with the 2022/2023 data. The Chan et al. (2014) data contains the following uncertainties:

- A number of samples do not have identified species types associated with the samples. These samples will not be incorporated in the current country foods assessment;
- The data is typically pooled by species and therefore for analytes not investigated in the 2022/2023 study, statistical exposure point concentrations (EPCs) are not be possible to derive;
- Moose tissue sample types (e.g., muscle, kidney, liver) are not identified. It is assumed for the purpose of the country foods assessment that these samples are of muscle tissue;
- Analytical certificates are not available to AtkinsRéalis;
- PCDDF, PCB, PAH, PBDE and OCP data are not stated as to whether they are in wet or dry weight units. It is assumed that the units are wet weight; and
- Most of the PCB and PAH analytical results are qualified with alphabetical codes. The definitions of the codes are not provided. It is assumed the qualifiers are US EPA data qualifiers and the qualified data is treated as follows:
    - “M” qualifier – This qualifier could indicate matrix spike recovery was outside the laboratory’s established acceptable recovery range (ITRC, 2022), the matrix recovery was high (e.g., Gordon et. al., 2005) or laboratory specific qualifier. M qualified data will be used as is in the country foods study and subsequent HHRA, although results could potentially be high biased; and
    - “U” qualifier - The analyte was analyzed for but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate (US EPA, 2002). The associated value is either the sample quantitation limit or the sample detection limit (ITRC, 2022) and is not considered a detected concentration in the HHRA.

4.2.1.2 Country Foods Consumption Characteristics

4.2.1.2.1 Serving Size Conversions

Serving sizes were translated from the qualitative measure used in the country foods survey questionnaire to a quantitative measure based on typical masses or volumes, converted to grams (g).

The qualitative measures provided in the survey consisted of the size of the palm of an adult hand or visual depiction of a cut of meat (typically with another object as a scale of reference) for fish and game while berry and plant/tree foods used fist size, cupped hand or bowl depictions to equate portion size to a volume. Volume-based depictions were used in the country foods survey questionnaire as mass-based measures are more difficult to visualize.

The serving size for fish and game equated to 75 grams (g) on a wet/fresh weight basis, while the serving size for berry and plant/tree foods equated to 60 mL and 250 mL respectively. Berry and plant/tree food serving size volumes were converted to mass using a surrogate berry/plant approach, based on the following:

- Berries (based on blueberries) – 125 mL (1/2 cup) = 150 berries (Calderwood and Tooley, 2020) and 50 berries = 68 g (GoC, 2023a). Therefore a 60 mL serving is equivalent to 72 berries which is equivalent to 98 g on a wet/fresh weight basis; and
- Plant leaf food (based on rosemary, an evergreen which has leaves that are similar to hemlock, as the most common plant consumed is cedar) – 15 mL equals 1.7 g (GoC, 2023b), therefore a single serving of 1 cup is equivalent to 28 g on a wet/fresh weight basis.

This volume to mass conversion approach differs from that completed in the FNFNES study where a generic density conversion of 0.96 g/mL was used for traditional food and 250 mL is then equal to 240 grams (FAO, 2012 in Chan et al., 2019). It is suspected that the FNFNES approach may overestimate serving portion masses for some berry and plant foods (berries which have void spaces between berries and many plants have densities less than 0.96 g/cm^3); therefore, the surrogate approach was used in this assessment.

A serving size of homegrown produce, consisting of potatoes, is 250 mL (1 cup). This volume of prepared potatoes is approximately 246 g, based on mashed potatoes (McCain, 2017) Country food root serving size used an equivalent serving to mass conversion factor.

Country food seed portion size volumes were converted, if necessary, too mass based on 1 cup of wild rice weighing 101 g, as measured by the AtkinsRéalis team.

4.2.1.2.2 Survey Data Statistical Evaluation

Maximum, median and mean consumption frequency and serving size statistics were generated using Microsoft Excel™ from the pooled data. These statistics were generated for both all respondent data and “eater only” data, otherwise referred to as “consumers only” in this document.

4.2.1.2.3 Identification of Country Food Consumption Characteristics

Statistical results were stratified by age ranges[1], based on Health Canada (HC, 2024) age classes. As a result, country food consumption characteristics are summarized on an age class basis. The Webequie First Nation country foods survey only provided adult consumption rate data as younger individuals did not directly participate in the survey. As a result, adult consumption rates for individual country foods were scaled based on recommended total food intakes summarized by the United States Environmental

[1] Health Canada (HC, 2024) defines receptor characteristics based on age classes, as opposed to age and gender classes.

Protection Agency (US EPA) (2011 Table 14-1) to estimate consumption rates for younger individuals. Scaling factors, based on US EPA (2011) for 95th percentile per capita food intake, edible portion, are provided in Table 4-1.

Table 4-1: Consumption Rate Scaling Factors

Age Class	Age Range (years)	Bodyweight (kg)	Consumption Rate (g/kg-day)	Consumption Rate (g/day)	Scaling Factor (unitless)
Infant	0 – <0.5	8.2	208	1705.6	0.4
Toddler	0.5 - <5	16.5	185	3052.5	0.7
Child	5 - <12	32.9	92	3026.8	0.7
Teen	12 - <20	59.7	56	3343.2	0.8
Adult	>20	70.7	63	4454.1	1

Scaling factors, relative to an adult, are calculated by multiplying the consumption rate for each age class by the respective bodyweight and then dividing the result by the adult age class bodyweight adjusted consumption rate. Scaling factors are calculated from the maximum 95th percentile intake rates for any US EPA (2011) age group within the Health Canada (HC, 2024) age classes while body weights were obtained from Health Canada (HC, 2024).

4.2.2 Country Foods Sampling and Analysis

4.2.2.1 Identification of Country Foods for Assessment

The AtkinsRéalis team, in consultation with the Webequie First Nation, identified the following priority country foods important to Webequie First Nation:

- Vegetation
  - Eastern white cedar (*Thuja occidentalis*);
  - Wild sarsaparilla (*Aralia nudicaulis*);
  - Labrador tea (*Rhododendron groenlandicum*); and
  - American sweet flag (*Acorus americanus*).
- Fish
  - Lake Whitefish (Coregonus clupeaformis);
  - Walleye (Pickerel;*Sander viterum*);
  - Northern pike (*Esox lucius*); and
  - White sucker (*Catostomus commersonii*).
- Mammals
  - Moose (*Alces alces*); and
  - Snowshoe hare (*Lepus americanus*).
- Birds
  - Species of ducks and geese; and
  - Species of Galliformes (e.g., Ruffed grouse, etc.).

A wide range of species and components of species may be consumed by the Webequie First Nation and therefore it is not always feasible to assess all country foods. Additionally, some plant and animal species are only seasonally available due to animal migration patterns and ripening periods or are not available in

the WSR area. Based on Chan et al. (2014), caribou, muskrat (rarely), beaver, Brook trout, Rainbow trout, Largemouth bass, Channel catfish, Red sucker, Lake sturgeon are also consumed.

4.2.2.2 Sample Collection

4.2.2.2.1 Vegetation

Between September 22 and 24, 2020, six (6) vegetation samples were collected for analysis by the AtkinsRéalis team from areas identified by the Webequie First Nation as country food harvest locations. Sample collection and handling protocols are described in Attachment B-1. The species targeted for collection were identified by the Webequie First Nation as locally important. Samples were manually collected, rinsed in the field to remove soil and dust and submitted to Bureau Veritas Labs (BV) of Mississauga, Ontario in laboratory supplied sample bags for analysis. Samples collected for analysis are summarized in Table 4-2.

Table 4-2: Vegetation Samples

Species	Type	Sample ID
Eastern White Cedar	Leaf	L1-CW-20-1
Wild Sarsaparilla	Root	L2-SA-20-1
Labrador Tea	Leaf	L2-LT-20-1 and L4-LT-20-01
American Sweet Flag	Tuber	L3-WK-20-01 and L3-WK-20-02

Sample locations are identified on Figure 2.

4.2.2.2.2 Fish

Fish species of importance as a food source were identified in consultation with the Webequie First Nation. These species consist of Walleye (Pickerel), Northern pike, Lake whitefish and White sucker. Sampling locations consisted of two (2) locations along the WSR corridor (at the proposed waterbody crossings with Winisk Lake [WB-1] located east of Bender Lake and with Winiskisis Channel [WC-3] located east of Stockman Lake).

Samples were collected passively in August 2020 using entanglement equipment consisting of research gill nets in two (2) 60 m length, 1.6 m height net sets in Winisk Lake and three (3) net sets in the Winiskisis Channel using 30 m length, 0.9 m height nets. Samples were processed in the field for analysis by scaling each specimen and removal of offal (entrails, swim bladder, etc.) from each specimen, to be retained. Sample offal and fillet fraction samples were retained for analysis. Sample collection and handling protocols are described in Attachment B-2. Samples collected for analysis are summarized in Table 4-3.

Table 4-3: Fish Samples

Species	Type	Location	Sample ID
Lake Whitefish	Fillet (5 samples)	Winiskisis Chanel (WC-3)	WFWC20-01 to WFWC20-05
Lake Whitefish	Fillet (4 samples)	Winisk Lake (WB-1)	WLWF20-01 to WLWF20-04
Walleye	Fillet (5 samples)	Winiskisis Chanel (WC-3)	PKWC20-01 to PKWC20-05
Walleye	Fillet (5 samples)	Winisk Lake (WB-1)	WLPK20-01 to WLPK20-05
Northern Pike	Fillet (5 samples)	Winiskisis Chanel (WC-3)	NPWC20-01 to NPWC20-05
Northern Pike	Fillet (5 samples)	Winisk Lake (WB-1)	WLNP20-01 to WLNP20-05

Sampling locations where fish were collected are identified on Figure 2.

4.2.2.2.3 Mammals

Mammal tissue samples were supplied to AtkinsRéalis by the Webequie First Nation, based on available samples in the community. Samples were collected on October 17 and 18, 2020 (moose and caribou samples) and November 6, 2021 (Snowshoe hare). Sample collection and handling protocols are described in Attachment B-3. Samples collected for analysis are summarized in Table 4-4.

Table 4-4: Mammal Samples

Species	Type	Location	Sample ID
Snowshoe Hare	Muscle	Within the Webequie community	SNOWSHOE HARE IN COMMUNITY
Moose	Meat Kidney Liver	North of community (53.241505 N, 87.043010 W)	MS-20-3-MM MS-20-1-KD MS-20-2-LV
Caribou	Meat Liver	North of community (53.303261 N, 86.930764 W)	CB-20-5-MM CB-20-4-LV

Sampling locations where the mammals were obtained were reported by community members and are identified on Figure 2.

4.2.2.2.4 Birds

Bird tissue samples were supplied to AtkinsRéalis by the Webequie First Nation, based on availability. Samples were collected on September 17, 2021 (Canada goose), October 17, 2021 (Ruffed grouse) and November 6, 2021 (Bufflehead). Sample collection and handling protocols are described in Attachment B-3. Samples collected for analysis are summarized in Table 4-5.

Table 4-5: Bird Samples

Species	Type	Location	Sample ID
Bufflehead	Meat	3 km south of the Webequie community	BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM.
Canada Goose	Meat	14 km south of the Webequie community	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER
Ruffed Grouse	Meat	Within the Webequie community	RUFFED GROUSE IN COMMUNITY

Sampling locations where the birds were obtained were reported by the community members and are identified on Figure 2.

4.2.2.3 Sample Analysis

Sample analysis consisted generally of metals, the primary potential contaminants associated with the Project, as well as moisture and selective methylmercury analysis, with further details regarding analytes identified in the following subsections. Samples were analysed by Bureau Veritas Labs (BV) of Mississauga, Ontario. BV is a licensed environmental laboratory, which is accredited by Canadian Association for Laboratory Accreditation Inc. (CALA) and Standards Council of Canada (SCC). BV

subcontracted methylmercury analysis to Flett Research Ltd. of Winnipeg, Manitoba, which is CALA accredited for methylmercury analysis.

4.2.2.3.1 Vegetation

Six (6) vegetation samples were analyzed for the following parameters:

- Metals (As, Sb, Ba, Be, Bi, B, Cd, Ca, total Cr, Cr VI, Co, Cu, Hg, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, U, V, Zn); and
- Moisture.

4.2.2.3.2 Fish

Twenty-nine (29) fish tissue samples were analysed for the following parameters:

- Metals (As, Sb, Ba, Be, Bi, B, Cd, Ca, Cs, total Cr, Cr VI, Co, Cu, Hg, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, U, V, Zn); and
- Moisture.

Methylmercury was not analysed in fish tissue, although nearly all (>95% based on Lescord et al., 2018) mercury in fish muscle tissue is methylmercury. As a result, all mercury analytical data for fish tissue is assumed to be representative of methylmercury concentrations.

4.2.2.3.3 Mammals

Six (6) mammal tissue samples were analysed for the following parameters:

- Metals (As, Sb, Ba, Be, Bi, B, Cd, Ca, Cs, total Cr, Cr VI, Co, Cu, Hg, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, U, V, Zn);
- Chromium VI (moose and caribou tissue only);
- Methylmercury (Snowshoe hare, caribou and moose muscle tissue only); and
- Moisture.

Methylmercury data are not available for moose liver and kidney and Caribou kidney. Methylmercury has been identified to comprise 19.9% to 20.4% and 2.7% to 26.4% of total mercury in mammalian kidney and liver, respectively (Wagemann et al., 1998; Moses et al., 2009). Therefore, for this assessment, it is conservatively assumed that methylmercury comprises 20% of total mercury in kidney and 26% of total mercury in liver. Wagemann et al. (1998) and Moses et al. (2009) established mammal methylmercury to total mercury fractions in mammals which are at a higher trophic level (carnivores) relative to moose and caribou (herbivores); therefore, the percentages used in this assessment should be conservative for methylmercury, an organometallic compound which biomagnifies. To illustrate that the above adopted fractions used in the HHRA are conservative, Wren et al. (1980) identified that 21.9% of total mercury in mammalian herbivore liver (four (4) beaver samples) and 12.2% of total mercury in the same specimens consisted of methylmercury.

4.2.2.3.4 Birds

Three (3) bird tissue samples were analysed for the following:

- Metals (As, Sb, Ba, Be, Bi, B, Cd, Ca, Cs, total Cr, Cr VI, Co, Cu, Hg, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Se, Ag, Na, Sr, Tl, Sn, Ti, U, V, Zn);
- Methylmercury; and
- Moisture.

4.2.2.4 Quality Assurance and Quality Control

The general objective of the Quality Assurance (QA) and Quality Control (QC) program is to ensure that analytical data are reliable and representative of baseline conditions in the WSR project area.

4.2.2.4.1 Field Quality Assurance and Quality Control

The field QA/QC program included the following QA components:

- In-house training to ensure field staff are competent with the execution of the field activities;
- Application of established sampling protocols to minimize sample handling and potential for cross-contamination;
- Use of dedicated non-contaminating sampling equipment wherever possible;
- Use of sample specific identification and labelling procedures; and
- Submission of samples in laboratory provided containers under Chain-of-Custody (CoC) records.

For sampling completed by the AtkinsRéalis team, nitrile gloves were worn at all times in preparation to collect a sample, including sample bag labelling, equipment set-up, sampling, etc. A fresh pair of nitrile gloves were donned before each sample was collected and was replaced as necessary throughout sample collection process at every location and when handling samples and sample processing equipment. Following sample collection, sample bags were placed on ice in laboratory supplied coolers.

Field duplicate samples were not submitted for laboratory analysis as tissue samples were homogenized by the laboratory as opposed to being completed in the field. As a result, data quality will be assessed based on laboratory QA/QC data.

4.2.2.4.2 Laboratory Quality Assurance and Quality Control

Chemical analyses were performed by laboratories accredited by the Standards Council of Canada (SCC) or Canadian Association for Laboratory Accreditation (CALA). Laboratory analyses were completed in accordance with standard methods. Laboratory QA/QC measures included analysis of laboratory blank, spiked blank, duplicate and matrix spike samples. Laboratory acceptance criteria reported on laboratory certificates of analyses were used to assess the quality of laboratory QA/QC measures.

4.2.3 Calculation of COPC Exposure Point Concentrations

Provided a sufficient number of samples and associated analytical data are available, according to Health Canada (HC, 2010a p41), a statistically derived exposure point concentration (EPC) may be used to evaluate human exposure. Because of uncertainties related to defining a true average, preferred EPCs for COPCs are typically calculated using the 95% upper confidence limit of the mean (UCLM) concentrations of COPCs for evaluating a reasonable maximum exposure risk scenario. The use of the 95% UCLM is consistent with guidance from other regulatory agencies such as the US EPA and Ontario Ministry of the Environment, Conservation and Parks (MECP) (US EPA, 1989 p6-19; MOE, 2005). At the 95% UCLM concentration, the probability of underestimating the true mean concentration is considered to be less than five (5) percent. The 95% UCLM is used to estimate risks and hazards since a human receptor is rarely, if ever, continuously exposed to the maximum concentration of a chemical through a particular route of exposure. It is more reasonable to assume that a human receptor is exposed to some measure of an average or upper estimate of the average value of the range of concentrations for country foods. Therefore, the EPC is calculated assuming an individual is equally exposed to similar country foods within all portions of the study area. The use of the 95% UCLM as the EPC is generally recommended as the conservative estimate of the average concentration and is recommended for use by the US EPA (US EPA, 1992).

The US EPA's ProUCL software (US EPA, 2022a) Version 5.2 was used to calculate 95% UCLMs for each COPC that met the minimum dataset size criteria. US EPA (2022b, Section 4.2.4 p127) indicates that a minimum of approximately ten (10) detected values for a parameter are required to compute an EPC. Datasets possessing greater or equal to ten (10) samples (with detections) are considered more reliable. For datasets with a high proportion of non-detectable results (approximately >95% based on US EPA 2022b Section 1.12) and the number of detections is low (e.g., <4 based on US EPA, 2022b Section 1.12), simple ad hoc methods of defining the EPC could be used, such a use of the sample median or mode (US EPA, 2022b Section 1.12). For identifying EPCs for use in the HHRA, median based EPCs were not identified for datasets with <4 detectable values unless the frequency of detection was less than 5%, since the median frequently would represent the detection limit, or the median of detectable results would exaggerate the reasonable maximum EPC.

Substitution of non-detectable results with a proxy concentration (such as half the detection limit or maximum detection limit) was not undertaken when calculating EPCs, with two (2) exceptions noted below. The Kaplan-Meier method was instead used to calculate EPCs for COPCs with non-detectable observations. The Kaplan-Meier method incorporated into ProUCL counts the number of data points below each detected concentration and then estimates probability distribution function for the chemical parameter.

EPCs were identified for each COPC as follows:

- Where the number of detections is ≥10, a UCLM was calculated using ProUCL 5.2. Based on such parameters as skewness, distribution, sample size and proportion of non-detectable values, a UCLM is recommended by the program.
- Where the number of detections was <10, or the frequency of non-detection was greater than 95%, the median of detectable measured concentrations was adopted as the EPC.
- Where the number of detections is ≥10, and the frequency of non-detection was greater than 95%, a UCLM was calculated with ProUCL 5.2 by assuming a proxy sample concentration equivalent to the detection limit. This approach is anticipated to overestimate the UCLM.
- If a COPC is non-detectable in all samples, a proxy concentration is assigned to the COPC representing half the maximum detection limit (consistent with HC, 2010b, Sec. 5.4 guidance).

In situations where ProUCL identifies more than one (1) recommended UCLM, the highest recommended value was selected as a conservative approach. If the recommended UCLM exceeds the maximum measured concentration of a specific chemical, the maximum measured concentration was identified as the EPC for that chemical.

5. Results

Results associated with the objectives of the current country foods assessment, as identified in Section 3, are provided as follows:

- Identification of country foods consumption characteristics for the Webequie First Nation (Section 5.1);
- Documentation of baseline concentrations of COPCs measured in country foods (Section 5.2); and
- Determination of EPCs for COPCs in country foods (Section 5.3).

These results will be incorporated into the country foods component of the HHRA to support the EA/IA for the Project.

5.1 Country Foods Consumption Characteristics

Administration of the country foods survey completed at Webequie First Nation between December 2022 and January 2023 resulted in only fourteen (14) survey responses, all of which were adult responses. As a result, collected data were considered collectively, where possible, with the much more extensive FNFNES data for Webequie First Nation obtained in 2011 (Chan et al., 2014). A summary of the pooled analysis results is provided in Attachment C. A summary of the 2022-2023 survey data is provided in Attachment D, while a summary of the FNFNES data is provided in Attachment E.

All results summarized in the following subsections are based on the pooled FNFNES and 2022-2023 survey data (Attachment C), unless noted otherwise. The FNFNES survey was not designed to provide information fully compatible for risk analysis; therefore, although limited in extent, additional consumption pattern information was obtained from the 2022-2023 country foods survey data (Attachment D) where available and suitable for use in the country foods study and an associated HHRA.

5.1.1 Demographics of Respondents

Attachment D provides the country foods survey demographic summary, which was disaggregated as part of the GBA Plus approach. Country foods survey respondents were predominantly male (64.3%) and respondents were all adults, aged between 31 and 45 years old. Children and teens present in respondents' households were predominantly female (61.5%). Household members of respondents consumed the same foods as the respondents. Attachment D indicates that of the limited number of households surveyed, the majority of households consist of teens and adults (22.5% and 35% respectively), similar individual proportions of toddlers and children (17.5% and 15% respectively), while toddlers represent a relatively small fraction (10%) of household occupants.

When country foods survey respondents and FNFNES respondent data are pooled (Attachment C), the total number of respondents was 112 (487 when all household members are considered) and respondents were predominantly under the age of 65 (95.5%), approximately evenly split between males and females (51.8% vs. 48.2% respectively) and in family households averaging 4.4 individuals.

5.1.2 Country Foods Consumption Patterns Survey

Data for consumers only are used to identify consumption parameters used in the country foods study in order to avoid underestimating risk in the HHRA to country foods consumers. Rates have been rounded to one (1) decimal place although calculations were completed with unrounded data.

5.1.2.1 Fish Consumption

Overall, the combined 2022-2023 country foods survey and the FNFNES data (Attachment C) indicate that 97.3% of survey respondents reported that they consume fish during the year. The most commonly consumed fish species is Walleye, followed by Lake whitefish, Lake sturgeon and Northern pike. The remaining fish species surveyed were consumed by less than approximately 38% of survey respondents. The percentage of survey respondents consuming these species, the maximum days per year of consumption and the mean days per year of consumption by consumers only are summarized as follows:

- Walleye – 93.8% of respondents consume the species a maximum of 364 days/year with a mean consumption rate of 46.6 days/year (consumers only);
- Lake whitefish – 74.1% of respondents consume the species a maximum of 364 days/year with a mean consumption rate of 36.7 days/year (consumers only);
- Lake sturgeon – 65.2% of respondents consume the species a maximum of 120 days/year with a mean consumption rate of 8.5 days/year (consumers only); and
- Northern pike – 58.0% of respondents consume the species a maximum of 364 days/year with a mean consumption rate of 33.1 days/year (consumers only).

The maximum days per year of fish consumption is 364 and associated with Walleye, Northern pike and Lake whitefish and the maximum mean fish consumption rate is 46.6 days/year and associated with Walleye.

Based on the 2022-2023 survey data (Attachment D), the mean number of meals per week of fish was 1.3, consisting of a mean serving size of 1.3 portions/meal (for consumers only) and typically prepared skin-off. The mean yearly number of all fish meals, for all species, by consumers only was 175.0 meals/year.

For the purpose of evaluating fish consumption risk, appropriate yearly consumption rates for the fish species identified to be of importance to the Webequie First Nation and for which data are available (Walleye (Pickerel), Northern pike, Lake whitefish from the 2022/2023 study and additionally Sturgeon, Trout and Sucker from the Chan et al., 2011 data) were identified. Mean yearly (consumer only) consumption rates of 79.7 meals/year (1.5 meals/week based on 46.4 days/year Walleye consumed and 33.06 days/year Northern pike consumed) for Walleye and Northern pike and 24.1 meals/year for Whitefish (0.5 meals/week), were calculated by AtkinsRéalis based on (Attachment C), at a mean 1.3 portions/meal, based on Attachment D).

These meals/year rates, were converted to g/year rates by based on a 99.8 g/meal size (based on a 75g/portion size: Appendix A):

- 7,954.1 g/year of Walleye and Northern pike consumed; and
- 2,405.2 g/year of Whitefish consumed.

5.1.2.2 Mammal Consumption

100% of survey respondents indicated they consume wild mammals during the year (Attachment C). The most common mammal species and tissue consumed consisted of moose meat, followed by moose liver and moose kidney. The remaining wild mammal/tissues surveyed were consumed by less than 29.5% of survey respondents. The percentage of survey respondents consuming these species, the maximum days/year of consumption and the mean days/year of consumption by consumers only are summarized as follows (Attachment C):

- Moose meat – 99.1% of respondents consume the species a maximum of 280 days/year with a mean consumption rate of 35.3 days/year (consumers only);

- Moose liver – 61.6% of respondents consume the species a maximum of 200 days/year with a mean consumption rate of 15.6 days/year (consumers only); and
- Moose kidney – 36.6% of respondents consume the species a maximum of 160 days/year with a mean consumption rate of 17.2 days/year (consumers only).

The 2022-2023 survey data (Attachment D) indicated 21.4% of respondents consumed rabbit or hare at a mean of 9.3 weeks per year (65.3 days/year) for consumers only. Based on the 2022-2023 survey data (Attachment D), the mean number of meals per week of land mammals was 2.2, consisting of a maximum mean serving size of 1.5 portions per meal (for consumers only).

To evaluate wild mammal tissue consumption risk, the following consumption rates from the 2022-2023 survey data (Attachment D) are used, in addition to the mean serving size of 1.5 portions per meal, which equates to 109.5 g/serving:

- Snowshoe hare – 4.7 meals/year at 510.3 g/year, with aquatic herbivore (muskrat and beaver) consumption rates added to Snowshoe hare;
- Moose meat – 15.9 meals/year at 1,735.6 g/year;
- Moose kidney – 5.5 meals/year at 602.3 g/year;
- Moose liver - 4.7 meals/year at 511.4 g/year;
- Caribou meat – 14.0 meals/year at 1,533 g/year; and
- Caribou liver – 4.7 meals/year at 511.4 g/year, conservatively based on Moose data.

5.1.2.3 Bird Consumption

99.1% of survey respondents indicated they consume wild birds during the year (Attachment C). Survey results are summarized based on whether the country food is migratory (waterfowl) or non-migratory. No eggs from wild birds were reported to be consumed by the survey respondents.

5.1.2.3.1 Migratory Birds (Waterfowl)

The most common waterfowl species consumed consisted of Canada goose (*Branta canadensis*), while ducks were consumed by 43.8% of survey respondents. The percentage of survey respondents consuming these species, the maximum days per year of consumption and the mean days per year of consumption by consumers only are summarized as follows:

- Canada goose – 99.1% of respondents consume the species a maximum of 140 days/year and a mean consumption rate of 25.8 days/year (consumers only); and
- Ducks – 43.8% of respondents consume various species a maximum of 56 days/year and a mean consumption rate of 4.2 days/year (consumers only).

The 2022-2023 survey data (Attachment D) indicates that mean number of goose meals/week is 3.9 (27.5 days/year) and duck meals was 3.3 meals/week, (9.31 and 14 days/year) or 10.29 meals/year of geese and 26 duck meals/year, with meals consisting of a mean of 1.2 portions/meal representing 90.75 g.

To evaluate migratory waterfowl consumption risk, the highest mean days/year consumption rate of 25.8 days/year for the Canada goose will be applied in the HHRA, as it is more conservative than the Attachment D rate. This rate applies to both geese and duck as the goose meal consumption rate is equivalent to the duck meal consumption rate (refer to Attachment C and Attachment D, respectively). Meal size and mass of tissue consumed are calculated from serving size per meal data in Attachment E and a meal portion mass of 75 g and consist of a meal size of 90.75 g, or 2,341.4 g/year.

5.1.2.3.2 Non-Migratory Birds

With respect to partridge and grouse, members of these species were consumed by 14.3% to 29.5% of survey respondents (Attachment C). The percentage of survey respondents consuming these species, the maximum days per year of consumption and the mean days per year of consumption by consumers only are summarized as follows:

- Grouse and partridge – 42% (14.3% for partridge plus 29.5% for grouse) of respondents consume the species a maximum of 60 days/year and a mean consumption rate of 9 days/year (consumers only).

To evaluate terrestrial bird consumption risk, the highest mean consumption rate of 10.4 days/year (based on grouse) is used to evaluate baseline and project risk. This consumption rate is higher than the rate from FNFNES data (Attachment E). For consumers only, mean serving size, based on the 2022-2023 survey data (Attachment D), is 0.67 portions/meal, which equates to a meal mass of 50.25 g, or 495.0 g/year.

5.1.2.4 Wild Berry Consumption

83.0% of survey respondents indicated they consume wild berries during the year (Attachment C). The most commonly consumed berry type was blueberries, followed by (and too much lesser extent) strawberries. The highest mean days/year consumption rates of 8.4 days/year (Attachment C, based on raspberry) and the total mean wild berry consumption rate is 35.2 days/year (Attachment C, sum of days/year mean berry consumption rates for all berry types).

To evaluate wild berry consumption risk, the total highest mean days/year consumption rate of 35.2 days/year, which exceeds the rate from the 2022-2023 survey data (Attachment D), is used to evaluate baseline and project risk. Meal size and wild berry ingestion rate are obtained from the 2022-2023 survey data (Attachment D), which represents a mean of 1 serving/meal or 60 mL which is equivalent to 98 g/meal or 3,447.6 g/year.

5.1.2.5 Wild Plants, Tree Foods or Mushrooms

38.4% of survey respondents indicated they consume wild plants of various types during the year. The most common plant and tissue consumed consisted of Labrador tea leaves, followed by Sweet flag root. Based on the 2022-2023 survey data (Attachment D), the most common plant type consumed was cedar, as tea, followed by Labrador tea. The remaining wild plant tissues surveyed in the FNFNES were consumed by less than approximately 2.7% of survey respondents. The mean days per year of plant consumption are summarized as follows (from pooled survey data summarized in Attachment C and FNFNES data summarized in Attachment E) and for the purpose of evaluating wild tissue consumption risk, the highest mean days per year consumption rates of the following are used to evaluate baseline risk:

- Plant root – 45.6 days/year consumed based on Sweet flag (Attachment C). Based on FNFNES Webequie First Nation data (Attachment E), a root consumption frequency of 16.5 days/year was identified;
- Plant seed – 7.0 days/year consumed based on Wild rice (Attachment E) from the FNFNES Webequie First Nation data as no seed consumption data is available from the 2022-2023 survey; and
- Plant leaves – 117.7 days/year consumed based on Mint, or 156.6 days per year based on all wild plant leaves, including dandelion (Attachment C). Based on FNFNES Webequie First Nation data (Attachment E), the man leaf/shoot consumption rate was 64 days/year.

Based on the FNFNES data and the 2022-2023 survey, mushrooms are not consumed. The FNFNES did not collect data regarding wild plant consumption portion size. Based on the 2022-2023 survey, the following portion size per meal/consumption occurrence data were identified:

- Cedar tea – 4 cups to 10+ cups, with 1 cup of leaves being used to make 2 to 4 cups of tea;
- Labrador tea – 1 cup to 10+ cups for consumers, with an average of 4.4 cups. Since data are not available to identify how many leaves are used to make a cup of tea, the volume of leaves required is based on cedar tea. Respondents indicated leaves or whole plant are used and one respondent indicated roots are consumed;
- Juniper – one (1) respondent indicated a "pinch" comprises a portion; and
- Bear root – two (2) respondents indicated whole plant or roots are consumed.

No 2022-2023 survey respondents identified portions of wild plant roots consumed per serving and the FNFNES Webequie First Nation data also does not provide portion information. Chan et al. (2014) does not provide Ecozone 1[2] root consumption data, therefore root consumption data from Chan et al., (2014 Appendix E) is used in the HHRA to evaluate risk. Very limited data are available, restricted to Wihkes (Muskrat root/Sweet flag) and consists of 0.01 g/day (equivalent to the mean and 95th percentile). This is equivalent to a consumption rate of 3.65 g/year.

For the country foods study, leaf consumption rates are calculated from a portion size of 1 cup. No seed (wild rice) portion size consumed per consumption event was identified in the 2022-2023 survey; therefore, consumption rates were identified from FNFNES data (Chan et al., 2014, 2021; Appendix E). The following wild rice consumption rates are available:

- 0.15 g/day mean and 0.52 g/day 95th percentile for Ontario (Chan et al., 2021);
- A mean of 1.07 g/day (women), 3.75 g/day (men) and 2.09 g/day (all genders) for Ecozone 1 which Webequie First Nation is located within (Chan et al., 2014 Table 10b); and
- A 95th percentile of 3.64 g/day (women), 7.81 g/day (men) and 6.25 g/day (all genders) for Ecozone 1 which Webequie First Nation is located within (Chan et al., 2014 Table 10b).

For the HHRA, the Ecozone 1 average all gender consumption rate of 2.09 g/day is used to evaluate chemical exposure from seed consumption.

In summary, wild plant consumption rates to be used in the country foods study comprise the following:

- Plant leaves – 156.56 days/year at 1 portion (1 cup) or 28 g/portion comprises 4,383.68 g/year;
- Plant seeds – 2.09 g/day or 762.85 g/year; and
- Plant roots – 0.01 g/day comprises 3.65 g/year.

5.1.2.6 Homegrown Produce Consumption

Homegrown produce is limited to potatoes grown at home or in the community garden, according to survey results. 55.4% of respondents consumed homegrown potatoes during the year. Based on data collected in 2022-2023 (Attachment D), homegrown produce (potatoes) is consumed during three (3) seasons consisting of spring, summer and fall, and the mean consumption rate is 0.5 meals/day, comprising 1.5 portions/meal, equivalent to approximately 185 g/day of prepared potatoes.

[2] Ecozone 1 represents the Boreal Shield/Subarctic ecozone located in northwestern Ontario.

5.1.2.7 Drinking Water Consumption

100% of respondents have tap water at home and 77.7% of those respondents drink their tap water. The main water source is the drinking water treatment plant, with 57.1% of respondents indicating they additionally treat their water prior to use. Of respondents who do not drink their tap water, water is primarily obtained from either a lake or pond and the common treatment method is boiling (Attachment C) followed by use of a filter (Attachment D). 31.3% of respondents drink bottled water as an alternate water source to tap water (Attachment C).

For the purpose of evaluating water consumption risk, the mean water consumption rate of 4.11 cups (972.4 mL) per day (based on pooled data summarized in Attachment C) is used to evaluate baseline and project risk.

5.1.2.8 Overview of Country Foods Consumption Profiles

Overall, the results of the 2022-2023 country foods survey identified the following:

- The most commonly consumed fish is Walleye, with nearly all Webequie First Nation survey respondents consuming fish during the year. This observation is consistent with data from Chan et al., (2014) where 95.9% of survey respondents reported consuming Walleye during the year.
- The most commonly consumed mammal is moose, with meat being consumed more frequently than other tissues, and with all Webequie First Nation members surveyed consuming wild land mammal tissue during the year. This observation is consistent with data from Chan et al., (2014) where 100% of survey respondents reported consuming moose meat during the year.
- The most frequently consumed waterfowl are Canada geese. This observation is consistent with data from Chan et al., (2014) where 99% of survey respondents reported consuming Canada Geese during the year.
- Grouse represent the most commonly consumed terrestrial bird, with nearly all Webequie First Nation consuming wild birds during the year. This observation is consistent with data from Chan et al., (2014) where 32.7% of survey respondents reported consuming Grouse during the year.
- Survey respondents did not report consuming eggs from the wild, which is also consistent with observations from Chan et al., (2014) where 0% of survey respondents reported consuming wild bird eggs during the year.
- Wild berries were consumed by most survey respondents, with blueberry consumption dominating the berry type consumed. These observations are consistent with data from Chan et al., (2014) where 84.7% of survey respondents reported consuming blueberries during the year.
- Wild plants most consumed by most respondents consisted of Labrador tea, while mint had a higher frequency of yearly consumption. Data from Chan et al., (2014) also indicated that Labrador tea was the most commonly consumed plant, although it is generally infrequently consumed as only 19.4% of survey respondents reported consuming the plant during the year.
- The only homegrown produce consumed by the respondents consisted of potatoes. This observation is consistent with data from Chan et al., (2014).
- Drinking water is primary sourced from the community water distribution system.

5.2 Country Foods Chemistry

Country food chemistry data is available from the AtkinsRéalis 2022/2023 study and the FNFNES survey conducted in the Webequie First Nation (Chan et al., 2011).

5.2.1 2022/2023 Study Data

Country foods analytical results for inorganic parameters (in addition to methylmercury) are summarized in the attached tables:

- Vegetation – Table 1;
- Fish – Table 2;
- Mammals – Table 3; and
- Birds – Table 4.

Analytical certificates are provided in Attachment F. Chemical screening was not undertaken since any available federal/provincial regulatory screening values for inorganics in food pertain to market foods which AtkinsRéalis considers under protective for country foods consumers. Health Canada (HC, 2023) also notes that screening values are not available for country foods chemistry data.

5.2.1.1 Vegetation

Regardless of vegetation type, major elements such as potassium, phosphorous, magnesium and calcium were detected at the highest concentration relative to other elements (Table 1). These elements are considered nutritionally essential for human health and were identified in the following concentration ranges:

- Potassium – 1,470 micrograms per gram (µg/g) (Cedar leaves) to 3,840 µg/g (Sweet flag tuber);
- Phosphorous – 351 µg/g (Cedar leaves) to 732 µg/g (Labrador tea leaves);
- Magnesium – 320 µg/g (Sweet flag tuber) to 966 µg/g (Labrador tea leaves); and
- Calcium – 1,540 µg/g (Sweet flag tuber) to 6,680 µg/g (Cedar leaves).

Manganese, a nutritionally essential element was detected at relatively high concentration in Labrador tea leaves (138 µg/g to 188 µg/g) relative to other vegetation types analysed (5.6 µg/g in Sweet flag tuber to 36.5 µg/g in Cedar leaves). Similarly, iron was detected at relatively high concentration in Sweet flag tuber (109 µg/g to 197 µg/g) relative to other vegetation types analysed (7 µg/g in Sarsaparilla root to 19 µg/g in Labrador tea leaves). Iron is nutritionally essential.

Other inorganic elements which are not nutritionally essential, such as mercury, chromium (VI), uranium and arsenic were not detected in vegetation samples. Lead, which is also not nutritionally essential, was detected at 0.03 µg/g in Sweet flag tuber, although this concentration is at the detection limit and therefore has the potential to represent a false positive detection.

5.2.1.2 Fish

The inorganic elements that have highest concentrations in fish tissue were calcium, magnesium, phosphorous and potassium (Table 2). These major elements are nutritionally essential. The following concentration ranges of these elements were identified:

- Potassium – 1,700 µg/g (Whitefish) to 4,100 µg/g (Walleye);
- Phosphorous – 1,900 µg/g (Whitefish and Walleye) to 6,000 µg/g (Whitefish);
- Magnesium – 210 µg/g (Whitefish) to 320 µg/g (Northern pike); and
- Calcium – 82 µg/g (Whitefish) to 8,700 µg/g (Whitefish).

The wide range in tissue calcium concentrations within the same species may in part be reflective of differences in bone content between samples.

Inorganic elements which are not nutritionally essential, such as lead, chromium (VI), uranium and arsenic were not detected in fish samples. Mercury, which is also not nutritionally essential, was detected at concentrations ranging from 0.012 in Whitefish to µg/g 0.34 µg/g in Walleye. Generally, Whitefish had lower tissue mercury concentrations than Northern pike and Walleye. There was little difference in the ranges of species mercury concentrations between the Winisk Lake and Winiskisis Channel, except for Walleye, where the Winiskisis Channel sample concentrations are higher than observed for Winisk Lake samples. Mercury measured in fish tissue is typically almost entirely (95% or higher) in the methylated form (i.e., methyl mercury) (Wiener et. al., 2003).

5.2.1.3 Mammals

The inorganic elements that have highest concentrations in mammal tissue were iron, magnesium, phosphorous, potassium and sodium (Table 3). The following concentration ranges of these nutritionally essential elements were identified:

- Iron – 25 µg/g (moose and Snowshoe hare muscle) to 150 µg/g (moose liver and kidney);
- Potassium – 2,000 µg/g (moose liver) to 3,600 µg/g (Snowshoe hare muscle);
- Phosphorous – 1,500 µg/g (moose muscle) to 2,800 µg/g (moose liver);
- Magnesium – 140 µg/g (moose kidney) to 260 µg/g (Snowshoe hare muscle); and
- Sodium – 520 µg/g (moose muscle) to 1,500 µg/g (Moose liver).

Non-essential elements, such as arsenic and chromium (VI) were not detected in tissue samples. Other non-essential elements were detected as follows:

- Mercury – Mercury was detected in moose kidney and liver and caribou muscle and liver with the highest concentration (0.73 µg/g) identified in caribou liver. Mercury was not detected in moose muscle, but was detected as methylmercury at 0.00288 µg/g. Methylmercury was also detected at 0.00616 µg/g in caribou muscle, indicating approximately 56% of mercury present in caribou muscle is in the methylated form;
- Lead – Lead was detected in caribou liver at a concentration of 0.06 µg/g; and
- Uranium – Uranium was detected in Snowshoe hare muscle at a concentration of 0.006 µg/g.

In general, organ samples possessed higher inorganic chemical concentrations than muscle tissue, except for potassium (moose and caribou) and zinc (moose). Caribou liver inorganic concentrations were generally higher than those identified in moose liver, with the exception of iron, molybdenum, phosphorous, sodium and titanium. Caribou muscle inorganic concentrations were also higher than moose muscle with the exception of titanium and zinc which were identified at equivalent concentrations in both tissues. Snowshoe hare muscle tissue inorganic chemical concentrations were lower than moose and caribou muscle tissue concentrations with the exception of sodium, potassium, phosphorous, manganese, magnesium, calcium, selenium (equivalent to moose muscle) and copper (greater than moose muscle but less than caribou muscle).

5.2.1.4 Birds

The inorganic elements that have highest concentrations in bird tissue were equivalent to those identified in mammal tissue and consisting of iron, magnesium, phosphorous, potassium and sodium (Table 4). The following concentration ranges of these nutritionally essential elements were identified:

- Iron – 9 µg/g (Ruffed grouse muscle) to 37 µg/g (bufflehead muscle);
- Potassium – 2,000 µg/g (bufflehead) to 3,000 µg/g (Ruffed grouse);
- Phosphorous – 1,400 µg/g (bufflehead) to 2,300 µg/g (Ruffed grouse);

- Magnesium – 140 µg/g (bufflehead) to 280 µg/g (Ruffed grouse); and
- Sodium – 460 µg/g (bufflehead) to 860 µg/g (Ruffed grouse).

Non-essential elements were detected as follows:

- Mercury – Mercury was detected in bufflehead and Ruffed grouse muscle tissue at concentrations of 0.065 µg/g and 0.005 µg/g respectively. Methylmercury was detected in all samples (bufflehead, Ruffed grouse and Canada goose) at concentrations ranging from 0.00062 µg/g (Ruffed grouse) to 0.0502 µg/g (bufflehead). Based on the methylmercury and mercury concentrations identified, 12.4% of mercury in Ruffed grouse is in the methylated form whereas 77% is present in the methylated form in bufflehead;
- Arsenic – Arsenic was detected at 1.4 µg/g in Canada goose; and
- Lead – Lead was detected in bufflehead at 0.04 µg/g and 180 µg/g in Canada goose.

Of all analysed inorganics, lead is notably elevated in concentration in Canada goose compared to bufflehead and Ruffed grouse while methylmercury is notably elevated in bufflehead.

5.2.2 FNFNES Study Data

FNFNES (Chan et. al., 2014) country foods analytical results are summarized in the following tables:

- Fish – Table 5;
- Mammals – Table 6; and
- Birds – Table 7.

As noted, the FNFNES (2014) data includes tissues concentrations for various contaminants in addition to metals/inorganics, the primary potential contaminants associated with the Project. All available FNFNES data has been included at this time, with the data that will be carried forward into the HHRA limited to the data for potential contaminants associated with the Project.

5.2.2.1 Fish

The inorganic elements that have highest concentrations in fish tissue were calcium, magnesium, phosphorous, sodium and potassium (Table 5). These major elements are nutritionally essential. The following concentration ranges of these elements were identified:

- Potassium – 2,740 µg/g (Sturgeon) to 13,700 µg/g (Sucker);
- Phosphorous – 1,910 µg/g (Sturgeon) to 6,330 µg/g (Sucker);
- Magnesium – 185 µg/g (Sturgeon) to 731 µg/g (Sucker);
- Sodium – 275 µg/g (Walleye) to 1,740 µg/g (Sucker); and
- Calcium – 235 µg/g (Walleye) to 1,560 µg/g (Whitefish).

Unlike the 2022/2023 study data, inorganic elements which are not nutritionally essential, such as lead, uranium and arsenic were detected in fish samples. Mercury, which is also not nutritionally essential, was detected in all fish samples except for Sucker.

One or more of analysed dioxins and furans were detected in fish tissue, with the highest detected concentration associated with 2,3,4,6,7,8-HxCDF in Walleye (0.731 picograms (pg) per g). one or more PCB congeners were also detected in all fish samples, with the most commonly detected PCB congener being PCB153 followed by PCB180. The highest concentration PCB congener was PCB153 at 2.12 nanograms (ng) per gram fish tissue in Sucker. Polycyclic aromatic hydrocarbons were also detected in all fish tissue samples, with the highest frequency PAH detections associated with Whitefish and Sucker. Polybrominated diphenyl ethers were detected in all fish samples, with the highest concentration

detections being generally associated with Sucker. The maximum concentration PBDE detection was 882 pg/g for brominated diphenyl ether (BDE) 209. BDE 209 is an environmentally persistent flame retardant used in a number of commercial products. The most routinely elevated detected PBDE was BDE 47 (100 pg/g to 706 pg/g). Organochlorine pesticides were detected in all samples with the most routinely detected OCPs being 4,4'-DDD, 4,4'-DDE, cis-nanochlor, heptachlor epoxide B and hexachlorobenzene and the highest detected concentration being 5.01 ng/g associated with 4,4'-DDE. Perfluoroalkyl substances were detected in Walleye and Northern pike. Detected PFAS consisted of PFOA, PFOS, PFNA, PFDA and PFUnDA with the highest detected PFAS being 0.21 ng/g in Northern pike. PFAS were not detected in Sucker tissue.

5.2.2.2 Mammals

The inorganic elements that have highest concentrations in mammal tissue were calcium, iron, magnesium, phosphorous, potassium and sodium (Table 6). The following concentration ranges of these nutritionally essential elements were identified:

- Calcium – 25.7 µg/g (moose) to 62.9 µg/g (moose);
- Iron – 7.05 µg/g (moose) to 33.2 µg/g (moose);
- Potassium – 143 µg/g (moose) to 3,450 µg/g (moose);
- Phosphorous – 71.3 µg/g (moose) to 1,710 µg/g (moose);
- Magnesium – 5.5 µg/g (moose) to 221 µg/g (moose);
- Zinc – 0.59 µg/g (moose) to 55.7 µg/g (moose); and
- Sodium – 136 µg/g (moose) to 560 µg/g (moose).

Non-essential elements, such as lead and mercury and uranium were not detected in tissue samples. Dioxins and furans and PCB congeners were not detected in any analysed samples. One (1) moose composite sample was analysed for PAHs, PBDEs and PFAS. Detected PAH varied from 0.22 ng/g (fluoranthene and pyrene) to 3.81 ng/g (naphthalene). Detected PBDEs varied from 0.0867 pg/g (BDE 15) to 3,270 pg/g (BDE 209). Organochlorine pesticides were detected in all samples with the most routinely detected OCPs being delta BHC and hexachlorobenzene and the highest detected OCP concentration being 2.19 ng/g associated with hexachlorobenzene. One (1) PFAS, consisting of PFOA, was detected in moose tissue at a concentration of 0.11 ng/g.

5.2.2.3 Birds

The inorganic elements that have highest concentrations in bird tissue were generally equivalent to those identified in mammal tissue and consisting of calcium, iron, magnesium, phosphorous, potassium, sodium and zinc (Table 7). The following concentration ranges of these nutritionally essential elements were identified:

- Iron – 27.9 µg/g (goose) to 156 µg/g (Canada goose);
- Potassium – 1,610 µg/g (goose) to 3,700 µg/g (teal);
- Calcium – 24.3 µg/g (Barrows golden eye) to 142 µg/g (Ruffed grouse);
- Phosphorous – 1,100 µg/g (goose) to 2,710 µg/g (teal);
- Magnesium – 126 µg/g (goose) to 314 µg/g (Ruffed grouse);
- Zinc – 7.09 µg/g (Barrows golden eye) 31.8 µg/g (Canada goose); and
- Sodium – 320 µg/g (Barrows golden eye) to 1,030 µg/g (goose).

Non-essential elements such as arsenic, lead and mercury were detected in the majority of samples. One (1) or more dioxins and furans were detected in each sample with the most commonly detected

PCDDF consisting of 1,2,3,7,8,9-HxCDF and the highest concentration PCDDF detected was OCDD at 8.58 pg/g (teal). Polychlorinated biphenyl congeners were predominantly detected in Mallard and Barrows golden eye duck samples at a maximum concentration of 3.75 ng/g for PCB153 in Barrows golden eye. Polychlorinated biphenyl congeners were not detected in Ruffed grouse and a single goose sample. Polycyclic aromatic hydrocarbons were detected in all analysed samples (Canada goose, teal and Mallard duck) at a maximum concentration of 164 ng/g for acenaphthalene. Polybrominated diphenyl ethers were also detected in all analysed samples (Canada goose, teal and Mallard duck) at a maximum concentration of 593 pg/g for BDE 209. Multiple OCPs were detected in all analysed samples with the most commonly detected OCPs being cis-nanochlor, oxychlordane and hexachlorobenzene. The highest detected OCP concentration was 4,4'-DDE associated with Mallard duck. Two (2) PFAS, consisting of PFOS and PFOA, were detected at concentrations of 3.3 ng/g and 0.17 ng/g respectively in a single sample (Canada goose) analyzed for PFAS.

5.3 COPC Exposure Point Concentrations for Country Foods

Exposure point concentrations are calculated for both the 2022/2023 survey data and the pooled 2022/2023 and FNFNES (Chan et. al., 2014) data. Since the pooled data provides additional COPCs and most notably significantly more mammal and bird chemical analytical data, the HHRA will consider the pooled data to generate EPCs for the contaminants identified to be associated with the Project, except for the following:

- Methylmercury – The FNFNES study does not provide methylmercury data, therefore the EPCs for this COPC are obtained from the 2022/20223 study;
- Vegetation – The FNFNES study does not provide vegetation data, therefore the EPCs for vegetation are obtained from the 2022/2023 study; and
- Snowshoe hare – The FNFNES study does not provide Snowshoe hare data, therefore the EPCs for this species are obtained from the 2022/2023 study.

5.3.1 2022/2023 Survey Data

All available tissue data, as summarized in Tables 1 to 4, were used to identify country foods EPCs. ProUCL output files are provided in Attachment G. Country foods COPC EPCs, number of samples analysed, frequency of detection, maximum detection limit, median of detectable concentrations, maximum detectable concentrations and half detection limit concentrations are summarized in the following tables:

- Vegetation – Table 8;
- Fish – Table 9;
- Mammals – Table 10; and
- Birds – Table 11.

Due to data limitations consisting of a total number of analyses being less than ten (10), 95% UCLMs are only calculated for fish tissue. All fish tissue data were pooled to calculate single EPCs for each inorganic COPC, with the exception of methylmercury. Methylmercury biomagnifies, therefore species trophic position (and size) influence tissue concentrations. Northern pike and Walleye are approximately the same trophic level (4.1 and 4.5 respectively, Fishbase, 2024) whereas Whitefish is a lower trophic level (3.2, Fishbase, 2024) and would be expected to have a lower methylmercury body burden, which is the case based on the 2022/2023 data. As a result, pooled Northern pike and Walleye data EPCs represent

95% UCLMs, whereas Whitefish EPCs represent median values as only nine (9) samples were analysed. This approach was undertaken to not underestimate the EPC for methylmercury in fish tissue.

5.3.2 Pooled 2022/2023 and FNFNES Data

All available pooled 2022/2023 and FNFNES (Chan et al., 2014) study tissue data are summarized in the following tables:

- Fish – Table 12;
- Mammals – Table 13a to Table 13d; and
- Birds – Table 14.

ProUCL output files for fish tissue data are provided in Attachment G (an insufficient number of samples are available for other tissues to calculate 95% UCLMs).

6. Quality Assurance and Quality Control

Results of laboratory QA/QC measures associated with the 2022/2023 study country food samples are presented in the laboratory certificates of analysis in Attachment F. Laboratory certificates of analysis were reviewed for any potential QA/QC issues identified by the laboratory. Laboratory certificates of analysis associated with the FNFNES data (Chan et al., 2014) are not available to AtkinsRéalis, therefore laboratory QA/QC has not been evaluated. The following subsections discuss QA/QC issues that were identified.

6.1 Mammal Data

- A phosphorous spike blank recovery slightly exceeded the upper QC limit (137% as opposed to a limit of 120%) associated with moose and caribou samples. A spike blank is used by the laboratory to measure analytical method accuracy. As the QC limit was slightly exceeded, there may be a high bias (concentrations measured in the affected samples might be lower than measured) to the phosphorous analytical results, although this will result in a conservative estimate of phosphorous consumption. The effect on the HHRA is considered negligible as moose and caribou tissue consumption based phosphorous intake will be conservative and phosphorous is also an essential nutrient for promoting human health.

6.2 Vegetation Data

- A very low chromium^{6+} matrix spike recovery (2.4% compared to a QC lower limit of 70%) was identified which affected all vegetation samples. A matrix spike measures of accuracy of the analysis in relation to the matrix or medium that the target of the measurement (the analyte, such as chromium^{6+} in this case, is present in). The medium composition and physico-chemical characteristics of the medium can affect the analytical results for the analyte quantification in the medium. The laboratory indicated that the sample may have been reductive due to the environmental nature of the vegetation sample, which may have affected the analysis (by converting chromium^{6+} to the 3+ oxidation state). Tissues tend to be reductive as this oxidation environment allows for the maintenance of proper electron flow (and therefore organism health).
- A very low phosphorous matrix spike recovery (-20% compared to a QC lower limit of 75%) was identified which affected all vegetation samples. The laboratory concluded that overall, data quality met acceptability criteria, implying the very low recovery was not due to poor analytical method but a function of the matrix itself;
- A slightly elevated uranium matrix spike recovery (49% compared to a QC upper limit of 40%) was identified which affected all vegetation samples. The laboratory concluded that overall, data quality met acceptability criteria, implying the very low recovery was not due to poor analytical method but a function of the matrix itself;
- An elevated phosphorous spiked blank recovery (134% compared to an upper QC limit of 120%) was identified which affected all vegetation samples. The laboratory concluded that overall, data quality met acceptability criteria, although the elevated recovery indicates a lab performance issue as the sample is matrix interference free; and
- Nickel was detected in a method blank sample at 0.07µg/g (at a Reportable Detection Limit [RDL] of 0.05 µg/g) associated with all vegetation samples. This detection may indicate a slight high bias in

vegetation sample nickel concentrations is present, although intake calculations using this data will be conservative due to the slight bias and not underestimate of risk.

6.3 Fish Data

- A phosphorous spike blank recovery slightly exceeded the upper QC limit (126% as opposed to a limit of 120%) associated with all fish samples. A spike blank is intended to identify contamination that could occur during the entire analytical process and since the blank is prepared with laboratory water, it excludes possible matrix interferences. The slightly elevated recovery could indicate phosphorous concentrations in the associated samples may be slightly high biased, although the tissue consumption based phosphorous intake will be conservative and phosphorous is also an essential nutrient; and
- A low chromium^{6+} matrix spike recovery (49% and 54% compared to a QC lower limit of 70%) was identified which affected all fish samples. As with the same metal in vegetation, the laboratory indicated that the sample may have been reductive due to the environmental nature of tissues, which may have affected the analysis.

6.4 Quality Assurance and Quality Control Conclusion

Phosphorous concentrations in mammal (moose and caribou) and fish tissue may be high biased, although since the bias is positive, phosphorous intake estimates associated with consuming these country foods would be conservative. Additionally, since phosphorous is an essential element, exposure to this element in diet is required at a certain level to maintain health.

A very low phosphorous matrix spike recovery was identified which affected all vegetation samples. The laboratory concluded that overall, data quality met acceptability criteria, implying the very low recovery was not due to poor analytical method but a function of the matrix itself. Plant tissue phosphorus data may be significantly low biased as it appears the analytical method could not quantify phosphorous adequately in the plant sample matrix.

Uranium and nickel analytical results for plant tissue may be high biased based on matrix spike recovery for uranium and the blank detection for nickel, although the magnitude of bias for nickel may be small and result in a negligible effect to the HHRA conclusions.

Fish tissue QA/QC analysis resulted in a reduced chromium^{6+} matrix spike recovery while a very low chromium^{6+} matrix spike recovery was identified for plant tissue. The laboratory indicated that the sample may have reduced the introduced chromium^{6+} spike (e.g., to the 3+ oxidation state). If matrix spike reduction occurred as a result of tissue physico-chemistry, data quality is not likely adversely affected. Since tissues tend to be reductive, it is anticipated that chromium^{6+} analytical result for fish and vegetation are not adversely affected.

All other inorganics data are considered acceptable and representative of the country foods analysed.

7. Country Food Consumer Exposure Characteristics

Receptor characteristics and consumption rates are summarized in Table 7-1. Where not available from the WSR country foods survey and study or FNFNES data, receptor characteristics were supplemented from Health Canada (HC, 2024).

Table 7-1: Receptor Exposure Characteristics

Parameter	Infant	Toddler	Child	Teen	Adult	Notes	Reference
Age	0 - < 6 mo.	6 mo - <5 years	5 years - < 12 years	12 years - < 20 years	≥20 years	--	HC, 2024
Age group duration (years)	0.5	4.5	7	8	60	--	HC, 2024
Body weight ($kg_{body\ weight}$)	8.2	16.5	32.9	59.7	70.7	--	HC, 2024
Water ingestion rate (L/day)	0.3	0.6	0.8	1	1.5	--	HC, 2024
Water ingestion rate (L/day)	--	--	--	--	0.9724*	Refer to Attachment C for further details	Pooled - AtkinsRéalis 2022/2023 survey data & Chan et al., 2014
Fish Consumption							
Fish consumption (grams/year)	6982.88**	12220.04**	12220.04**	13965.76**	7954.1	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Mammal Consumption							
Snowshoe hare consumption (grams/year)	204.108**	357.189**	357.189**	408.216**	510.27	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Moose meat consumption (grams/year)	694.232**	1214.906**	1214.906**	1388.464**	1,735.58	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Moose kidney consumption (grams/year)	240.9**	421.575**	421.575**	481.8**	602.25	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Moose liver consumption (grams/year)	204.548**	357.959**	357.959**	409.096**	511.37	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Caribou meat consumption (grams/year)	461.2**	807.1**	807.1**	922.4**	1,533	Refer to Attachment D for further details;	AtkinsRéalis 2022/2023 survey data
Caribou liver consumption (grams/year)	204.548**	357.959**	357.959**	409.096**	511.37	Refer to Attachment D for further details; conservatively assumed Moose meat consumption rate	AtkinsRéalis 2022/2023 survey data

Parameter	Infant	Toddler	Child	Teen	Adult	Notes	Reference
Waterfowl Consumption							
Migratory waterfowl consumption (grams/year)	936.56**	1638.98**	1638.98**	1873.12**	2,341.4	Refer to Attachment E for further details	Chan et al., 2014
Non-migratory waterfowl consumption (grams/year)	198**	346.5**	346.5**	396**	495	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Wild Berry Consumption							
Wild berry consumption (grams/year)	1379.04**	2413.32**	2413.32**	2758.08**	3,447.6	Refer to Attachment D for further details	AtkinsRéalis 2022/2023 survey data
Wild Plants and Tree Food Consumption							
Plant leaf consumption (grams/year)	1753.472**	3068.576**	3068.576**	3506.944**	4,383.68	Refer to Attachment E for further details	Chan et al., 2014, 2021
Plant seeds consumption (grams/year)	305.14**	533.995**	533.995**	610.28**	762.85	Refer to Attachment E for further details	Chan et al., 2014, 2021
Plant roots consumption (grams/year)	1.46**	2.555**	2.555**	2.92**	3.65	Refer to Attachment E for further details	Chan et al., 2014, 2021
Homegrown Produce Consumption							
Homegrown Produce Consumption (grams/year)	74**	129.5**	129.5**	148**	185	Refer to Attachment D for further details; based on consumption of potatoes	AtkinsRéalis 2022/2023 survey data
Exposure Duration							
Dermal exposure events per day	1	1	1	1	1	Assumes residential land use	HC, 2024
Hours per day on site (hours)	24	24	24	24	24	Assumes residential land use	HC, 2024
Days per week on site (days) (generic)	7	7	7	7	7	Assumes residential land use	HC, 2024
Weeks per year on site (weeks) (generic)	52	52	52	52	52	Assumes residential land use	HC, 2024
Total years exposed (years)	80	80	80	80	80	Assumes residential land use	HC, 2024

Parameter	Infant	Toddler	Child	Teen	Adult	Notes	Reference
Lifetime expectancy (years)	80	80	80	80	80	Assumes residential land use	HC, 2024

Notes:

*For adults, the more conservative drinking water value obtained from the pooled AtkinsRéalis and Chan et al., 2014 data sets have been selected for use in assessing potential risks.

**As per Table 3-1, scaling factors were used to derive consumption rates for the following age groups: infant, toddler, child and teen.

8. Conclusion

To support the EA/IA for the WSR, a baseline and HHRA will be completed. As the study areas for the WSR are used by the community of Webequie for hunting, fishing and harvesting activities, a baseline country foods study was conducted to assess baseline concentrations of contaminants in berries and other vegetation, game birds, small and large mammals and fish. To support the country food evaluation in the HHRA, a country foods survey was conducted in the Webequie community, the results of which are supplemented with information for the Webequie First Nation available from the FNFNES (2014).

The Webequie First Nation identified a series of country food species of importance to the community. AtkinsRéalis collected vegetation samples (where available) and fish samples in 2020, while the Webequie First Nation provided mammal and bird samples to AtkinsRéalis in 2020 and 2021.

Detailed information obtained from the country food survey conducted by AtkinsRéalis for the WSR, along with the FNFNES (2014) data for the Webequie First Nation has been summarized for consideration in the baseline WSR HHRA, including:

- Community specific country food consumption rate and pattern data for the Webequie First Nation
- Inorganics analytical data for the country food samples available for analysis; and
- Chemical exposure point concentrations to be considered in the baseline HHRA.

Overall, the results of the 2022/2023 country foods survey were generally consistent with observation identified by Chan et al., (2014), with the 2022/2023 study identifying the following:

- The most commonly consumed fish is Walleye, with nearly all Webequie First Nation survey respondents consuming fish during the year.
- The most commonly consumed mammal is moose, with meat being consumed more frequently than other tissues, and with all Webequie First Nation members surveyed consuming wild land mammal tissue during the year.
- The most frequently consumed waterfowl are Canada geese and the most commonly consumed terrestrial bird is Grouse, with nearly all Webequie First Nation consuming wild birds during the year.
- No wild obtained eggs were consumed during the year of the survey.
- Wild berries were consumed by majority of survey respondents, with Blueberry consumption dominating the berry type consumed.
- Wild plants most consumed by most respondents consisted of Labrador tea, while mint had a higher frequency of yearly consumption and the only homegrown produce consumed by the respondents consisted of potatoes.
- Drinking water is primary sourced from the community water distribution system.

Due to data limitations associated with the number of respondents participating in the 2022/2023 survey, and the limited availability of tissue samples, data was pooled with the FNFNES study results (Chan et al., 2014) to provide a more robust dataset to identify consumption patterns and tissue concentrations to be used to evaluate baseline human health risk.

9. References

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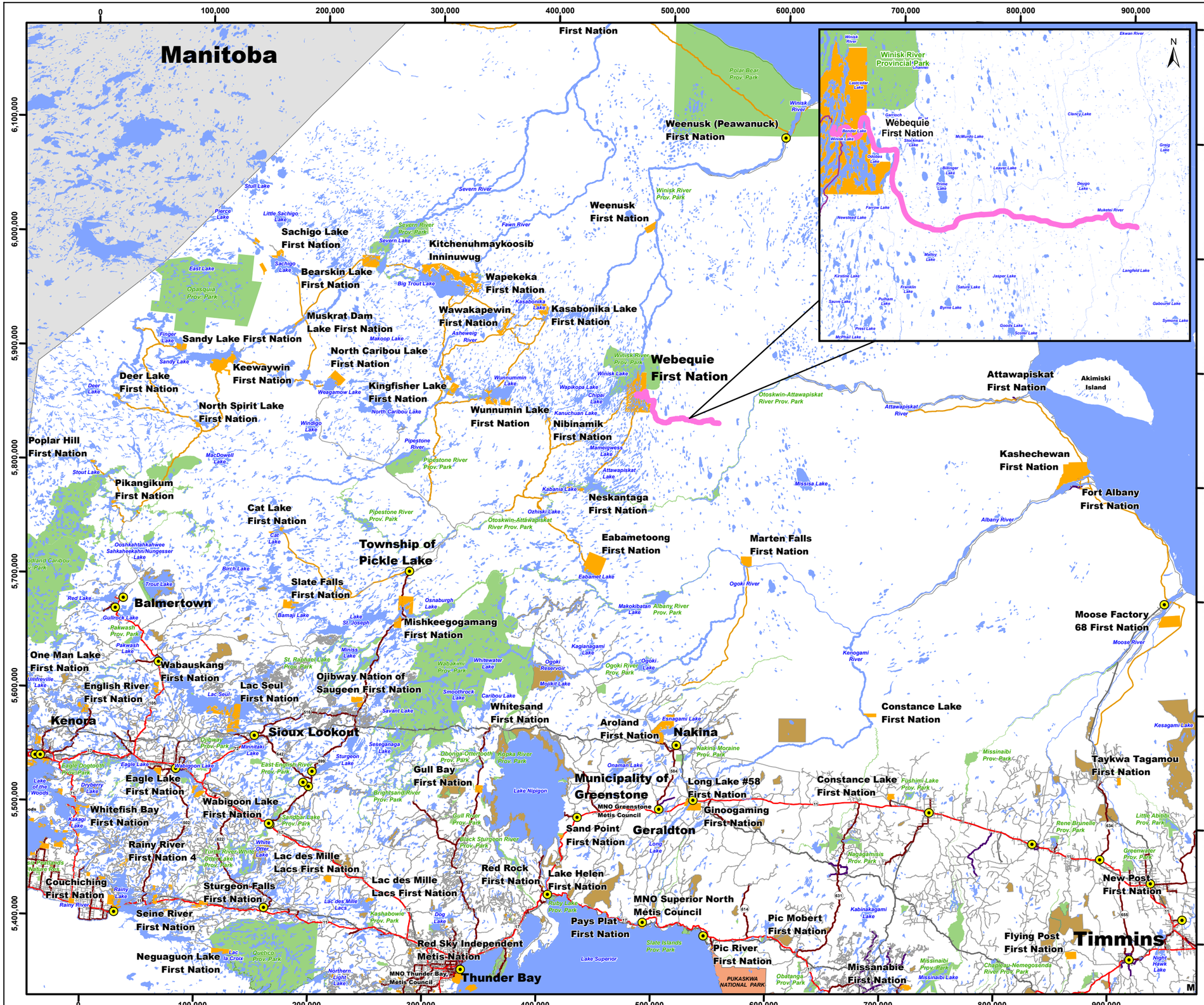
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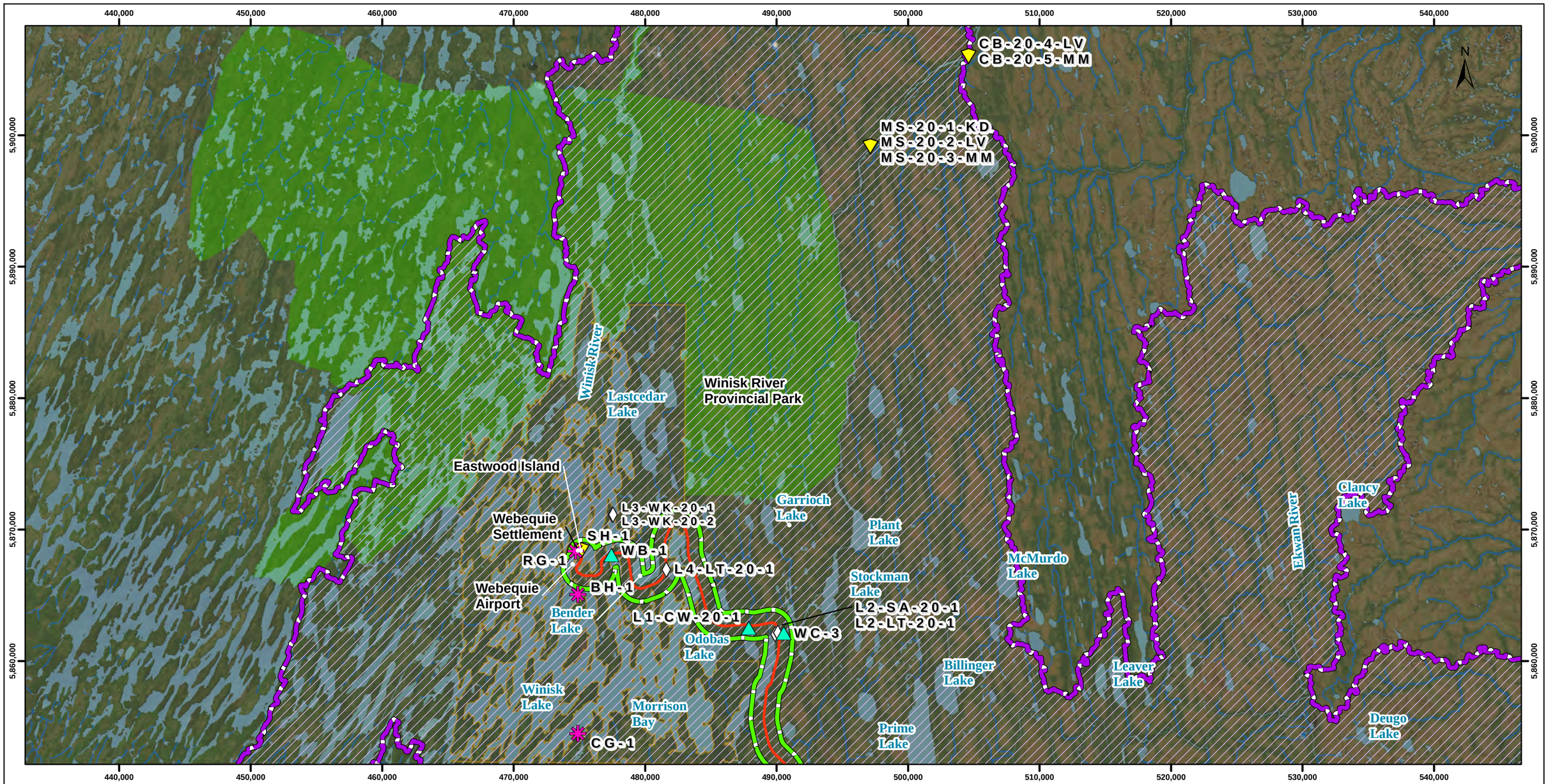
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FIGURES

1: Project Location
2: Sampling Locations


Manitoba
First Nation
Weenusk (Peawanuck) First Nation
Webequie First Nation
Weenusk First Nation
Sachigo Lake First Nation
Kitchenuhmaykoosib Inninuwug
Bearskin Lake First Nation
Wapekeka First Nation
Wawakapewin First Nation
Kasabonika Lake First Nation
Muskrat Dam Lake First Nation
Sandy Lake First Nation
North Caribou Lake First Nation
Keewaywin First Nation
Deer Lake First Nation
Kingfisher Lake First Nation
North Spirit Lake First Nation
Wunnumin Lake First Nation
Nibinamik First Nation
Poplar Hill First Nation
Pikangikum First Nation
Cat Lake First Nation
Township of Pickle Lake
Slate Falls First Nation
Balmertown
Mishkeegogamang First Nation
Eabametoong First Nation
Marten Falls First Nation
Neskantaga First Nation
Attawapiskat First Nation
Akimiski Island
Kashechewan First Nation
Fort Albany First Nation
Moose Factory 68 First Nation
Moose River
One Man Lake First Nation
Wabauskang First Nation
English River First Nation
Lac Seul First Nation
Ojibway Nation of Saugeen First Nation
Kenora
Sioux Lookout
Whitesand First Nation
Aroland First Nation
Nakina
Constance Lake First Nation
Taykwa Tagamou First Nation
Eagle Lake First Nation
Whitefish Bay First Nation
Wabigoon Lake First Nation
Gull Bay First Nation
Municipality of Greenstone
Long Lake #58 First Nation
Ginoogaming First Nation
Geraldton
Sand Point First Nation
Constance Lake First Nation
Rainy River First Nation 4
Lac des Mille Lacs First Nation
Couchiching First Nation
Sturgeon Falls First Nation
Red Rock First Nation
Lake Helen First Nation
MNO Superior North Métis Council
Pays Plat First Nation
Pic Mobert First Nation
Pic River First Nation
Flying Post First Nation
Timmins
New Post First Nation
Seine River First Nation
Neguaguon Lake First Nation
Red Sky Independent Métis Nation
MNO Thunder Bay Métis Council
Thunder Bay
Missanabie First Nation
PUKASKWA NATIONAL PARK
Lake Superior
Winisk River Provincial Park
Polar Bear Prov. Park
Winisk River Prov. Park
Opasquia Prov. Park
Otoskwin-Attawapiskat River Prov. Park
Pipestone River Prov. Park
Albany River Prov. Park
Ogoki River Prov. Park
Nakina Moraine Prov. Park
Kopka River Prov. Park
Brightsand River Prov. Park
Sandbar Lake Prov. Park
Black Sturgeon River Prov. Park
Nagagamisis Prov. Park
Rene Brunelle Prov. Park
Little Abitibi Prov. Park
Greenwater Prov. Park
Fishimi Lake Prov. Park
Missinaibi Prov. Park
Chapleau-Nemegosenda River Prov. Park
Obatanga Prov. Park
Slate Islands Prov. Park
Kabinakagami Lake
Missinaibi Lake
Albany River
Attawapiskat River
Ogoki River
Kenogami River
Severn River
Fawn River
Asheweig River
Wunnumin Lake
Kanuchuan Lake
Mameigwess Lake
Attawapiskat Lake
Kabania Lake
Ozhiski Lake
Eabamet Lake
Makokibatan Lake
Kagianagami Lake
Ogoki Reservoir
Mojikit Lake
Esnagami Lake
Onaman Lake
Long Lake
Lake Nipigon
Gull River Prov. Park
Caribou Lake
Smoothrock Lake
Whitewater Lake
Wabakimi Prov. Park
Ojibway Prov. Park
Sturgeon Lake
Seseganaga Lake
Minnitaki Lake
Wabigoon Lake
Eagle Lake
East-English River Prov. Park
Lac Seul
Savant Lake
Pipestone River
Mameigwess Lake
Kashabowie Prov. Park
Dog Lake
Quetico Prov. Park
Lac la Croix
Northern Light Lake
Ruby Lake Prov. Park
Ozhiski Lake
Otoskwin-Attawapiskat River Prov. Park
Winisk River
Severn River
Severn River Prov. Park
Severn Lake
Big Trout Lake
Kasabonika Lake
Makoop Lake
Winisk Lake
Wapikopa Lake
Chipai Lake
Kanuchuan Lake
Wunnumin Lake
Weagamow Lake
North Caribou Lake
Windigo Lake
Pipestone River



Legend

- Bird Tissue Sample
- Fish Tissue Sample
- Mammal Tissue Sample
- Vegetation Sample
- Proposed Route
- Local Study Area (LSA 1km From Alternative Footprints)
- Regional Study Area (RSA) relevant to Country Foods. The RSA consists of quaternary watersheds crossed by the WSR
- Webequie First Nation Reserve
- Waterbody
- Watercourse
- Winisk River Provincial Park

WSR WEBEQUIE SUPPLY ROAD

0 10 20 Km

NOTES

1. Coordinate System: NAD 1983 UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (https://geohub.lio.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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Webequie Supply Road (WSR)

Sampling Locations

Figure Number:	REV:
2	PA

Client:	Project Number:	Date:
Webequie First Nation	661910	2024-07-17

DSC	DRN	CHK	APP
	AG	DT	CW

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Document Path: K:\Webequi\40_Execution\45_GIS_Dwgs\001 (HIA)\001F02_661910.mxd

SIZE 11x17

TABLES

1: Vegetation Sampling Results – Metals (2020)
2: Fish Sampling Results – Metals (2020)
3: Mammal Tissue Sampling Results – Metals (2020 & 2021)
4: Bird Tissue Sampling Results – Metals (2021)
5: Fish Sampling Results – FNFNES (Webequie - Chan et al., 2011)
6: Mammal Sampling Results – FNFNES (Webequie - Chan et al., 2011)
7: Bird Sampling Results – FNFNES (Webequie - Chan et al., 2011)
8: Vegetation Metals – Exposure Concentrations
9: Fish Metals – Exposure Point Concentrations
10: Mammal Tissue Metals – Exposure Point Concentrations
11: Bird Tissue – Exposure Point Concentrations
12: Fish Tissue – Exposure Point Concentrations (FNFNES and 2022/2023 Study Data)
13: Mammal Tissue – Exposure Point Concentrations (FNFNES and 2022/2023 Study Data)
14: Bird Tissue – Exposure Point Concentrations (FNFNES and 2022/2023 Study Data)

TABLE 1 **VEGETATION SAMPLING RESULTS - METALS (2020)**
Webequie Supply Road
Webequie First Nation, Ontario

Parameters	RDL	Units	Sample ID / Laboratory ID / BV Labs Job # / Tissue / Sampling Date	L1-CW-20-1 / NUH190 / C0P8445 / Cedar (leaves) / 22-Sep-20	L2-SA-20-1 / NUH191 / C0P8445 / Sarsaparila (root) / 22-Sep-20	L2-LT-20-1 / NUH192 / C0P8445 / Labrador Tea (leaves) / 22-Sep-20	L3-WK-20-01 / NUH193 / C0P8445 / Sweetflag (tuber) / 23-Sep-20	L3-WK-20-01 DUP 1 * / NUH193 DUP 1 / C0P8445 / Sweetflag (tuber) / 23-Sep-20	L3-WK-20-02 / NUH194 / C0P8445 / Sweetflag (tuber) / 23-Sep-20	L4-LT-20-01 / NUH195 / C0P8445 / Labrador Tea (leaves) / 24-Sep-20
Moisture	0.1	%		57	68	50	69	-	68	57
Antimony (Sb)	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic (As)	0.1	µg/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium (Ba)	0.3	µg/g		5.1	16.9	38.6	4.6	4.6	4.3	23
Beryllium (Be)	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	0.5	µg/g		4.7	4.7	7.6	4.8	4.8	4.1	8.9
Cadmium (Cd)	0.01	µg/g		<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Calcium (Ca)	50	µg/g		6680	3620	3370	1560	1540	1570	2690
Chromium (Cr)	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt (Co)	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	0.011	<0.005
Copper (Cu)	0.5	µg/g		0.9	1.5	2.1	0.6	0.5	<0.5	1.8
Iron (Fe)	3	µg/g		10	7	19	109	109	197	17
Lead (Pb)	0.03	µg/g		<0.03	<0.03	<0.03	0.03	0.03	<0.03	<0.03
Magnesium (Mg)	100	µg/g		340	577	966	321	320	359	772
Manganese (Mn)	0.3	µg/g		36.5	28	138	7.3	7.3	5.6	188
Molybdenum (Mo)	0.05	µg/g		0.36	0.13	<0.05	0.11	0.1	0.16	<0.05
Nickel (Ni)	0.05	µg/g		0.06	0.05	<0.05	<0.05	-	<0.05	0.07
Phosphorus (P)	50	µg/g		351	465	732	537	551	576	530
Potassium (K)	100	µg/g		1470	3720	2870	3840	3770	2720	2250
Selenium (Se)	0.04	µg/g		<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver (Ag)	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium (Na)	50	µg/g		<50	<50	<50	164	161	196	<50
Strontium (Sr)	0.5	µg/g		9.7	3.4	5.2	4.8	4.8	3.9	2.8
Thallium (Tl)	0.003	µg/g		<0.003	<0.003	<0.003	<0.003	0.003	0.004	<0.003
Tin (Sn)	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	0.5	µg/g		<0.5	<0.5	0.7	<0.5	<0.5	<0.5	0.5
Uranium (U)	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium (V)	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn)	2	µg/g		6	6	12	8	8	8	9
Chromium (VI)	0.18	µg/g		<0.90	<0.18	<0.90	<0.18	<0.18	<0.18	<0.90
Mercury (Hg)	0.01	µg/g		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

* - Laboratory duplicate
RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 2 **FISH SAMPLING RESULTS - METALS (2020)**
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	RDL	Units	Sample Location	NPWC20-01	NPWC20-02	NPWC20-03	NPWC20-04	NPWC20-05	PKWC20-01	PKWC20-02	PKWC20-03	PKWC20-04	PKWC20-05	WFWC20-01	WFWC20-02	WFWC20-03
			Waterbody	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel	Winiskisis Channel
			Waterbody ID	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3	WC-3
			Laboratory Sample ID	NLE877	NLF121	NLE992	NLE993	NLE994	NLF122	NLE878	NLF123	NLF075	NLE879	NLE991	NLF124	NLF125
			SNC-Lavalin Sample ID	NPWC20-01	NPWC20-02	NPWC20-03	NPWC20-04	NPWC20-05	PKWC20-01	PKWC20-02	PKWC20-03	PKWC20-04	PKWC20-05	WFWC20-01	WFWC20-02	WFWC20-03
			Sampling Date (yyyy/mm/dd)	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19	2020/08/19
			Species	Northern Pike	Northern Pike	Northern Pike	Northern Pike	Northern Pike	Pickerel	Pickerel	Pickerel	Pickerel	Pickerel	Whitefish	Whitefish	Whitefish
Physical Parameters																
Moisture	0.1	%		81.8	80.8	80.1	79.8	80.1	80.7	80.2	78.8	80.7	77.9	78.3	78.1	78.7
Total Metals																
Antimony	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	0.1	µg/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Beryllium	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	0.01	µg/g		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	50	µg/g		1500	1300	780	1300	1800	1200	180	140	2600	1700	82	88	440
Cesium	0.005	µg/g		0.017	0.025	0.031	0.024	0.019	0.057	0.05	0.048	0.037	0.051	0.016	0.018	0.022
Chromium	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium VI	0.18	µg/g		<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Cobalt	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Iron	3	µg/g		<3	4	<3	<3	<3	3	<3	4	<3	5	4	7	5
Lead	0.03	µg/g		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Magnesium	100	µg/g		260	260	300	300	290	270	260	260	280	280	240	230	220
Manganese	0.3	µg/g		0.8	0.7	0.4	0.6	1.6	<0.3	<0.3	<0.3	<0.3	0.4	<0.3	<0.3	<0.3
Mercury	0.005	µg/g		0.065	0.22	0.083	0.14	0.057	0.29	0.24	0.34	0.17	0.27	0.075	0.088	0.079
Molybdenum	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorous	500	µg/g		2900	2300	2200	2400	2500	2200	1900	1900	2800	3200	1900	1900	1900
Potassium	100	µg/g		3400	3500	3800	3800	3400	3800	4000	3900	3600	3700	3400	3400	3100
Selenium	0.04	µg/g		0.12	0.12	0.12	0.15	0.12	0.15	0.15	0.16	0.16	0.15	0.15	0.16	0.14
Silver	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium	50	µg/g		420	540	480	380	480	560	570	530	500	550	430	460	570
Strontium	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	0.003	µg/g		0.005	<0.003	0.004	<0.003	0.004	0.003	0.004	0.004	0.005	0.005	<0.003	<0.003	<0.003
Tin	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium	0.5	µg/g		1.4	1.2	1.2	1.3	1.3	1.2	1	1	1.4	1.8	1	1	1
Uranium	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	2	µg/g		8	9	6	6	10	5	6	6	5	5	5	8	10

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 2 **FISH SAMPLING RESULTS - METALS (2020)**
Webequie Supply Road
Webequie First Nation, Ontario

			Sample Location	WFWC20-04	WFWC20-05	WLNP20-01	WLNP20-02	WLNP20-03	WLNP20-04	WLNP20-05	WLPK20-01	WLPK20-02	WLPK20-03	WLPK20-04	WLPK20-05	WLWF20-01
			Waterbody	Winiskisis Channel	Winiskisis Channel	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake	Winisk Lake
			Waterbody ID	WC-3	WC-3	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1	WB-1
			Laboratory Sample ID	NLE875	NLE876	NLE921	NLE922	NLF071	NLF072	NLF073	NLE923	NLE924	NLF074	NLE925	NLE926	NLE927
			SNC-Lavalin Sample ID	WFWC20-04	WFWC20-05	WLNP20-01	WLNP20-02	WLNP20-03	WLNP20-04	WLNP20-05	WLPK20-01	WLPK20-02	WLPK20-03	WLPK20-04	WLPK20-05	WLWF20-01
			Sampling Date (yyyy/mm/dd)	2020/08/19	2020/08/19	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21	2020/08/21
			Species	Whitefish	Whitefish	Northern Pike	Northern Pike	Northern Pike	Northern Pike	Northern Pike	Pickerel	Pickerel	Pickerel	Pickerel	Pickerel	Whitefish
Parameter	**RDL**	**Units**														
Physical Parameters																
Moisture	0.1	%		74.8	78.4	79.2	79.1	79.3	79.9	78.4	80.3	80.2	78.6	79.2	79.2	80.5
Total Metals																
Antimony	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Arsenic	0.1	µg/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Barium	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Beryllium	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	0.01	µg/g		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	50	µg/g		410	1000	250	520	930	1000	1600	89	1500	130	2000	740	1100
Cesium	0.005	µg/g		0.023	0.015	0.014	0.028	0.03	0.026	0.022	0.037	0.026	0.035	0.023	0.033	0.005
Chromium	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium VI	0.18	µg/g		<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18
Cobalt	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
Iron	3	µg/g		4	5	<3	<3	<3	<3	<3	<3	<3	<3	3	<3	4
Lead	0.03	µg/g		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Magnesium	100	µg/g		250	240	270	270	310	270	320	250	280	270	290	270	210
Manganese	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	0.5	0.4	0.7	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Mercury	0.005	µg/g		0.036	0.081	0.063	0.18	0.19	0.067	0.25	0.048	0.078	0.057	0.056	0.059	0.03
Molybdenum	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	<0.05	<0.05
Phosphorous	500	µg/g		2100	2200	2400	2000	2300	2200	2500	2200	3000	2000	2700	2600	2200
Potassium	100	µg/g		3700	3300	3600	3700	4100	3600	3900	3700	3800	4100	3800	3700	2700
Selenium	0.04	µg/g		0.16	0.14	0.12	0.14	0.15	0.12	0.15	0.16	0.17	0.17	0.15	0.17	0.13
Silver	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sodium	50	µg/g		450	590	470	540	480	280	530	520	470	480	590	590	450
Strontium	0.5	µg/g		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Thallium	0.003	µg/g		<0.003	<0.003	0.004	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	0.003	<0.003	<0.003
Tin	0.3	µg/g		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium	0.5	µg/g		1.1	1.2	1.2	1.1	1.3	1.2	1.4	1	1.4	1	1.5	1.3	1.1
Uranium	0.005	µg/g		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium	0.05	µg/g		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	2	µg/g		5	7	7	14	11	12	8	4	5	5	6	5	11

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 2 **FISH SAMPLING RESULTS - METALS (2020)**
Webequie Supply Road
Webequie First Nation, Ontario

		Sample Location	**WLWF20-02**	**WLWF20-03**	**WLWF20-04**
		Waterbody	**Winisk Lake**	**Winisk Lake**	**Winisk Lake**
		Waterbody ID	**WB-1**	**WB-1**	**WB-1**
		Laboratory Sample ID	**NLE928**	**NLE929**	**NLE930**
		SNC-Lavalin Sample ID	**WLWF20-02**	**WLWF20-03**	**WLWF20-04**
		Sampling Date (yyyy/mm/dd)	**2020/08/21**	**2020/08/21**	**2020/08/21**
		Species	**Whitefish**	**Whitefish**	**Whitefish**
Parameter	**RDL**	**Units**			
Physical Parameters					
Moisture	0.1	%	81.8	83.6	81.4
Total Metals					
Antimony	0.05	µg/g	<0.05	<0.05	<0.05
Arsenic	0.1	µg/g	<0.1	<0.1	<0.1
Barium	0.3	µg/g	<0.3	0.3	<0.3
Beryllium	0.05	µg/g	<0.05	<0.05	<0.05
Bismuth	0.05	µg/g	<0.05	<0.05	<0.05
Boron	0.5	µg/g	<0.5	<0.5	<0.5
Cadmium	0.01	µg/g	<0.01	<0.01	<0.01
Calcium	50	µg/g	5700	8700	270
Cesium	0.005	µg/g	<0.005	<0.005	0.015
Chromium	0.3	µg/g	<0.3	<0.3	<0.3
Chromium VI	0.18	µg/g	<0.18	<0.18	<0.18
Cobalt	0.005	µg/g	<0.005	<0.005	<0.005
Copper	0.5	µg/g	0.6	<0.5	<0.5
Iron	3	µg/g	6	6	<3
Lead	0.03	µg/g	<0.03	<0.03	<0.03
Magnesium	100	µg/g	280	300	230
Manganese	0.3	µg/g	0.9	1.2	<0.3
Mercury	0.005	µg/g	0.022	0.03	0.012
Molybdenum	0.05	µg/g	<0.05	<0.05	<0.05
Nickel	0.05	µg/g	0.06	<0.05	<0.05
Phosphorous	500	µg/g	4700	6000	2100
Potassium	100	µg/g	2500	1700	3300
Selenium	0.04	µg/g	0.15	0.13	0.16
Silver	0.05	µg/g	<0.05	<0.05	<0.05
Sodium	50	µg/g	560	430	590
Strontium	0.5	µg/g	2.2	3.1	<0.5
Thallium	0.003	µg/g	<0.003	<0.003	<0.003
Tin	0.3	µg/g	<0.3	<0.3	<0.3
Titanium	0.5	µg/g	2.4	3	1.1
Uranium	0.005	µg/g	<0.005	<0.005	<0.005
Vanadium	0.05	µg/g	<0.05	<0.05	<0.05
Zinc	2	µg/g	22	20	5

RDL - Reportable Detection Limit, unless otherwise noted
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"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 3

MAMMAL TISSUE SAMPLING RESULTS - METALS (2020 and 2021)
Webequie Supply Road
Webequie First Nation, Ontario

			Sample ID	MS-20-1-KD	MS-20-2-LV	MS-20-3-MM	CB-20-4-LV	CB-20-5-MM	SNOWSHOE HARE IN COMMUNITY
			Location ID	MS-20-1-KD	MS-20-2-LV	MS-20-3-MM	CB-20-4-LV	CB-20-5-MM	SH-1
			Laboratory ID / Guideline ID	NZL621	NZL622	NZL623	NZL624	NZL625	RFE998
			BV Labs Job #	C0S2427	C0S2427	C0S2427	C0S2427	C0S2427	C1X3115
			Units	Moose (kidney)	Moose (liver)	Moose (muscle)	Caribou (liver)	Caribou (muscle)	Snowshoe Hare(Muscle)
			Sampling Date	18-Oct-20	18-Oct-20	18-Oct-20	17-Oct-20	17-Oct-20	06-Nov-21
Parameter	**RDL**	**Units**							
Moisture	0.1	%	76.8	72.6	76.9	75	75.5	74.97
Mercury (Hg)	0.01	µg/g	0.029	0.01	<0.005	0.73	0.011	<0.005
Arsenic (As)	0.1	µg/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Antimony (Sb)	0.05	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Barium (Ba)	0.3	µg/g	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Beryllium (Be)	0.05	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bismuth (Bi)	0.05	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Boron (B)	0.5	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium (Cd)	0.01	µg/g	0.35	0.13	<0.01	1.6	<0.01	<0.01
Calcium (Ca)	50	µg/g	100	66	<50	67	<50	70
Cesium (Cs)	0.005	µg/g	0.14	0.05	0.13	0.43	0.55	0.083
Chromium (Cr)	0.3	µg/g	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Cobalt (Co)	0.005	µg/g	0.035	0.1	<0.005	0.017	<0.005	<0.005
Copper (Cu)	0.5	µg/g	3.2	20	1.4	48	2.3	1.9
Iron (Fe)	3	µg/g	150	150	25	120	36	25
Lead (Pb)	0.03	µg/g	<0.03	<0.03	<0.03	0.06	<0.03	<0.03
Magnesium (Mg)	100	µg/g	140	150	220	170	240	260
Manganese (Mn)	0.3	µg/g	2.6	2.8	0.4	3.4	0.6	0.9
Molybdenum (Mo)	0.05	µg/g	0.33	1.2	<0.05	0.59	<0.05	<0.05
Nickel (Ni)	0.05	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phosphorus (P)	300	µg/g	1800	2800	1500	2300	1700	2300
Potassium (K)	100	µg/g	2700	2000	3300	2700	3400	3600
Selenium (Se)	0.04	µg/g	0.49	0.18	0.05	0.79	0.13	0.05
Silver (Ag)	0.05	µg/g	<0.05	<0.05	<0.05	0.26	<0.05	<0.05
Sodium (Na)	50	µg/g	1400	1500	520	1100	590	600
Strontium (Sr)	0.5	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium (Tl)	0.003	µg/g	0.009	<0.003	<0.003	0.005	<0.003	<0.003
Tin (Sn)	0.3	µg/g	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium (Ti)	0.5	µg/g	1.5	2.3	1.4	2.1	1.4	1
Uranium (U)	0.005	µg/g	<0.005	<0.005	<0.005	<0.005	<0.005	0.006
Vanadium (V)	0.05	µg/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc (Zn)	2	µg/g	19	20	28	33	28	17
Chromium (VI)	0.18	µg/g	<0.18	<0.18	<0.18	<0.18	<0.18	-
Methylmercury (MeHg)	0.004	µg/g	-	-	0.00288	-	0.00616	-

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 4

BIRD TISSUE SAMPLING RESULTS - METALS (2021)
Webequie Supply Road
Webequie First Nation, Ontario

		Bureau Veritas ID	**RFE996**	**RFE997**	**RFE999**
		Sampling Date	**2021-11-06**	**2021-10-17**	**2021-09-17**
		COC Number	**855214-01-01**	**855214-01-01**	**855214-01-01**
		Location ID	**BH-1**	**RG-1**	**CG-1**
		Species	**BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM.**	**RUFFED GROUSE IN COMMUNITY**	**CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER**
Parameter	**RDL**	**Units**			
Moisture		%	43.26	72.46	
Metals					
Methylmercury (MeHg)	0.00016	µg/g	0.0502	0.00062	0.00082
Mercury (Hg)	0.005	µg/g	0.065	0.005	<0.005
Arsenic (As)	0.100	µg/g	<0.1	<0.1	1.4
Antimony (Sb)	0.050	µg/g	<0.05	<0.05	3.6
Barium (Ba)	0.300	µg/g	<0.3	<0.3	<0.3
Beryllium (Be)	0.050	µg/g	<0.05	<0.05	<0.05
Bismuth (Bi)	0.050	µg/g	<0.05	<0.05	<0.05
Boron (B)	0.500	µg/g	<0.5	<0.5	<0.5
Cadmium (Cd)	0.010	µg/g	<0.01	<0.01	<0.01
Calcium (Ca)	50	µg/g	<50	140	140
Cesium (Cs)	0.005	µg/g	<0.005	0.1	0.005
Chromium (Cr)	0.300	µg/g	<0.3	<0.3	<0.3
Cobalt (Co)	0.005	µg/g	0.008	<0.005	<0.005
Copper (Cu)	0.500	µg/g	2.9	0.8	1.5
Iron (Fe)	3.000	µg/g	37	9	32
Lead (Pb)	0.030	µg/g	0.04	<0.03	180
Magnesium (Mg)	100	µg/g	140	280	190
Manganese (Mn)	0.300	µg/g	<0.3	<0.3	0.4
Molybdenum (Mo)	0.050	µg/g	<0.05	<0.05	<0.05
Nickel (Ni)	0.050	µg/g	<0.05	<0.05	<0.05
Phosphorus (P)	500	µg/g	1400	2300	1900
Potassium (K)	100	µg/g	2000	3000	2600
Selenium (Se)	0.040	µg/g	0.24	0.11	0.14
Silver (Ag)	0.050	µg/g	<0.05	<0.05	<0.05
Sodium (Na)	50	µg/g	460	860	590
Strontium (Sr)	0.500	µg/g	<0.5	<0.5	<0.5
Thallium (Tl)	0.003	µg/g	<0.003	<0.003	<0.003
Tin (Sn)	0.300	µg/g	<0.3	<0.3	<0.3
Titanium (Ti)	0.500	µg/g	0.8	1.1	1
Uranium (U)	0.005	µg/g	<0.005	<0.005	<0.005
Vanadium (V)	0.050	µg/g	<0.05	<0.05	<0.05
Zinc (Zn)	2.000	µg/g	8	8	19

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
% - percent
µg/g - micrograms per gram, wet weight basis
Comm = Community

TABLE 5 FISH SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	Laboratory Sample ID	L1231364-1	WG1635717-4	L1231364-2	L1231364-3	L1231364-4	L1231364-5	L1231364-6	L1231364-12	L1231364-28
		Sample ID	39-1	Duplicate of 39-1	39-2	39-3	39-4	39-5	39-6	39-12	39-28
		Sampling Date (dd-mmm-yy)	18-OCT-11	18-OCT-11	09-NOV-11	14-NOV-11	09-NOV-11	09-NOV-11	09-NOV-11	14-NOV-11	14-NOV-11
		Species	5X WALLEYE	5X WALLEYE	5X Sturgeon	5X Whitefish	5X Northern Pike	5X Whitefish	5X Sucker	5X Sucker	2X TROUT
METALS											
Aluminum (Al)-Total	µg/g		<0.40	-	0.89	1.55	<0.40	<0.40	<0.40	1.51	<0.40
Antimony (Sb)-Total	µg/g		<0.0020	-	<0.0020	0.0118	<0.0020	<0.0020	<0.0020	0.0222	<0.0020
Arsenic (As)-Total	µg/g		0.0363	-	0.243	0.121	0.0226	0.074	0.0221	0.201	0.0218
Barium (Ba)-Total	µg/g		0.015	-	0.261	0.287	0.017	0.033	0.065	0.25	0.061
Beryllium (Be)-Total	µg/g		<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	µg/g		0.0022	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	µg/g		<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total	µg/g		<0.0020	-	0.0039	0.0039	<0.0020	<0.0020	<0.0020	0.0038	0.0021
Calcium (Ca)-Total	µg/g		235	-	1080	1560	259	1060	320	273	1350
Cesium (Cs)-Total	µg/g		0.0297	-	0.0034	0.0185	0.0194	0.0141	0.0129	0.0336	0.0054
Chromium (Cr)-Total	µg/g		0.079	-	0.14	0.175	0.09	0.063	0.225	0.047	0.074
Cobalt (Co)-Total	µg/g		<0.0040	-	<0.0040	0.0056	<0.0040	<0.0040	0.0127	0.0062	0.0063
Copper (Cu)-Total	µg/g		0.233	-	0.564	0.566	0.222	0.306	1.18	1.01	0.406
Gallium (Ga)-Total	µg/g		<0.0040	-	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Iron (Fe)-Total	µg/g		2.12	-	7.26	11.7	2.28	4.15	15.2	28.8	4.16
Lanthanum (La)-Total	µg/g		<0.040	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Lead (Pb)-Total	µg/g		<0.0040	-	0.009	0.0131	0.0044	0.0102	<0.0040	0.0666	0.0042
Lithium (Li)-Total	µg/g		<0.020	-	<0.020	<0.020	<0.020	0.026	0.021	0.102	<0.020
Magnesium (Mg)-Total	µg/g		282	-	185	460	276	256	424	731	311
Manganese (Mn)-Total	µg/g		0.108	-	0.357	3.17	0.143	0.234	2.6	1.18	0.46
Mercury (Hg)-Total	µg/g		0.196	-	0.19	0.0991	0.181	0.0285	0.0067	<0.0010	0.0425
Molybdenum (Mo)-Total	µg/g		<0.0040	-	0.0052	0.0073	<0.0040	<0.0040	0.031	0.0201	0.007
Nickel (Ni)-Total	µg/g		0.015	-	0.018	<0.010	<0.010	<0.010	0.107	0.032	0.026
Phosphorus (P)-Total	µg/g		1990	-	1910	3970	2020	2320	3580	6330	2860
Potassium (K)-Total	µg/g		3680	-	2740	7000	3800	3450	2880	13700	4280
Rhenium (Re)-Total	µg/g		<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Rubidium (Rb)-Total	µg/g		12	-	3.32	7.93	5.68	5.21	4.26	12.5	5.56
Selenium (Se)-Total	µg/g		0.206	-	0.22	0.353	0.123	0.203	0.546	0.591	0.186
Silver (Ag)-Total	µg/g		0.0037	-	0.0016	<0.0010	0.0038	<0.0010	0.0015	<0.0010	<0.0010
Sodium (Na)-Total	µg/g		275	-	865	1020	338	499	718	1740	464
Strontium (Sr)-Total	µg/g		0.035	-	0.277	0.397	0.039	0.384	0.078	0.13	0.406
Tellurium (Te)-Total	µg/g		<0.0040	-	0.0046	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	µg/g		0.00434	-	0.00127	0.00184	0.00236	0.00269	0.00052	0.00224	0.00258
Thorium (Th)-Total	µg/g		<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Tin (Sn)-Total	µg/g		<0.0040	-	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	0.004	0.0041
Titanium (Ti)-Total	µg/g		<0.010	-	0.059	0.13	<0.010	0.014	0.011	0.049	<0.010
Uranium (U)-Total	µg/g		<0.00040	-	0.00068	0.00054	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)-Total	µg/g		<0.0040	-	0.006	0.0082	<0.0040	<0.0040	<0.0040	0.0049	<0.0040
Yttrium (Y)-Total	µg/g		<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc (Zn)-Total	µg/g		4.86	-	8.12	9.51	6.58	11.4	37.4	57.6	9.05
Zirconium (Zr)-Total	µg/g		<0.040	-	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
PCDDF											
2,3,7,8-TCDD	pg/g		<0.054	<0.062	0.302	<0.095	<0.094	-	-	<0.083	<0.39
1,2,3,7,8-PeCDD	pg/g		0.129	0.151	<0.22	<0.11	<0.099	-	-	0.190	<0.17
1,2,3,4,7,8-HxCDD	pg/g		0.0621	0.0626	<0.080	0.0976	<0.065	-	-	<0.074	<0.11
1,2,3,6,7,8-HxCDD	pg/g		<0.073	<0.10	<0.11	<0.089	<0.077	-	-	<0.10	<0.13
1,2,3,7,8,9-HxCDD	pg/g		<0.036	<0.054	<0.069	<0.041	<0.074	-	-	<0.083	<0.12
1,2,3,4,6,7,8-HpCDD	pg/g		<0.051	<0.054	<0.078	<0.099	<0.076	-	-	<0.097	<0.074
OCDD	pg/g		<0.064	0.260	<0.47	<0.22	<0.14	-	-	<0.25	<0.18
2,3,7,8-TCDF	pg/g		<0.089	<0.085	<0.75	0.305	<0.16	-	-	<0.21	<0.28
1,2,3,7,8-PeCDF	pg/g		<0.096	<0.057	0.353	<0.21	0.165	-	-	<0.13	<0.14
2,3,4,7,8-PeCDF	pg/g		<0.12	<0.12	0.261	<0.11	<0.12	-	-	<0.090	<0.13
1,2,3,4,7,8-HxCDF	pg/g		<0.054	<0.027	<0.077	0.107	<0.084	-	-	<0.035	<0.055
1,2,3,6,7,8-HxCDF	pg/g		<0.037	0.116	<0.16	<0.057	0.115	-	-	<0.034	<0.054
2,3,4,6,7,8-HxCDF	pg/g		0.731	0.633	<0.75	0.662	0.684	-	-	<0.56	<0.65
1,2,3,7,8,9-HxCDF	pg/g		<0.025	<0.032	<0.096	<0.068	<0.049	-	-	<0.049	<0.065
1,2,3,4,6,7,8-HpCDF	pg/g		<0.040	<0.088	0.298	<0.026	<0.056	-	-	<0.041	0.0655
1,2,3,4,7,8,9-HpCDF	pg/g		0.0481	<0.039	<0.069	<0.036	<0.044	-	-	<0.063	<0.060
OCDF	pg/g		<0.056	<0.054	<0.089	<0.082	<0.052	-	-	<0.12	<0.12
PCBs											
PCB31/28	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB20/33/21	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB37	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB43/49	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB44	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB71/41/68/64	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB40	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB74/61	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1
PCB80/66	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1
PCB56/60	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB84/90/101/89	ng/g		<0.1	<0.1	0.33	0.17	<0.1	0.25	0.48	0.22	<0.1
PCB99	ng/g		<0.1	<0.1	0.24	0.13	<0.1	0.18	0.51	0.18	<0.1
PCB86/111/125/117/87/116/115	ng/g		<14	<14	<14	<15	<14	<14	<14	<14	<14
PCB118/106	ng/g		<0.1	<0.1	0.17	0.21	0.12	0.26	0.78	0.26	0.1
PCB105/127	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.21	<0.1	<0.1
PCB136	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB153	ng/g		0.12	0.12	0.87	0.44	0.38	0.66	2.12	0.63	0.3
PCB141	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB137	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB163/164/138	ng/g		0.1	<0.1	0.56	0.3	0.24	0.46	1.51	0.44	0.19
PCB129	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB128/167	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.37	0.12	<0.1
PCB156	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
PCB157	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB183	ng/g		<0.1	<0.1	0.14	<0.1	<0.1	<0.1	0.21	<0.1	<0.1
PCB185	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB180	ng/g		<0.1	<0.1	0.33	0.14	0.16	0.22	0.74	0.21	0.11
PCB193	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB191	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB170/190	ng/g		<0.1	<0.1	0.14	<0.1	<0.1	0.1	0.33	<0.1	<0.1
PCB-189	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB196/203	ng/g		<0.1	<0.1	0.15	<0.1	<0.1	<0.1	0.25	<0.1	<0.1
PCB194	ng/g		<0.1	<0.1	0.11	<0.1	<0.1	<0.1	0.15	<0.1	<0.1
PCB206	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.16	<0.1	<0.1
PCB209	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB201/204	ng/g		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH											
Naphthalene	ng/g		3.91	3.37	3.44	41	1.88	-	-	46.3	3.68
Acenaphthylene	ng/g		0.83	0.47	0.47	62.5	0.34	-	-	85.5	3.11
Acenaphthene	ng/g		0.55	0.61	0.32	4.72	<0.2	-	-	9.59	<0.2
Fluorene	ng/g		1.34	0.71	0.8	41.1	0.6	-	-	56.5	0.38
Phenanthrene	ng/g		11.6	4.46	5.13	282	5.16	-	-	366	1.14
Anthracene	ng/g		1.41	0.72	0.52	40.2	0.61	-	-	44.6	<0.2
Fluoranthene	ng/g		4.59	1.73	1.99	96.5	2.11	-	-	143	0.27
Pyrene	ng/g		3.35	1.35	2.38	83.5	1.64	-	-	127	0.68
Benzo(a)Anthracene	ng/g		<0.2	<0.2	<0.2	31.9	<0.2	-	-	35.3	<0.2
Chrysene	ng/g		0.32	0.25	0.53	35.8	0.27	-	-	45.6	<0.2
Benzo(b)Fluoranthene	ng/g		<0.2	<0.2	<0.2	11.4	<0.2	-	-	14.4	<0.2
Benzo(k)Fluoranthene	ng/g		<0.2	<0.2	<0.2	13.6	<0.2	-	-	15.2	<0.2
Benzo(a)Pyrene	ng/g		<0.2	<0.2	<0.2	13.1	<0.2	-	-	16	<0.2
Indeno(1,2,3-cd)Pyrene	ng/g		<0.2	<0.2	<0.2	4.73	<0.2	-	-	5.4	<0.2
Dibenzo(a,h)Anthracene	ng/g		<0.2	<0.2	<0.2	0.72	<0.2	-	-	1.28	<0.2
Benzo(g,h,i)Perylene	ng/g		<0.2	<0.2	<0.2	4.13	<0.2	-	-	6.4	<0.2
PBDEs											
BDE 10	pg/g		<0.051	<0.11	<0.064	<0.083	<0.057	-	-	<0.11	<0.065
BDE 7	pg/g		<0.043	<0.063	<0.054	<0.070	<0.048	-	-	<1.5	<0.055

TABLE 5 FISH SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	Laboratory Sample ID	L1231364-1	WG1635717-4	L1231364-2	L1231364-3	L1231364-4	L1231364-5	L1231364-6	L1231364-12	L1231364-28
		Sample ID	39-1	Duplicate of 39-1	39-2	39-3	39-4	39-5	39-6	39-12	39-28
		Sampling Date (dd-mmm-yy)	18-OCT-11	18-OCT-11	09-NOV-11	14-NOV-11	09-NOV-11	09-NOV-11	09-NOV-11	14-NOV-11	14-NOV-11
		Species	5X WALLEYE	5X WALLEYE	5X Sturgeon	5X Whitefish	5X Northern Pike	5X Whitefish	5X Sucker	5X Sucker	2X TROUT
BDE 8/11	pg/g		<0.033	<0.048	<0.041	0.324	0.0509	-	-	3.66	0.129
BDE 12/13	pg/g		<0.27	<0.25	<2.4	<0.30	<0.12	-	-	<2.9	<0.12
BDE 15	pg/g		0.188	0.162	0.518	1.88	0.348	-	-	6.19	1.03
BDE 30	pg/g		<0.050	<0.075	<0.070	<0.063	<0.061	-	-	<0.085	<0.40
BDE 32	pg/g		<0.035	<0.093	0.321	0.316	<0.043	-	-	<0.060	<0.28
BDE 17/25	pg/g		<0.58	<0.54	0.659	3.87	0.622	-	-	12.1	1.09
BDE 28/33	pg/g		2.11	2.2	14	20.6	10.8	-	-	51.5	14.4
BDE 35	pg/g		<1.8	<1.9	<11	<5.5	<2.5	-	-	<9.3	<3.7
BDE 37	pg/g		4.14	4.86	4.39	4.78	4.63	-	-	7.7	5.78
PBEB	pg/g		<0.051	<0.075	<0.12	<0.071	<0.10	-	-	0.23	<0.094
HBB	pg/g		0.688	0.699	0.621	<1.1	<0.56	-	-	2.29	0.619
BDE 75	pg/g		<0.14	<0.14	1.39	0.788	0.869	-	-	1.68	1.11
BDE 51	pg/g		<0.57	<0.40	2.08	2.11	<0.81	-	-	5.17	1.74
BDE 49	pg/g		12.5	11.6	24.4	24.7	19.6	-	-	48.4	35.1
BDE 71	pg/g		<0.066	<0.10	<0.10	<0.077	<0.12	-	-	<0.16	<0.36
BDE 47	pg/g		109	100	151	327	513	-	-	706	472
BDE 79	pg/g		<0.041	<0.064	<0.064	<0.048	<0.072	-	-	4.31	<0.23
BDE 66	pg/g		2.71	2.95	5.86	5.14	6.36	-	-	5.81	13.3
BDE 77	pg/g		0.441	<0.49	0.538	0.846	0.307	-	-	0.938	1.38
BDE 100	pg/g		31	29.5	30.1	64.4	113	-	-	128	70.5
BDE 119/120	pg/g		2.46	2.43	3.98	4.01	5.08	-	-	6.79	5.33
BDE 99	pg/g		73.3	69.1	23.5	54.3	113	-	-	82.6	222
BDE 116	pg/g		<0.28	<0.46	<0.42	<0.42	<0.35	-	-	<0.35	<0.41
BDE 118	pg/g		1.08	<0.96	1.41	1.33	1.97	-	-	1.18	3.65
BDE 85	pg/g		0.384	0.445	0.71	1.55	0.462	-	-	4.28	2.72
BDE 126	pg/g		<0.10	<0.17	0.176	<0.16	<0.13	-	-	0.257	<0.14
BDE 105	pg/g		<0.19	<0.31	<0.29	<0.29	<0.24	-	-	<0.24	<0.28
BDE 155	pg/g		1.53	1.7	5.24	3.67	4.26	-	-	9.84	1.97
BDE 154	pg/g		12	11.5	19.5	26.1	42.3	-	-	54.3	26.4
BDE 153	pg/g		11.5	10.6	14.3	14.8	31.2	-	-	27.1	36.1
BDE 140	pg/g		<0.25	<0.51	<0.30	0.476	<0.63	-	-	<0.69	<0.77
BDE 138/166	pg/g		<0.29	<0.69	<0.41	<0.41	0.349	-	-	1.1	0.872
BDE 156	pg/g		<0.33	<0.78	<0.46	<0.46	<0.20	-	-	<0.83	<0.44
BDE 128	pg/g		<0.33	<0.77	<0.46	<0.46	<1.5	-	-	<0.82	<0.44
BDE 184	pg/g		<0.12	<0.21	0.469	0.496	<0.15	-	-	<0.38	0.441
BDE 183	pg/g		0.566	0.661	2.83	3.31	1.03	-	-	6.07	1.72
BDE 191	pg/g		<0.22	<0.40	<0.63	<0.34	<0.28	-	-	<0.70	<0.36
BDE 181	pg/g		<0.20	<0.35	<0.56	<0.31	<0.25	-	-	<0.62	<0.32
BDE 190	pg/g		<0.28	<0.51	<0.81	<0.44	<0.36	-	-	<0.91	<0.46
BDE 197	pg/g		0.35	<0.40	1.35	1.77	0.317	-	-	4.61	0.537
BDE 203	pg/g		0.308	<0.48	0.748	1.33	0.231	-	-	5.64	0.498
BDE 196	pg/g		0.343	<0.46	0.822	1.18	<0.19	-	-	4.64	<0.40
BDE 208	pg/g		1.43	1.26	1.35	4.03	0.716	-	-	22.3	0.954
BDE 207	pg/g		1.93	2.07	<1.7	7.18	<0.86	-	-	31.1	<1.0
BDE 206	pg/g		2.59	<1.9	2.46	9.08	1.32	-	-	42.4	1.47
BDE 209	pg/g		38.7	51.9	23.3	253	25.5	-	-	882	23
OCPs											
Hexachlorobenzene	ng/g		0.167	0.138	1.25	0.698	0.143	0.767	0.405	0.638	0.5
alpha-BHC	ng/g		0.0253	0.0186	0.0919	0.0896	<0.013	0.0854	0.0496	0.0746	0.0495
beta-BHC	ng/g		<0.020	<0.018	<0.017	<0.018	<0.014	<0.013	<0.013	<0.011	<0.0072
gamma-BHC	ng/g		0.0786	0.0513	0.0498	0.0456	0.0445	<0.039	0.0375	0.0274	0.0305
delta-BHC	ng/g		0.219	0.221	0.167	<0.018	0.0532	0.0718	0.0184	<0.011	0.194
Heptachlor	ng/g		<0.0051	<0.0047	<0.0039	<0.0040	<0.0046	<0.0034	<0.0037	<0.0025	<0.00083
Aldrin	ng/g		<0.0024	<0.0021	<0.0021	<0.0022	<0.0048	<0.0041	<0.0044	<0.0039	<0.0011
Chlorpyrifos	ng/g		0.0892	<0.042	0.0374	<0.059	0.0861	0.0595	<0.022	0.102	0.016
Heptachlor Epoxide B	ng/g		0.0238	0.0193	0.137	0.0724	0.0153	0.0646	0.033	0.0824	0.0619
Heptachlor Epoxide A	ng/g		<0.062	<0.054	<0.054	<0.058	<0.026	<0.023	<0.024	<0.020	<0.023
Oxychlordane	ng/g		0.0221	0.0181	0.152	<0.052	<0.028	0.118	0.0544	0.0676	0.0695
trans-Chlordane	ng/g		<0.023	<0.019	<0.082	0.0359	<0.028	<0.025	<0.027	0.0449	<0.0067
cis-Chlordane	ng/g		<0.048	0.0831	0.562	<0.15	<0.044	<0.045	0.222	0.284	<0.043
trans-Nonachlor	ng/g		0.0891	0.0757	<0.71	0.279	0.149	0.425	0.352	0.326	<0.19
Dieldrin	ng/g		0.0767	0.0683	0.28	0.161	0.0449	0.122	0.109	0.24	0.164
Endrin	ng/g		<0.018	<0.015	<0.014	<0.014	<0.037	<0.031	<0.036	<0.024	0.0252
cis-Nonachlor	ng/g		0.0629	0.0517	0.489	0.182	0.103	0.211	0.25	0.211	0.0901
Endosulfan I	ng/g		<0.087	<0.085	<0.29	<0.32	<0.64	<0.28	<0.31	<0.26	<0.27
Endosulfan II	ng/g		<0.12	<0.10	<0.099	<0.11	<0.058	<0.051	<0.056	<0.047	<0.017
Endosulfan Sulfate	ng/g		<0.048	0.0468	0.136	0.0438	<0.033	0.0971	0.0484	<0.026	0.0974
24'-DDE	ng/g		<0.039	<0.032	0.047	<0.035	<0.032	<0.028	<0.031	0.0282	<0.023
44'-DDE	ng/g		0.456	0.37	2.83	1.37	0.955	2.06	5.01	2.19	0.6
24'-DDD	ng/g		<0.015	<0.012	0.0747	0.0209	<0.012	<0.0097	0.0436	0.0606	<0.0097
44'-DDD	ng/g		0.0352	0.0279	0.232	0.109	0.0573	0.121	0.171	0.13	0.0379
24'-DDT	ng/g		<0.023	<0.018	<0.086	<0.014	<0.023	<0.019	<0.021	<0.021	<0.0087
44'-DDT	ng/g		0.0285	0.0205	0.047	0.025	0.0514	0.0442	<0.030	<0.025	0.0171
Methoxychlor	ng/g		<0.056	<0.046	<0.059	<0.10	<0.17	<0.16	<0.19	<0.54	<0.12
Dicofol	ng/g		<10	<10	<10	<10	<10	<10	<10	<10	<10
Mirex	ng/g		<0.019	<0.019	0.119	0.0305	<0.037	<0.034	0.062	0.036	0.0323
Parlar-26	ng/g		<0.049	<0.040	0.129	<0.038	<0.069	<0.058	<0.067	<0.045	<0.030
Parlar-50	ng/g		<0.050	<0.041	0.129	<0.042	<0.041	<0.037	<0.044	<0.042	<0.024
Parlar-62	ng/g		<0.058	<0.047	<0.061	<0.049	<0.053	<0.048	<0.057	<0.054	<0.028
PFAS											
Perfluorobutanoic Acid	ng/g		<7.5	-	-	-	<6.5	-	-	<7.5	-
Perfluorobutanesulfonate	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-
Perfluoropentanoic Acid	ng/g		<1.9	-	-	-	<1.6	-	-	<6.5	-
Perfluorohexanoic Acid	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-
Perfluorohexanesulfonate	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-
Perfluoroheptanoic Acid	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-
Perfluorooctanoic Acid	ng/g		<0.23	-	-	-	0.21	-	-	<0.81	-
Perfluorooctanesulfonate	ng/g		0.12	-	-	-	<0.2	-	-	<0.81	-
Perfluorooctylsulfonamide	ng/g		<0.47	-	-	-	<0.41	-	-	<1.6	-
Perfluorononanoic acid	ng/g		0.13	-	-	-	0.14	-	-	<0.81	-
Perfluorodecanoic Acid	ng/g		0.053	-	-	-	<0.2	-	-	<0.81	-
Perfluoroundecanoic Acid	ng/g		0.06	-	-	-	0.12	-	-	<0.81	-
Perfluorododecanoic Acid	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-
Perfluoro-n-tridecanoic acid	ng/g		<0.23	-	-	-	<0.2	-	-	<0.81	-

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram
ng/g - nanograms per gram

TABLE 6 MAMMAL SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	Laboratory Sample ID Sample ID Sampling Date (dd-mmm-yy) Species L1231364-7 39-7 14-NOV-11 3X Moose	WG1669190-4 Duplicate of 14-NOV-11 3X Moose	L1231364-8 39-8 18-OCT-11 5X Moose	L1231364-10 39-10 14-NOV-11 4X Moose	L1231364-27 39-27 14-NOV-11 4X BEAVER
Inorganics						
Aluminum (Al)-Total	µg/g	<0.40	-	0.62	<0.40	<0.40
Antimony (Sb)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Arsenic (As)-Total	µg/g	0.0281	-	0.0082	0.0064	0.0063
Barium (Ba)-Total	µg/g	0.041	-	0.019	0.028	0.018
Beryllium (Be)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Boron (B)-Total	µg/g	<0.20	-	<0.20	<0.20	<0.20
Cadmium (Cd)-Total	µg/g	0.0082	-	0.0076	0.0041	0.0042
Calcium (Ca)-Total	µg/g	44	-	62.9	25.7	50.9
Cesium (Cs)-Total	µg/g	0.0049	-	0.0314	<0.0010	0.0097
Chromium (Cr)-Total	µg/g	0.071	-	0.161	0.068	0.113
Cobalt (Co)-Total	µg/g	<0.0040	-	0.0054	<0.0040	<0.0040
Copper (Cu)-Total	µg/g	0.133	-	1.25	0.025	0.438
Gallium (Ga)-Total	µg/g	<0.0040	-	<0.0040	<0.0040	<0.0040
Iron (Fe)-Total	µg/g	5.91	-	33.2	7.05	23.1
Lanthanum (La)-Total	µg/g	<0.040	-	<0.040	<0.040	<0.040
Lead (Pb)-Total	µg/g	<0.0040	-	0.0209	<0.0040	<0.0040
Lithium (Li)-Total	µg/g	0.021	-	<0.020	<0.020	<0.020
Magnesium (Mg)-Total	µg/g	47.7	-	221	5.5	127
Manganese (Mn)-Total	µg/g	0.709	-	0.208	0.0978	0.111
Mercury (Hg)-Total	µg/g	<0.0010	-	0.0011	<0.0010	<0.0010
Molybdenum (Mo)-Total	µg/g	0.0042	-	0.0097	<0.0040	0.0057
Nickel (Ni)-Total	µg/g	<0.010	-	0.051	0.018	0.023
Phosphorus (P)-Total	µg/g	360	-	1710	71.3	963
Potassium (K)-Total	µg/g	849	-	3450	143	1900
Rhenium (Re)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Rubidium (Rb)-Total	µg/g	2.26	-	10.5	0.331	3.34
Selenium (Se)-Total	µg/g	0.029	-	0.093	<0.020	0.041
Silver (Ag)-Total	µg/g	<0.0010	-	<0.0010	<0.0010	<0.0010
Sodium (Na)-Total	µg/g	489	-	560	136	540
Strontium (Sr)-Total	µg/g	0.049	-	0.011	<0.010	0.036
Tellurium (Te)-Total	µg/g	<0.0040	-	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	µg/g	<0.00040	-	<0.00040	<0.00040	0.00047
Thorium (Th)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Tin (Sn)-Total	µg/g	<0.0040	-	<0.0040	<0.0040	<0.0040
Titanium (Ti)-Total	µg/g	0.014	-	0.024	0.068	<0.010
Uranium (U)-Total	µg/g	<0.00040	-	<0.00040	<0.00040	<0.00040
Vanadium (V)-Total	µg/g	<0.0040	-	<0.0040	<0.0040	<0.0040
Yttrium (Y)-Total	µg/g	<0.0020	-	<0.0020	<0.0020	<0.0020
Zinc (Zn)-Total	µg/g	5.99	-	55.7	0.59	19.3
Zirconium (Zr)-Total	µg/g	<0.040	-	<0.040	<0.040	<0.040
PCDDF						
2,3,7,8-TCDD	pg/g	-	-	<0.16	-	-
1,2,3,7,8-PeCDD	pg/g	-	-	<0.16	-	-
1,2,3,4,7,8-HxCDD	pg/g	-	-	<0.10	-	-
1,2,3,6,7,8-HxCDD	pg/g	-	-	<0.13	-	-
1,2,3,7,8,9-HxCDD	pg/g	-	-	<0.12	-	-
1,2,3,4,6,7,8-HpCDD	pg/g	-	-	<0.095	-	-
OCDD	pg/g	-	-	<0.20	-	-
2,3,7,8-TCDF	pg/g	-	-	<0.25	-	-
1,2,3,7,8-PeCDF	pg/g	-	-	<0.14	-	-
2,3,4,7,8-PeCDF	pg/g	-	-	<0.12	-	-
1,2,3,4,7,8-HxCDF	pg/g	-	-	<0.14	-	-
1,2,3,6,7,8-HxCDF	pg/g	-	-	<0.080	-	-
2,3,4,6,7,8-HxCDF	pg/g	-	-	<0.63	-	-
1,2,3,7,8,9-HxCDF	pg/g	-	-	<0.10	-	-
1,2,3,4,6,7,8-HpCDF	pg/g	-	-	<0.060	-	-
1,2,3,4,7,8,9-HpCDF	pg/g	-	-	<0.088	-	-
OCDF	pg/g	-	-	<0.17	-	-
PCBs						
PCB31/28	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB20/33/21	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB37	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB43/49	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB44	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB71/41/68/64	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB40	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB74/61	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB80/66	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB56/60	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB84/90/101/89	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB99	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB86/111/125/117/87/116/115	ng/g	<0.2	<0.2	<14	<0.2	<0.2
PCB118/106	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2

TABLE 6 MAMMAL SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	L1231364-7 39-7 14-NOV-11 3X Moose	WG1669190-4 Duplicate of 14-NOV-11 3X Moose	L1231364-8 39-8 18-OCT-11 5X Moose	L1231364-10 39-10 14-NOV-11 4X Moose	L1231364-27 39-27 14-NOV-11 4X BEAVER
PCB105/127	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB136	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB153	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB141	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB137	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB163/164/138	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB129	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB128/167	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB156	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB157	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB183	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB185	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB180	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB193	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB191	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB170/190	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB-189	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB196/203	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB194	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB206	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB209	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PCB201/204	ng/g	<0.2	<0.2	<0.1	<0.2	<0.2
PAH						
Naphthalene	ng/g	-	-	3.81	-	-
Acenaphthylene	ng/g	-	-	0.24	-	-
Acenaphthene	ng/g	-	-	1.49	-	-
Fluorene	ng/g	-	-	0.35	-	-
Phenanthrene	ng/g	-	-	1	-	-
Anthracene	ng/g	-	-	<0.2	-	-
Fluoranthene	ng/g	-	-	0.22	-	-
Pyrene	ng/g	-	-	0.22	-	-
Benzo(a)Anthracene	ng/g	-	-	<0.2	-	-
Chrysene	ng/g	-	-	<0.2	-	-
Benzo(b)Fluoranthene	ng/g	-	-	<0.2	-	-
Benzo(k)Fluoranthene	ng/g	-	-	<0.2	-	-
Benzo(a)Pyrene	ng/g	-	-	<0.2	-	-
Indeno(1,2,3-cd)Pyrene	ng/g	-	-	<0.2	-	-
Dibenzo(a,h)Anthracene	ng/g	-	-	<0.2	-	-
Benzo(g,h,i)Perylene	ng/g	-	-	<0.2	-	-
PBDEs						
BDE 10	pg/g	-	-	<0.18	-	-
BDE 7	pg/g	-	-	<0.15	-	-
BDE 8/11	pg/g	-	-	<0.11	-	-
BDE 12/13	pg/g	-	-	<0.15	-	-
BDE 15	pg/g	-	-	0.0867	-	-
BDE 30	pg/g	-	-	<0.18	-	-
BDE 32	pg/g	-	-	<0.13	-	-
BDE 17/25	pg/g	-	-	<0.23	-	-
BDE 28/33	pg/g	-	-	<0.52	-	-
BDE 35	pg/g	-	-	<0.095	-	-
BDE 37	pg/g	-	-	3.72	-	-
PBEB	pg/g	-	-	<0.14	-	-
HBB	pg/g	-	-	<0.59	-	-
BDE 75	pg/g	-	-	<0.22	-	-
BDE 51	pg/g	-	-	<0.22	-	-
BDE 49	pg/g	-	-	<0.30	-	-
BDE 71	pg/g	-	-	<0.28	-	-
BDE 47	pg/g	-	-	10.3	-	-
BDE 79	pg/g	-	-	<0.17	-	-
BDE 66	pg/g	-	-	<0.33	-	-
BDE 77	pg/g	-	-	<0.16	-	-
BDE 100	pg/g	-	-	1.75	-	-
BDE 119/120	pg/g	-	-	<0.33	-	-
BDE 99	pg/g	-	-	6.4	-	-
BDE 116	pg/g	-	-	<0.42	-	-
BDE 118	pg/g	-	-	<0.29	-	-
BDE 85	pg/g	-	-	<0.26	-	-
BDE 126	pg/g	-	-	<0.16	-	-
BDE 105	pg/g	-	-	<0.28	-	-
BDE 155	pg/g	-	-	<0.37	-	-
BDE 154	pg/g	-	-	1.05	-	-
BDE 153	pg/g	-	-	2.77	-	-
BDE 140	pg/g	-	-	<0.70	-	-
BDE 138/166	pg/g	-	-	<0.96	-	-
BDE 156	pg/g	-	-	<1.1	-	-
BDE 128	pg/g	-	-	<1.1	-	-

TABLE 6 MAMMAL SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	L1231364-7 39-7 14-NOV-11 3X Moose	WG1669190-4 Duplicate of 14-NOV-11 3X Moose	L1231364-8 39-8 18-OCT-11 5X Moose	L1231364-10 39-10 14-NOV-11 4X Moose	L1231364-27 39-27 14-NOV-11 4X BEAVER
BDE 184	pg/g	-	-	1.44	-	-
BDE 183	pg/g	-	-	<1.4	-	-
BDE 191	pg/g	-	-	<1.6	-	-
BDE 181	pg/g	-	-	<0.67	-	-
BDE 190	pg/g	-	-	<0.98	-	-
BDE 197	pg/g	-	-	8.46	-	-
BDE 203	pg/g	-	-	14.9	-	-
BDE 196	pg/g	-	-	7.87	-	-
BDE 208	pg/g	-	-	55.1	-	-
BDE 207	pg/g	-	-	108	-	-
BDE 206	pg/g	-	-	86.5	-	-
BDE 209	pg/g	-	-	3270	-	-
OCPs						
Hexachlorobenzene	ng/g	1.26	1.28	0.118	2.19	0.349
alpha-BHC	ng/g	<0.13	<0.13	<0.010	0.197	0.0625
beta-BHC	ng/g	<0.019	<0.027	<0.013	<0.022	<0.022
gamma-BHC	ng/g	<0.018	<0.028	<0.018	<0.021	<0.022
delta-BHC	ng/g	0.0664	0.0644	0.579	0.143	0.0527
Heptachlor	ng/g	<0.0066	<0.010	<0.0034	<0.0068	<0.0066
Aldrin	ng/g	0.00357	<0.0055	<0.0044	<0.0039	<0.0036
Chlorpyrifos	ng/g	<0.039	0.169	<0.022	<0.043	<0.040
Heptachlor Epoxide B	ng/g	0.0621	0.0931	<0.0056	0.0717	0.0723
Heptachlor Epoxide A	ng/g	<0.059	<0.091	<0.024	<0.065	<0.059
Oxychlordane	ng/g	0.132	0.184	0.0113	<0.13	<0.037
trans-Chlordane	ng/g	<0.064	<0.11	<0.028	<0.065	<0.063
cis-Chlordane	ng/g	<0.059	<0.10	<0.027	<0.060	<0.057
trans-Nonachlor	ng/g	<0.056	<0.099	<0.026	<0.057	<0.055
Dieldrin	ng/g	<0.037	<0.069	<0.017	<0.040	<0.13
Endrin	ng/g	<0.077	<0.15	<0.034	<0.078	<0.064
cis-Nonachlor	ng/g	<0.060	<0.11	<0.026	<0.061	<0.059
Endosulfan I	ng/g	<0.75	<1.3	<0.31	<0.74	<0.69
Endosulfan II	ng/g	<0.057	<0.097	<0.056	<0.055	<0.052
Endosulfan Sulfate	ng/g	<0.026	<0.044	<0.032	<0.025	<0.023
24'-DDE	ng/g	<0.12	<0.24	<0.032	<0.13	<0.12
44'-DDE	ng/g	<0.16	<0.32	<0.037	<0.16	<0.15
24'-DDD	ng/g	<0.13	<0.30	<0.011	<0.13	<0.091
44'-DDD	ng/g	<0.15	<0.34	<0.013	<0.15	<0.10
24'-DDT	ng/g	<0.22	<0.51	<0.021	<0.22	<0.15
44'-DDT	ng/g	<0.28	<0.63	<0.025	<0.27	<0.19
Methoxychlor	ng/g	<0.58	<1.1	<0.17	<0.49	<0.30
Dicofol	ng/g	<10	<10	<10	<10	<10
Mirex	ng/g	0.0335	<0.21	<0.0078	<0.0072	<0.031
Parlar-26	ng/g	<0.17	<0.33	<0.064	<0.17	<0.14
Parlar-50	ng/g	<0.61	<1.2	<0.039	<0.52	<0.32
Parlar-62	ng/g	<0.71	<1.4	<0.050	<0.61	<0.37
PFAS						
Perfluorobutanoic Acid	ng/g	-	-	<9.3	-	-
Perfluorobutanesulfonate	ng/g	-	-	<0.29	-	-
Perfluoropentanoic Acid	ng/g	-	-	<2.3	-	-
Perfluorohexanoic Acid	ng/g	-	-	<0.29	-	-
Perfluorohexanesulfonate	ng/g	-	-	<0.29	-	-
Perfluoroheptanoic Acid	ng/g	-	-	<0.29	-	-
Perfluorooctanoic Acid	ng/g	-	-	0.11	-	-
Perfluorooctanesulfonate	ng/g	-	-	<0.29	-	-
Perfluorooctylsulfonamide	ng/g	-	-	<0.58	-	-
Perfluorononanoic acid	ng/g	-	-	<0.29	-	-
Perfluorodecanoic Acid	ng/g	-	-	<0.29	-	-
Perfluoroundecanoic Acid	ng/g	-	-	<0.29	-	-
Perfluorododecanoic Acid	ng/g	-	-	<0.29	-	-
Perfluoro-n-tridecanoic acid	ng/g	-	-	<0.29	-	-

< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram
ng/g - nanograms per gram

TABLE 7 BIRD SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	Laboratory Sample ID: L1231364-14	L1231364-17	L1231364-21	L1231364-22	L1231364-24	L1231364-25	L1231364-26
		Sample ID: 39-14	39-17	39-21	39-22	39-24	39-25	39-26
		Sampling Date (dd-mmm-yy): 10-NOV-11	14-NOV-11	10-NOV-11	18-NOV-11	14-NOV-11	14-NOV-11	15-NOV-11
		Species: 5X CAN. GOOSE	5X Can. Goose	5X RUFFED GROUSE	1X GOOSE	2X TEAL	3X MALLARD, MALE	1X BARROW'S GOLDEN EYE DUCK
METALS								
Aluminum (Al)-Total	µg/g	<0.40	31.7	<0.40	0.45	<0.40	0.62	<0.40
Antimony (Sb)-Total	µg/g	0.076	0.0033	<0.0020	<0.0020	<0.0020	0.0328	<0.0020
Arsenic (As)-Total	µg/g	0.0311	0.0463	0.0105	0.0113	0.0101	0.0146	0.0284
Barium (Ba)-Total	µg/g	0.037	0.455	0.062	0.038	0.022	0.042	<0.010
Beryllium (Be)-Total	µg/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Bismuth (Bi)-Total	µg/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Boron (B)-Total	µg/g	<0.20	<0.20	0.22	<0.20	<0.20	<0.20	<0.20
Cadmium (Cd)-Total	µg/g	0.003	0.0164	0.0113	0.0394	0.0112	0.0081	<0.0020
Calcium (Ca)-Total	µg/g	67.1	75.5	142	65.2	62.3	79.7	24.3
Cesium (Cs)-Total	µg/g	0.0459	0.0559	0.0656	0.0064	0.0053	0.0044	0.0028
Chromium (Cr)-Total	µg/g	0.08	0.633	0.028	0.292	0.07	0.024	0.12
Cobalt (Co)-Total	µg/g	0.0054	0.0445	<0.0040	<0.0040	0.0086	0.0088	<0.0040
Copper (Cu)-Total	µg/g	3.93	1.15	1.96	0.705	7.05	2.77	3.01
Gallium (Ga)-Total	µg/g	<0.0040	0.0129	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Iron (Fe)-Total	µg/g	57.1	156	31.2	27.9	71.4	58.7	33.7
Lanthanum (La)-Total	µg/g	<0.040	0.081	<0.040	<0.040	<0.040	<0.040	<0.040
Lead (Pb)-Total	µg/g	1.19	0.028	0.009	0.0085	<0.0040	1.43	<0.0040
Lithium (Li)-Total	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Magnesium (Mg)-Total	µg/g	260	202	314	126	301	241	130
Manganese (Mn)-Total	µg/g	0.519	1.59	0.414	0.266	0.497	0.639	0.252
Mercury (Hg)-Total	µg/g	0.0023	0.001	<0.0010	<0.0010	0.0583	0.0146	0.029
Molybdenum (Mo)-Total	µg/g	0.0227	0.0547	0.0204	0.0179	0.0227	0.0208	0.0188
Nickel (Ni)-Total	µg/g	0.034	0.078	0.011	0.077	<0.010	<0.010	0.058
Phosphorus (P)-Total	µg/g	2300	1420	2450	1100	2710	2060	1210
Potassium (K)-Total	µg/g	2980	3650	3370	2300	3700	3130	1610
Rhenium (Re)-Total	µg/g	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Rubidium (Rb)-Total	µg/g	13.5	15.3	5.44	3.4	5.09	3.49	4.6
Selenium (Se)-Total	µg/g	0.301	0.248	0.228	0.081	0.882	0.83	0.176
Silver (Ag)-Total	µg/g	<0.0010	<0.0010	<0.0010	0.0153	<0.0010	<0.0010	<0.0010
Sodium (Na)-Total	µg/g	661	850	753	1030	630	650	320
Strontium (Sr)-Total	µg/g	0.022	0.114	0.154	0.028	0.031	0.027	<0.010
Tellurium (Te)-Total	µg/g	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Thallium (Tl)-Total	µg/g	0.00453	0.00473	0.00048	<0.00040	0.00164	0.00094	0.00082
Thorium (Th)-Total	µg/g	<0.0020	0.0227	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Tin (Sn)-Total	µg/g	<0.0040	0.0043	0.0135	<0.0040	<0.0040	<0.0040	<0.0040
Titanium (Ti)-Total	µg/g	<0.010	3.94	0.012	0.026	<0.010	0.029	<0.010
Uranium (U)-Total	µg/g	<0.00040	0.0034	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Vanadium (V)-Total	µg/g	<0.0040	0.175	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Yttrium (Y)-Total	µg/g	<0.0020	0.0233	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Zinc (Zn)-Total	µg/g	25.9	31.8	9.12	27.6	12.3	16.5	7.09
Zirconium (Zr)-Total	µg/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
PCDDF								
2,3,7,8-TCDD	pg/g	<0.068	-	-	-	<0.14	<0.19	<1.7
1,2,3,7,8-PeCDD	pg/g	<0.099	-	-	-	<0.69	0.674	<0.77
1,2,3,4,7,8-HxCDD	pg/g	<0.068	-	-	-	<0.48	<0.36	<0.31
1,2,3,6,7,8-HxCDD	pg/g	<0.034	-	-	-	<0.67	<0.83	<0.36
1,2,3,7,8,9-HxCDD	pg/g	0.0643	-	-	-	<0.089	<0.14	<0.31
1,2,3,4,6,7,8-HpCDD	pg/g	<0.27	-	-	-	<1.0	1.60	<0.44
OCDD	pg/g	<0.44	-	-	-	8.58	4.61	<0.69
2,3,7,8-TCDF	pg/g	<0.097	-	-	-	<0.22	<0.92	<1.1
1,2,3,7,8-PeCDF	pg/g	<0.049	-	-	-	<0.092	0.259	<0.74
2,3,4,7,8-PeCDF	pg/g	<0.12	-	-	-	0.232	0.591	<0.77
1,2,3,4,7,8-HxCDF	pg/g	0.0720	-	-	-	<0.055	<0.10	<0.38
1,2,3,6,7,8-HxCDF	pg/g	<0.021	-	-	-	<0.024	0.154	<0.37
2,3,4,6,7,8-HxCDF	pg/g	<0.70	-	-	-	<0.74	1.24	<1.2
1,2,3,7,8,9-HxCDF	pg/g	0.0389	-	-	-	<0.031	<0.070	<0.58
1,2,3,4,6,7,8-HpCDF	pg/g	<0.077	-	-	-	0.109	0.503	<0.52
1,2,3,4,7,8,9-HpCDF	pg/g	<0.051	-	-	-	<0.039	<0.081	<0.79
OCDF	pg/g	0.122	-	-	-	<0.12	<0.12	<0.97
PCBs								
PCB31/28	ng/g	-	<0.1	<0.1	<0.2	-	0.44	<0.2
PCB20/33/21	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB37	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB43/49	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB44	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB71/41/68/64	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB40	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB74/61	ng/g	-	<0.1	<0.1	<0.2	-	0.56	<0.2
PCB80/66	ng/g	-	<0.1	<0.1	<0.2	-	0.59	<0.2
PCB56/60	ng/g	-	<0.1	<0.1	<0.2	-	0.19	<0.2
PCB84/90/101/89	ng/g	-	<0.1	<0.1	<0.2	-	0.13	<0.2
PCB99	ng/g	-	<0.1	<0.1	<0.2	-	0.66	0.47
PCB86/111/125/117/87/116/115	ng/g	-	<14	<14	<0.2	-	<14	<0.2
PCB118/106	ng/g	-	<0.1	<0.1	<0.2	-	1.29	1.18
PCB105/127	ng/g	-	<0.1	<0.1	<0.2	-	0.48	0.3
PCB136	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB153	ng/g	-	0.12	<0.1	<0.2	-	2.07	3.75
PCB141	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB137	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB163/164/138	ng/g	-	<0.1	<0.1	<0.2	-	1.49	1.15
PCB129	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB128/167	ng/g	-	<0.1	<0.1	<0.2	-	0.42	0.56
PCB156	ng/g	-	<0.1	<0.1	<0.2	-	0.17	0.31
PCB157	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB183	ng/g	-	<0.1	<0.1	<0.2	-	0.27	0.74
PCB185	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB180	ng/g	-	<0.1	<0.1	<0.2	-	1.22	2.98
PCB193	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB191	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB170/190	ng/g	-	<0.1	<0.1	<0.2	-	0.52	0.69
PCB-189	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PCB196/203	ng/g	-	<0.1	<0.1	<0.2	-	0.37	0.83
PCB194	ng/g	-	<0.1	<0.1	<0.2	-	0.34	0.54
PCB206	ng/g	-	<0.1	<0.1	<0.2	-	0.26	0.28
PCB209	ng/g	-	<0.1	<0.1	<0.2	-	0.21	<0.2
PCB201/204	ng/g	-	<0.1	<0.1	<0.2	-	<0.1	<0.2
PAH								
Naphthalene	ng/g	16.5	-	-	-	5.23	104	-
Acenaphthylene	ng/g	24	-	-	-	12.3	164	-
Acenaphthene	ng/g	1.32	-	-	-	1.18	9.71	-

TABLE 7 BIRD SAMPLING RESULTS
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

Parameter	Units	L1231364-14 39-14 10-NOV-11 5X CAN. GOOSE	L1231364-17 39-17 14-NOV-11 5X Can. Goose	L1231364-21 39-21 10-NOV-11 5X RUFFED GROUSE	L1231364-22 39-22 18-NOV-11 1X GOOSE	L1231364-24 39-24 14-NOV-11 2X TEAL	L1231364-25 39-25 14-NOV-11 3X MALLARD, MALE	L1231364-26 39-26 15-NOV-11 1X BARROW'S GOLDEN EYE DUCK
Laboratory Sample ID								
Sample ID								
Sampling Date (dd-mmm-yy)								
Species								
Fluorene	ng/g	8.43	-	-	-	1.15	45.7	-
Phenanthrene	ng/g	34.8	-	-	-	1.93	216	-
Anthracene	ng/g	5.9	-	-	-	0.27	28.1	-
Fluoranthene	ng/g	18.2	-	-	-	0.48	84	-
Pyrene	ng/g	17.3	-	-	-	2.43	71	-
Benzo(a)Anthracene	ng/g	4.56	-	-	-	<0.2	23.8	-
Chrysene	ng/g	5.51	-	-	-	0.41	26.2	-
Benzo(b)Fluoranthene	ng/g	2.84	-	-	-	<0.2	13	-
Benzo(k)Fluoranthene	ng/g	3.9	-	-	-	<0.2	20.7	-
Benzo(a)Pyrene	ng/g	2.54	-	-	-	<0.2	12.4	-
Indeno(1,2,3-cd)Pyrene	ng/g	1.83	-	-	-	<0.2	10.7	-
Dibenzo(a,h)Anthracene	ng/g	<0.2	-	-	-	<0.2	1.5	-
Benzo(g,h,i)Perylene	ng/g	1.72	-	-	-	<0.2	10.2	-
PBDEs								
BDE 10	pg/g	<0.059	-	-	-	<0.070	<0.052	-
BDE 7	pg/g	<0.049	-	-	-	<0.059	<0.044	-
BDE 8/11	pg/g	<0.038	-	-	-	<0.063	<0.069	-
BDE 12/13	pg/g	<0.072	-	-	-	<0.15	<0.11	-
BDE 15	pg/g	0.153	-	-	-	0.276	1.72	-
BDE 30	pg/g	<0.15	-	-	-	<0.75	<0.61	-
BDE 32	pg/g	<0.11	-	-	-	<0.53	<0.43	-
BDE 17/25	pg/g	0.158	-	-	-	<0.62	0.695	-
BDE 28/33	pg/g	<0.58	-	-	-	0.953	4.15	-
BDE 35	pg/g	<3.8	-	-	-	<11	<8.3	-
BDE 37	pg/g	3.3	-	-	-	7.21	5.57	-
PBEB	pg/g	<0.057	-	-	-	<0.10	<0.092	-
HBB	pg/g	<0.70	-	-	-	0.929	1.39	-
BDE 75	pg/g	<0.12	-	-	-	<0.24	0.372	-
BDE 51	pg/g	<0.12	-	-	-	2.13	4.13	-
BDE 49	pg/g	0.848	-	-	-	7.8	25.6	-
BDE 71	pg/g	<0.16	-	-	-	<0.32	<0.36	-
BDE 47	pg/g	49.3	-	-	-	58.1	422	-
BDE 79	pg/g	0.239	-	-	-	<0.20	<0.23	-
BDE 66	pg/g	<0.15	-	-	-	1.1	4.04	-
BDE 77	pg/g	<0.090	-	-	-	<0.19	<0.27	-
BDE 100	pg/g	29.9	-	-	-	38.3	266	-
BDE 119/120	pg/g	0.924	-	-	-	2.19	8.55	-
BDE 99	pg/g	61.1	-	-	-	74.6	472	-
BDE 116	pg/g	<0.36	-	-	-	<0.47	<0.42	-
BDE 118	pg/g	<0.25	-	-	-	<0.51	1.91	-
BDE 85	pg/g	2.89	-	-	-	4.07	15.1	-
BDE 126	pg/g	<0.12	-	-	-	<0.17	0.391	-
BDE 105	pg/g	<0.25	-	-	-	<0.32	<0.28	-
BDE 155	pg/g	1.13	-	-	-	0.896	4.89	-
BDE 154	pg/g	14.2	-	-	-	19.9	101	-
BDE 153	pg/g	18.6	-	-	-	69.2	251	-
BDE 140	pg/g	<0.38	-	-	-	0.759	2.41	-
BDE 138/166	pg/g	1.51	-	-	-	3.85	13.2	-
BDE 156	pg/g	<0.41	-	-	-	<0.48	<1.2	-
BDE 128	pg/g	<0.40	-	-	-	<0.47	<1.5	-
BDE 184	pg/g	0.423	-	-	-	0.673	<1.7	-
BDE 183	pg/g	7.9	-	-	-	41.4	53.6	-
BDE 191	pg/g	<0.31	-	-	-	<0.36	1.49	-
BDE 181	pg/g	<0.28	-	-	-	1.91	3.45	-
BDE 190	pg/g	<0.40	-	-	-	1.37	<3.6	-
BDE 197	pg/g	6.34	-	-	-	12.4	17.7	-
BDE 203	pg/g	4.44	-	-	-	6.86	17.3	-
BDE 196	pg/g	5.83	-	-	-	11.2	18.3	-
BDE 208	pg/g	15.1	-	-	-	10.6	21	-
BDE 207	pg/g	21.4	-	-	-	16.6	32.6	-
BDE 206	pg/g	7	-	-	-	14.4	24.2	-
BDE 209	pg/g	185	-	-	-	321	593	-
OCPs								
Hexachlorobenzene	ng/g	-	0.252	0.15	0.967	-	1.16	3.16
alpha-BHC	ng/g	-	<0.0072	<0.020	0.13	-	<0.012	0.179
beta-BHC	ng/g	-	0.023	<0.011	<0.018	-	<0.015	<0.023
gamma-BHC	ng/g	-	0.0189	0.0362	<0.019	-	0.0201	<0.025
delta-BHC	ng/g	-	0.88	0.289	0.32	-	0.922	<0.18
Heptachlor	ng/g	-	<0.00089	<0.0026	<0.0063	-	<0.0013	<0.0072
Aldrin	ng/g	-	<0.0015	<0.0016	<0.0043	-	<0.0029	<0.0051
Chlorpyrifos	ng/g	-	0.0441	<0.020	<0.048	-	0.0434	<0.057
Heptachlor Epoxide B	ng/g	-	0.556	0.0125	<0.012	-	1.26	0.31
Heptachlor Epoxide A	ng/g	-	<0.031	<0.032	<0.072	-	<0.054	<0.086
Oxychlordane	ng/g	-	0.188	0.00725	0.0808	-	1.06	0.329
trans-Chlordane	ng/g	-	<0.0080	<0.0084	<0.082	-	<0.015	<0.13
cis-Chlordane	ng/g	-	<0.0074	<0.0077	<0.075	-	<0.10	<0.12
trans-Nonachlor	ng/g	-	0.311	<0.0073	<0.072	-	1.47	<0.58
Dieldrin	ng/g	-	2.64	0.0511	<0.047	-	3.02	<0.49
Endrin	ng/g	-	<0.036	<0.033	<0.095	-	<0.034	<0.14
cis-Nonachlor	ng/g	-	0.157	0.0233	<0.077	-	0.216	0.154
Endosulfan I	ng/g	-	<0.36	<0.36	<0.94	-	<0.61	<1.2
Endosulfan II	ng/g	-	<0.023	<0.023	<0.071	-	<0.039	<0.094
Endosulfan Sulfate	ng/g	-	<0.0097	<0.0098	<0.032	-	0.0323	<0.043
24'-DDE	ng/g	-	<0.029	<0.030	<0.17	-	<0.049	<0.29
44'-DDE	ng/g	-	2.54	<0.038	<0.22	-	8.49	6.39
24'-DDD	ng/g	-	<0.011	<0.0077	<0.16	-	<0.012	<0.30
44'-DDD	ng/g	-	0.322	0.0127	<0.19	-	0.151	<0.34
24'-DDT	ng/g	-	<0.012	<0.014	<0.27	-	<0.021	<0.50
44'-DDT	ng/g	-	2.51	<0.015	<0.34	-	0.576	<0.63
Methoxychlor	ng/g	-	<0.18	<0.12	<0.57	-	<0.29	<0.91
Dicofol	ng/g	-	<10	<10	<10	-	<10	<10
Mirex	ng/g	-	<0.023	0.0233	<0.023	-	0.101	<0.018
Parlar-26	ng/g	-	0.0447	<0.024	<0.21	-	<0.036	<0.31
Parlar-50	ng/g	-	<0.036	<0.025	<0.60	-	<0.058	<0.96
Parlar-62	ng/g	-	<0.043	<0.029	<0.71	-	<0.069	<1.1
PFAS								
Perfluorobutanoic Acid	ng/g	-	<10	-	-	-	-	-
Perfluorobutanesulfonate	ng/g	-	<0.32	-	-	-	-	-
Perfluoropentanoic Acid	ng/g	-	<2.6	-	-	-	-	-
Perfluorohexanoic Acid	ng/g	-	<0.32	-	-	-	-	-
Perfluorohexanesulfonate	ng/g	-	<0.32	-	-	-	-	-
Perfluoroheptanoic Acid	ng/g	-	<0.32	-	-	-	-	-

TABLE 7 **BIRD SAMPLING RESULTS**
FNFNES (Webequie - Chan et. al., 2014)
Webequie First Nation, Ontario

	Laboratory Sample ID	**L1231364-14**	**L1231364-17**	**L1231364-21**	**L1231364-22**	**L1231364-24**	**L1231364-25**	**L1231364-26**
	Sample ID	**39-14**	**39-17**	**39-21**	**39-22**	**39-24**	**39-25**	**39-26**
	Sampling Date (dd-mmm-yy)	**10-NOV-11**	**14-NOV-11**	**10-NOV-11**	**18-NOV-11**	**14-NOV-11**	**14-NOV-11**	**15-NOV-11**
	Species	**5X CAN. GOOSE**	**5X Can. Goose**	**5X RUFFED GROUSE**	**1X GOOSE**	**2X TEAL**	**3X MALLARD, MALE**	**1X BARROW'S GOLDEN EYE DUCK**
Parameter	**Units**							
Perfluorooctanoic Acid	ng/g	-	0.17	-	-	-	-	-
Perfluorooctanesulfonate	ng/g	-	3.3	-	-	-	-	-
Perfluorooctylsulfonamide	ng/g	-	<0.64	-	-	-	-	-
Perfluorononanoic acid	ng/g	-	<0.32	-	-	-	-	-
Perfluorodecanoic Acid	ng/g	-	<0.32	-	-	-	-	-
Perfluoroundecanoic Acid	ng/g	-	<0.32	-	-	-	-	-
Perfluorododecanoic Acid	ng/g	-	<0.32	-	-	-	-	-
Perfluoro-n-tridecanoic acid	ng/g	-	<0.32	-	-	-	-	-

< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram
ng/g - nanograms per gram

TABLE 8 - VEGETATION METALS
EXPOSURE CONCENTRATIONS
Webequie Supply Road
Webequie First Nation, Ontario

		Cedar (leaves)						
Parameters	**Units**	**Number of Analysis**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Detections (%)**
Antimony (Sb)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Arsenic (As)	µg/g	1	NA	NA	ND	0.1	**0.05**	0
Barium (Ba)	µg/g	1	NA	NA	**5.1**	0.3	0.15	100
Beryllium (Be)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Bismuth (Bi)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Boron (B)	µg/g	1	NA	NA	**4.7**	0.5	0.25	100
Cadmium (Cd)	µg/g	1	NA	NA	ND	0.01	**0.005**	0
Calcium (Ca)	µg/g	1	NA	NA	**6680**	50	25	100
Chromium (Cr)	µg/g	1	NA	NA	ND	0.3	**0.15**	0
Cobalt (Co)	µg/g	1	NA	NA	ND	0.005	**0.0025**	0
Copper (Cu)	µg/g	1	NA	NA	**0.9**	0.5	0.25	100
Iron (Fe)	µg/g	1	NA	NA	**10**	3	1.5	100
Lead (Pb)	µg/g	1	NA	NA	ND	0.03	**0.015**	0
Magnesium (Mg)	µg/g	1	NA	NA	**340**	100	50	100
Manganese (Mn)	µg/g	1	NA	NA	**36.5**	0.3	0.15	100
Molybdenum (Mo)	µg/g	1	NA	NA	**0.36**	0.05	0.025	100
Nickel (Ni)	µg/g	1	NA	NA	**0.06**	0.05	0.025	100
Phosphorus (P)	µg/g	1	NA	NA	**351**	50	25	100
Potassium (K)	µg/g	1	NA	NA	**1470**	100	50	100
Selenium (Se)	µg/g	1	NA	NA	ND	0.04	**0.02**	0
Silver (Ag)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Sodium (Na)	µg/g	1	NA	NA	ND	50	**25**	0
Strontium (Sr)	µg/g	1	NA	NA	**9.7**	0.5	0.25	100
Thallium (Tl)	µg/g	1	NA	NA	ND	0.003	**0.0015**	0
Tin (Sn)	µg/g	1	NA	NA	ND	0.3	**0.15**	0
Titanium (Ti)	µg/g	1	NA	NA	ND	0.5	**0.25**	0
Uranium (U)	µg/g	1	NA	NA	ND	0.005	**0.0025**	0
Vanadium (V)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Zinc (Zn)	µg/g	1	NA	NA	**6**	2	1	100
Chromium (VI)	µg/g	1	NA	NA	ND	0.18	**0.09**	0
Mercury (Hg)	µg/g	1	NA	NA	**0.01**	0.01	0.005	100

% - percent
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - One sample represents a laboratory duplicate

TABLE 8 - VEGETATION METALS
EXPOSURE CONCENTRATIONS
Webequie Supply Road
Webequie First Nation, Ontario

		Sarsaparila (root)						
Parameters	**Units**	**Number of Analysis**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Detections (%)**
Antimony (Sb)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Arsenic (As)	µg/g	1	NA	NA	ND	0.1	**0.05**	0
Barium (Ba)	µg/g	1	NA	NA	**16.9**	0.3	0.15	100
Beryllium (Be)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Bismuth (Bi)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Boron (B)	µg/g	1	NA	NA	**4.7**	0.5	0.25	100
Cadmium (Cd)	µg/g	1	NA	NA	ND	0.01	**0.005**	0
Calcium (Ca)	µg/g	1	NA	NA	**3620**	50	25	100
Chromium (Cr)	µg/g	1	NA	NA	ND	0.3	**0.15**	0
Cobalt (Co)	µg/g	1	NA	NA	ND	0.005	**0.0025**	0
Copper (Cu)	µg/g	1	NA	NA	**1.5**	0.5	0.25	100
Iron (Fe)	µg/g	1	NA	NA	**7**	3	1.5	100
Lead (Pb)	µg/g	1	NA	NA	ND	0.03	**0.015**	0
Magnesium (Mg)	µg/g	1	NA	NA	**577**	100	50	100
Manganese (Mn)	µg/g	1	NA	NA	**28**	0.3	0.15	100
Molybdenum (Mo)	µg/g	1	NA	NA	**0.13**	0.05	0.025	100
Nickel (Ni)	µg/g	1	NA	NA	**0.05**	0.05	0.025	100
Phosphorus (P)	µg/g	1	NA	NA	**465**	50	25	100
Potassium (K)	µg/g	1	NA	NA	**3720**	100	50	100
Selenium (Se)	µg/g	1	NA	NA	ND	0.04	**0.02**	0
Silver (Ag)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Sodium (Na)	µg/g	1	NA	NA	ND	50	**25**	0
Strontium (Sr)	µg/g	1	NA	NA	**3.4**	0.5	0.25	100
Thallium (Tl)	µg/g	1	NA	NA	ND	0.003	**0.0015**	0
Tin (Sn)	µg/g	1	NA	NA	ND	0.3	**0.15**	0
Titanium (Ti)	µg/g	1	NA	NA	ND	0.5	**0.25**	0
Uranium (U)	µg/g	1	NA	NA	ND	0.005	**0.0025**	0
Vanadium (V)	µg/g	1	NA	NA	ND	0.05	**0.025**	0
Zinc (Zn)	µg/g	1	NA	NA	**6**	2	1	100
Chromium (VI)	µg/g	1	NA	NA	ND	0.18	**0.09**	0
Mercury (Hg)	µg/g	1	NA	NA	ND	0.01	**0.005**	0

% - percent
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - One sample represents a laboratory duplicate

TABLE 8 - VEGETATION METALS
EXPOSURE CONCENTRATIONS
Webequie Supply Road
Webequie First Nation, Ontario

		Labrador Tea (leaves)						
Parameters	**Units**	**Number of Analysis**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Detections (%)**
Antimony (Sb)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Arsenic (As)	µg/g	2	ND	ND	NA	0.1	**0.05**	0
Barium (Ba)	µg/g	2	30.8	30.8	**38.6**	0.3	0.15	100
Beryllium (Be)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Bismuth (Bi)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Boron (B)	µg/g	2	8.25	8.25	**8.9**	0.5	0.25	100
Cadmium (Cd)	µg/g	2	ND	ND	NA	0.01	**0.005**	0
Calcium (Ca)	µg/g	2	3030	3030	**3370**	50	25	100
Chromium (Cr)	µg/g	2	ND	ND	NA	0.3	**0.15**	0
Cobalt (Co)	µg/g	2	ND	ND	NA	0.005	**0.0025**	0
Copper (Cu)	µg/g	2	1.95	1.95	**2.1**	0.5	0.25	100
Iron (Fe)	µg/g	2	18	18	**19**	3	1.5	100
Lead (Pb)	µg/g	2	ND	ND	NA	0.03	**0.015**	0
Magnesium (Mg)	µg/g	2	869	869	**966**	100	50	100
Manganese (Mn)	µg/g	2	163	163	**188**	0.3	0.15	100
Molybdenum (Mo)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Nickel (Ni)	µg/g	2	0.07	0.07	**0.07**	0.05	0.025	50
Phosphorus (P)	µg/g	2	631	631	**732**	50	25	100
Potassium (K)	µg/g	2	2560	2560	**2870**	100	50	100
Selenium (Se)	µg/g	2	ND	ND	NA	0.04	**0.02**	0
Silver (Ag)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Sodium (Na)	µg/g	2	ND	ND	NA	50	**25**	0
Strontium (Sr)	µg/g	2	4	4	**5.2**	0.5	0.25	100
Thallium (Tl)	µg/g	2	ND	ND	NA	0.003	**0.0015**	0
Tin (Sn)	µg/g	2	ND	ND	NA	0.3	**0.15**	0
Titanium (Ti)	µg/g	2	0.6	0.6	**0.7**	0.5	0.25	100
Uranium (U)	µg/g	2	ND	ND	NA	0.005	**0.0025**	0
Vanadium (V)	µg/g	2	ND	ND	NA	0.05	**0.025**	0
Zinc (Zn)	µg/g	2	10.5	10.5	**12**	2	1	100
Chromium (VI)	µg/g	2	ND	ND	NA	0.18	**0.09**	0
Mercury (Hg)	µg/g	2	ND	ND	NA	0.01	**0.005**	0

% - percent
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - One sample represents a laboratory duplicate

TABLE 8 - VEGETATION METALS
EXPOSURE CONCENTRATIONS
Webequie Supply Road
Webequie First Nation, Ontario

		Sweetflag (tuber)						
Parameters	**Units**	**Number of Analysis [1]**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Detections (%)**
Antimony (Sb)	µg/g	3	NA	NA	NA	0.05	**0.025**	0
Arsenic (As)	µg/g	3	NA	NA	NA	0.1	**0.05**	0
Barium (Ba)	µg/g	3	4.5	4.6	**4.6**	0.3	0.15	100
Beryllium (Be)	µg/g	3	NA	NA	NA	0.05	**0.025**	0
Bismuth (Bi)	µg/g	3	NA	NA	NA	0.05	**0.025**	0
Boron (B)	µg/g	3	4.57	4.8	**4.8**	0.5	0.25	100
Cadmium (Cd)	µg/g	3	0.010	0.01	**0.01**	0.01	0.005	33
Calcium (Ca)	µg/g	3	1557	1560	**1570**	50	25	100
Chromium (Cr)	µg/g	3	NA	NA	NA	0.3	**0.15**	0
Cobalt (Co)	µg/g	3	0.011	0.011	**0.011**	0.005	0.0025	33
Copper (Cu)	µg/g	3	0.55	0.55	**0.6**	0.5	0.25	67
Iron (Fe)	µg/g	3	138	109	**197**	3	1.5	100
Lead (Pb)	µg/g	3	0.03	0.03	**0.03**	0.03	0.015	67
Magnesium (Mg)	µg/g	3	333	321	**359**	100	50	100
Manganese (Mn)	µg/g	3	6.73	7.3	**7.3**	0.3	0.15	100
Molybdenum (Mo)	µg/g	3	0.12	0.11	**0.16**	0.05	0.025	100
Nickel (Ni)	µg/g	2	NA	NA	NA	0.05	**0.025**	0
Phosphorus (P)	µg/g	3	555	551	**576**	50	25	100
Potassium (K)	µg/g	3	3443	3770	**3840**	100	50	100
Selenium (Se)	µg/g	3	NA	NA	NA	0.04	**0.02**	0
Silver (Ag)	µg/g	3	NA	NA	NA	0.05	**0.025**	0
Sodium (Na)	µg/g	3	174	164	**196**	50	25	100
Strontium (Sr)	µg/g	3	4.5	4.8	**4.8**	0.5	0.25	100
Thallium (Tl)	µg/g	3	0.0035	0.0035	**0.004**	0.003	0.0015	67
Tin (Sn)	µg/g	3	NA	NA	NA	0.3	**0.15**	0
Titanium (Ti)	µg/g	3	NA	NA	NA	0.5	**0.25**	0
Uranium (U)	µg/g	3	NA	NA	NA	0.005	**0.0025**	0
Vanadium (V)	µg/g	3	NA	NA	NA	0.05	**0.025**	0
Zinc (Zn)	µg/g	3	8.00	8	**8**	2	1	100
Chromium (VI)	µg/g	3	NA	NA	NA	0.18	**0.09**	0
Mercury (Hg)	µg/g	3	NA	NA	NA	0.01	**0.005**	0

% - percent
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - One sample represents a laboratory duplicate

TABLE 9 **FISH TISSUE METALS - EXPOSURE POINT CONCENTRATIONS**
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	RDL	95% UCLM	Type	Number of Analysis	Mean	Median	Maximum	Maximum Detection Limit	1/2 Detection Concentration	Detections (%)
Antimony	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Arsenic	µg/g	0.1	ND	-	29	-	-	-	0.1	**0.05**	0
Barium	µg/g	0.3	ND	-	29	-	-	-	0.3	**0.15**	0
Beryllium	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Bismuth	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Boron	µg/g	0.5	ND	-	29	-	-	-	0.5	**0.25**	0
Cadmium	µg/g	0.01	ND	-	29	-	-	-	0.01	**0.005**	0
Calcium	µg/g	50	**1992**	95% Adjusted Gamma UCL	29	1347	1000	8700	50	25	100
Cesium	µg/g	0.005	**0.0304**	95% KM (t) UCL	29	0.0277	0.025	0.057	0.005	0.0025	93.1
Chromium	µg/g	0.3	ND	-	29	-	-	-	0.3	**0.15**	0
Chromium VI	µg/g	0.18	ND	-	29	-	-	-	0.18	**0.09**	0
Cobalt	µg/g	0.005	ND	-	29	-	-	-	0.005	**0.0025**	0
Copper	µg/g	0.5	ND	-	29	-	-	-	0.5	**0.25**	0
Iron	µg/g	3	**4.089**	95% KM (t) UCL	29	4.615	4	7	3	1.5	44.8
Lead	µg/g	0.03	ND	-	29	-	-	-	0.03	**0.015**	0
Magnesium	µg/g	100	**276.1**	95% Student's-t UCL	29	267.6	270	320	100	50	100
Manganese	µg/g	0.3	**0.571**	95% KM (t) UCL	29	0.745	0.7	1.6	0.3	0.15	37.9
Mercury	µg/g	0.005	**0.173**	95% H-UCL	29	0.116	0.078	0.34	0.005	0.0025	100
Molybdenum	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Nickel	µg/g	0.05	0.0562	95% KM (t) UCL	29	0.08	**0.08**	0.1	0.05	0.025	6.9
Phosphorous	µg/g	500	**2815**	95% Modified-t UCL	29	2524	2200	6000	500	250	100
Potassium	µg/g	100	**3677**	95% Student's-t UCL	29	3517	3700	4100	100	50	100
Selenium	µg/g	0.04	**0.151**	95% Student's-t UCL	29	0.146	0.15	0.17	0.04	0.02	100
Silver	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Sodium	µg/g	50	**522.5**	95% Student's-t UCL	29	499.7	500	590	50	25	100
Strontium	µg/g	0.5	0.864	95% KM (t) UCL	29	1.933	**2.2**	3.1	0.5	0.25	10.3
Thallium	µg/g	0.003	**0.0036**	95% KM (t) UCL	29	0.004	0.004	0.005	0.003	0.0015	37.9
Tin	µg/g	0.3	ND	-	29	-	-	-	0.3	**0.15**	0
Titanium	µg/g	0.5	**1.458**	95% Modified-t UCL	29	1.314	1.2	3	0.5	0.25	100
Uranium	µg/g	0.005	ND	-	29	-	-	-	0.005	**0.0025**	0
Vanadium	µg/g	0.05	ND	-	29	-	-	-	0.05	**0.025**	0
Zinc	µg/g	2	**9.571**	95% Modified-t UCL	29	8.138	6	22	2	1	100

- UCLM not calculated
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC

TABLE 10

MAMMAL TISSUE METALS - EXPOSURE POINT CONCENTRATIONS
Webequie Supply Road
Webequie First Nation, Ontario

		Moose (kidney)				Moose (liver)			
Parameter	**Units**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**
Moisture	%	**76.8**	0.1	0.05	1	**72.6**	0.1	0.05	1
Mercury (Hg)	µg/g	**0.029**	0.01	0.005	1	**0.01**	0.01	0.005	1
Arsenic (As)	µg/g	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1
Antimony (Sb)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Barium (Ba)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Beryllium (Be)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Bismuth (Bi)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Boron (B)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Cadmium (Cd)	µg/g	**0.35**	0.01	0.005	1	**0.13**	0.01	0.005	1
Calcium (Ca)	µg/g	**100**	50	25	1	**66**	50	25	1
Cesium (Cs)	µg/g	**0.14**	0.005	0.0025	1	**0.05**	0.005	0.0025	1
Chromium (Cr)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Cobalt (Co)	µg/g	**0.035**	0.005	0.0025	1	**0.1**	0.005	0.0025	1
Copper (Cu)	µg/g	**3.2**	0.5	0.25	1	**20**	0.5	0.25	1
Iron (Fe)	µg/g	**150**	3	1.5	1	**150**	3	1.5	1
Lead (Pb)	µg/g	NA	0.03	**0.015**	1	NA	0.03	**0.015**	1
Magnesium (Mg)	µg/g	**140**	100	50	1	**150**	100	50	1
Manganese (Mn)	µg/g	**2.6**	0.3	0.15	1	**2.8**	0.3	0.15	1
Molybdenum (Mo)	µg/g	**0.33**	0.05	0.025	1	**1.2**	0.05	0.025	1
Nickel (Ni)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Phosphorus (P)	µg/g	**1800**	300	150	1	**2800**	300	150	1
Potassium (K)	µg/g	**2700**	100	50	1	**2000**	100	50	1
Selenium (Se)	µg/g	**0.49**	0.04	0.02	1	**0.18**	0.04	0.02	1
Silver (Ag)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Sodium (Na)	µg/g	**1400**	50	25	1	**1500**	50	25	1
Strontium (Sr)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Thallium (Tl)	µg/g	**0.009**	0.003	0.0015	1	NA	0.003	**0.0015**	1
Tin (Sn)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Titanium (Ti)	µg/g	**1.5**	0.5	0.25	1	**2.3**	0.5	0.25	1
Uranium (U)	µg/g	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1
Vanadium (V)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Zinc (Zn)	µg/g	**19**	2	1	1	**20**	2	1	1
Chromium (VI)	µg/g	NA	0.18	**0.09**	1	NA	0.18	**0.09**	1
Methylmercury (MeHg)	µg/g	NA	0.004	**0.002**	0	NA	0.004	**0.002**	0

µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - 1 sample represents a laboratory duplicate

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 10 **MAMMAL TISSUE METALS - EXPOSURE POINT CONCENTRATIONS**
Webequie Supply Road
Webequie First Nation, Ontario

		Moose (kidney)				Moose (muscle)				Caribou (liver) [1]				
Parameter	**Units**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Average**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**
Moisture	%	**76.8**	0.1	0.05	1	**76.9**	0.1	0.05	1	75	**75**	0.1	0.05	1
Mercury (Hg)	µg/g	**0.029**	0.01	0.005	1	NA	0.01	**0.005**	1	0.735	**0.74**	0.01	0.005	1
Arsenic (As)	µg/g	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1	NA	NA	0.1	**0.05**	1
Antimony (Sb)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	NA	0.05	**0.025**	1
Barium (Ba)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	NA	0.3	**0.15**	1
Beryllium (Be)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	NA	0.05	**0.025**	1
Bismuth (Bi)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	NA	0.05	**0.025**	1
Boron (B)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1	NA	NA	0.5	**0.25**	1
Cadmium (Cd)	µg/g	**0.35**	0.01	0.005	1	NA	0.01	**0.005**	1	1.55	**1.6**	0.01	0.005	1
Calcium (Ca)	µg/g	**100**	50	25	1	NA	50	**25**	1	66.5	**67**	50	25	1
Cesium (Cs)	µg/g	**0.14**	0.005	0.0025	1	**0.13**	0.005	0.0025	1	0.425	**0.43**	0.005	0.0025	1
Chromium (Cr)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	NA	0.3	**0.15**	1
Cobalt (Co)	µg/g	**0.035**	0.005	0.0025	1	NA	0.005	**0.0025**	1	0.016	**0.017**	0.005	0.0025	1
Copper (Cu)	µg/g	**3.2**	0.5	0.25	1	**1.4**	0.5	0.25	1	47	**48**	0.5	0.25	1
Iron (Fe)	µg/g	**150**	3	1.5	1	**25**	3	1.5	1	120	**120**	3	1.5	1
Lead (Pb)	µg/g	NA	0.03	**0.015**	1	NA	0.03	**0.015**	1	0.06	**0.06**	0.03	0.015	1
Magnesium (Mg)	µg/g	**140**	100	50	1	**220**	100	50	1	170	**170**	100	50	1
Manganese (Mn)	µg/g	**2.6**	0.3	0.15	1	**0.4**	0.3	0.15	1	3.3	**3.4**	0.3	0.15	1
Molybdenum (Mo)	µg/g	**0.33**	0.05	0.025	1	NA	0.05	**0.025**	1	0.58	**0.59**	0.05	0.025	1
Nickel (Ni)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	NA	0.05	**0.025**	1
Phosphorus (P)	µg/g	**1800**	300	150	1	**1500**	300	150	1	2500	**2700**	300	150	1
Potassium (K)	µg/g	**2700**	100	50	1	**3300**	100	50	1	2700	**2700**	100	50	1
Selenium (Se)	µg/g	**0.49**	0.04	0.02	1	**0.05**	0.04	0.02	1	0.77	**0.79**	0.04	0.02	1
Silver (Ag)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	0.25	**0.26**	0.05	0.025	1
Sodium (Na)	µg/g	**1400**	50	25	1	**520**	50	25	1	1100	**1100**	50	25	1
Strontium (Sr)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1	NA	NA	0.5	**0.25**	1
Thallium (Tl)	µg/g	**0.009**	0.003	0.0015	1	NA	0.003	**0.0015**	1	0.005	**0.005**	0.003	0.0015	1
Tin (Sn)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	NA	0.3	**0.15**	1
Titanium (Ti)	µg/g	**1.5**	0.5	0.25	1	**1.4**	0.5	0.25	1	2.05	**2.1**	0.5	0.25	1
Uranium (U)	µg/g	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1	NA	NA	0.005	**0.0025**	1
Vanadium (V)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	NA	0.05	**0.025**	1
Zinc (Zn)	µg/g	**19**	2	1	1	**28**	2	1	1	33	**33**	2	1	1
Chromium (VI)	µg/g	NA	0.18	**0.09**	1	NA	0.18	**0.09**	1	NA	NA	0.18	**0.09**	1
Methylmercury (MeHg)	µg/g	NA	0.004	**0.002**	0	**0.00288**	0.004	0.002	1	0.0061	**0.0061**	0.004	0.002	0

µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - 1 sample represents a laboratory duplicate

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 10 **MAMMAL TISSUE METALS - EXPOSURE POINT CONCENTRATIONS**
Webequie Supply Road
Webequie First Nation, Ontario

		Moose (kidney)				Caribou (muscle)				Snowshoe Hare (Muscle)			
Parameter	**Units**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**
Moisture	%	**76.8**	0.1	0.05	1	**75.5**	0.1	0.05	1	**74.97**	0.1	0.05	1
Mercury (Hg)	µg/g	**0.029**	0.01	0.005	1	**0.011**	0.01	0.005	1	NA	0.01	**0.005**	1
Arsenic (As)	µg/g	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1
Antimony (Sb)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Barium (Ba)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Beryllium (Be)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Bismuth (Bi)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Boron (B)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Cadmium (Cd)	µg/g	**0.35**	0.01	0.005	1	NA	0.01	**0.005**	1	NA	0.01	**0.005**	1
Calcium (Ca)	µg/g	**100**	50	25	1	NA	50	**25**	1	**70**	50	25	1
Cesium (Cs)	µg/g	**0.14**	0.005	0.0025	1	**0.55**	0.005	0.0025	1	**0.083**	0.005	0.0025	1
Chromium (Cr)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Cobalt (Co)	µg/g	**0.035**	0.005	0.0025	1	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1
Copper (Cu)	µg/g	**3.2**	0.5	0.25	1	**2.3**	0.5	0.25	1	**1.9**	0.5	0.25	1
Iron (Fe)	µg/g	**150**	3	1.5	1	**36**	3	1.5	1	**25**	3	1.5	1
Lead (Pb)	µg/g	NA	0.03	**0.015**	1	NA	0.03	**0.015**	1	NA	0.03	**0.015**	1
Magnesium (Mg)	µg/g	**140**	100	50	1	**240**	100	50	1	**260**	100	50	1
Manganese (Mn)	µg/g	**2.6**	0.3	0.15	1	**0.6**	0.3	0.15	1	**0.9**	0.3	0.15	1
Molybdenum (Mo)	µg/g	**0.33**	0.05	0.025	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Nickel (Ni)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Phosphorus (P)	µg/g	**1800**	300	150	1	**1700**	300	150	1	**2300**	300	150	1
Potassium (K)	µg/g	**2700**	100	50	1	**3400**	100	50	1	**3600**	100	50	1
Selenium (Se)	µg/g	**0.49**	0.04	0.02	1	**0.13**	0.04	0.02	1	**0.05**	0.04	0.02	1
Silver (Ag)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Sodium (Na)	µg/g	**1400**	50	25	1	**590**	50	25	1	**600**	50	25	1
Strontium (Sr)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Thallium (Tl)	µg/g	**0.009**	0.003	0.0015	1	NA	0.003	**0.0015**	1	NA	0.003	**0.0015**	1
Tin (Sn)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Titanium (Ti)	µg/g	**1.5**	0.5	0.25	1	**1.4**	0.5	0.25	1	**1**	0.5	0.25	1
Uranium (U)	µg/g	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1	**0.006**	0.005	0.0025	1
Vanadium (V)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Zinc (Zn)	µg/g	**19**	2	1	1	**28**	2	1	1	**17**	2	1	1
Chromium (VI)	µg/g	NA	0.18	**0.09**	1	NA	0.18	**0.09**	1	NA	0.18	**0.09**	0
Methylmercury (MeHg)	µg/g	NA	0.004	**0.002**	0	**0.00616**	0.004	0.002	1	NA	0.004	**0.002**	0

µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
1 - 1 sample represents a laboratory duplicate

RDL - Reportable Detection Limit, unless otherwise noted
< - Denotes concentration less than indicated detection limit
"-" - Not analyzed
na - Not applicable
mbgs - metres below ground surface
% - percent
µg/g - micrograms per gram, wet weight basis

TABLE 11 **BIRD TISSUE - EXPOSURE POINT CONCENTRATIONS**
Webequie Supply Road
Webequie First Nation, Ontario

			Duck/Goose [2]						Ruffed Grouse [1]					
Parameter	**RDL**	**Units**	**Average**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detections (%)**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Concentration**	**Number of Analysis**	**Detections (%)**
Moisture		%	57.1	57.10			2	50	72.46			1	100
Metals													
Methylmercury (MeHg)	0.00016	µg/g	0.01726	**0.05**	0.00016	0.00008	3	100	**0.00062**	0.00016	0.00008	1	100
Mercury (Hg)	0.005	µg/g	0.065	**0.07**	0.005	0.0025	3	33	**0.005**	0.005	0.0025	1	100
Arsenic (As)	0.100	µg/g	1.4	**1.40**	0.1	0.05	2	50	NC	0.1	**0.05**	1	100
Antimony (Sb)	0.050	µg/g	3.6	**3.60**	0.05	0.025	2	50	NC	0.05	**0.025**	1	100
Barium (Ba)	0.300	µg/g	NC	NC	0.3	**0.15**	2	0	NC	0.3	**0.15**	1	100
Beryllium (Be)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Bismuth (Bi)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Boron (B)	0.500	µg/g	NC	NC	0.5	**0.25**	2	0	NC	0.5	**0.25**	1	100
Cadmium (Cd)	0.010	µg/g	NC	NC	0.01	**0.005**	2	0	NC	0.01	**0.005**	1	100
Calcium (Ca)	50	µg/g	140	**140**	50	25	2	50	**150**	50	25	1	100
Cesium (Cs)	0.005	µg/g	0.005	**0.01**	0.005	0.0025	2	50	**0.1**	0.005	0.0025	1	100
Chromium (Cr)	0.300	µg/g	NC	NC	0.3	**0.15**	2	0	NC	0.3	**0.15**	1	100
Cobalt (Co)	0.005	µg/g	0.008	**0.01**	0.005	0.0025	2	50	**0.005**	0.005	0.0025	1	100
Copper (Cu)	0.500	µg/g	2.2	**2.90**	0.5	0.25	2	100	**0.8**	0.5	0.25	1	100
Iron (Fe)	3.000	µg/g	34.5	**37.00**	3	1.5	2	100	**9**	3	1.5	1	100
Lead (Pb)	0.030	µg/g	90.02	**180**	0.03	0.015	2	100	NC	0.03	**0.015**	1	100
Magnesium (Mg)	100	µg/g	165	**190**	100	50	2	100	**280**	100	50	1	100
Manganese (Mn)	0.300	µg/g	0.4	**0.40**	0.3	0.15	2	50	NC	0.3	**0.15**	1	100
Molybdenum (Mo)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Nickel (Ni)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Phosphorus (P)	500	µg/g	1650	**1900**	500	250	2	100	**2300**	500	250	1	100
Potassium (K)	100	µg/g	2300	**2600**	100	50	2	100	**3000**	100	50	1	100
Selenium (Se)	0.040	µg/g	0.19	**0.24**	0.04	0.02	2	100	**0.11**	0.04	0.02	1	100
Silver (Ag)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Sodium (Na)	50	µg/g	525	**590**	50	25	2	100	**860**	50	25	1	100
Strontium (Sr)	0.500	µg/g	NC	NC	0.5	**0.25**	2	0	NC	0.5	**0.25**	1	100
Thallium (Tl)	0.003	µg/g	NC	NC	0.003	**0.0015**	2	0	NC	0.003	**0.0015**	1	100
Tin (Sn)	0.300	µg/g	NC	NC	0.3	**0.15**	2	0	NC	0.3	**0.15**	1	100
Titanium (Ti)	0.500	µg/g	0.9	**1.00**	0.5	0.25	2	100	**1.1**	0.5	0.25	1	100
Uranium (U)	0.005	µg/g	NC	NC	0.005	**0.0025**	2	0	NC	0.005	**0.0025**	1	100
Vanadium (V)	0.050	µg/g	NC	NC	0.05	**0.025**	2	0	NC	0.05	**0.025**	1	100
Zinc (Zn)	2.000	µg/g	13.5	**19**	2	1	2	100	**8**	2	1	1	100

NC - Not calculated (typically due to the COPC being non-detectable)
% - percent
µg/g - micrograms per gram, wet weight basis
Note: Median COPC concentrations were not calculated since the number of samples analysed was two (2) or less
BOLD - Identified EPC
1 - Includes one laboratory duplicate sample
2 - Includes one laboratory duplicate sample analysed for mercury and methylmercury

TABLE 12 **FISH TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)**
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	95% UCLM	Type	Number of Analysis	Number of Detections	Mean	Median	Maximum	Maximum Detection Limit	1/2 Detection Limit Concentration	Detections (%)
Inorganics											
Antimony	µg/g	NA	-	37	2	0.017	**0.017**	0.0222	0.05	0.025	5.4
Arsenic	µg/g	NA	-	37	8	0.0927	**0.0552**	0.243	0.1	0.05	21.6
Barium	µg/g	NA	-	37	9	0.143	**0.065**	0.3	0.3	0.15	24.3
Beryllium	µg/g	ND	-	37	0	-	-	-	0.05	**0.025**	0.0
Bismuth	µg/g	NA	-	37	1	-	-	**0.0022**	0.05	0.025	2.7
Boron	µg/g	ND	-	37	0	-	-	-	0.2	**0.1**	0.0
Cadmium	µg/g	NA	-	37	4	0.00343	**0.00385**	0.0039	0.01	0.005	10.8
Calcium	µg/g	**1682**	95% Adjusted Gamma UCL	37	37	1221	1000	8700	NA	NA	100.0
Cesium	µg/g	**0.0278**	95% KM (t) UCL	37	35	0.0253	0.023	0.057	0.005	0.0025	94.6
Chromium	µg/g	NA	-	37	8	0.112	**0.0845**	0.225	0.3	0.15	21.6
Chromium VI	µg/g	ND	-	29	0	-	-	-	0.18	**0.09**	0.0
Cobalt	µg/g	NA	-	37	4	0.0077	**0.00625**	0.0127	0.005	0.0025	10.8
Copper	µg/g	**0.446**	95% KM (t) UCL	37	10	0.569	0.565	1.18	0.5	0.25	27.0
Iron	µg/g	**6.003**	95% KM (t) UCL	37	21	6.46	4.16	28.8	3	1.5	56.8
Lead	µg/g	NA	-	37	6	0.0179	**0.0096**	0.0666	0.03	0.015	16.2
Magnesium	µg/g	**313.6**	95% Student's-t UCL	37	37	288.8	270	731	NA	NA	100.0
Manganese	µg/g	**0.716**	95% KM (t) UCL	37	19	0.866	0.6	3.17	0.3	0.15	51.4
Mercury	µg/g	**0.145**	95% GROS Adjusted Gamma UCL	37	36	0.114	0.0785	0.34	0.001	0.0005	97.3
Molybdenum	µg/g	NA	-	37	5	0.0141	**0.0073**	0.031	0.05	0.025	13.5
Nickel	µg/g	NA	-	37	7	0.0511	**0.032**	0.107	0.05	0.025	18.9
Phosphorous	µg/g	**2944**	95% Student's-t UCL	37	37	2654	2300	6330	NA	NA	100.0
Potassium	µg/g	**4385**	95% Student's-t UCL	37	37	3879	3700	13700	NA	NA	100.0
Selenium	µg/g	**0.208**	95% Student's-t UCL	37	37	0.18	0.15	0.591	NA	NA	100.0
Silver	µg/g	NA	-	37	4	0.00265	0.00265	0.0038	0.05	**0.025**	10.8
Sodium	µg/g	**618.9**	95% Student's-t UCL	37	37	551.6	500	1740	NA	NA	100.0
Strontium	µg/g	0.61	95% KM Adjusted Gamma UCL	37	11	0.686	0.384	3.1	0.5	0.25	29.7
Thallium	µg/g	**0.00305**	95% KM Adjusted Gamma UCL	37	19	0.00325	0.003	0.005	0.003	0.0015	51.4
Tin	µg/g	NA	-	37	2	0.00405	0.00405	**0.0041**	0.3	0.15	5.4
Titanium	µg/g	**1.22**	95% KM (t) UCL	37	34	1.128	1.2	3	0.01	0.005	91.9
Uranium	µg/g	NA	-	37	2	6.1000E-4	6.1000E-4	6.8000E-4	0.005	**0.0025**	5.4
Vanadium	µg/g	ND	-	37	3	0.00637	0.006	0.0082	0.05	**0.025**	8.1
Zinc	µg/g	**9.571**	95% Modified-t UCL	37	37	10.28	7	57.6	NA	NA	100.0
PCDDF											
2,3,7,8-TCDD	pg/g	NA	-	7	1	0.30	0.302	**0.302**	0.39	0.195	14.3
1,2,3,7,8-PeCDD	pg/g	NA	-	7	3	0.16	**0.151**	0.19	0.22	0.11	42.9
1,2,3,4,7,8-HxCDD	pg/g	NA	-	7	3	0.07	**0.0626**	0.0976	0.11	0.055	42.9
1,2,3,6,7,8-HxCDD	pg/g	ND	-	7	0	NA	NA	NA	0.13	**0.065**	0.0
1,2,3,7,8,9-HxCDD	pg/g	ND	-	7	0	NA	NA	NA	0.12	**0.06**	0.0
1,2,3,4,6,7,8-HpCDD	pg/g	ND	-	7	0	NA	NA	NA	0.099	**0.0495**	0.0
OCDD	pg/g	NA	-	7	1	0.26	0.26	**0.26**	0.47	0.235	14.3
2,3,7,8-TCDF	pg/g	NA	-	7	1	0.31	0.305	**0.305**	0.75	0.375	14.3
1,2,3,7,8-PeCDF	pg/g	NA	-	7	2	0.26	**0.259**	0.353	0.21	0.105	28.6
2,3,4,7,8-PeCDF	pg/g	NA	-	7	1	0.26	0.261	**0.261**	0.13	0.065	14.3
1,2,3,4,7,8-HxCDF	pg/g	NA	-	7	1	0.11	0.107	**0.107**	0.084	0.042	14.3
1,2,3,6,7,8-HxCDF	pg/g	NA	-	7	2	0.12	**0.1155**	0.116	0.16	0.08	28.6
2,3,4,6,7,8-HxCDF	pg/g	NA	-	7	4	0.68	**0.673**	0.731	0.75	0.375	57.1
1,2,3,7,8,9-HxCDF	pg/g	ND	-	7	0	NA	NA	NA	0.096	**0.048**	0.0
1,2,3,4,6,7,8-HpCDF	pg/g	NA	-	7	2	0.18	**0.18175**	0.298	0.088	0.044	28.6
1,2,3,4,7,8,9-HpCDF	pg/g	NA	-	7	1	0.05	0.0481	**0.0481**	0.069	0.0345	14.3
OCDF	pg/g	ND	-	7	0	NA	NA	NA	0.12	**0.06**	0.0
PCBs											
PCB31/28	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB20/33/21	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB37	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB43/49	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB44	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB71/41/68/64	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB40	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB74/61	ng/g	NA	-	9	1	0.11	0.11	**0.11**	0.1	0.05	11.1
PCB80/66	ng/g	NA	-	9	1	0.11	0.11	**0.11**	0.1	0.05	11.1
PCB56/60	ng/g	ND	-	9	0	NA	NA	NA	0.1	0.05	0.0
PCB84/90/101/89	ng/g	NA	-	9	5	0.29	**0.25**	0.48	0.1	0.05	55.6
PCB99	ng/g	NA	-	9	5	0.25	**0.18**	0.51	0.1	0.05	55.6
PCB86/111/125/117/87/116/115	ng/g	ND	-	9	0	NA	NA	NA	15	**7.5**	0.0
PCB118/106	ng/g	NA	-	9	7	0.27	**0.21**	0.78	0.1	0.05	77.8
PCB105/127	ng/g	NA	-	9	1	0.21	0.21	**0.21**	0.1	0.05	11.1
PCB136	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB153	ng/g	NA	-	9	9	0.63	**0.44**	2.12	NA	NA	100.0
PCB141	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB137	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB163/164/138	ng/g	NA	-	9	8	0.48	**0.37**	1.51	0.1	0.05	88.9
PCB129	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB128/167	ng/g	NA	-	9	2	0.25	**0.245**	0.37	0.1	0.05	22.2
PCB156	ng/g	NA	-	9	1	0.10	0.1	**0.1**	0.1	0.05	11.1
PCB157	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB183	ng/g	NA	-	9	2	0.18	**0.175**	0.21	0.1	0.05	22.2
PCB185	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB180	ng/g	NA	-	9	7	0.27	**0.21**	0.74	0.1	0.05	77.8
PCB193	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB191	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB170/190	ng/g	NA	-	9	3	0.19	**0.14**	0.33	0.1	0.05	33.3
PCB-189	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB196/203	ng/g	NA	-	9	2	0.20	**0.2**	0.25	0.1	0.05	22.2
PCB194	ng/g	NA	-	9	2	0.13	**0.13**	0.15	0.1	0.05	22.2
PCB206	ng/g	NA	-	9	1	0.16	0.16	**0.16**	0.1	0.05	11.1
PCB209	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PCB201/204	ng/g	ND	-	9	0	NA	NA	NA	0.1	**0.05**	0.0
PAH											
Naphthalene	ng/g	NA	-	7	7	14.80	**3.68**	46.3	NA	NA	100.0
Acenaphthylene	ng/g	NA	-	7	7	21.89	**0.83**	85.5	NA	NA	100.0
Acenaphthene	ng/g	NA	-	7	5	3.16	**0.61**	9.59	0.2	0.1	71.4
Fluorene	ng/g	NA	-	7	7	14.49	**0.8**	56.5	NA	NA	100.0
Phenanthrene	ng/g	NA	-	7	7	96.50	**5.16**	366	NA	NA	100.0
Anthracene	ng/g	NA	-	7	6	14.68	**1.065**	44.6	0.2	0.1	85.7
Fluoranthene	ng/g	NA	-	7	7	35.74	**2.11**	143	NA	NA	100.0
Pyrene	ng/g	NA	-	7	7	31.41	**2.38**	127	NA	NA	100.0
Benzo(a)Anthracene	ng/g	NA	-	7	2	33.60	**33.6**	35.3	0.2	0.1	28.6
Chrysene	ng/g	NA	-	7	6	13.80	**0.425**	45.6	0.2	0.1	85.7
Benzo(b)Fluoranthene	ng/g	NA	-	7	2	12.90	**12.9**	14.4	0.2	0.1	28.6
Benzo(k)Fluoranthene	ng/g	NA	-	7	2	14.40	**14.4**	15.2	0.2	0.1	28.6
Benzo(a)Pyrene	ng/g	NA	-	7	2	14.55	**14.55**	16	0.2	0.1	28.6
Indeno(1,2,3-cd)Pyrene	ng/g	NA	-	7	2	5.07	**5.065**	5.4	0.2	0.1	28.6
Dibenzo(a,h)Anthracene	ng/g	NA	-	7	2	1.00	**1**	1.28	0.2	0.1	28.6
Benzo(g,h,i)Perylene	ng/g	NA	-	7	2	5.27	**5.265**	6.4	0.2	0.1	28.6
PBDEs											
BDE 10	pg/g	ND	-	7	0	NA	NA	NA	0.11	**0.055**	0.0
BDE 7	pg/g	ND	-	7	0	NA	NA	NA	1.5	**0.75**	0.0
BDE 8/11	pg/g	NA	-	7	4	1.04	**0.2265**	3.66	0.048	0.024	57.1
BDE 12/13	pg/g	ND	-	7	0	NA	NA	NA	2.9	**1.45**	0.0
BDE 15	pg/g	NA	-	7	7	1.47	**0.518**	6.19	NA	NA	100.0
BDE 30	pg/g	ND	-	7	0	NA	NA	NA	0.4	**0.2**	0.0
BDE 32	pg/g	NA	-	7	2	0.32	**0.3185**	0.321	0.28	0.14	28.6
BDE 17/25	pg/g	NA	-	7	5	3.67	**1.09**	12.1	0.58	0.29	71.4
BDE 28/33	pg/g	NA	-	7	7	16.52	**14**	51.5	NA	NA	100.0
BDE 35	pg/g	ND	-	7	0	NA	NA	NA	11	**5.5**	0.0
BDE 37	pg/g	NA	-	7	7	5.18	**4.78**	7.7	NA	NA	100.0
PBEB	pg/g	NA	-	7	1	0.23	0.23	**0.23**	0.12	0.06	14.3

TABLE 12 **FISH TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)**
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	95% UCLM	Type	Number of Analysis	Number of Detections	Mean	Median	Maximum	Maximum Detection Limit	1/2 Detection Limit Concentration	Detections (%)
HBB	pg/g	NA	-	7	5	0.98	**0.688**	2.29	1.1	0.55	71.4
BDE 75	pg/g	NA	-	7	5	1.17	**1.11**	1.68	0.14	0.07	71.4
BDE 51	pg/g	NA	-	7	4	2.78	**2.095**	5.17	0.81	0.405	57.1
BDE 49	pg/g	NA	-	7	7	25.19	**24.4**	48.4	NA	NA	100.0
BDE 71	pg/g	ND	-	7	0	NA	NA	NA	0.36	**0.18**	0.0
BDE 47	pg/g	NA	-	7	7	339.71	**327**	706	NA	NA	100.0
BDE 79	pg/g	NA	-	7	1	4.31	4.31	**4.31**	0.23	0.115	14.3
BDE 66	pg/g	NA	-	7	7	6.02	**5.81**	13.3	NA	NA	100.0
BDE 77	pg/g	NA	-	7	6	0.74	**0.692**	1.38	0.49	0.245	85.7
BDE 100	pg/g	NA	-	7	7	66.64	**64.4**	128	NA	NA	100.0
BDE 119/120	pg/g	NA	-	7	7	4.30	**4.01**	6.79	NA	NA	100.0
BDE 99	pg/g	NA	-	7	7	91.11	**73.3**	222	NA	NA	100.0
BDE 116	pg/g	ND	-	7	0	NA	NA	NA	0.46	**0.23**	0.0
BDE 118	pg/g	NA	-	7	6	1.77	**1.37**	3.65	0.96	0.48	85.7
BDE 85	pg/g	NA	-	7	7	1.51	**0.71**	4.28	NA	NA	100.0
BDE 126	pg/g	NA	-	7	2	0.22	**0.2165**	0.257	0.17	0.085	28.6
BDE 105	pg/g	ND	-	7	0	NA	NA	NA	0.31	0.155	0.0
BDE 155	pg/g	NA	-	7	7	4.03	**3.67**	9.84	NA	NA	100.0
BDE 154	pg/g	NA	-	7	7	27.44	**26.1**	54.3	NA	NA	100.0
BDE 153	pg/g	NA	-	7	7	20.80	**14.8**	36.1	NA	NA	100.0
BDE 140	pg/g	NA	-	7	1	0.48	0.476	**0.476**	0.77	0.385	14.3
BDE 138/166	pg/g	NA	-	7	3	0.77	**0.872**	1.1	0.69	0.345	42.9
BDE 156	pg/g	ND	-	7	0	NA	NA	NA	0.83	**0.415**	0.0
BDE 128	pg/g	ND	-	7	0	NA	NA	NA	1.5	**0.75**	0.0
BDE 184	pg/g	NA	-	7	3	0.47	**0.469**	0.496	0.38	0.19	42.9
BDE 183	pg/g	NA	-	7	7	2.31	**1.72**	6.07	NA	NA	100.0
BDE 191	pg/g	ND	-	7	0	NA	NA	NA	0.7	**0.35**	0.0
BDE 181	pg/g	ND	-	7	0	NA	NA	NA	0.62	**0.31**	0.0
BDE 190	pg/g	ND	-	7	0	NA	NA	NA	0.91	**0.455**	0.0
BDE 197	pg/g	NA	-	7	6	1.49	**0.9435**	4.61	0.4	0.2	85.7
BDE 203	pg/g	NA	-	7	6	1.46	**0.623**	5.64	0.48	0.24	85.7
BDE 196	pg/g	NA	-	7	4	1.75	**1.001**	4.64	0.46	0.23	57.1
BDE 208	pg/g	NA	-	7	7	4.58	**1.35**	22.3	NA	NA	100.0
BDE 207	pg/g	NA	-	7	4	10.57	**4.625**	31.1	1.7	0.85	57.1
BDE 206	pg/g	NA	-	7	6	9.89	**2.525**	42.4	1.9	0.95	85.7
BDE 209	pg/g	NA	-	7	7	185.34	**38.7**	882	NA	NA	100.0
OCPs											
Hexachlorobenzene	ng/g	NA	-	9	9	0.52	**0.5**	1.25	NA	NA	100.0
alpha-BHC	ng/g	NA	-	9	8	0.06	**0.0621**	0.0919	0.013	0.0065	88.9
beta-BHC	ng/g	ND	-	9	0	NA	NA	NA	0.02	**0.01**	0.0
gamma-BHC	ng/g	NA	-	9	8	0.05	**0.04505**	0.0786	0.039	0.0195	88.9
delta-BHC	ng/g	NA	-	9	7	0.13	**0.167**	0.221	0.018	0.009	77.8
Heptachlor	ng/g	ND	-	9	0	NA	NA	NA	0.0051	**0.00255**	0.0
Aldrin	ng/g	ND	-	9	0	NA	NA	NA	0.0048	**0.0024**	0.0
Chlorpyrifos	ng/g	NA	-	9	6	0.07	**0.0728**	0.102	0.059	0.0295	66.7
Heptachlor Epoxide B	ng/g	NA	-	9	9	0.06	**0.0619**	0.137	NA	NA	100.0
Heptachlor Epoxide A	ng/g	ND	-	9	0	NA	NA	NA	0.062	0.031	0.0
Oxychlordane	ng/g	NA	-	9	7	0.07	**0.0676**	0.152	0.052	0.026	77.8
trans-Chlordane	ng/g	NA	-	9	2	0.04	**0.0404**	0.0449	0.082	0.041	22.2
cis-Chlordane	ng/g	NA	-	9	4	0.29	**0.253**	0.562	0.15	0.075	44.4
trans-Nonachlor	ng/g	NA	-	9	7	0.24	**0.279**	0.425	0.71	0.355	77.8
Dieldrin	ng/g	NA	-	9	9	0.14	**0.122**	0.28	NA	NA	100.0
Endrin	ng/g	NA	-	9	1	0.03	0.0252	**0.0252**	0.037	0.0185	11.1
cis-Nonachlor	ng/g	NA	-	9	9	0.18	**0.182**	0.489	NA	NA	100.0
Endosulfan I	ng/g	ND	-	9	0	NA	NA	NA	0.64	**0.32**	0.0
Endosulfan II	ng/g	ND	-	9	0	NA	NA	NA	0.12	**0.06**	0.0
Endosulfan Sulfate	ng/g	NA	-	9	6	0.08	**0.07275**	0.136	0.048	0.024	66.7
24'-DDE	ng/g	NA	-	9	2	0.04	**0.0376**	0.047	0.039	0.0195	22.2
44'-DDE	ng/g	NA	-	9	9	1.76	**1.37**	5.01	NA	NA	100.0
24'-DDD	ng/g	NA	-	9	4	0.05	**0.0521**	0.0747	0.015	0.0075	44.4
44'-DDD	ng/g	NA	-	9	9	0.10	**0.109**	0.232	NA	NA	100.0
24'-DDT	ng/g	ND	-	9	0	NA	NA	NA	0.086	**0.043**	0.0
44'-DDT	ng/g	NA	-	9	7	0.03	**0.0285**	0.0514	0.03	0.015	77.8
Methoxychlor	ng/g	ND	-	9	0	NA	NA	NA	0.54	**0.27**	0.0
Dicofol	ng/g	ND	-	9	0	NA	NA	NA	10	**5**	0.0
Mirex	ng/g	NA	-	9	5	0.06	**0.036**	0.119	0.037	0.0185	55.6
Parlar-26	ng/g	NA	-	9	1	0.13	0.129	**0.129**	0.069	0.0345	11.1
Parlar-50	ng/g	NA	-	9	1	0.13	0.129	**0.129**	0.05	0.025	11.1
Parlar-62	ng/g	ND	-	9	0	NA	NA	NA	0.061	**0.0305**	0.0
PFAS											
Perfluorobutanoic Acid	ng/g	ND	-	3	0	NA	NA	NA	7.5	**3.75**	0.0
Perfluorobutanesulfonate	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0
Perfluoropentanoic Acid	ng/g	ND	-	3	0	NA	NA	NA	6.5	**3.25**	0.0
Perfluorohexanoic Acid	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0
Perfluorohexanesulfonate	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0
Perfluoroheptanoic Acid	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0
Perfluorooctanoic Acid	ng/g	NA	-	3	1	0.21	0.21	**0.21**	0.81	0.405	33.3
Perfluorooctanesulfonate	ng/g	NA	-	3	1	0.12	0.12	**0.12**	0.81	0.405	33.3
Perfluorooctylsulfonamide	ng/g	ND	-	3	0	NA	NA	NA	1.6	0.8	0.0
Perfluorononanoic acid	ng/g	NA	-	3	2	0.14	**0.135**	0.14	0.81	0.405	66.7
Perfluorodecanoic Acid	ng/g	NA	-	3	1	0.05	0.053	**0.053**	0.81	0.405	33.3
Perfluoroundecanoic Acid	ng/g	NA	-	3	2	0.09	**0.09**	0.12	0.81	0.405	66.7
Perfluorododecanoic Acid	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0
Perfluoro-n-tridecanoic acid	ng/g	ND	-	3	0	NA	NA	NA	0.81	**0.405**	0.0

- UCLM not calculated
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
ND - Not detectable
NA - Not applicable
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

TABLE 13a

MAMMAL TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	Moose (kidney)				Moose (liver)			
		Detected Concentration	Maximum Detection Limit	1/2 Detection Limit Concentration	Number of Analysis	Detected Concentration	Maximum Detection Limit	1/2 Detection Limit Concentration	Number of Analysis
Moisture	%	**76.8**	0.1	0.05	1	**72.6**	0.1	0.05	1
Inorganics									
Mercury (Hg)	µg/g	**0.029**	0.01	0.005	1	**0.01**	0.01	0.005	1
Arsenic (As)	µg/g	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1
Antimony (Sb)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Barium (Ba)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Beryllium (Be)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Bismuth (Bi)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Boron (B)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Cadmium (Cd)	µg/g	**0.35**	0.01	0.005	1	**0.13**	0.01	0.005	1
Calcium (Ca)	µg/g	**100**	50	25	1	**66**	50	25	1
Cesium (Cs)	µg/g	**0.14**	0.005	0.0025	1	**0.05**	0.005	0.0025	1
Chromium (Cr)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Cobalt (Co)	µg/g	**0.035**	0.005	0.0025	1	**0.1**	0.005	0.0025	1
Copper (Cu)	µg/g	**3.2**	0.5	0.25	1	**20**	0.5	0.25	1
Iron (Fe)	µg/g	**150**	3	1.5	1	**150**	3	1.5	1
Lead (Pb)	µg/g	NA	0.03	**0.015**	1	NA	0.03	**0.015**	1
Magnesium (Mg)	µg/g	**140**	100	50	1	**150**	100	50	1
Manganese (Mn)	µg/g	**2.6**	0.3	0.15	1	**2.8**	0.3	0.15	1
Molybdenum (Mo)	µg/g	**0.33**	0.05	0.025	1	**1.2**	0.05	0.025	1
Nickel (Ni)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Phosphorus (P)	µg/g	**1800**	300	150	1	**2800**	300	150	1
Potassium (K)	µg/g	**2700**	100	50	1	**2000**	100	50	1
Selenium (Se)	µg/g	**0.49**	0.04	0.02	1	**0.18**	0.04	0.02	1
Silver (Ag)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Sodium (Na)	µg/g	**1400**	50	25	1	**1500**	50	25	1
Strontium (Sr)	µg/g	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Thallium (Tl)	µg/g	**0.009**	0.003	0.0015	1	NA	0.003	**0.0015**	1
Tin (Sn)	µg/g	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Titanium (Ti)	µg/g	**1.5**	0.5	0.25	1	**2.3**	0.5	0.25	1
Uranium (U)	µg/g	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1
Vanadium (V)	µg/g	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Zinc (Zn)	µg/g	**19**	2	1	1	**20**	2	1	1
Chromium (VI)	µg/g	NA	0.18	**0.09**	1	NA	0.18	**0.09**	1
Methylmercury (MeHg)	µg/g	NA	0.004	**0.002**	0	NA	0.004	**0.002**	0

BOLD - Identified EPC
"-" - Not analyzed
NA - Not applicable
% - percent
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

TABLE 13b

MAMMAL TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	Moose (muscle)							
		Number of Analysis	Number of Detections	Mean	Median	Maximum	Maximum Detection Limit	1/2 Detection Limit Concentration	Detections (%)
Moisture	%	1	1	76.90	76.9	**76.9**	NA	NA	100
Inorganics									
Mercury (Hg)	µg/g	4	1	0.00	0.0011	**0.0011**	0.01	0.005	25.0
Arsenic (As)	µg/g	4	3	0.01	**0.0082**	0.0281	0.1	0.05	75.0
Antimony (Sb)	µg/g	4	0	NA	NA	NA	0.05	**0.025**	0.0
Barium (Ba)	µg/g	4	3	0.03	**0.028**	0.041	0.3	0.15	75.0
Beryllium (Be)	µg/g	4	0	NA	NA	NA	0.05	**0.025**	0.0
Bismuth (Bi)	µg/g	4	0	NA	NA	NA	0.05	**0.025**	0.0
Boron (B)	µg/g	4	0	NA	NA	NA	0.5	**0.25**	0.0
Cadmium (Cd)	µg/g	4	3	0.01	**0.0076**	0.0082	0.01	0.005	75.0
Calcium (Ca)	µg/g	4	3	44.20	**44**	62.9	50	25	75.0
Cesium (Cs)	µg/g	4	3	0.06	**0.0314**	0.13	0.001	0.0005	75.0
Chromium (Cr)	µg/g	4	3	0.10	**0.071**	0.161	0.3	0.15	75.0
Cobalt (Co)	µg/g	4	1	0.01	0.0054	**0.0054**	0.005	0.0025	25.0
Copper (Cu)	µg/g	4	4	0.70	**0.6915**	1.4	NA	NA	100.0
Iron (Fe)	µg/g	4	4	17.79	**16.025**	33.2	NA	NA	100.0
Lead (Pb)	µg/g	4	1	0.02	0.0209	**0.0209**	0.03	0.015	25.0
Magnesium (Mg)	µg/g	4	4	123.55	**133.85**	221	NA	NA	100.0
Manganese (Mn)	µg/g	4	4	0.35	**0.304**	0.709	NA	NA	100.0
Molybdenum (Mo)	µg/g	4	2	0.01	**0.00695**	0.0097	0.05	0.025	50.0
Nickel (Ni)	µg/g	4	2	0.03	**0.0345**	0.051	0.05	0.025	50.0
Phosphorus (P)	µg/g	4	4	910.33	**930**	1710	NA	NA	100.0
Potassium (K)	µg/g	4	4	1935.50	**2074.5**	3450	NA	NA	100.0
Selenium (Se)	µg/g	4	3	0.06	**0.05**	0.093	0.02	0.01	75.0
Silver (Ag)	µg/g	4	0	NA	NA	NA	0.05	**0.025**	0.0
Sodium (Na)	µg/g	4	4	426.25	**504.5**	560	NA	NA	100.0
Strontium (Sr)	µg/g	4	2	0.03	**0.03**	0.049	0.5	0.25	50.0
Thallium (Tl)	µg/g	4	0	NA	NA	NA	0.003	**0.0015**	0.0
Tin (Sn)	µg/g	4	0	NA	NA	NA	0.3	**0.15**	0.0
Titanium (Ti)	µg/g	4	4	0.38	**0.046**	1.4	NA	NA	100.0
Uranium (U)	µg/g	4	0	NA	NA	NA	0.005	**0.0025**	0.0
Vanadium (V)	µg/g	4	0	NA	NA	NA	0.05	**0.025**	0.0
Zinc (Zn)	µg/g	4	4	22.57	**16.995**	55.7	NA	NA	100.0
Chromium (VI)	µg/g	1	0	NA	NA	NA	0.18	**0.09**	0.0
Methylmercury (MeHg)	µg/g	1	1	0.00	0.00288	**0.00288**	NA	NA	100.0
Aluminum	µg/g	3	1	0.62	0.62	**0.62**	0.4	0.2	33.3
Gallium	µg/g	3	0	NA	NA	NA	0.004	**0.002**	0.0
Lanthanum	µg/g	3	0	NA	NA	NA	0.04	**0.02**	0.0
Lithium	µg/g	3	1	0.02	0.021	**0.021**	0.02	0.01	33.3
Rhenium	µg/g	3	0	NA	NA	NA	0.002	**0.001**	0.0
Rubidium	µg/g	3	3	4.36	**2.26**	10.5	NA	NA	100.0
Tellurium	µg/g	3	0	NA	NA	NA	0.004	**0.002**	0.0
Thorium	µg/g	3	0	NA	NA	NA	0.002	**0.001**	0.0
Yttrium	µg/g	3	0	NA	NA	NA	0.002	**0.001**	0.0
Zirconium	µg/g	3	0	NA	NA	NA	0.04	**0.02**	0.0
PCDDF									
2,3,7,8-TCDD	pg/g	1	0	NA	NA	NA	0.16	**0.08**	0.0
1,2,3,7,8-PeCDD	pg/g	1	0	NA	NA	NA	0.16	**0.08**	0.0
1,2,3,4,7,8-HxCDD	pg/g	1	0	NA	NA	NA	0.1	**0.05**	0.0
1,2,3,6,7,8-HxCDD	pg/g	1	0	NA	NA	NA	0.13	**0.065**	0.0
1,2,3,7,8,9-HxCDD	pg/g	1	0	NA	NA	NA	0.12	**0.06**	0.0
1,2,3,4,6,7,8-HpCDD	pg/g	1	0	NA	NA	NA	0.095	**0.0475**	0.0
OCDD	pg/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
2,3,7,8-TCDF	pg/g	1	0	NA	NA	NA	0.25	**0.125**	0.0
1,2,3,7,8-PeCDF	pg/g	1	0	NA	NA	NA	0.14	**0.07**	0.0
2,3,4,7,8-PeCDF	pg/g	1	0	NA	NA	NA	0.12	**0.06**	0.0
1,2,3,4,7,8-HxCDF	pg/g	1	0	NA	NA	NA	0.14	**0.07**	0.0
1,2,3,6,7,8-HxCDF	pg/g	1	0	NA	NA	NA	0.08	**0.04**	0.0
2,3,4,6,7,8-HxCDF	pg/g	1	0	NA	NA	NA	0.63	**0.315**	0.0
1,2,3,7,8,9-HxCDF	pg/g	1	0	NA	NA	NA	0.1	**0.05**	0.0
1,2,3,4,6,7,8-HpCDF	pg/g	1	0	NA	NA	NA	0.06	**0.03**	0.0
1,2,3,4,7,8,9-HpCDF	pg/g	1	0	NA	NA	NA	0.088	**0.044**	0.0
OCDF	pg/g	1	0	NA	NA	NA	0.17	**0.085**	0.0
PCBs									
PCB31/28	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB20/33/21	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB37	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB43/49	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB44	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB71/41/68/64	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB40	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB74/61	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB80/66	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB56/60	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB84/90/101/89	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB99	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB86/111/125/117/87/116/115	ng/g	4	0	NA	NA	NA	14	**7**	0.0
PCB118/106	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB105/127	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB136	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB153	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB141	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB137	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB163/164/138	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB129	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB128/167	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB156	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB157	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB183	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB185	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB180	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB193	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB191	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB170/190	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB-189	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB196/203	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB194	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB206	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB209	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PCB201/204	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0.0
PAH									
Naphthalene	ng/g	1	1	3.81	3.81	**3.81**	NA	NA	100.0
Acenaphthylene	ng/g	1	1	0.24	0.24	**0.24**	NA	NA	100.0
Acenaphthene	ng/g	1	1	1.49	1.49	**1.49**	NA	NA	100.0
Fluorene	ng/g	1	1	0.35	0.35	**0.35**	NA	NA	100.0
Phenanthrene	ng/g	1	1	1.00	1	**1**	NA	NA	100.0
Anthracene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Fluoranthene	ng/g	1	1	0.22	0.22	**0.22**	NA	NA	100.0
Pyrene	ng/g	1	1	0.22	0.22	**0.22**	NA	NA	100.0
Benzo(a)Anthracene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Chrysene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Benzo(b)Fluoranthene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Benzo(k)Fluoranthene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Benzo(a)Pyrene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Indeno(1,2,3-cd)Pyrene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Dibenzo(a,h)Anthracene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
Benzo(g,h,i)Perylene	ng/g	1	0	NA	NA	NA	0.2	**0.1**	0.0
PBDEs									

TABLE 13b

MAMMAL TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	Moose (muscle)							
		Number of Analysis	Number of Detections	Mean	Median	Maximum	Maximum Detection Limit	1/2 Detection Limit Concentration	Detections (%)
BDE 10	pg/g	1	0	NA	NA	NA	0.18	**0.09**	0.0
BDE 7	pg/g	1	0	NA	NA	NA	0.15	**0.075**	0.0
BDE 8/11	pg/g	1	0	NA	NA	NA	0.11	**0.055**	0.0
BDE 12/13	pg/g	1	0	NA	NA	NA	0.15	**0.075**	0.0
BDE 15	pg/g	1	1	0.09	0.0867	**0.0867**	NA	NA	100.0
BDE 30	pg/g	1	0	NA	NA	NA	0.18	**0.09**	0.0
BDE 32	pg/g	1	0	NA	NA	NA	0.13	**0.065**	0.0
BDE 17/25	pg/g	1	0	NA	NA	NA	0.23	**0.115**	0.0
BDE 28/33	pg/g	1	0	NA	NA	NA	0.52	**0.26**	0.0
BDE 35	pg/g	1	0	NA	NA	NA	0.095	**0.0475**	0.0
BDE 37	pg/g	1	1	3.72	3.72	**3.72**	NA	NA	100.0
PBEB	pg/g	1	0	NA	NA	NA	0.14	**0.07**	0.0
HBB	pg/g	1	0	NA	NA	NA	0.59	**0.295**	0.0
BDE 75	pg/g	1	0	NA	NA	NA	0.22	**0.11**	0.0
BDE 51	pg/g	1	0	NA	NA	NA	0.22	**0.11**	0.0
BDE 49	pg/g	1	0	NA	NA	NA	0.3	**0.15**	0.0
BDE 71	pg/g	1	0	NA	NA	NA	0.28	**0.14**	0.0
BDE 47	pg/g	1	1	10.30	10.3	**10.3**	NA	NA	100.0
BDE 79	pg/g	1	0	NA	NA	NA	0.17	**0.085**	0.0
BDE 66	pg/g	1	0	NA	NA	NA	0.33	**0.165**	0.0
BDE 77	pg/g	1	0	NA	NA	NA	0.16	**0.08**	0.0
BDE 100	pg/g	1	1	1.75	1.75	**1.75**	NA	NA	100.0
BDE 119/120	pg/g	1	0	NA	NA	NA	0.33	**0.165**	0.0
BDE 99	pg/g	1	1	6.40	6.4	**6.4**	NA	NA	100.0
BDE 116	pg/g	1	0	NA	NA	NA	0.42	**0.21**	0.0
BDE 118	pg/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
BDE 85	pg/g	1	0	NA	NA	NA	0.26	**0.13**	0.0
BDE 126	pg/g	1	0	NA	NA	NA	0.16	**0.08**	0.0
BDE 105	pg/g	1	0	NA	NA	NA	0.28	**0.14**	0.0
BDE 155	pg/g	1	0	NA	NA	NA	0.37	**0.185**	0.0
BDE 154	pg/g	1	1	1.05	1.05	**1.05**	NA	NA	100.0
BDE 153	pg/g	1	1	2.77	2.77	**2.77**	NA	NA	100.0
BDE 140	pg/g	1	0	NA	NA	NA	0.7	**0.35**	0.0
BDE 138/166	pg/g	1	0	NA	NA	NA	0.96	**0.48**	0.0
BDE 156	pg/g	1	0	NA	NA	NA	1.1	**0.55**	0.0
BDE 128	pg/g	1	0	NA	NA	NA	1.1	**0.55**	0.0
BDE 184	pg/g	1	1	1.44	1.44	**1.44**	NA	NA	100.0
BDE 183	pg/g	1	0	NA	NA	NA	1.4	**0.7**	0.0
BDE 191	pg/g	1	0	NA	NA	NA	1.6	**0.8**	0.0
BDE 181	pg/g	1	0	NA	NA	NA	0.67	**0.335**	0.0
BDE 190	pg/g	1	0	NA	NA	NA	0.98	**0.49**	0.0
BDE 197	pg/g	1	1	8.46	8.46	**8.46**	NA	NA	100.0
BDE 203	pg/g	1	1	14.90	14.9	**14.9**	NA	NA	100.0
BDE 196	pg/g	1	1	7.87	7.87	**7.87**	NA	NA	100.0
BDE 208	pg/g	1	1	55.10	55.1	**55.1**	NA	NA	100.0
BDE 207	pg/g	1	1	108.00	108	**108**	NA	NA	100.0
BDE 206	pg/g	1	1	86.50	86.5	**86.5**	NA	NA	100.0
BDE 209	pg/g	1	1	3270.00	3270	**3270**	NA	NA	100.0
OCPs									
Hexachlorobenzene	ng/g	4	4	1.21	**1.27**	2.19	NA	NA	100.0
alpha-BHC	ng/g	4	1	0.20	0.197	**0.197**	0.13	0.065	25.0
beta-BHC	ng/g	4	0	NA	NA	NA	0.027	**0.0135**	0.0
gamma-BHC	ng/g	4	0	NA	NA	NA	0.028	**0.014**	0.0
delta-BHC	ng/g	4	4	0.21	**0.1047**	0.579	NA	NA	100.0
Heptachlor	ng/g	4	0	NA	NA	NA	0.01	**0.005**	0.0
Aldrin	ng/g	4	1	0.00	0.00357	**0.00357**	0.0055	0.00275	25.0
Chlorpyrifos	ng/g	4	1	0.17	0.169	**0.169**	0.043	0.0215	25.0
Heptachlor Epoxide B	ng/g	4	3	0.08	**0.0717**	0.0931	0.0056	0.0028	75.0
Heptachlor Epoxide A	ng/g	4	0	NA	NA	NA	0.091	**0.0455**	0.0
Oxychlordane	ng/g	4	3	0.11	**0.132**	0.184	0.13	0.065	75.0
trans-Chlordane	ng/g	4	0	NA	NA	NA	0.11	**0.055**	0.0
cis-Chlordane	ng/g	4	0	NA	NA	NA	0.1	**0.05**	0.0
trans-Nonachlor	ng/g	4	0	NA	NA	NA	0.099	**0.0495**	0.0
Dieldrin	ng/g	4	0	NA	NA	NA	0.069	**0.0345**	0.0
Endrin	ng/g	4	0	NA	NA	NA	0.15	**0.075**	0.0
cis-Nonachlor	ng/g	4	0	NA	NA	NA	0.11	**0.055**	0.0
Endosulfan I	ng/g	4	0	NA	NA	NA	1.3	**0.65**	0.0
Endosulfan II	ng/g	4	0	NA	NA	NA	0.097	**0.0485**	0.0
Endosulfan Sulfate	ng/g	4	0	NA	NA	NA	0.044	**0.022**	0.0
24'-DDE	ng/g	4	0	NA	NA	NA	0.24	**0.12**	0.0
44'-DDE	ng/g	4	0	NA	NA	NA	0.32	**0.16**	0.0
24'-DDD	ng/g	4	0	NA	NA	NA	0.3	**0.15**	0.0
44'-DDD	ng/g	4	0	NA	NA	NA	0.34	**0.17**	0.0
24'-DDT	ng/g	4	0	NA	NA	NA	0.51	**0.255**	0.0
44'-DDT	ng/g	4	0	NA	NA	NA	0.63	**0.315**	0.0
Methoxychlor	ng/g	4	0	NA	NA	NA	1.1	**0.55**	0.0
Dicofol	ng/g	4	0	NA	NA	NA	10	**5**	0.0
Mirex	ng/g	4	1	0.03	0.0335	**0.0335**	0.21	0.105	25.0
Parlar-26	ng/g	4	0	NA	NA	NA	0.33	**0.165**	0.0
Parlar-50	ng/g	4	0	NA	NA	NA	1.2	**0.6**	0.0
Parlar-62	ng/g	4	0	NA	NA	NA	1.4	**0.7**	0.0
PFAS									
Perfluorobutanoic Acid	ng/g	1	0	NA	NA	NA	9.3	**4.65**	0.0
Perfluorobutanesulfonate	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluoropentanoic Acid	ng/g	1	0	NA	NA	NA	2.3	**1.15**	0.0
Perfluorohexanoic Acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluorohexanesulfonate	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluoroheptanoic Acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluorooctanoic Acid	ng/g	1	1	0.11	0.11	**0.11**	NA	NA	100.0
Perfluorooctanesulfonate	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluorooctylsulfonamide	ng/g	1	0	NA	NA	NA	0.58	**0.29**	0.0
Perfluorononanoic acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluorodecanoic Acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluoroundecanoic Acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluorododecanoic Acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0
Perfluoro-n-tridecanoic acid	ng/g	1	0	NA	NA	NA	0.29	**0.145**	0.0

BOLD - Identified EPC
"-" - Not analyzed
NA - Not applicable
% - percent
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

TABLE 13c **MAMMAL TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)**
Webequie Supply Road
Webequie First Nation, Ontario

Parameter	Units	Caribou (liver) [1] Average	Maximum	Maximum Detection Limit	1/2 Detection Limit Concentration	Number of Analysis	Caribou (muscle) Detected Concentration	Maximum Detection Limit	1/2 Detection Limit Concentration	Number of Analysis
Moisture	%	75	**75**	0.1	0.05	1	**75.5**	0.1	0.05	1
Inorganics										
Mercury (Hg)	µg/g	0.735	**0.74**	0.01	0.005	1	**0.011**	0.01	0.005	1
Arsenic (As)	µg/g	NA	NA	0.1	**0.05**	1	NA	0.1	**0.05**	1
Antimony (Sb)	µg/g	NA	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Barium (Ba)	µg/g	NA	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Beryllium (Be)	µg/g	NA	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Bismuth (Bi)	µg/g	NA	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Boron (B)	µg/g	NA	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Cadmium (Cd)	µg/g	1.55	**1.6**	0.01	0.005	1	NA	0.01	**0.005**	1
Calcium (Ca)	µg/g	66.5	**67**	50	25	1	NA	50	**25**	1
Cesium (Cs)	µg/g	0.425	**0.43**	0.005	0.0025	1	**0.55**	0.005	0.0025	1
Chromium (Cr)	µg/g	NA	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Cobalt (Co)	µg/g	0.016	**0.017**	0.005	0.0025	1	NA	0.005	**0.0025**	1
Copper (Cu)	µg/g	47	**48**	0.5	0.25	1	**2.3**	0.5	0.25	1
Iron (Fe)	µg/g	120	**120**	3	1.5	1	**36**	3	1.5	1
Lead (Pb)	µg/g	0.06	**0.06**	0.03	0.015	1	NA	0.03	**0.015**	1
Magnesium (Mg)	µg/g	170	**170**	100	50	1	**240**	100	50	1
Manganese (Mn)	µg/g	3.3	**3.4**	0.3	0.15	1	**0.6**	0.3	0.15	1
Molybdenum (Mo)	µg/g	0.58	**0.59**	0.05	0.025	1	NA	0.05	**0.025**	1
Nickel (Ni)	µg/g	NA	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Phosphorus (P)	µg/g	2500	**2700**	300	150	1	**1700**	300	150	1
Potassium (K)	µg/g	2700	**2700**	100	50	1	**3400**	100	50	1
Selenium (Se)	µg/g	0.77	**0.79**	0.04	0.02	1	**0.13**	0.04	0.02	1
Silver (Ag)	µg/g	0.25	**0.26**	0.05	0.025	1	NA	0.05	**0.025**	1
Sodium (Na)	µg/g	1100	**1100**	50	25	1	**590**	50	25	1
Strontium (Sr)	µg/g	NA	NA	0.5	**0.25**	1	NA	0.5	**0.25**	1
Thallium (Tl)	µg/g	0.005	**0.005**	0.003	0.0015	1	NA	0.003	**0.0015**	1
Tin (Sn)	µg/g	NA	NA	0.3	**0.15**	1	NA	0.3	**0.15**	1
Titanium (Ti)	µg/g	2.05	**2.1**	0.5	0.25	1	**1.4**	0.5	0.25	1
Uranium (U)	µg/g	NA	NA	0.005	**0.0025**	1	NA	0.005	**0.0025**	1
Vanadium (V)	µg/g	NA	NA	0.05	**0.025**	1	NA	0.05	**0.025**	1
Zinc (Zn)	µg/g	33	**33**	2	1	1	**28**	2	1	1
Chromium (VI)	µg/g	NA	NA	0.18	**0.09**	1	NA	0.18	**0.09**	1
Methylmercury (MeHg)	µg/g	0.0061	**0.0061**	0.004	0.002	0	**0.00616**	0.004	0.002	1

BOLD - Identified EPC
"-" - Not analyzed
% - percent
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

TABLE 13d **MAMMAL TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)**
Webequie Supply Road
Webequie First Nation, Ontario

		Snowshoe Hare (Muscle)				Beaver (Muscle)			
Parameter	**Units**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Number of Analysis**	**Detected Concentration**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Number of Analysis**
Moisture	%	**74.97**	0.1	0.05	1	-	-	-	NA
Inorganics									
Mercury (Hg)	µg/g	NA	0.01	**0.005**	1	NA	0.001	**0.0005**	1
Arsenic (As)	µg/g	NA	0.1	**0.05**	1	**0.0063**	NA	NA	1
Antimony (Sb)	µg/g	NA	0.05	**0.025**	1	NA	0.002	**0.001**	1
Barium (Ba)	µg/g	NA	0.3	**0.15**	1	**0.018**	NA	NA	1
Beryllium (Be)	µg/g	NA	0.05	**0.025**	1	NA	0.002	**0.001**	1
Bismuth (Bi)	µg/g	NA	0.05	**0.025**	1	NA	0.002	**0.001**	1
Boron (B)	µg/g	NA	0.5	**0.25**	1	NA	0.2	**0.1**	1
Cadmium (Cd)	µg/g	NA	0.01	**0.005**	1	**0.0042**	NA	NA	1
Calcium (Ca)	µg/g	**70**	50	25	1	**50.9**	NA	NA	1
Cesium (Cs)	µg/g	**0.083**	0.005	0.0025	1	**0.0097**	NA	NA	1
Chromium (Cr)	µg/g	NA	0.3	**0.15**	1	**0.113**	NA	NA	1
Cobalt (Co)	µg/g	NA	0.005	**0.0025**	1	NA	0.004	**0.002**	1
Copper (Cu)	µg/g	**1.9**	0.5	0.25	1	**0.438**	NA	NA	1
Iron (Fe)	µg/g	**25**	3	1.5	1	**23.1**	NA	NA	1
Lead (Pb)	µg/g	NA	0.03	**0.015**	1	NA	0.004	**0.002**	1
Magnesium (Mg)	µg/g	**260**	100	50	1	**127**	NA	NA	1
Manganese (Mn)	µg/g	**0.9**	0.3	0.15	1	**0.111**	NA	NA	1
Molybdenum (Mo)	µg/g	NA	0.05	**0.025**	1	**0.0057**	NA	NA	1
Nickel (Ni)	µg/g	NA	0.05	**0.025**	1	**0.023**	NA	NA	1
Phosphorus (P)	µg/g	**2300**	300	150	1	**963**	NA	NA	1
Potassium (K)	µg/g	**3600**	100	50	1	**1900**	NA	NA	1
Selenium (Se)	µg/g	**0.05**	0.04	0.02	1	**0.041**	NA	NA	1
Silver (Ag)	µg/g	NA	0.05	**0.025**	1	NA	0.001	**0.0005**	1
Sodium (Na)	µg/g	**600**	50	25	1	**540**	NA	NA	1
Strontium (Sr)	µg/g	NA	0.5	**0.25**	1	**0.036**	NA	NA	1
Thallium (Tl)	µg/g	NA	0.003	**0.0015**	1	**0.00047**	NA	NA	1
Tin (Sn)	µg/g	NA	0.3	**0.15**	1	NA	0.004	**0.002**	1
Titanium (Ti)	µg/g	**1**	0.5	0.25	1	NA	0.01	**0.005**	1
Uranium (U)	µg/g	**0.006**	0.005	0.0025	1	NA	0.0004	**0.0002**	1
Vanadium (V)	µg/g	NA	0.05	**0.025**	1	NA	0.004	**0.002**	1
Zinc (Zn)	µg/g	**17**	2	1	1	**19.3**	NA	NA	1
Chromium (VI)	µg/g	NA	0.18	**0.09**	0	-	-	-	-
Methylmercury (MeHg)	µg/g	NA	0.004	**0.002**	0	-	-	-	-
Aluminum	µg/g	-	-	-	-	NA	0.4	**0.2**	1
Gallium	µg/g	-	-	-	-	NA	0.004	**0.002**	1
Lanthanum	µg/g	-	-	-	-	NA	0.04	**0.02**	1
Lithium	µg/g	-	-	-	-	NA	0.02	**0.01**	1
Rhenium	µg/g	-	-	-	-	NA	0.002	**0.001**	1
Rubidium	µg/g	-	-	-	-	3.34	NA	NA	1
Tellurium	µg/g	-	-	-	-	NA	0.004	**0.002**	1
Thorium	µg/g	-	-	-	-	NA	0.002	**0.001**	1
Yttrium	µg/g	-	-	-	-	NA	0.002	**0.001**	1
Zirconium	µg/g	-	-	-	-	NA	0.04	**0.02**	1

BOLD - Identified EPC
"-" - Not analyzed
NA - Not applicable
% - percent
µg/g - micrograms per gram, wet weight basis
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

TABLE 14 **BIRD TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)**
Webequie Supply Road
Webequie First Nation, Ontario

		Duck/Geese								Ruffed Grouse							
Parameter	**Units**	**Number of Analysis**	**Number of Detections**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Detections (%)**	**Number of Analysis**	**Number of Detections**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Detections (%)**
Moisture	%	1	1	43.26	43.26	**43.26**	NA	NA	100	1	1	72.46	72.46	**72.46**	NA	NA	100
Inorganics																	
Methylmercury (MeHg)	µg/g	2	2	0.03	**0.02551**	0.0502	NA	NA	100	1	1	0.00062	0.00062	**0.00062**	NA	NA	100
Mercury (Hg)	µg/g	8	6	0.03	**0.0218**	0.065	0.005	0.0025	75	2	1	0.005	0.005	**0.005**	NA	NA	50
Arsenic (As)	µg/g	8	7	0.22	**0.0284**	1.4	0.1	0.05	88	2	1	0.0105	0.0105	**0.0105**	NA	NA	50
Antimony (Sb)	µg/g	8	4	0.93	**0.0544**	3.6	0.05	0.025	50	2	0	NA	NA	NA	0.05	**0.025**	0
Barium (Ba)	µg/g	8	5	0.12	**0.038**	0.455	0.3	0.15	63	2	1	0.062	**0.062**	0.062	0.3	0.15	50
Beryllium (Be)	µg/g	8	0	NA	NA	NA	0.05	**0.025**	0	2	0	NA	NA	NA	0.05	0.025	0
Bismuth (Bi)	µg/g	8	0	NA	NA	NA	0.05	**0.025**	0	2	0	NA	NA	NA	0.05	0.025	0
Boron (B)	µg/g	8	0	NA	NA	NA	0.5	**0.25**	0	2	1	0.22	0.22	**0.22**	0.5	0.25	50
Cadmium (Cd)	µg/g	8	5	0.02	**0.0112**	0.0394	0.01	0.005	63	2	1	0.0113	0.0113	**0.0113**	0.01	0.005	50
Calcium (Ca)	µg/g	8	7	73.44	**67.1**	140	50	25	88	2	2	141	**141**	142	NA	NA	100
Cesium (Cs)	µg/g	8	7	0.02	**0.0053**	0.0559	0.005	0.0025	88	2	2	0.0828	**0.0828**	0.1	NA	NA	100
Chromium (Cr)	µg/g	8	6	0.20	**0.1**	0.633	0.3	0.15	75	2	1	0.028	0.028	**0.028**	0.3	0.15	50
Cobalt (Co)	µg/g	8	5	0.02	**0.0086**	0.0445	0.005	0.0025	63	2	0	NA	NA	NA	0.005	**0.0025**	0
Copper (Cu)	µg/g	8	8	2.88	**2.835**	7.05	NA	NA	100	2	2	1.38	**1.38**	1.96	NA	NA	100
Iron (Fe)	µg/g	8	8	59.23	**47.05**	156	NA	NA	100	2	2	20.1	**20.1**	31.2	NA	NA	100
Lead (Pb)	µg/g	8	6	30.45	**0.615**	180	0.004	0.002	75	2	1	0.009	0.009	**0.009**	0.03	0.015	50
Magnesium (Mg)	µg/g	8	8	198.75	**196**	301	NA	NA	100	2	2	297	**297**	314	NA	NA	100
Manganese (Mn)	µg/g	8	7	0.59	**0.497**	1.59	0.3	0.15	88	2	1	0.414	0.414	**0.414**	0.3	0.15	50
Molybdenum (Mo)	µg/g	8	6	0.03	**0.02175**	0.0547	0.05	0.025	75	2	1	0.0204	0.0204	**0.0204**	0.05	0.025	50
Nickel (Ni)	µg/g	8	4	0.06	**0.0675**	0.078	0.05	0.025	50	2	1	0.011	0.011	**0.011**	0.05	0.025	50
Phosphorus (P)	µg/g	8	8	1762.50	**1660**	2710	NA	NA	100	2	2	2375	**2375**	2450	NA	NA	100
Potassium (K)	µg/g	8	8	2746.25	**2790**	3700	NA	NA	100	2	2	3185	**3185**	3370	NA	NA	100
Selenium (Se)	µg/g	8	8	0.36	**0.244**	0.882	NA	NA	100	2	2	0.169	**0.169**	0.228	NA	NA	100
Silver (Ag)	µg/g	8	1	0.02	0.0153	0.0153	0.05	0.025	13	2	0	NA	NA	0	0.05	0.025	0
Sodium (Na)	µg/g	8	8	648.88	**640**	1030	NA	NA	100	2	2	806.5	**806.5**	860	NA	NA	100
Strontium (Sr)	µg/g	8	5	0.04	**0.028**	0.114	0.5	0.25	63	2	1	0.154	0.154	**0.154**	0.5	0.25	50
Thallium (Tl)	µg/g	8	5	0.00	**0.00164**	0.00473	0.003	0.0015	63	2	1	0.00048	0.00048	**0.00048**	0.003	0.0015	50
Tin (Sn)	µg/g	8	1	0.00	0.0043	**0.0043**	0.3	0.15	13	2	1	0.0135	0.0135	**0.0135**	0.3	0.15	50
Titanium (Ti)	µg/g	8	5	1.16	**0.8**	3.94	0.01	0.005	63	2	2	0.556	**0.556**	1.1	NA	NA	100
Uranium (U)	µg/g	8	1	0.00	0.0034	**0.0034**	0.005	0.0025	13	2	0	NA	NA	NA	0.005	**0.0025**	0
Vanadium (V)	µg/g	8	1	0.18	0.175	**0.175**	0.05	0.025	13	2	0	NA	NA	NA	0.05	**0.025**	0
Zinc (Zn)	µg/g	8	8	18.52	**17.75**	31.8	NA	NA	100	2	2	8.56	**8.56**	9.12	NA	NA	100
Aluminum (Al)	µg/g	6	3	10.92	**0.62**	31.7	0.4	0.2	50	1	0	NA	NA	NA	0.4	**0.2**	0
Gallium (Ga)	µg/g	6	1	0.01	0.0129	**0.0129**	0.004	0.002	17	1	0	NA	NA	NA	0.004	**0.002**	0
Lanthanum (La)	µg/g	6	1	0.08	0.081	**0.081**	0.04	0.02	17	1	0	NA	NA	NA	0.04	**0.02**	0
Lithium (Li)	µg/g	6	0	NA	NA	NA	0.02	0.01	0	1	0	NA	NA	NA	0.02	**0.01**	0
Rhenium (Re)	µg/g	6	0	NA	NA	NA	0.002	0.001	0	1	0	NA	NA	NA	0.002	**0.001**	0
Rubidium (Rb)	µg/g	6	6	7.56	**4.845**	15.3	NA	NA	100	1	1	5.44	5.44	**5.44**	NA	NA	100
Tellurium (Te)	µg/g	6	0	NA	NA	NA	0.004	**0.002**	0	1	0	NA	NA	NA	0.004	**0.002**	0
Thorium (Th)	µg/g	6	1	0.02	0.0227	0.0227	0.002	0.001	17	1	0	NA	NA	NA	0.002	**0.001**	0
Yttrium (Y)	µg/g	6	1	0.02	0.0233	0.0233	0.002	0.001	17	1	0	NA	NA	NA	0.002	**0.001**	0
Zirconium (Zr)	µg/g	6	0	NA	NA	NA	0.04	0.02	0	1	0	NA	NA	NA	0.04	**0.02**	0
PCDDF																	
2,3,7,8-TCDD	pg/g	4	0	NA	NA	NA	0.14	**0.07**	0	-	-	-	-	-	-	-	-
1,2,3,7,8-PeCDD	pg/g	4	0	NA	NA	NA	0.69	**0.345**	0	-	-	-	-	-	-	-	-
1,2,3,4,7,8-HxCDD	pg/g	4	0	NA	NA	NA	0.48	**0.24**	0	-	-	-	-	-	-	-	-
1,2,3,6,7,8-HxCDD	pg/g	4	0	NA	NA	NA	0.67	**0.335**	0	-	-	-	-	-	-	-	-
1,2,3,7,8,9-HxCDD	pg/g	4	1	0.06	0.0643	**0.0643**	0.089	0.0445	25	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDD	pg/g	4	1	1.60	1.6	**1.6**	1	0.5	25	-	-	-	-	-	-	-	-
OCDD	pg/g	4	2	6.60	**6.595**	8.58	0.44	0.22	50	-	-	-	-	-	-	-	-
2,3,7,8-TCDF	pg/g	4	0	NA	NA	NA	0.22	**0.11**	0	-	-	-	-	-	-	-	-
1,2,3,7,8-PeCDF	pg/g	4	1	0.26	0.259	**0.259**	0.092	0.046	25	-	-	-	-	-	-	-	-
2,3,4,7,8-PeCDF	pg/g	4	2	0.41	**0.4115**	0.591	0.12	0.06	50	-	-	-	-	-	-	-	-
1,2,3,4,7,8-HxCDF	pg/g	4	1	0.07	0.072	**0.072**	0.055	0.0275	25	-	-	-	-	-	-	-	-
1,2,3,6,7,8-HxCDF	pg/g	4	1	0.15	0.154	**0.154**	0.024	0.012	25	-	-	-	-	-	-	-	-
2,3,4,6,7,8-HxCDF	pg/g	4	1	1.24	1.24	**1.24**	0.74	0.37	25	-	-	-	-	-	-	-	-
1,2,3,7,8,9-HxCDF	pg/g	4	1	0.04	0.0389	**0.0389**	0.031	0.0155	25	-	-	-	-	-	-	-	-
1,2,3,4,6,7,8-HpCDF	pg/g	4	2	0.31	**0.306**	0.503	0.077	0.0385	50	-	-	-	-	-	-	-	-
1,2,3,4,7,8,9-HpCDF	pg/g	4	0	NA	NA	NA	0.051	0.0255	0	-	-	-	-	-	-	-	-
OCDF	pg/g	4	1	0.12	0.122	**0.122**	0.12	0.06	25	-	-	-	-	-	-	-	-
PCBs																	
PCB31/28	ng/g	4	1	0.44	0.44	**0.44**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB20/33/21	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB37	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB43/49	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB44	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB71/41/68/64	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB40	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB74/61	ng/g	4	1	0.56	0.56	**0.56**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB80/66	ng/g	4	1	0.59	0.59	**0.59**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB56/60	ng/g	4	1	0.19	0.19	**0.19**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB84/90/101/89	ng/g	4	1	0.13	0.13	**0.13**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB99	ng/g	4	2	0.565	**0.565**	0.66	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB86/111/125/117/87/116/115	ng/g	4	0	NA	NA	NA	14	**7**	0	1	0	NA	NA	NA	14	**7**	0
PCB118/106	ng/g	4	2	1.235	**1.235**	1.29	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB105/127	ng/g	4	2	0.39	**0.39**	0.48	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB136	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB153	ng/g	4	3	1.98	**2.07**	3.75	0.2	0.1	75	1	0	NA	NA	NA	0.1	**0.05**	0
PCB141	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB137	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB163/164/138	ng/g	4	2	1.32	**1.32**	1.49	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB129	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB128/167	ng/g	4	2	0.49	**0.49**	0.56	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB156	ng/g	4	2	0.24	**0.24**	0.31	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB157	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB183	ng/g	4	2	0.505	**0.505**	0.74	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB185	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB180	ng/g	4	2	2.1	**2.1**	2.98	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB193	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB191	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB170/190	ng/g	4	2	0.605	**0.605**	0.69	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB-189	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PCB196/203	ng/g	4	2	0.6	**0.6**	0.83	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB194	ng/g	4	2	0.44	**0.44**	0.54	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB206	ng/g	4	2	0.27	**0.27**	0.28	0.2	0.1	50	1	0	NA	NA	NA	0.1	**0.05**	0
PCB209	ng/g	4	1	0.21	0.21	**0.21**	0.2	0.1	25	1	0	NA	NA	NA	0.1	**0.05**	0
PCB201/204	ng/g	4	0	NA	NA	NA	0.2	**0.1**	0	1	0	NA	NA	NA	0.1	**0.05**	0
PAH																	
Naphthalene	ng/g	3	3	41.91	**16.5**	104	NA	NA	100	-	-	-	-	-	-	-	-
Acenaphthylene	ng/g	3	3	66.77	**24**	164	NA	NA	100	-	-	-	-	-	-	-	-
Acenaphthene	ng/g	3	3	4.07	**1.32**	9.71	NA	NA	100	-	-	-	-	-	-	-	-
Fluorene	ng/g	3	3	18.43	**8.43**	45.7	NA	NA	100	-	-	-	-	-	-	-	-
Phenanthrene	ng/g	3	3	84.24	**34.8**	216	NA	NA	100	-	-	-	-	-	-	-	-
Anthracene	ng/g	3	3	11.42	**5.9**	28.1	NA	NA	100	-	-	-	-	-	-	-	-
Fluoranthene	ng/g	3	3	34.23	**18.2**	84	NA	NA	100	-	-	-	-	-	-	-	-
Pyrene	ng/g	3	3	30.24	**17.3**	71	NA	NA	100	-	-	-	-	-	-	-	-
Benzo(a)Anthracene	ng/g	3	2	14.18	**14.18**	23.8	0.2	0.1	67	-	-	-	-	-	-	-	-
Chrysene	ng/g	3	3	10.71	**5.51**	26.2	NA	NA	100	-	-	-	-	-	-	-	-
Benzo(b)Fluoranthene	ng/g	3	2	7.92	**7.92**	13	0.2	0.1	67	-	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	ng/g	3	2	12.30	**12.3**	20.7	0.2	0.1	67	-	-	-	-	-	-	-	-
Benzo(a)Pyrene	ng/g	3	2	7.47	**7.47**	12.4	0.2	0.1	67	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)Pyrene	ng/g	3	2	6.27	**6.265**	10.7	0.2	0.1	67	-	-	-	-	-	-	-	-
Dibenzo(a,h)Anthracene	ng/g	3	1	1.50	1.5	**1.5**	0.2	0.1	33	-	-	-	-	-	-	-	-
Benzo(g,h,i)Perylene	ng/g	3	2	5.96	**5.96**	10.2	0.2	0.1	67	-	-	-	-	-	-	-	-
PBDEs																	
BDE 10	pg/g	3	0	NA	NA	NA	0.07	**0.035**	0	-	-	-	-	-	-	-	-
BDE 7	pg/g	3	0	NA	NA	NA	0.059	**0.0295**	0	-	-	-	-	-	-	-	-
BDE 8/11	pg/g	3	0	NA	NA	NA	0.063	**0.0315**	0	-	-	-	-	-	-	-	-
BDE 12/13	pg/g	3	0	NA	NA	NA	0.15	**0.075**	0	-	-	-	-	-	-	-	-
BDE 15	pg/g	3	3	0.72	**0.276**	1.72	NA	NA	100	-	-	-	-	-	-	-	-
BDE 30	pg/g	3	0	NA	NA	NA	0.75	**0.375**	0	-	-	-	-	-	-	-	-
BDE 32	pg/g	3	0	NA	NA	NA	0.53	**0.265**	0	-	-	-	-	-	-	-	-
BDE 17/25	pg/g	3	2	0.43	**0.4265**	0.695	0.62	0.31	67	-	-	-	-	-	-	-	-
BDE 28/33	pg/g	3	2	2.55	**2.5515**	4.15	0.58	0.29	67	-	-	-	-	-	-	-	-
BDE 35	pg/g	3	0	NA	NA	NA	11	5.5	0	-	-	-	-	-	-	-	-
BDE 37	pg/g	3	3	5.36	**5.57**	7.21	NA	NA	100	-	-	-	-	-	-	-	-
PBEB	pg/g	3	0	NA	NA	NA	0.1	**0.05**	0	-	-	-	-	-	-	-	-
HBB	pg/g	3	2	1.16	1.1595	1.39	0.7	0.35	67	-	-	-	-	-	-	-	-

TABLE 14

BIRD TISSUE - EXPOSURE POINT CONCENTRATIONS (FNFNES and 2022/2023 Study Data)
Webequie Supply Road
Webequie First Nation, Ontario

		Duck/Geese								Ruffed Grouse							
Parameter	**Units**	**Number of Analysis**	**Number of Detections**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Detections (%)**	**Number of Analysis**	**Number of Detections**	**Mean**	**Median**	**Maximum**	**Maximum Detection Limit**	**1/2 Detection Limit Concentration**	**Detections (%)**
BDE 75	pg/g	3	1	0.37	0.372	**0.372**	0.24	0.12	33	-	-	-	-	-	-	-	-
BDE 51	pg/g	3	2	3.13	**3.13**	4.13	0.12	0.06	67	-	-	-	-	-	-	-	-
BDE 49	pg/g	3	3	11.42	**7.8**	25.6	NA	NA	100	-	-	-	-	-	-	-	-
BDE 71	pg/g	3	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
BDE 47	pg/g	3	3	176.47	**58.1**	422	NA	NA	100	-	-	-	-	-	-	-	-
BDE 79	pg/g	3	1	0.24	0.239	**0.239**	0.2	0.1	33	-	-	-	-	-	-	-	-
BDE 66	pg/g	3	2	2.57	**2.57**	4.04	0.15	0.075	67	-	-	-	-	-	-	-	-
BDE 77	pg/g	3	0	NA	NA	NA	0.19	**0.095**	0	-	-	-	-	-	-	-	-
BDE 100	pg/g	3	3	111.40	**38.3**	266	NA	NA	100	-	-	-	-	-	-	-	-
BDE 119/120	pg/g	3	3	3.89	**2.19**	8.55	NA	NA	100	-	-	-	-	-	-	-	-
BDE 99	pg/g	3	3	202.57	**74.6**	472	NA	NA	100	-	-	-	-	-	-	-	-
BDE 116	pg/g	3	0	NA	NA	NA	0.47	**0.235**	0	-	-	-	-	-	-	-	-
BDE 118	pg/g	3	1	1.91	1.91	**1.91**	0.51	0.255	33	-	-	-	-	-	-	-	-
BDE 85	pg/g	3	3	7.35	**4.07**	15.1	NA	NA	100	-	-	-	-	-	-	-	-
BDE 126	pg/g	3	1	0.39	0.391	**0.391**	0.17	0.085	33	-	-	-	-	-	-	-	-
BDE 105	pg/g	3	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
BDE 155	pg/g	3	3	2.31	**1.13**	4.89	NA	NA	100	-	-	-	-	-	-	-	-
BDE 154	pg/g	3	3	45.03	**19.9**	101	NA	NA	100	-	-	-	-	-	-	-	-
BDE 153	pg/g	3	3	112.93	**69.2**	251	NA	NA	100	-	-	-	-	-	-	-	-
BDE 140	pg/g	3	2	1.58	**1.5845**	2.41	0.38	0.19	67	-	-	-	-	-	-	-	-
BDE 138/166	pg/g	3	3	6.19	**3.85**	13.2	NA	NA	100	-	-	-	-	-	-	-	-
BDE 156	pg/g	3	0	NA	NA	NA	0.48	**0.24**	0	-	-	-	-	-	-	-	-
BDE 128	pg/g	3	0	NA	NA	NA	0.47	**0.235**	0	-	-	-	-	-	-	-	-
BDE 184	pg/g	3	2	0.55	**0.548**	0.673	NA	NA	67	-	-	-	-	-	-	-	-
BDE 183	pg/g	3	3	34.30	**41.4**	53.6	NA	NA	100	-	-	-	-	-	-	-	-
BDE 191	pg/g	3	1	1.49	1.49	**1.49**	0.36	0.18	33	-	-	-	-	-	-	-	-
BDE 181	pg/g	3	2	2.68	**2.68**	3.45	0.28	0.14	67	-	-	-	-	-	-	-	-
BDE 190	pg/g	3	1	1.37	1.37	**1.37**	0.4	0.2	33	-	-	-	-	-	-	-	-
BDE 197	pg/g	3	3	12.15	**12.4**	17.7	NA	NA	100	-	-	-	-	-	-	-	-
BDE 203	pg/g	3	3	9.53	**6.86**	17.3	NA	NA	100	-	-	-	-	-	-	-	-
BDE 196	pg/g	3	3	11.78	**11.2**	18.3	NA	NA	100	-	-	-	-	-	-	-	-
BDE 208	pg/g	3	3	15.57	**15.1**	21	NA	NA	100	-	-	-	-	-	-	-	-
BDE 207	pg/g	3	3	23.53	**21.4**	32.6	NA	NA	100	-	-	-	-	-	-	-	-
BDE 206	pg/g	3	3	15.20	**14.4**	24.2	NA	NA	100	-	-	-	-	-	-	-	-
BDE 209	pg/g	3	3	366.33	**321**	593	NA	NA	100	-	-	-	-	-	-	-	-
OCPs																	
Hexachlorobenzene	ng/g	4	4	1.38	**1.0635**	3.16	NA	NA	100	1	1	0.15	0.15	**0.15**	NA	NA	100
alpha-BHC	ng/g	4	2	0.15	**0.1545**	0.179	0.0072	0.0036	50	1	0	NA	NA	NA	0.02	**0.01**	0
beta-BHC	ng/g	4	1	0.02	0.023	**0.023**	0.018	0.009	25	1	0	NA	NA	NA	0.011	**0.0055**	0
gamma-BHC	ng/g	4	2	0.02	**0.0195**	0.0201	0.019	0.0095	50	1	1	0.0362	0.0362	**0.0362**	NA	NA	100
delta-BHC	ng/g	4	3	0.71	**0.88**	0.922	NA	NA	75	1	1	0.289	0.289	**0.289**	NA	NA	100
Heptachlor	ng/g	4	0	NA	NA	NA	0.0063	**0.00315**	0	1	0	NA	NA	NA	0.0026	**0.0013**	0
Aldrin	ng/g	4	0	NA	NA	NA	0.0043	**0.00215**	0	1	0	NA	NA	NA	0.0016	**0.0008**	0
Chlorpyrifos	ng/g	4	2	0.04	**0.04375**	0.0441	0.048	0.024	50	1	0	NA	NA	NA	0.02	**0.01**	0
Heptachlor Epoxide B	ng/g	4	3	0.71	**0.556**	1.26	0.012	0.006	75	1	1	0.0125	0.0125	**0.0125**	NA	NA	100
Heptachlor Epoxide A	ng/g	4	0	NA	NA	NA	0.072	**0.036**	0	1	0	NA	NA	NA	0.032	**0.016**	0
Oxychlordane	ng/g	4	4	0.41	**0.2585**	1.06	NA	NA	100	1	1	0.00725	0.00725	**0.00725**	NA	NA	100
trans-Chlordane	ng/g	4	0	NA	NA	NA	0.082	**0.041**	0	1	0	NA	NA	NA	0.0084	**0.0042**	0
cis-Chlordane	ng/g	4	0	NA	NA	NA	0.075	**0.0375**	0	1	0	NA	NA	NA	0.0077	**0.00385**	0
trans-Nonachlor	ng/g	4	2	0.89	**0.8905**	1.47	0.072	0.036	50	1	0	NA	NA	NA	0.0073	**0.00365**	0
Dieldrin	ng/g	4	2	2.83	**2.83**	3.02	0.047	0.0235	50	1	1	0.0511	0.0511	**0.0511**	NA	NA	100
Endrin	ng/g	4	0	NA	NA	NA	0.095	**0.0475**	0	1	0	NA	NA	NA	0.033	**0.0165**	0
cis-Nonachlor	ng/g	4	3	0.18	**0.157**	0.216	0.077	0.0385	75	1	1	0.0233	0.0233	**0.0233**	NA	NA	100
Endosulfan I	ng/g	4	0	NA	NA	NA	0.94	**0.47**	0	1	0	NA	NA	NA	0.36	**0.18**	0
Endosulfan II	ng/g	4	0	NA	NA	NA	0.071	**0.0355**	0	1	0	NA	NA	NA	0.023	**0.0115**	0
Endosulfan Sulfate	ng/g	4	1	0.03	0.0323	**0.0323**	0.032	0.016	25	1	0	NA	NA	NA	0.0098	**0.0049**	0
24'-DDE	ng/g	4	0	NA	NA	NA	0.17	**0.085**	0	1	0	NA	NA	NA	0.03	**0.015**	0
44'-DDE	ng/g	4	3	5.81	**6.39**	8.49	0.22	0.11	75	1	0	NA	NA	NA	0.038	**0.019**	0
24'-DDD	ng/g	4	0	NA	NA	NA	0.16	**0.08**	0	1	0	NA	NA	NA	0.0077	**0.00385**	0
44'-DDD	ng/g	4	2	0.24	**0.2365**	0.322	0.19	0.095	50	1	1	0.0127	0.0127	**0.0127**	NA	NA	100
24'-DDT	ng/g	4	0	NA	NA	NA	0.27	**0.135**	0	1	0	NA	NA	NA	0.014	**0.007**	0
44'-DDT	ng/g	4	2	1.54	**1.543**	2.51	0.34	0.17	50	1	0	NA	NA	NA	0.015	**0.0075**	0
Methoxychlor	ng/g	4	0	NA	NA	NA	0.57	**0.285**	0	1	0	NA	NA	NA	0.12	**0.06**	0
Dicofol	ng/g	4	0	NA	NA	NA	10	**5**	0	1	0	NA	NA	NA	10	**5**	0
Mirex	ng/g	4	1	0.10	0.101	**0.101**	0.023	0.0115	25	1	1	0.0233	0.0233	**0.0233**	NA	NA	100
Parlar-26	ng/g	4	1	0.04	0.0447	**0.0447**	0.21	0.105	25	1	0	NA	NA	NA	0.024	**0.012**	0
Parlar-50	ng/g	4	0	NA	NA	NA	0.6	**0.3**	0	1	0	NA	NA	NA	0.025	**0.0125**	0
Parlar-62	ng/g	4	0	NA	NA	NA	0.71	**0.355**	0	1	0	NA	NA	NA	0.029	**0.0145**	0
PFAS																	
Perfluorobutanoic Acid	ng/g	1	0	NA	NA	NA	10	**5**	0	-	-	-	-	-	-	-	-
Perfluorobutanesulfonate	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluoropentanoic Acid	ng/g	1	0	NA	NA	NA	2.6	**1.3**	0	-	-	-	-	-	-	-	-
Perfluorohexanoic Acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluorohexanesulfonate	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluoroheptanoic Acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluorooctanoic Acid	ng/g	1	1	0.17	0.17	**0.17**	NA	NA	100	-	-	-	-	-	-	-	-
Perfluorooctanesulfonate	ng/g	1	1	3.3	3.3	**3.3**	NA	NA	100	-	-	-	-	-	-	-	-
Perfluorooctylsulfonamide	ng/g	1	0	NA	NA	NA	0.64	**0.32**	0	-	-	-	-	-	-	-	-
Perfluorononanoic acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluorodecanoic Acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluoroundecanoic Acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluorododecanoic Acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-
Perfluoro-n-tridecanoic acid	ng/g	1	0	NA	NA	NA	0.32	**0.16**	0	-	-	-	-	-	-	-	-

"-" - Not analyzed
% - percent
µg/g - micrograms per gram, wet weight basis
BOLD - Identified EPC
pg/g - picograms per gram, wet weight basis
ng/g - nanograms per gram, wet weight basis

ATTACHMENT A

Attachment A – Country Food Survey

COUNTRY FOODS SURVEY GUIDE

A country foods survey will be used to collect information from Webequie First Nation (WFN) members regarding the use of country foods (traditional foods) for consumption, medicinal purposes, or cultural value as part of the Webequie Supply Road (WSR) Project.

This guide is for Webequie Community Coordinators administering and conducting the country foods surveys. Webequie Community Coordinators will be responsible for surveying community members. This guide can be used as a script to explain to community members the purpose of the questions and how to answer the questions provided in the survey.

The outline of this guide follows the main headings and questions of the survey. This survey should not take longer than 20-30 minutes.

Administering the Survey with Community Members

When conducting the survey with community members:

- Provide them with the opportunity to answer the survey themselves on the tablet or paper copy (they may have privacy concerns). If they wish to do this, just make sure that you're available to answer any questions they have.
- Let them know about the incentive for completing this survey
- Explain to the respondents that the survey is **anonymous** and that the information is **confidential** and will only be used for the WSR Project. In other words, their answers won't be connected to them and all of the answers will be presented in a combined or aggregate form (not individually).
- Ask the respondent to read and sign the consent form to complete the survey or allow them to consent verbally if they are more comfortable. Feel free to read the consent form out loud to the respondent if it is easier for them.
- If using a paper copy, do not ask for personal information. Do not write down their name on the survey. Instead of their name, give them an ID code – i.e., WFN1, WFN2, etc.
- Explain to the respondent that they can answer the questions that they are comfortable answering (they don't have to respond to every question).
- Check the relevant box and record the appropriate answers for each of the questions.
- Ask probing questions if needed and where indicated to help the person answer.
- For open ended questions, write the answers word for word on the lines, so that they are clear and understandable to others.
- Do not summarize their answers. Always put write exactly what they are saying.
- For each question with a selection of answers, always read out the answers to them.
- Follow the skip logic – always go to the next question when it is labelled to do so.

Start of Survey

Introduce yourself and your role as Community Coordinator working with the WSR Project Team.

Read the consent form and have them sign or verbally agree-they do not have to agree and they can decide not to respond to the survey.

Read the introduction to the survey.

1.1 Respondent Demographics

Explain that the questions in this section are to understand respondent demographics including their age, gender, and the number of children and teens living in each home.

Q1 – Check their age range.

1. What age range are you in?

☐ 15-17 ☐ 18-30 ☐ 31-45
☐ 46-65 ☐ 66+

Q2 – Check the answer. We are trying to determine any variations in eating/drinking habits among different age groups.

2. If there are children and teens in the home do they eat and drink the same food and beverages as the adults?

☐ Yes
☐ No

Q3 – If the respondent has children at home, populate the table by selecting the Age Group and Gender of each child in the household. If the respondent does not have children at home, skip to Q4.

3. Please indicate the age group and gender of each child that lives in your home.

Children	Age Group	Gender
#1		
#2		
#3		
#4		
#5		

Q4 – Check the gender that the respondent identifies as. We are trying to determine any variations in eating/drinking habits among different gender groups. If other, please fill in any other gender identity details. If they feel uncomfortable, leave blank.

4. Do you identify as…? Check all that apply.

☐ Female
☐ Male
☐ Other (Please Specify): _____

2.1 Traditional Food Consumption: Fish

Explain that these questions are to understand fish consumption in WFN, including consumption by type/species, season, meals per week and servings per meal, preparation methods, and parts of the fish that are eaten.

Q5 & 6 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 3.1.

To fill in the table, for each fish species, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this fish. Ask the respondent to make their best estimate. If they ate any fish species that is not listed, please specify this in the bottom row of the table. ***Note: there are photos on the following pages which can be shown to the respondent to help them identify different locally harvested fish species.**

5. In the past 12 months, have you eaten any locally harvested FISH?

☐ Yes

☐ No (Skip to Question 13)

6. Please fill the following table on Locally Harvested Fish

Locally Harvested Fish Species	Did you eat ANY during the past 12 months?	How many WEEKS per season			
		Summer (June - Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Lake Trout	☐ YES ☐ NO				
Speckled/Brook Trout	☐ YES ☐ NO				
Lake Sturgeon	☐ YES ☐ NO				
White / Red (longnose) sucker	☐ YES ☐ NO				
Round whitefish	☐ YES ☐ NO				
Walleye	☐ YES ☐ NO				
Yellow Pickerel	☐ YES ☐ NO				
Sauger	☐ YES ☐ NO				
Burbot/Ling/Mariah	☐ YES ☐ NO				
Lake whitefish	☐ YES ☐ NO				
Northern pike	☐ YES ☐ NO				
Muskie/Muskellunge	☐ YES ☐ NO				
Other – Please Specify	☐ YES ☐ NO				

WSR
WEBEQUIE
SUPPLY ROAD



LAKE TROUT



SPECKLED/BROOK TROUT



LAKE STURGEON



WHITE/RED (LONGNOSE) SUCKER

WSR
WEBEQUIE
SUPPLY ROAD



ROUND WHITEFISH



WALLEYE



YELLOW PICKEREL (SMALLER)



SAUGER

WSR
WEBEQUIE
SUPPLY ROAD



BURBOT/LING/MARIAH



LAKE WHITEFISH



NORTHERN PIKE



MUSKIE/MUSKELLUNGE

Q7 – Check the number of meals per week. Ask the respondent to make their best estimate.

7. For how many meals per week do you eat fish?

For example, *"I think I eat about two meals of fish per week."*

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Q8 – Please check the answer given. The answer should reflect the respondent's most commonly used method of fish preparation.

8. What is your typical preparation method for fish for cooking/eating?

☐ Whole fish and gutted
☐ Whole fish, skinned and gutted
☐ Whole fish, scales removed and gutted
☐ Fillet with skin on
☐ Fillet with skin off
☐ Smoked
☐ Dryed
☐ Pemmican or fish flakes
☐ Fish cheeks
☐ Fish egg bannock
☐ Boiled
☐ Other – Please specify _____

Q9 – If the respondent answers yes, list the typical preparation methods used for different fish species that they consume.

9. Do you prepare certain fish differently? If yes, please identify which fish species and the preparation method?

Please specify _____

Q10 – If the respondent answers yes, list all the different fish parts they consumed over the past 12 months and how much of each, based on the serving size image.

10. **Did you also eat fish organs, egg, eyes, or liver over the past 12 months? Please specify below which, and how much (for example, ½ palm of hand, 1 palm of hand, 2 palms, 3 palms, etc.). See photo below for a typical serving size.**

_____



Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

Q11 – Please check the answer given. Ask the respondent to make their best estimate.

11. **What was your typical number of servings of fish during a single meal? See photo below for a typical serving size.**



Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

- ☐ ½ palm of hand
- ☐ 1 palm of hand
- ☐ 2 palms
- ☐ 3 palms
- ☐ Other – please specify _____

Q12 – Please populate the table by writing the respondents' estimated number of meals of each fish species eaten over the past 12 months.

12. Can you please indicate, on average, over the past 12 months how many meals of each fish species you may have eaten?

Locally Harvested Fish Species	Number of meals during the past 12 months?
Lake Trout	
Speckled/Brook Trout	
Lake Sturgeon	
White / Red (longnose) sucker	
Round whitefish	
Walleye	
Yellow Pickerel	
Sauger	
Burbot/Ling/Mariah	
Lake whitefish	
Northern pike	
Muskie/Muskellunge	
Other – Please Specify	

3.1 Traditional Food Consumption: Animals that Frequent the Water

Explain that these questions are to understand the consumption of animals that frequent the water in WFN, such as beavers, minks, and muskrats, including consumption by type/species, season, meals per week and servings per meal.

Q13 & 14 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 4.1.

To fill in the table, for each animal that frequents the water, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this animal. Ask the respondent to make their best estimate. If they ate any other animal that frequents the water that is not listed, including organs, please specify this in the bottom row of the table.

13. In the past 12 months, have you eaten any animals that frequent the water?

☐ Yes

☐ No (Skip to Question 18)

14. Please fill in the following table on Animals that Frequent the Water.

Animals that Frequent the Water	Did you eat ANY during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Beaver meat	☐ YES ☐ NO				

Animals that Frequent the Water	Did you eat ANY during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Mink meat	☐ YES ☐ NO				
Muskrat meat	☐ YES ☐ NO				
Other (including organs) – Please Specify	☐ YES ☐ NO				

Q15 – Check the number of meals per week for each species - ask the respondent to make their best estimate. If another animal that frequents that water is eaten, please indicate this under "Other".

15. **For how many meals per week do you eat each of the following animals that frequent the water?**

Beaver meat

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Mink meat

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Muskrat meat

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Other: _____

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Q16 – Please check the answer given. Ask the respondent to make their best estimate based on the serving size image.

16. **What was your typical number of servings of the above type of meat and organs for each meal? See image below for a typical serving size.**

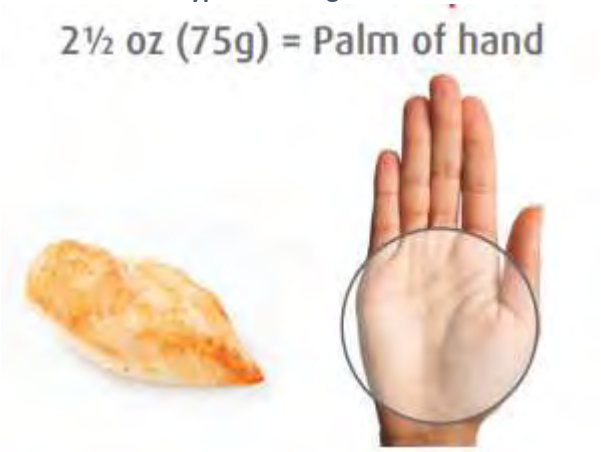


Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

- ☐ ½ palm of hand
- ☐ 1 palm of hand
- ☐ 2 palms
- ☐ 3 palms
- ☐ Other amount:
- ☐ Not sure

Q17 – Please populate the table by writing the respondents' estimated number of meals of each species eaten over the past 12 months.

17. Over the past 12 months can you please indicate approximately how many meals of each species you may have eaten?

Animals that Frequent the Water	Number of Meals During the Past 12 months?
Beaver meat	
Mink meat	
Muskrat meat	
Other (including organs) – Please Specify	

4.1 Traditional Food Consumption: Wild Game (Land Mammals)

Explain that these questions are to understand the consumption of land mammals in WFN, such as moose, caribou, black bears, and rabbit, including consumption by type/species, season, meals per week and servings per meal.

Q18 & 19 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 5.1.

To fill in the table, for each land mammal species/organ, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this

species/organ. Ask the respondent to make their best estimate. If they ate any other animal land mammal or organ that is not listed, please specify this in the bottom row of the table.

18. In the past 12 months, have you eaten any wild game (land mammals)?

☐ YES
☐ NO (Skip to Question 23)

19. Please fill in the following table on wild game (land mammals).

Land Mammal Species	Did you eat ANY of the following during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Moose-Meat	☐ YES ☐ NO				
Moose-Liver	☐ YES ☐ NO				
Moose-Kidney	☐ YES ☐ NO				
Caribou-Meat	☐ YES ☐ NO				
Caribou-Liver	☐ YES ☐ NO				
Caribou-Kidney	☐ YES ☐ NO				
Black bear meat	☐ YES ☐ NO				
Black bear fat	☐ YES ☐ NO				
Rabbit/Hare meat	☐ YES ☐ NO				
Other – Please Specify	☐ YES ☐ NO				

Q20 – Check the number of meals per week - ask the respondent to make their best estimate.

20. For how many meals per week do you eat wild game?

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Q21 – Please check the answer given. Ask the respondent to make their best estimate based on the serving size image.

21. **What was your typical number of servings of the above type of meat and organs for each meal? See image below for a typical serving size.**

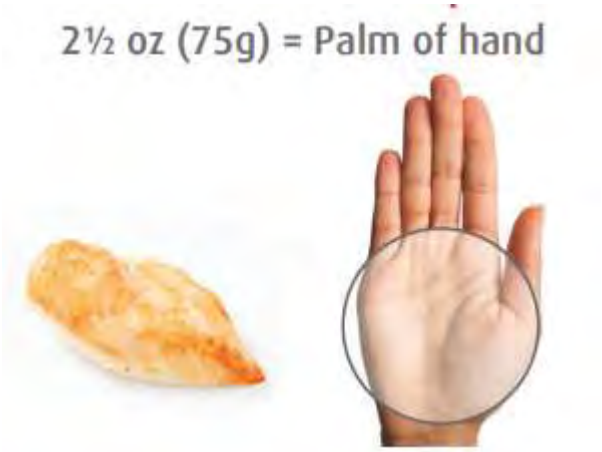


Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

- ☐ ½ palm of hand
- ☐ 1 palm of hand
- ☐ 2 palms
- ☐ 3 palms
- ☐ Not sure

Q22 – Please populate the table by writing the respondents' estimated number of meals of each species/organ eaten over the past 12 months.

22. **Over the past 12 months can you please indicate approximately how many meals of each animal you may have eaten?**

Land Mammal Species	Number of Meals During the Past 12 months?
Moose-Meat	
Moose-Liver	
Moose-Kidney	
Caribou-Meat	
Caribou-Liver	
Caribou-Kidney	
Black bear meat	
Black bear fat	
Rabbit/Hare meat	
Other – Please Specify	

5.1 Traditional Food Consumption: Migratory Birds (e.g., Ducks, Geese and Loons)

Explain that these questions are to understand the consumption of migratory birds in WFN, such as goose, ducks, loons, and bird eggs, including consumption by type/species, season, meals per week and servings per meal.

Q23 & 24 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 6.1.

To fill in the table, for each migratory species, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this species. Ask the respondent to make their best estimate. If they ate any other migratory species that is not listed, please specify this in the bottom row of the table. ***Note: there are photos on the following pages which can be shown to the respondent to help them identify different migratory birds.**

23. In the past 12 months, have you eaten any migratory birds?

☐ YES

☐ NO (Skip to Question 28)

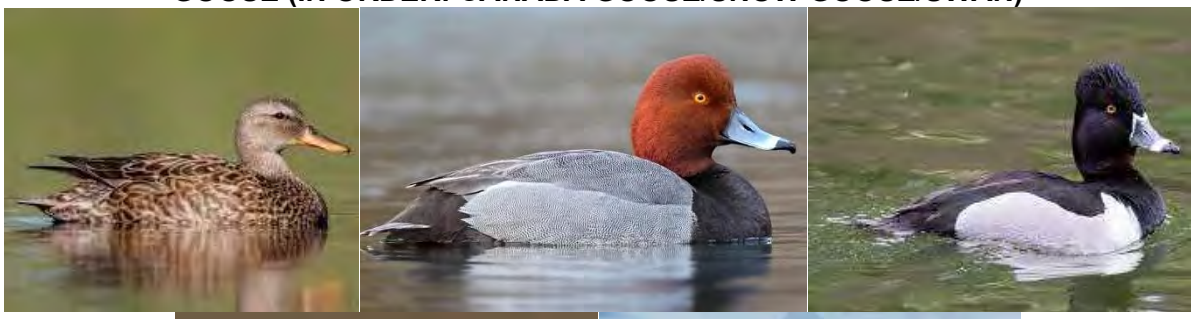
24. Please fill in the following table on migratory birds.

Migratory Species	Did you eat ANY of the following during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Goose (i.e., Canada goose, Snow goose, Swan)	☐ YES ☐ NO				
Duck - plant eaters (i.e., Gadwall, Redhead, Ring-necked, Wood duck, American widgeon)	☐ YES ☐ NO				
Duck – omnivores (i.e., Mallard, Bufflehead, Northern pintail, White-winged scoter, Common goldeneye, American black duck)	☐ YES ☐ NO				
Duck – fish eaters (i.e., Common merganser)	☐ YES ☐ NO				
Common Loon	☐ YES ☐ NO				
Bird eggs	☐ YES ☐ NO				
Crane	☐ YES ☐ NO				
Other – Please Specify	☐ YES ☐ NO				

WSR
WEBEQUIE
SUPPLY ROAD

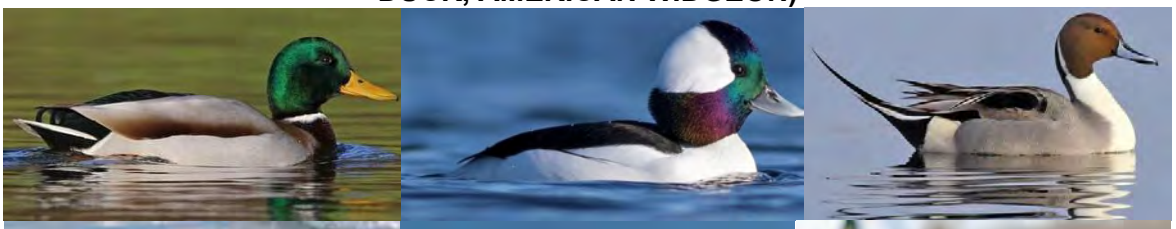


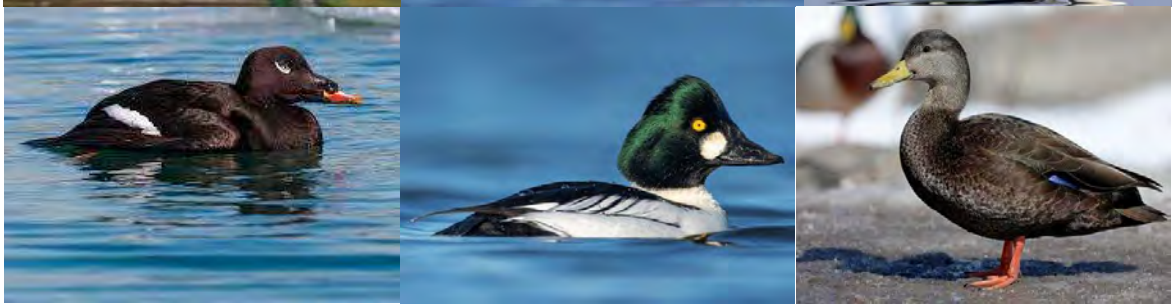
GOOSE (IN ORDER: CANADA GOOSE/SNOW GOOSE/SWAN)





DUCK – PLANT EATERS (IN ORDER: GADWALL, REDHEAD, RING-NECKED, WOOD DUCK, AMERICAN WIDGEON)





DUCK – OMNIVORES (IN ORDER: MALLARD, BUFFLEHEAD, NORTHERN PINTAIL, WHITE-WINGED SCOTER, COMMON GOLDENEYE, AMERICAN BLACK DUCK)

WSR
WEBEQUIE
SUPPLY ROAD



DUCK – FISH EATERS (COMMON MERGANSER)



COMMON LOON



BIRD EGGS



CRANE

Q25 – Check the number of meals per week - ask the respondent to make their best estimate.

25. For how many meals per week do you eat migratory birds?

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Q26 – Please check the answer given. Ask the respondent to make their best estimate based on the serving size image.

26. What was your typical number of servings size of migratory species meat for each meal? See image below for a typical serving size.

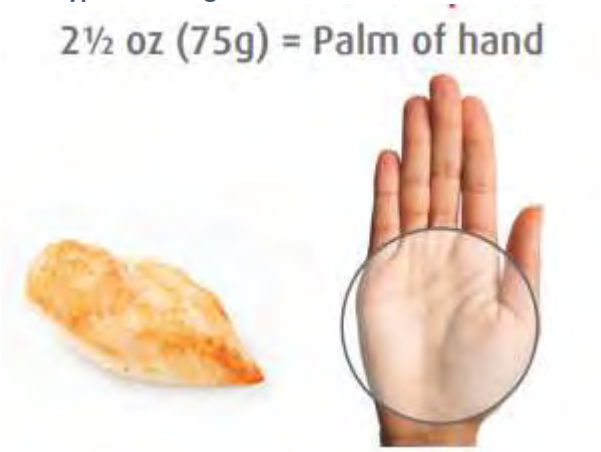


Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

☐ ½ palm of hand
☐ 1 palm of hand
☐ 2 palms
☐ 3 palms
☐ Not sure

Q27 – Please populate the table by writing the respondents' estimated number of meals of each species eaten over the past 12 months.

27. Over the past 12 months can you please indicate approximately how many meals of each animal you may have eaten?

Migratory Species	Number of Meals During the Past 12 months?
Goose (i.e., Canada goose, Snow goose, Swan)	
Duck - plant eaters (i.e., Gadwall, Redhead, Ring-necked, Wood duck, American widgeon)	
Duck – omnivores (i.e., Mallard, Bufflehead, Northern pintail, White-winged scoter, Common goldeneye, American black duck)	
Duck – fish eaters (i.e., Common merganser, Common loon)	
Bird eggs	
Crane	
Other – Please Specify	

Migratory Species	Number of Meals During the Past 12 months?

6.1 Traditional Food Consumption: Non-Migratory Birds (e.g., Grouse and Partridge)

Explain that these questions are to understand the consumption of non-migratory birds in WFN, such as grouse and partridge, including consumption by type/species, season, meals per week and servings per meal.

Q28 & 29 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 7.1.

To fill in the table, for each non-migratory bird species, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this species. Ask the respondent to make their best estimate. If they ate any other non-migratory bird species that is not listed, please specify this in the bottom row of the table. ***Note: there are photos on the following page which can be shown to the respondent to help them identify different non-migratory birds.**

28. In the past 12 months, have you eaten any non-migratory birds?

☐ YES

☐ NO (Skip to Question 33)

29. Please fill in the following table on non-migratory birds.

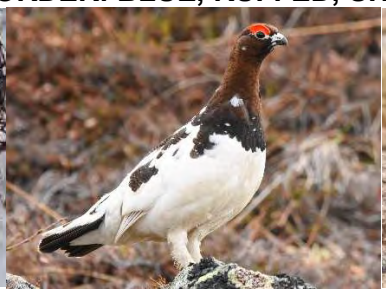
Non-Migratory Bird Species	Did you eat ANY of the following during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Grouse (Blue, Ruffed, Sharp-tailed)	☐ YES ☐ NO				
Ptarmigan	☐ YES ☐ NO				
Grey Partridge	☐ YES ☐ NO				
Other – Please Specify	☐ YES ☐ NO				

WSR
WEBEQUIE
SUPPLY ROAD





GROUSE (IN ORDER: BLUE, RUFFED, SHARP-TAILED)


PTARMIGANS



GRAY PARTRIDGE

Q30 – Check the number of meals per week - ask the respondent to make their best estimate.

30. For how many meals per week do you eat non-migratory bird species?

☐ 1 meal
☐ 2 meals
☐ 3 meals
☐ Other – Please specify _____

Q31 – Please check the answer given. Ask the respondent to make their best estimate based on the serving size image.

31. What was your typical number of servings of non-migratory bird species meat for each meal? See photo below for a typical serving size.

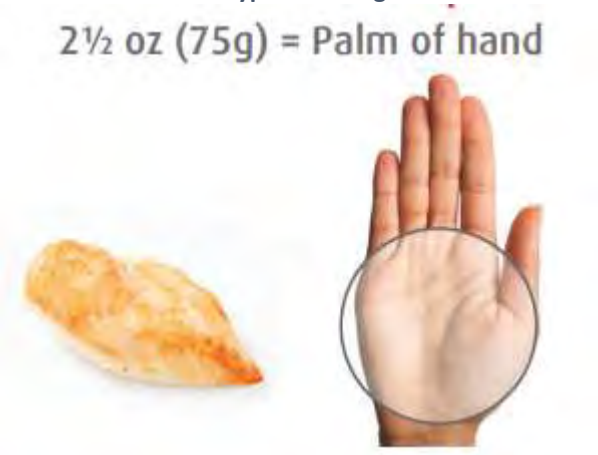


Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

☐ ½ palm of hand
☐ 1 palm of hand
☐ 2 palms
☐ 3 palms
☐ Not sure

Q32 – Please populate the table by writing the respondents' estimated number of meals of each species eaten over the past 12 months.

32. Over the past 12 months can you please indicate approximately how many meals of each animal you may have eaten?

Non-Migratory Bird Species	Number of Meals During the Past 12 months?
Grouse (Blue, Ruffed, Sharp-tailed)	
Ptarmigan	
Grey partridge	
Other – Please Specify	

7.1 Traditional Food Consumption: Wild Berries

Explain that these questions are to understand the consumption of wild berries in WFN, such as blueberries, wild strawberries, gooseberries/currants, raspberries, and service berries/June berries/Saskatoon berries, including consumption by berry type, season, servings per week, and typical serving size.

Q33 & 34 – If the respondent answers yes, fill in the table below. If they answer no, skip to Section 8.1.

To fill in the table, for each wild berry type, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this wild berry type. Ask the respondent to make their best estimate. If they ate any other wild berry that is not listed, please specify this in the bottom row of the table. ***Note: there are photos on the following pages which can be shown to the respondent to help them identify different wild berry types.**

33. In the past 12 months, have you eaten any wild berries?

☐ YES

☐ NO (Skip to Question 38)

34. Please fill in the following table on wild berries.

Wild Berries	Did you eat ANY of the following during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Blueberries	☐ YES ☐ NO				
Wild Strawberry	☐ YES ☐ NO				
Gooseberry/Currant	☐ YES ☐ NO				
Raspberry	☐ YES ☐ NO				
Service Berry/June Berry/Saskatoon Berry	☐ YES ☐ NO				
Other, please specify	☐ YES ☐ NO				

WSR
WEBEQUIE
SUPPLY ROAD



BLUEBERRIES



WILD STRAWBERRY



GOOSEBERRY/CURRANT

WSR
WEBEQUIE
SUPPLY ROAD



RASPBERRY



SERVICE BERRY/JUNE BERRY/SASKATOON BERRY

Q35 – Check the number of times per week that wild berries were eaten - ask the respondent to make their best estimate.

35. How many times per week do you eat wild berries?

☐ 1 time
☐ 2 times
☐ 3 times
☐ Other – Please specify _____

Q36 – Please check the answer given. Ask the respondent to make their best estimate based on the serving size image.

36. What was your typical serving size of wild berries? See photo below for a typical serving size.

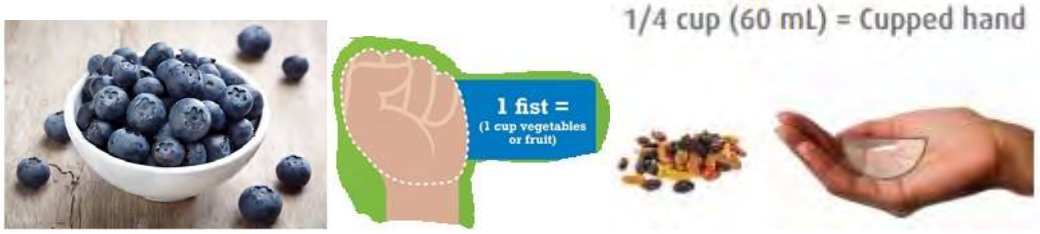


Photo – Courtesy of unlockfood.ca – Handy Guide to Serving Sizes and courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

☐ ½ fist
☐ 1 fist
☐ 1 ½ fist
☐ 2 fists
☐ Not sure

Q37 – Please populate the table by writing the respondents' estimated number of servings of each type of wild berry eaten over the past 12 months.

37. Over the past 12 months can you please indicate approximately how many servings of each wild berry you have eaten?

Wild Berries	Number of Servings During the Past 12 months?
Blueberries	
Wild Strawberry	
Gooseberry/Currant	
Raspberry	
Service Berry/June Berry/Saskatoon Berry	
Other, please specify	

8.1 Traditional Food Consumption: Wild Plants and Tree Foods

Explain that these questions are to understand the consumption of wild plants and tree foods in WFN, such as Labrador tea, muskrat root, bear root, wild rice, dandelions, mushrooms, wintergreen (teaberry) leaves, mint leaves, and cedar tea, including consumption by wild plant type and amount consumed in a single meal/occurrence. They also ask about the consumption

of homegrown/home cultivated foods, including seasonality, times per day, preparation methods, and serving sizes.

Q38, 39& 40 – Populate the tables for wild plants and tree foods consumed. To fill in the table in Q38, for each wild plant type, check off whether they ate any during the past 12 months. If they answer yes, write how many weeks per season they ate this wild plant type. Ask the respondent to make their best estimate. If they ate any other wild plant that is not listed, please specify this in the bottom row of the table.

To fill in the table in Q39, for each wild plant type, write out the estimated amount that the respondent typically consumes in a single meal or occurrence by indicating the amount used without water (for example, number of leaves, portion of a root, or number of cups).

To fill in the table in Q40, for each wild plant type, select the part of the plant that the participant consumed. If another part is consumed, please indicate this by writing it out.

38. Please fill in the following table on wild plants and tree foods.

Wild Plant, Leaf or Root	Did you have ANY during the past 12 months?	How many WEEKS per season			
		Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Labrador tea	☐ YES ☐ NO				
Muskrat root	☐ YES ☐ NO				
Wild rice	☐ YES ☐ NO				
Dandelions	☐ YES ☐ NO				
Bear root	☐ YES ☐ NO				
Mushrooms	☐ YES ☐ NO				
Wintergreen (teaberry) leaves	☐ YES ☐ NO				
Mint leaves	☐ YES ☐ NO				
Cedar tea	☐ YES ☐ NO				
Homegrown/Home Cultivated foods	☐ YES ☐ NO				
Other – Please Specify	☐ YES ☐ NO				

39. If you consumed wild plant or tree foods, how much wild plant or tree foods do you typically consume in a single meal or occurrence? Please indicate how much by indicating the amount used without water. (For example, 8 leaves, half a root, 1 cup, etc.)

Wild Plants	Amount used without water (for example, 8 leaves, half a root, 1 cup, etc.)
Labrador tea	Please specify_____
Muskrat root	Please specify_____
Wild rice	Please specify_____
Dandelions	Please specify_____
Mushrooms	Please specify_____
Bear root	Please specify_____
Wintergreen (teaberry) leaves	Please specify_____
Mint leaves	Please specify_____
Cedar tea	Please specify_____
Other – Please Specify	Please specify_____

40. If you consumed wild plant or tree foods, please indicate which part of each plant you consumed. If you consumed another part of any plant, please indicate this at the bottom of the table.

Wild Plants	Part of Plant Consumed
Labrador tea	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Muskrat root	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Bear root	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Mushrooms	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____

Wild Plants	Part of Plant Consumed
Wild rice	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Dandelions	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Wintergreen (teaberry) leaves	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Mint leaves	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Cedar tea	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____
Other – Please Specify	☐ Whole plant ☐ Leaf ☐ Root ☐ Other (specify)_____

Q41 & 42 – Please populate the table in Q41 by asking the respondent to identify any homegrown/cultivated food items that they consumed in the past 12 months, and ask them to remember the food items they identified for this question (either memorize them or write them on a sticky note, record them on their phone, etc. – whatever is easiest).

For the table in Q42, ask them how many weeks per season they consumed each of the items that they identified for Q41. If none are identified, they can skip through to Section 9.1 – note they will have to individually skip through questions 41, 42, 43 and 44 to reach Section 9.1 as this “skip logic” is more complex than the features available on Survey Monkey (we appreciate your patience)!

41. **In the past 12 months, if you consumed homegrown/home cultivated foods, can you identify what those food items are? *(For example: celery, potatoes, etc.)***

Homegrown/Cultivated Food Item
Item 1:_____
Item 2:_____
Item 3:_____
Item 4:_____
Item 5:_____
Item 6:_____

42. **Please indicate how often you consumed the homegrown/ cultivated foods you listed above.**

Homegrown/Cultivated Food Item	How many WEEKS per season			
	Summer (June – Aug)	Spring (March – May)	Winter (Dec – Feb)	Fall (Sept-Nov)
Item 1				
Item 2				
Item 3				
Item 4				
Item 5				
Item 6				

Q43 – Please populate the table by asking the respondent approximately how often per day they consumed each of the items listed in Q41 & Q 42 above, and how each item would be prepared (based on the preparation method options listed in the text below the table). If none are identified, skip to Section 9.1.

43. For the weeks that you ate homegrown/ home cultivated foods, generally how many times per day would you have eaten those items and how would you prepare each item?

Homegrown/Cultivated Food Item	About How Often per Day That You Consumed the Item?	Typical Preparation Method
Item 1		
Item 2		
Item 3		
Item 4		
Item 5		
Item 6		

Preparation methods may include the following: No preparation (I eat them fresh), preserved by canning, boiled, dried, cooked into other foods or other methods.

Q44 – Please populate the table by checking off respondents' typical serving sizes for any homegrown/cultivated food items (the same as those identified in the previous question). Ask the respondent to make their best estimate based on the serving size image. If none are identified, skip to Section 9.1.

44. What was your typical serving size of homegrown/home cultivated foods? See photo below for a typical serving size.



Image courtesy of Dietitians of Canada, Handy Guide to Serving Sizes

Homegrown/Cultivated Food Item	Serving Size
Item 1:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____
Item 2:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____
Item 3:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____
Item 4:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____
Item 5:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____
Item 6:_____	☐ ½ fist ☐ 1 fist ☐ 1 ½ fist ☐ 2 fists ☐ Other (please indicate)_____

9.1 Drinking/Cooking Water

Explain that these questions are to understand the condition of drinking/cooking water in WFN, including water quality, sources, treatment methods, and overall usage.

Q45 – If the respondent answers yes, skip to Q47. If they answer no, specify the reason(s) why the respondent does not drink the tap water in their home (based on the list of potential reasons below the text box).

45. Do you drink the tap water in your house?

☐ Yes (Skip to Question 47)

☐ No (Please Specify Reason):

Reasons could include smell, taste, boil advisory, do not trust the water quality, or other reasons

Q46 – Please check the answer given. We are trying to understand tap water sources in WFN.

46. If your house has tap water, where does it come from?

☐ Water Treatment plant ☐ Water Well ☐ Not sure
☐ Lake/Pond ☐ Other (Please Specify)

Q47 – Please check all that apply. We are trying to understand alternative water sources in WFN.

47. If there are other, additional types of water that you use for drinking in your house, what are they? Check all that apply.

☐ Bottled ☐ Water Well ☐ Water Treatment plant
☐ Lake/Pond ☐ Not Sure ☐ Other (Please Specify)

Q48 & 49 – Please check the answer given. If the answer is yes, please fill out Q49 by checking all the treatment methods that apply. If the answer is no, please move to Question 50.

48. Do you treat the water in your house?

☐ Yes
☐ No (Skip to Question 50)
☐ Not Sure

Treatment could include water filters, water softener or other types of treatment.

49. If you answered yes to previous question, what water treatment methods do you use at home? Check all that apply.

☐ Boil ☐ Tablets ☐ Softener
☐ Filters (including Brita type filters) ☐ Other (Please specify):

Q50 – Please indicate the number of cups of tap water per day.

50. How many cups of water do you drink per day, either through drinking tea/coffee, tap water, hot chocolate, etc.?

Please indicate the number of cups of water per day:

_____

End of the Survey

At the end of the survey, thank the respondent for participating in the survey and for their time. Let them know that if they have any further questions to speak to Michael Fox or Don Parkinson whose contact information you should have to provide to the respondent.

Let the respondent know that the WSR Project Team will compile the information and share the results with Webequie- who will have the opportunity to review the information, including how it gets incorporated into the Environmental Impact Statement.

Ensure that you take their consent form (if signed) and label the completed survey with the appropriate code (if paper copy).

ATTACHMENT B

Attachment B-1 Sampling & Handling Protocols for Vegetation

Attachment B-2 Sampling & Handling Protocols for Fish

Attachment B-3 Sampling & Handling Protocols for Mammals and Birds

Attachment B-1 Sampling & Handling Protocols for Vegetation

Webequie Supply Road

Plant Tissue Sampling Instructions and Guidance

August 6, 2020, Revised July 16, 2021

661910 - Ver. 1

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1. Plant Tissue Sampling Procedure

1.1. Objectives

Plant tissue sampling and analysis will be undertaken to establish baseline risk associated plant consumption by humans. Goals consist of:

- The analyses of various plant samples will be used to determine baseline tissue concentrations of metals and associated potential risk; and
- The data will be retained to establish a historical database of metal concentrations in plants, which will be used as reference to evaluate the impact of the Project.

1.2. Sample Collection Method

Sample collection will occur opportunistically in conjunction with ongoing work.

1.3. General Considerations

Work will be conducted under the EIAM Health and Safety plan and staff will wear appropriate PPE. Surface soil samples will also be collected (refer to surface soil sampling guidance). Do not sample diseased or dead plants and plants that have insect or mechanical damage.

1.4. Equipment

Equipment to be used during sample collection will include the following, at a minimum:

- Disposable latex, PVC or nitrile gloves;
- Large or Ziploc or Whirl Pack bags (approximately 40);
- Alconox (to clean sampling equipment between samples);
- Distilled water (for sample equipment and sample rinsing);
- Plant collection record form/log sheets;
- Coolers for shipping of samples;
- Sample chains of custody (supplied by the analytical laboratory);
- *Pens* (to record information on the sample log);
- Shipping labels (for labelling cooler when shipping);
- Spray bottles, 2 per sampling staff (equipment decontamination);
- Stainless steel plate (optional – for sample processing);
- Tweezers (optional – for sample processing);
- Stainless steel scissors (for sample collection and processing);
- *GPS* (for recording sample location);
- *Camera* (to record image of sample);
- Ice (for sample shipping);
- Packing tape (for sample shipping);
- Garbage bags (for sample shipping);
- Indelible marker (for sample bag labelling);
- Distilled water (for sample rinsing);
- Paper towels (to dry samples before bagging);

- Sample location map (locations will be coincident with community study locations); and
- Alconox (to clean equipment between samples).

Italicized equipment represents equipment that the EIAM staff will need to supply.

1.5. Sampling Locations

Sampling locations will be coincident with specific plant community sampling locations. The sampling locations will be identified by the WFN during consultation by EIAM staff regarding what species are considered food/traditional medicine items and the location where these specific plants can be found. Preferably the sampling locations will be in the area to be directly affected by the supply road construction activities (road location and possibly aggregate extraction areas).

1.6. Target Species

Target species are berries, preferably blueberries, but in the absence of blueberries, other edible berries may be collected, such as raspberries. The WFN has indicated in the past that gooseberries are important to the community as well.

1.7. Sample Processing Approach

For the purpose of this sampling program, the minimum number of specimens to retain at each sampling location will consist of three (3) (of sufficient mass to complete analysis) of the same species. The minimum required sample mass is 100 grams/sample. Each sample will consist of a single species type (i.e. a single sample will not consist of a composite mix of different species of berries). The total number of samples will ideally be eight (8)

The field sampling staff will have to prepare the plant tissue samples in the field once collected. The processing procedure is as follows:

1. Record GPS position of the sampling location on the field log for the site;
2. Record species to be sampled, and the part of the plant which will comprise the sample on the field log sheet;
3. Assign a unique sample identifier to each specimen which will be retained. It is suggested to use an identifier structured as follows:
    - Species (assign a two-letter code which makes logical sense, i.e. LT for Labrador tea, BB for blueberry, etc.)
    - Location (This can be decided once the sample locations are determined, but it can be as simple as L1 for location 1, etc.);
    - Sample Year (20=2020);
    - Sample Number (sequential from 1 to X for each individual from a specific species at a sample site);
    - For example – three separate Labrador tea samples were obtained at the first sampling location. The sample identifier for the third sample of the species processed would be LT-L1-20-3;
4. Label the sample bag with the unique sample identifier;
5. Observe external conditions of the specimens to be retained for analysis and record any observation observations on the field log sheet;
6. Clean sampling equipment (scissors, plate, tweezers) with Alconox solution;
7. Rinse sampling equipment with distilled water;

8. Don disposable gloves;
9. Collect sample;
10. Rinse dust off sample using distilled water spray (if no access to distilled water, use local drinking water). Do not prolong washing to avoid leaching of the sample;
11. Air-dry the sample in the shade, not in the sun to prevent desiccation, on a stainless-steel plate covered in a clean paper towel;
12. Once surface moisture is removed from the sample, place sample in labelled sample bag, remove excess air from the sample bag and seal;
13. Place sample in cooler;
14. Indicate on the sample log the time the sample was collected;
15. Make sure all relevant fields on the sample log for the sample are filled in; and
16. Repeat steps 3 to 15 for each subsequent sample.

Following return from the field, perform the following:

- Test to see if the sample ID on the bag can be rubbed of or rinsed off. If so, the bag will have to be relabelled and a paper sample ID labelled tag inserted into the sample bag. This tag should be in one of its own Ziploc bags; and
- Freeze samples in their sample bags.

Caution – Sample analysis will consist of metals. Avoid allowing soil or dust to contact the samples to be analysed as inclusion of this material in the samples may bias analytical results.

1.8. Sample Logs

A copy of a blank sample log is provided in Appendix A.

1.9. Sample Submission to Laboratory

1.9.1. Sample Analytes

Analysis will consist of the following:

- Metals;
    - Antimony (Sb)
    - Arsenic (As)
    - Barium (Ba)
    - Beryllium (Be)
    - Bismuth (Bi)
    - Boron (B)
    - Cadmium (Cd)
    - Calcium (Ca)
    - Chromium (Cr)
    - Cobalt (Co)
    - Copper (Cu)
    - Iron (Fe)
    - Lead (Pb)
    - Magnesium (Mg)

- Manganese (Mn)
- Molybdenum (Mo)
- Nickel (Ni)
- Phosphorus (P)
- Potassium (K)
- Selenium (Se)
- Silver (Ag)
- Sodium (Na)
- Strontium (Sr)
- Thallium (Tl)
- Tin (Sn)
- Titanium (Ti)
- Uranium (U)
- Vanadium (V)
- Zinc (Zn)

› Mercury;
› Chromium^{VI}; and
› Moisture.

Each parameter/parameter group (i.e. “metals”) needs to be identified on the Chain-of-Custody (COC), as outlined below in this guidance.

1.9.2. Sample Hold Time

Analytical methods identify hold times specific to various analytes. The hold time represents the timeperiod from sampling to date of extraction by the laboratory that cannot be exceeded without adding a qualifier to the analytical results. This qualifier usually implies that the sample results may be biased, which calls into question any decisions made based on the sample chemical quality. Sample hold times for metals are generally 30 days.

Plan sample shipping keeping in mind sample hold time. For example, if hold time for an analyte is 7 days, do not hold onto the samples and ship on Friday as day 5 since even with a 1 day travel time, the samples will not be received by the lab until the following Monday (day 8).

1.9.3. Laboratory Chain of Custody (COC)

Samples collected as part of an environmental monitoring program and submitted for laboratory analysis are required to be recorded on the COC. Partially pre-filled in COCs should be inside one of the coolers supplied by the lab which have been shipped to you. A COC represents a legal document recording the paper trail of seizure, control, transfer, analysis and disposition of physical or electronic evidence. The Chain-of- Custody should include all project and client specific information required. The Chain-of-Custody is used to document the transfer of samples from one party to another (in this case SNC-Lavalin personnel to a laboratory).

All laboratory contact details and the sample analysis request should already be prefilled on the COCs. If the COCs are not pre-filled out, add the following:

Project Information

› Add the project number and the name of the person who conducted the sampling.

Analysis Requested

- In the first vertical box write the following - Metals, incl. CrVI and Hg;
- In the second vertical box write the following – Moisture; and
- Place an “X” in the box next to the sample ID and under the analysis requested.

Regulation 153 (2011)

- You do not need to check off anything here.

Other Regulations

- You don’t need to check off anything here.

Special Instructions

- Add – Refer to request associated with quote C03309;

Sample (Location) Identification

- Add sample identifiers (i.e. LT-L1-20-3, etc.) for all samples in the shipment. You may need to use more than one COC to accommodate all samples;

Date Sampled

- Indicate the date that each sample was collected.

Time Sampled

- Indicate the time that each sample was collected.

Matrix

- Add – tissue

# of Bottles

- Identify the number of bags associated with each sample.

Comments

- Add any applicable comments

Turnaround Time (TAT) Required

- Check Regular (Standard) TAT

The bottom of the chain of custody is filled out when the samples are sealed in the coolers for shipping.

Relinquished by

- Indicate the shipping persons name. This will be one of our staff.

Date

- Identify the date on which the chain of custody was relinquished.

Time

- Identify the date on which the chain of custody was relinquished.

Received by

- Leave blank.

Date (associated with “received by”)

- Leave blank.

Time (associated with “received by”)

- Leave blank.

jars used and not submitted

- Leave blank.

Laboratory use only section

- Leave blank.

If there are other blank fields, please contact SNC-Lavalin Contact to obtain guidance on what to enter in the COC field.

1.9.4. Sample Packing

Samples must remain frozen during shipping and until receipt by the laboratory and will have to be packed on ice carefully. For each sample shipment (a shipment can comprise one (1) or more coolers)there will be up to four (4) items in each cooler. These items are:

- Ziploc bagged samples (ensure labels are legible);
- Approximately two (2) garbage bags. One bag with the sample bags (closed tightly) and one bag with the ice (closed tightly with the bag opening vertical in the cooler);
- Ice (in one of the garbage bags); and
- In one of the coolers, all completed COCs stored in a sealed Ziploc bag.

Samples may be shipped in the same coolers as fish tissue samples (contact Holly Dodd who will be completing fish tissue sampling).

All coolers must be securely closed with packing tape, the valve (if present) must be sealed shut and the join between the closed lid and cooler body must be taped to limit water leakage if ice melts. The shipper will likely reject a cooler en-route if it is leaking water, which is why the lid must be sealed and the ice inside the cooler must be bagged in a manner that minimizes draining. All air gaps should be

packed with foam or bubble wrap or other material (not paper) to limit the amount of sample movement in the cooler.

Prior to sealing the coolers with packing tape, affix two shipping labels to each cooler (one on top, the other on the side). This label is pre-filled out and provided with the sampling equipment. If there are five coolers in a shipment, the labels should be marked to indicate “1 of 5”, “2 of 5”, etc. Tape cooler shut, including over the shipping label. The actual shipper will have to affix their own shipping label at the airport.

1.10. Sample Shipping

A seat will have to be purchased on Wasaya for the samples to ensure they arrive at their destination. Samples will be shipped to:

Bureau Veritas Laboratories

6740 Campobello Rd. / Mississauga, ON Canada L5N 2L8

Phone: 905 817 5829 Mobile: 647 226 3181

Attention Ema Gitej

ema.gitej@bvlabs.com

1.10.1. Labelling

Clearly label all freight with complete information such as destination, name and phone of both the shipper and consignee. Use labels such as "Frozen", "Perishable" and orientation labels as required. Please ensure that any old labels are removed, or old marker labels on coolers are obscured.

Plant Tissue Collection Log Sheet

Sample ID	Date (dd/mm/yyyy)	Time	Sample Location			Species	Part of Plant Sampled	Observations	Sampler Initials
			Northing	Easting	Datum				

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name:	Company Name:	Quotation #:	☐ **Regular TAT (5-7 days)** Most analyses
Contact Name:	Contact Name:	P.O. #/ AFE#:	**PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS**
Address:	Address:	Project #:	**Rush TAT (Surcharges will be applied)**
		Site Location:	☐ **1 Day** ☐ **2 Days** ☐ **3-4 Days**
Phone: Fax:	Phone: Fax:	Site #:	
Email:	Email:	Site Location Province:	**Date Required:**
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY		Sampled By:	**Rush Confirmation #:**

Regulation 153	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/ Other	☐ PWQO Region _____
☐ Table _____	☐ Other (Specify) _____
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table _____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)									HOLD- DO NOT ANALYZE
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	**Intact**	

COOLING MEDIA PRESENT: Y / N

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #

Attachment B-2 Sampling & Handling Protocols for Fish

Webequie Supply Road

Fish Tissue Sampling Instructions and Guidance

July 31, 2020, Revised July 20, 2021

Notice to Reader

This report has been prepared and the work referred to in this report has been undertaken by the Environment & Geoscience business unit of SNC-Lavalin Inc. (SNC-Lavalin) for the exclusive use of Webequie First Nation (the Client), who has been party to the development of the scope of work and understands its limitations. The methodology, findings, conclusions, and recommendations in this report are based solely upon the scope of work and subject to the time and budgetary considerations described in the proposal and/or contract pursuant to which this report was issued. Any use, reliance on, or decision made by a third party based on this report is the sole responsibility of such third party. SNC-Lavalin accepts no liability or responsibility for any damages that may be suffered or incurred by any third party as a result of the use of, reliance on, or any decision made based on this report.

The findings, conclusions, and recommendations in this report (i) have been developed in a manner consistent with the level of skill normally exercised by professionals currently practicing under similar conditions in the area, and (ii) reflect SNC-Lavalin's best judgment based on information available at the time of preparation of this report. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report. The findings and conclusions contained in this report are valid only as of the date of this report and may be based, in part, upon information provided by others. If any of the information is inaccurate, new information is discovered, site conditions change, or applicable standards are amended, modifications to this report may be necessary. The results of this assessment should in no way be construed as a warranty that the subject site is free from any and all contamination.

Any soil and rock descriptions in this report and associated logs have been made with the intent of providing general information on the subsurface conditions of the site. This information should not be used as geotechnical data for any purpose unless specifically addressed in the text of this report. Groundwater conditions described in this report refer only to those observed at the location and time of observation noted in the report.

This report must be read as a whole, as sections taken out of context may be misleading. If discrepancies occur between the preliminary (draft) and final versions of this report, it is the final version that takes precedence. Nothing in this report is intended to constitute or provide a legal opinion.

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1. Fish Tissue Sampling Procedure

1.1. Objectives

Fish tissue sampling and analysis will be undertaken to establish baseline risk associated fish consumption by humans. Goals consist of:

- The analyses of whole-body samples (scaled and offal removed) will be used to determine baseline tissue concentrations of metals and associated potential risk; and
- The data will be retained to establish a historical database of metal concentrations in fish, which will be used as reference to evaluate the impact of the Project.

In 2020, metals analysis was completed on fish tissue. The objective of this program is to characterize moisture, mercury and methylmercury concentrations in tissue.

1.2. Sample Collection Method

Sample collection method will consist of traditional angling, unless netting is taking place at the same time.

1.3. General Considerations

It is our understanding that freezer space for fish samples is limited. Storage space limitations may dictate the number of samples that can reasonably be retained for analysis. Consideration should be given to the size of the specimens collected during each net set and a decision made which approximate size class is retained as a result of space limitations. One (1) coolers will be required for for sample shipping.

1.4. Equipment

Sampling equipment consists of the following:

- *Research net and equipment to set the net*;
- Fish collection record form;
- Coolers for storage of samples;
- Fillet knife;
- *Measuring tape*;
- *Fillet board;*
- Alconox (to clean equipment between samples);
- Two (2) small buckets (one to mix a clean Alconox solution, the other to store any waste);
- Disposable latex, PVC or nitrile gloves;
- Extra Large or XX-Large Ziploc or Whirl Pack bags (approximately two (2) per fish);
- Waterproof pen for notes;
- Waterproof indelible marker for labelling sample bags;
- Ice for sample storage;
- *Club* (sacrifice fish if necessary);
- *GPS* (to record sample position);
- *Spoon or scaler*; and

› Sample location map (locations will be coincident with community study locations).

Italicized equipment represents equipment that the EIAM staff will need to supply. Depending on when sampling is completed, some equipment such as Alconox may not be available. In this case, dish soap may be used, but all residue must be removed.

1.5. Sampling Locations

Sampling locations will be coincident with specific fish community sampling locations. These locations consist of approximately two (2) locations along the planned road alignment (Winisk Lake east of Bender Lake) and Winiskisis Channel east of Stockman Lake) and a possible third location in a potential aggregate source area in the Farrow Lake area. Refer to Figure 1 for approximate sampling locations.

1.6. Target Species

Target species have been selected based on discussion with the Webequie First Nation (WFN) regarding species most commonly consumed. These species consist of Pickerel (Walleye), Northern Pike, Whitefish and White sucker. Primary target species will be Pickerel Northern Pike and Whitefish, based on species analysed in 2020.

1.7. Sample Processing Approach

For the purpose of this sampling program, the minimum number of specimens to retain at each sampling location will consist of one (1) fish of the same species. Since the number of samples to be analysed is small, it is recommended to restrict the samples to be retained based on an approximate single size class. The size class between sample locations (i.e. Winisk River vs. Winiskisis Channel) does not have to be the same. For this sampling program, a size class is based on the following limits:

› The smallest fish in the sample within approximately 90% of the total length of the largest fish chosen for the sample.

If it is not possible to catch at least one (1) individual in a single size class for a specific species at a sample location, select the individuals closest in size. The field crew must prepare the fish tissue sample once fish have been obtained. The processing procedure is as follows:

1. Record GPS position of the sampling location on the field log for the site;
2. Measure fork/total length of individual specimens to be retained and record on the field log sheet.
3. Assign a unique sample identifier to each specimen which will be retained. It is suggested to use an identifier structured as follows:
    - Species (PK=Pickerel, NP=Northern Pike, WF=Whitefish);
    - Location (WR=Winisk River, WC=Winiskisis Channel, FL=Farrow Lake aggregate borrow area);
    - Sample Year (21=2021);
    - Sample Number (sequential from 1 to X for each individual from a specific species at a sample site);
    - For example – Five White suckers were obtained at the Winisk River. The sample identifier for the fifth sample of the species processed would be WS-WR-20-5;
4. Label sample bag;

5. Observe external conditions of the specimens to be retained for analysis and record any pathology observations on the field log sheet;
6. Clean fillet knife/ fillet board, weigh scale and scaling utensil with Alconox solution;
7. Don disposable gloves;
8. Scale specimen and rinse off scales (lake water is suitable);
9. Record total weight of the specimen on the field log for the site;
10. Remove offal (entrails, swim bladder, etc.) from each specimen to be retained. Observe internal gross pathology and note any abnormalities on the field log sheet. Offal can be discarded;
11. Weigh total weight of the specimen, minus offal and record on the field log for the site;
12. Place sample in labelled sample bag;
13. Place sample in cooler;
14. Indicate on the sample log the time the sample was collected;
15. Make sure all relevant fields on the sample log for the sample are filled in;
16. Rinse sampling equipment in lake water;
17. Repeat steps 3 to 16 for each remaining specimen.

Following return from the field, perform the following:

- Test to see if the sample ID on the bag can be rubbed of or rinsed off. If so, the bag will have to be relabelled and a paper sample ID labelled tag inserted into the sample bag. This tag should be in one of its own Ziploc bags; and
- Freeze samples.

Caution – Sample analysis will consist of mercury and methylmercury. Avoid allowing fine sediment to contact the samples to be analysed as inclusion of sediment in the samples may bias analytical results.

1.8. Sample Submission to Laboratory

1.8.1. Laboratory Chain of Custody (COC)

Samples collected as part of an environmental monitoring program and submitted for laboratory analysis are required to be recorded on the Chain-of-Custody (COC). Partially pre-filled in COCs should be inside one of the coolers supplied by the lab. A COC represents a legal document recording the paper trail of seizure, control, transfer, analysis and disposition of physical or electronic evidence. The Chain-of- Custody should include all project and client specific information required. The Chain-of-Custody is used to document the transfer of samples from one party to another (in this case SNC-Lavalin personnel to a laboratory).

If the COCs are not pre-filled out, add the following:

Project Information

- Add the project number and the name of the person who conducted the sampling.

Analysis Requested

- In the first vertical box write the following – Mercury, methylmercury;
- In the second vertical box write the following – Moisture; and
- Place an “X” in the box next to the sample ID and under the analysis requested.

Regulation 153 (2011)

- You do not need to check off anything here.

Other Regulations

- You don't need to check off anything here.

Special Instructions

- Add – Refer to request associated with quote;

Sample (Location) Identification

- Add sample identifiers (i.e. WS-WR-21-5, etc.);

Date Sampled

- Indicate the date that each sample was collected.

Time Sampled

- Indicate the time that each sample was collected.

Matrix

- Add – tissue

# of Bottles

- Identify the number of bags associated with each sample.

Comments

- Add any applicable comments

Turnaround Time (TAT) Required

- Check Regular (Standard) TAT

The bottom of the chain of custody is filled out when the samples are sealed in the coolers for shipping.

Relinquished by

- Indicate the shipping persons name. This will be one of our staff.

Date

- Identify the date on which the chain of custody was relinquished.

Time

- Identify the date on which the chain of custody was relinquished.

Received by

- Leave blank.

Date (associated with “received by”)

- Leave blank.

Time (associated with “received by”)

- Leave blank.

jars used and not submitted

- Leave blank.

Laboratory use only section

- Leave blank.

If there are other blank fields, please contact SNC-Lavalin Contact () to obtain guidance on what to enter in the COC field.

1.8.2. Sample Packing

Samples must remain frozen during shipping and until receipt by the laboratory and will have to be packed on ice carefully. For each sample shipment (a shipment can comprise one (1) or more coolers)there will be up to four (4) items in each cooler. These items are:

- Ziploc bagged samples (ensure labels are legible);
- Approximately two (2) garbage bags. One bag with the sample bags (closed tightly) and one bag with the ice (closed tightly with the bag opening vertical in the cooler);
- Ice (in one of the garbage bags); and
- In one of the coolers, all completed COCs stored in a sealed Ziploc bag.

All coolers must be securely closed with packing tape, the valve (if present) must be sealed shut and the join between the closed lid and cooler body must be taped to limit water leakage if ice melts. The shipper will likely reject a cooler en-route if it is leaking water, which is why the lid must be sealed and the ice inside the cooler must be bagged in a manner that minimizes draining. All air gaps should be packed with foam or bubble wrap or other material (not paper) to limit the amount of sample movement in the cooler.

Prior to sealing the coolers with packing tape, affix two shipping labels to each cooler (one on top, the other on the side). This label is pre-filled out and provided with the sampling equipment. If there are five coolers in a shipment, the labels should be marked to indicate “1 of 5”, “2 of 5”, etc. Tape cooler shut, including over the shipping label. The actual shipper will have to affix their own shipping label at the airport.

1.8.3. Sample Shipment

EIAM staff may have already arranged shipping methods which the samples will be part of. Samples are perishable and need to be received by the lab in a relatively short time period. Typically, samples would be shipped air direct to Toronto via Wasaya and probably Air Canada. The shipping information will need to have SNC-Lavalin contact information included so that Air Canada cargo can call SNC-Lavalin to retrieve the samples. Please identify this individual as the contact person with the cell numbers as follows:

SNC-Lavalin Contact

Record flight routing information and relay this information to SNC-Lavalin Contact so we can track the shipment.

1.9. Waste Disposal

Waste may consist of:

- Used Alconox solution;
- Paper/plastic packaging material;
- Latex/nitrile gloves;
- Fish offal.

Alconox solution waste can be disposed of down a household or commercial drain into a sewer or septic system. Packaging material and waste gloves can be disposed of as household type waste as regular garbage. Fish offal can be discarded at the sampling site, unless considered unacceptable to WFN, otherwise this material can be discarded as household waste.

1.10. Main SNC-Lavalin Contacts

If you have questions, please contact:

- SNC-Lavalin Contact

2. Fish Pathology Observation

The primary intent of the work is to establish baseline tissue metals concentrations. Although pathology observations do not directly assist in establishing baseline metals concentrations, the data may be used in the future to assess effects of the project on the fish community. For example, if post construction observations indicate a degraded fish health based on gross pathology is present, baseline pathology observations can be evaluated to qualitatively assess if the post construction observations are anomalous or consistent with pre-construction conditions. The following subsections have been adopted, in part verbatim, from ADFG (2000), Gunderson (2008) and Kane (2005).

2.1. Gross External Pathology

Each fish should be examined upon retrieval for external abnormalities or lesions that could include the following:

- pinheadedness or otherwise poor body condition;
- exophthalmia (abnormal protrusion of the eyeball or eyeballs – this also can occur if the fish is retrieved from significant depth rapidly);
- cloudy cornea or lens opacity (this can also occur if the specimen has died in a net and has been dead for an extended period of time);
- hemorrhaging within the anterior (front) chamber of the eyes, fins, body surface or body orifices (anus, nares, mouth, gill chamber);
- frayed or missing fins;
- gas bubbles within the fin rays or connective tissues of the eyes;
- ulcerations, lesions, abscesses or abrasions (Refer to Figure 2 for lesion occurrence description). Northern pike are frequently observed to be affected by a virus (?) causing lymphosarcoma which resembles a red cauliflower on the outside of the skin. The tumours can be pea-sized up to several inches in diameter, spread to internal organs, and are more prominent in the fall and winter;
- body discolorations (this can also occur if the specimen has died in a net and has been dead for an extended period of time) which are abnormal (dark or light patches, etc.);
- excessive mucus on the skin or gills;
- abnormal gill colour (healthy gills are usually a bright cherry red);
- trailing fecal casts or rectal prolapse;
- external foreign bodies such as fungus, metazoan or protozoal parasites, cysts or tissue growths;
- potbelly or other protrusion or body malformations (spinal deformities, cranial swelling, shortened opercula, pugheadedness, microeye).

Note whether these observations of abnormalities occur on one side (left or right) or are bilateral. For reference, a general external anatomy of a fish is provided on Figure 3.

For each net set, record the following:

- whether the fish is alive, weak, moribund (in the process of dying) or dead when retrieved and how many fish are affected.

Some external abnormalities (whitened or eroded fin tips, cloudy cornea, body discoloration, excessive mucus) are best observed while the fish is submerged in water. In many cases, postmortem change in fish which have died before retrieval and observation may display a number of body changes that are not associated with a condition present prior to death.

2.1.1. Lesions

If there are multiple types of lesions, note the primary lesion first (or note lesion type and state in the sample notes it is the primary lesion) and then make additional observations for other lesions. When describing lesions, a number of terms below should be considered for use:

- size (provide measurement or estimate dimensions);
- number (how many);
- location (where on body);
- presentation. This may consist of the lesion(s) being focal (single affected area, typically the lesion margins are well-circumscribed) , multifocal (more than one affected area) or diffuse (affected area(s) widely distributed (like chicken pox); margins of the lesion(s)
- may not be well circumscribed) – Refer to Figure 2;
- shape (round, oval, thread-like, ribbon or tube-like, etc.);
- texture (smooth, granular, nodular, cheesy);
- colour and opacity (transparent, translucent, opaque);
- firmness (hard, soft);
- 3-D description (depressed, flat, raised);
- severity (minimal, mild, moderate, marked, severe); and
- extent (% body coverage; Note that this is a difficult estimate to make accurately and can easily be over-estimated.

Not all terms need to be used. Only use enough descriptive terms to convey an accurate impression.

Lesions can be classified as follows:

- a) Loss of Scales (LOS): there is no reddening or other changes; lesion does not obviously penetrate beneath the surface of the skin and scales;
- b) Reddening: red or reddish colour (diffuse or focal) associated with the observation; this is not necessarily a penetrating lesion;
- c) Ulcer: there is a penetration of the lesion through the skin and scales. Underlying dermis (deep skin beneath the scales), muscle or viscera may be visible;
- d) Other: describe

To describe lesion location, refer to Figure 3 for a general fish anatomy. To describe lesion severity, a qualitative ranking scale can be used, such as:

- 0 – Normal;
- 1 – Minimal (barely perceptible);
- 2 – Mild;
- 3 – Moderate;
- 4 – Marked; and
- 5 – Severe (not possible to be any worse).

A rank between 0 to 1, for example, might indicate the lesion(s) are barely perceptible. Examples of lesions and rankings are provided on Figure 4.

If possible, take a photograph (note photograph number of the lesion/specimen) and include a ruler of some sort (i.e. common object such as a coin) in the picture to indicate relative size and a tag with the specimen number or ID.

2.1.2. Parasites

Numerous parasites, both internal and externally present, may occur on fish captured as part of the program. Species identification is not important as part of the present work. Observe the body of the fish, including gills and fins, since parasites may attach to those parts as well. Some common parasites are illustrated on Figure 5 and listed in Table I. Note the following:

- Type;
- Frequency of occurrence; and
- Body location.

Table I: Common External Parasites

External Parasite	Type	Symptom	Description	Common Name
Lernaea spp.	copepod	**Red pustule** on or near base of fins; thread-like body may protrude from wound	1/8 to 1 inch; buries anchor-shaped head into fish. Body protrudes; inflamed pustule may form. Parasite may drop off, leaving inflamed area.	Anchorworm
Achtheres and *Salmincola spp.*	copepod		Infects mainly trout and salmon. White; short plump bodies with arm-like appendages that cling to fish. Yellow egg sacs. Attach in the mouth or on gills.	Lice
Aeromonas spp., etc.	bacteria	Fish **popeyed; scales puffed** with fluid (dropsy). Bloody wounds, inflammation around mouth	Infects stressed fish. Severely infected fish probably won't bite on hook but may be found dead or distressed. May have open bloody wounds.	Bacteria
(Neascus spp., Uvulifer spp.)	fluke	Small round **black spots** under skin or in flesh	Easy to recognize; caused by larval flukes burrowing under skin. Become adults in fish-eating birds.	Black Spot
Clinostomum spp.	fluke		Cream-colored cysts contain larval flukes (about ½-inch long); numerous at times. Will emerge if cyst broken. Become adults in fish-eating birds. Also parasite of flesh.	Yellow grub
Camallanus spp.	Nematode	Red thread-like **worms extending from anus**	Found throughout intestine. Occasionally species living in lower large intestine extends from anus.	Roundworm
Flexibacter columnaris	bacteria	Grey-white to yellowish **slime** on skin, gills or fins; also frayed fins	Infects catfish, trout, and possibly other species.	Columnaris Disease
Myxosoma cerebralis (causes deformities in young trout)	protozoan; other	**Crooked spine**	Other causes include genetic and nutritional defects, bacterial infections, chemical exposure, electric shock. Difficult to pinpont cause	Crooked Spine

Dermal sarcoma	virus		Infects walleye; similar to lymphocystis, except cells are normal size.	Dermal sarcoma
Lymphocystis	virus	Cluster of white or cream coloured **warts**. May be pinkish to red and resemble a raspberry	Infects pickerel (occasionally perch and other species). Enters skin abrasions and attacks connective tissue. Cells grow to enormous size and cause lumpy growths	Lymphocystis
Lymphosarcoma	virus	Cauliflower-like reddish **tumor**; small to several inches; may spread to internal organs	Infects muskellunge and northern pike. More prominent in cooler water (fall, winter). Usually fatal in muskellunge.	Lymphosarcoma
Ergasilus spp.	copepod	White, cream, or yellow cysts **or sacs** on gills or in mouth	When numerous, can kill young fish. Presence indicated by V-shaped white egg sacs on inner edges of gills.	Gill lice
Diplostomulum spp.	fluke	**Eye trouble**: bulging (popeye); opaque or shrunken; fish apparently blind	Microscopic larval flukes live in fluid of eye, often causing popeye. Bulging subsides but blindness may result.	Eye fluke
Argulus spp.	copepod	**Bloody area under scales**. Louse-like organism, resembling miniature turtle under scales	Rarely seen; up to ½ inch; often leaves fish after removed from water. Pierces skin, destroying fish's mucous coat. Secondary infection from bacteria or fungus can result.	Fish louse
Glochidia (larval stage of many freshwater mussels)	mussel	Tiny freshwater **mussels** attached to gill filaments or fins. May also appear as **lumps** on gill filaments or fins	Soon after attaching, become encysted; appear as enlargements. Cysts open, mussels fall to substrate, develop into nonparasitic adults.	Mussel larvae
Ichthyophthirius multifilis	protozoan	Tiny **white spots** or clusters on skin or gills	Most common protozoan encountered by anglers; visible with magnifying glass. Burrows under skin and may cause lesions.	Ich
Leeches	leech	**Flattened, segmented worms** attached to body, gills, fins, or mouth; sucker on both ends. Can be greenish to black; undulating	Conspicuous blood-feeder; produce small circular wound that persist though leech may drop off. Up to 1½-inches long.	Leeches
Philometra spp.	roundworm	White to pink thread-like **swelling on head or fins**	Typically infests carp, buffalo, and suckers; lives just under skin.	Roundworm

2.2. Gross Internal Pathology

The abdominal cavity of the fish is entered by pulling the pectoral fin with sterile forceps or clean gloved hand while cutting into the abdominal wall at the base of the pectoral fin with a pair of small sterile scissors or clean fillet knife. The cut is continued dorsally to just below the lateral line where resistance is encountered. Start again at the base of the pectoral fin and continue the incision towards the posterior of the fish along the ventral abdominal wall to the vent. Stay slightly above the intestinal tract

when making the incision so that it is not punctured, thereby contaminating the tissues. At the vent, continue dorsally to just below the lateral line and continue cutting anteriorly to connect with the first incision. Remove the flap of abdominal tissue, thus exposing the internal viscera and cavity. When done correctly on a moribund (nearly dead) specimen the air bladder should remain inflated and the gastrointestinal tract completely intact. Instruments may need wiping of organic material repeatedly during this procedure.

Visually examine viscera (heart, liver and gall bladder, kidney, pancreas, adipose tissue, spleen, air bladder, pyloric caeca and entire gastrointestinal tract – Refer to Figure 6 for fish internal structure) for abnormalities such as: discoloration or mottled appearance; enlargement (hypertrophy); haemorrhage or erythema (redness); abscesses (collection of pus) or cysts; fluid in the abdominal cavity (ascites causing potbelly); foreign bodies such as fungus, metazoan parasites or tissue growths, etc. Some common parasites listed in Table I. Note the following:

- Type of condition;
- Frequency of occurrence; and
- Body location.

2.2.1. Parasites

Table II: Common Internal Parasites

Internal Parasite	Type	Symptom	Description	Common Name
Bass Tapeworm (*Proteocephalas spp.*)	tapeworm	Whitish **segmented flat worms** in intestines of fish	Infects large and smallmouth bass but also in trout, perch, northern pike, and carp; larvae may invade fish reproductive organs.	Tapeworm
Neascus spp., Uvulifer spp.	fluke	**Black spots** under the skin or in flesh	Easy to recognize; caused by larval flukes burrowing under skin. Become adults in fish-eating birds.	Black Spot
Diphyllobothrium spp.	tapeworm	White, glistening, **worm** about ½ to 1½- inches long found in muscle. May be coiled and encysted	Infects northern pike, pickerel, and yellow perch, and other species. Adults develop in intestines of humans and other mammals. Symptoms include nausea, vomiting, weakness, dizziness, diarrhea.	Broadfish tapeworm
Contracaecum spp. and *Eustrongylides spp.*	roundworm	**Coiled worm** (like a watch spring) encysted on internal organs	Found on internal organs or wall of body cavity; immobile. Become adults in fish-eating birds.	Roundworm
Heterosporisis	microsporidian	**Areas of flesh appear white**, opaque, and freezer burned or cooked	Infects yellow perch, but also found in northern pike,pPickerel, burbot	Heterosporisis

			(Ling), sunfish, and rock bass. Not widespread. Forms spores in muscle cells.	
Intestinal Worms	flukes, tapeworms, roundworms, spiny-headed worms	White, undulating worms emerging from ruptured intestines	Normally not seen unless intestine is accidentally cut.	Worms (etc.)
Larval Roundworm	roundworm	Tiny **gold-brown** cysts on the internal organs	Often numerous; cysts give sandy appearance to entrails. Kidney roundworm, found in bullheads and northern pike, may infect humans.	Roundworm
Myofibrogranuloma	virus	**Areas of flesh appear yellowish brown** with granular deposits and be semi-translucent or opaque	Infects pickerel in some areas; genetic and environmental stressors may play a role.	Myofibrogranuloma
Ligula spp.	tapeworm	Large, white, **unsegmented flat worm** tapered at ends; found free in body cavity	Infects minnows, carp, suckers, and other species. Thick fleshy body uncommonly large and may create abdominal bulge.	Ribbon tapeworm
(*Acanthocephala spp.*)	spiny-headed worm	**White or orange worm** in the body cavity, attached to the inside of the intestine.	Adults typically live inside intestine and are not seen.	Spiny-headed worm
Posthodiplostomum spp.	fluke		Smaller and whiter than yellow grub. Numerous at times; can cause small round transparent cysts on internal organs, typically the liver.	White grub
Clinostomum spp.	fluke	White, cream, or yellow cysts embedded in muscle, especially at base of tail or fins. Heavy infections may be found in body cavity, head, throat, and gills. Flukes very active when squeezed from cysts	Cream-colored cysts contain larval flukes (about ½-inch long); numerous at times. Will emerge if cyst broken. Become adults in fish-eating birds. Also parasite of flesh.	Yellow Grub

3. Sample Logs

A copy of a sample log Sheet is provided in Appendix A.

4. References

Alaska Department of Fish and Game (ADFG), 2000. Fish Pathology Section Laboratory Manual. Edited by Theodore R. Meyers, Ph.D., Special Publication No. 12, 2nd Edition. January 2000.

Gunderson J., 2008. Parasites of Freshwater Fish.

Kane A.S., 2005. Descriptive Guide to Observing Fish Lesions. September 2005

FIGURES

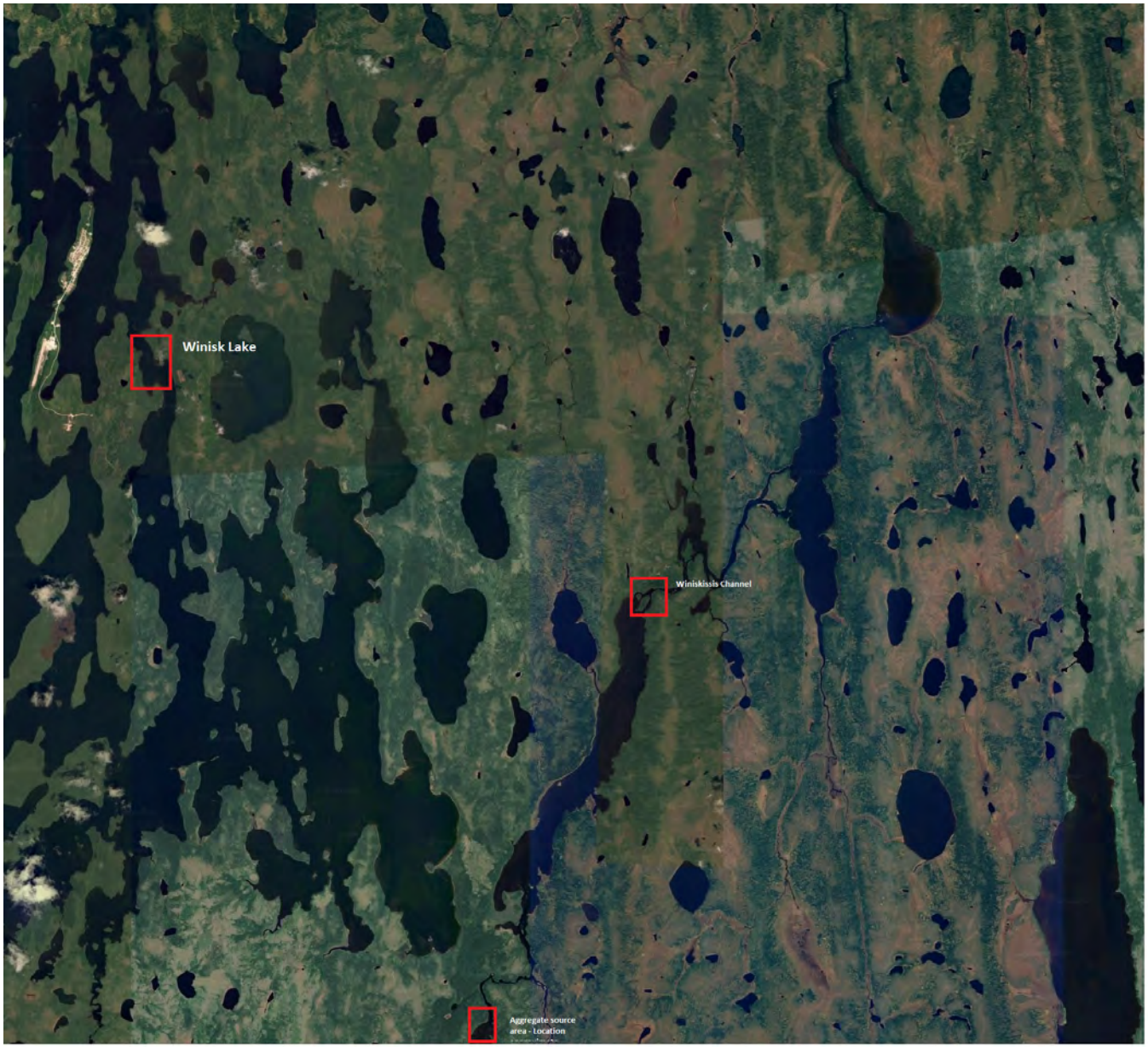

Winisk Lake
Winiskisis Channel
Aggregate source
area - Location

Figure 2 – Lesion Occurrence Description

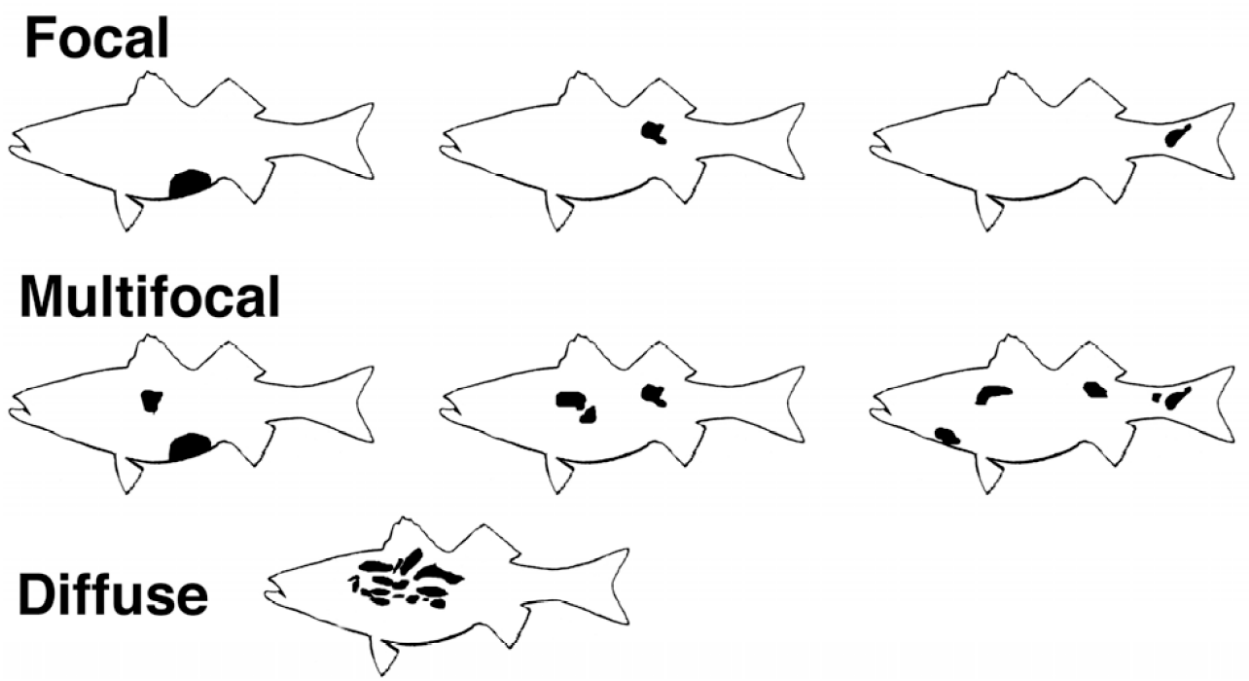
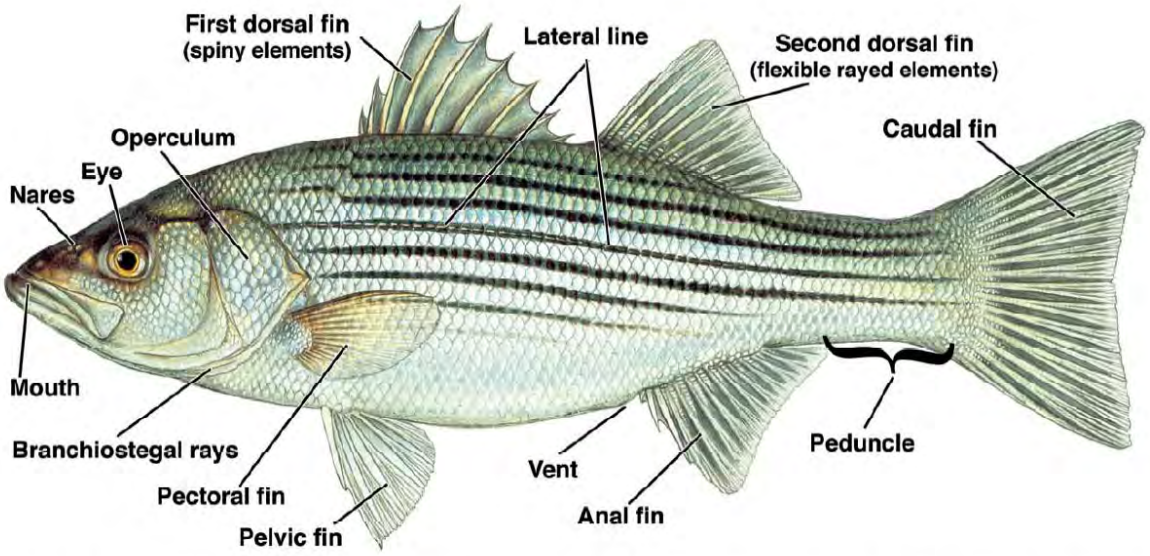


Figure 3 – General External Anatomy of a Fish

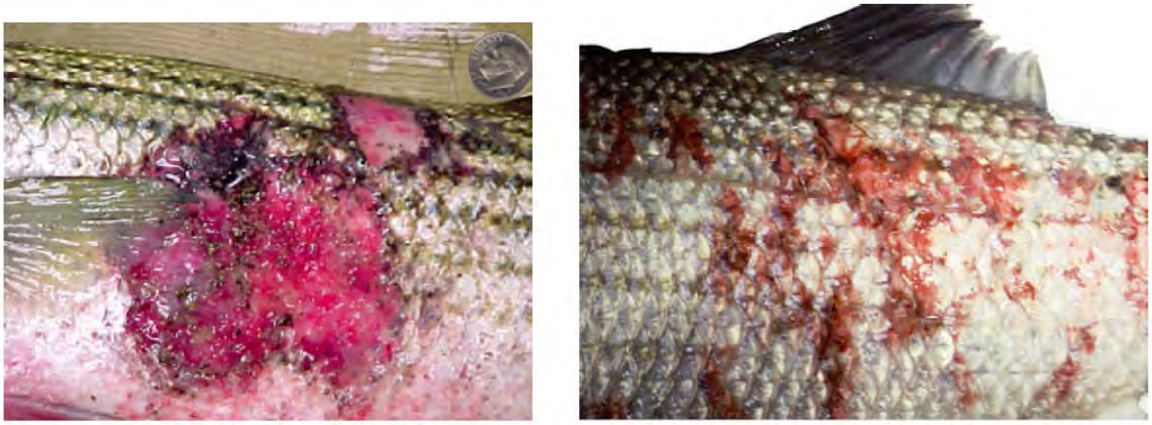


External anatomy of the striped bass (*Morone saxatilis*). Fish illustration by Joseph Tomelleri *(with permission)*, general annotation by A. Kane.

Figure 4 – Lesion Description



This goldfish (*Carassius auratus*) has a focal, well-circumscribed, deep oval ulcer (severity ranking of 5, "severe"), 25 x 18 mm, located on the left mid-flank, above the pelvic fin. The ulcer penetrates through the muscle and reveals rib bones and some of the viscera. The margins of this ulcer do not appear reddened, but the posterior margin has a cream-colored section extending approximately 3-4 mm. The distal edges of the anal and caudal fins are frayed (serverity ranking of 3, "moderate").

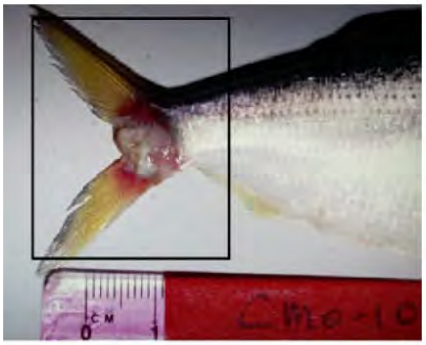


The image of the striped bass (*Morone saxatilis*) on the left has a large (7 x 6 cm), focal, diffuse irregularly-shaped, red lesion (ulcer) that penetrates the skin and scales and reveals underlying dermis (severity ranking 4, "marked"). The lesion is located on the left side of the specimen, extending posteriorly from the distal edge of the pectoral fin; a portion of the lesion extend to the dorsal surface of the fish, anterior to the first dorsal fin. Portions of the lesion, as well as the lesion margins, have superficial black coloration (possibly pigmentation). The lesion margins are irregular. The surface of the lesion has a sandpaper-like appearance. Ventral to the lesion, there is a large, diffuse area of reddening, with no loss of scales, that extends from the branchiostegal membrane to the vent. The fish was in otherwise good body condition. In contrast, the image of the striped bass on the right shows a multifocal, extensively distributed lesion.

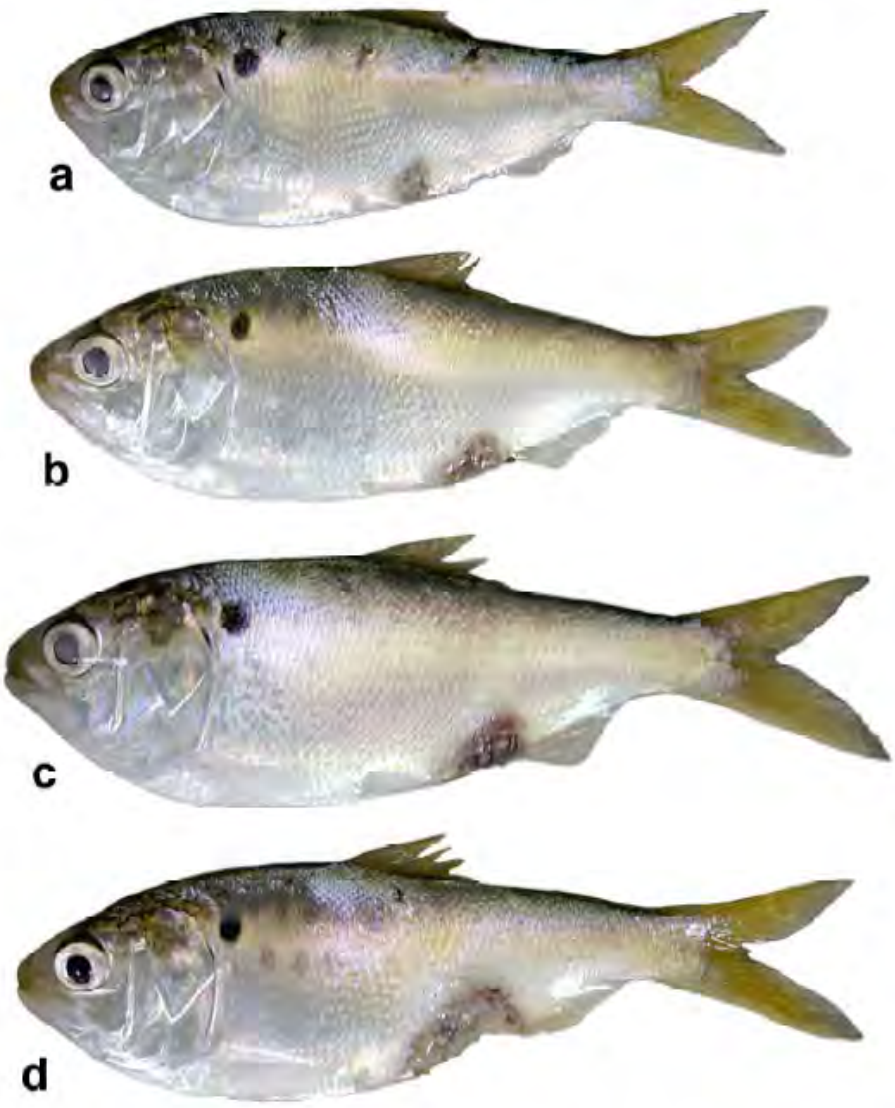


This young-of-the-year Atlantic menhaden (*Brevoortia tyrannus*) measured 58 mm total length and presented with spinal deformity. The deformity consisted of curvature in the dorsal-ventral plane, and extended from the middle of the dorsal fin to the caudal fin. Severity ranking 3, "moderate." The animal was alive and otherwise non-remarkable when observed.



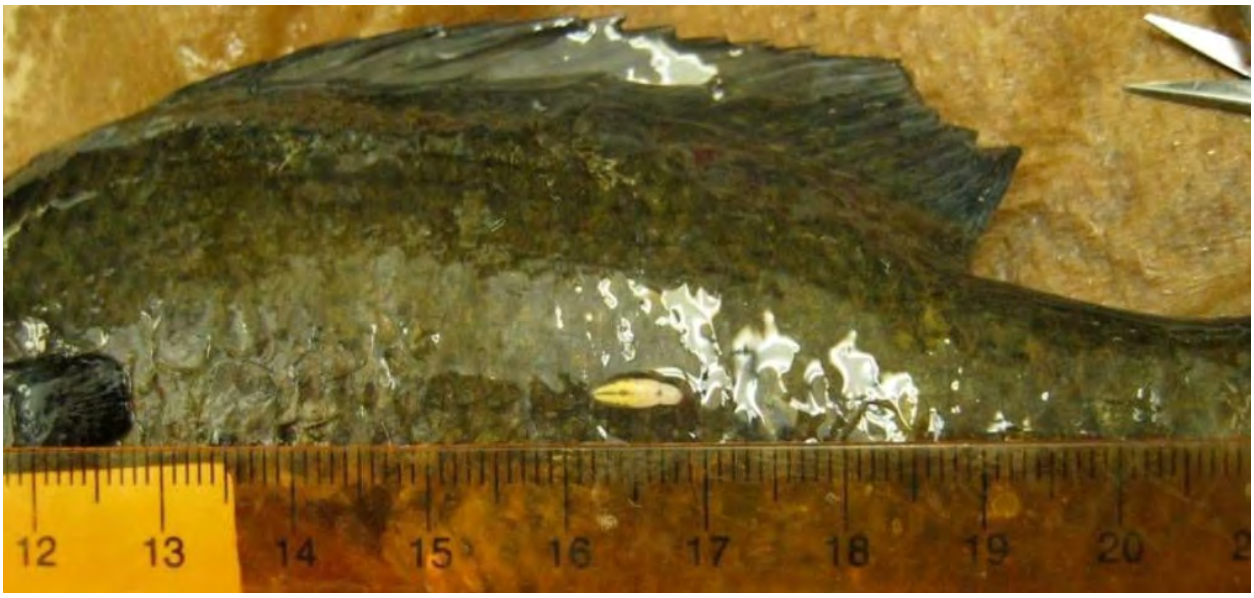


This specimen is an Atlantic menhaden (*Brevoortia tyrannus*) that presented with a raised, irregularly-shaped, off-white, cauliflower-like growth (5 x 8 mm) on the right side, extending from the peduncle into the fork of the caudal fin. The mass has well-defined edges and had reddened margins. The smaller photograph on the right shows the same image and indicates the appropriate size tissue sample that would be taken for preservation and subsequent histologic analysis. This sample contains both the abnormal tissue as well as adjacent normal tissue.



This composite image of four young-of-the-year Atlantic menhaden (*Brevoortia tyrannus*) depicts ulcerative lesions with varying ranks of severity. The ulcer seen on fish "a" has a severity ranking of 2, "mild." Fish "b," "c" and "d" have severity rankings of 3 (moderate), 4 (marked) and 5 (severe), respectively. Of course these rankings are relative and subject to the experience of the observer. Nevertheless, if personnel follow the basic tenets of severity rankings as illustrated in this guide, there should be a fair degree of consistency between observers, plus or minus one severity ranking. Note that the ulcer on fish "a" is located halfway between the pectoral fin and the anal fin, whereas ulcers on the other three specimens are perianal. These perianal lesions have burgundy margins with central red to grayish areas. Also, careful observation of the image of fish "a" shows a small (3 x 3 mm), diffuse area of reddening on the left side, just below the distal insertion of the dorsal fin.

Figure 5 – Common Parasites



Yellow grub (found immediately under skin and appears as a yellow lump) which is a fluke (Trematode)



Black spot (a Trematode) on Lake trout



Gill lice (a type of crustacean). Lice may also be found on the body and attached to fins.



Dermal sarcoma on Pickerel.



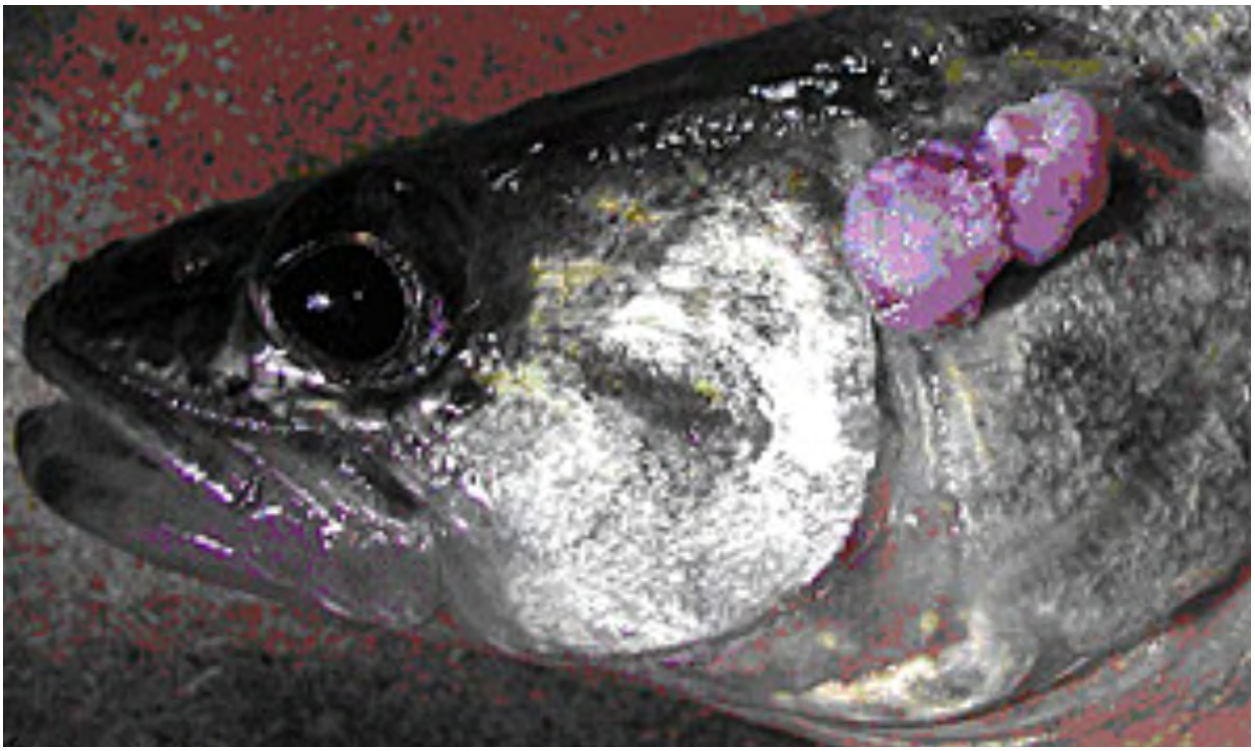
Anchorworm



Roundworm

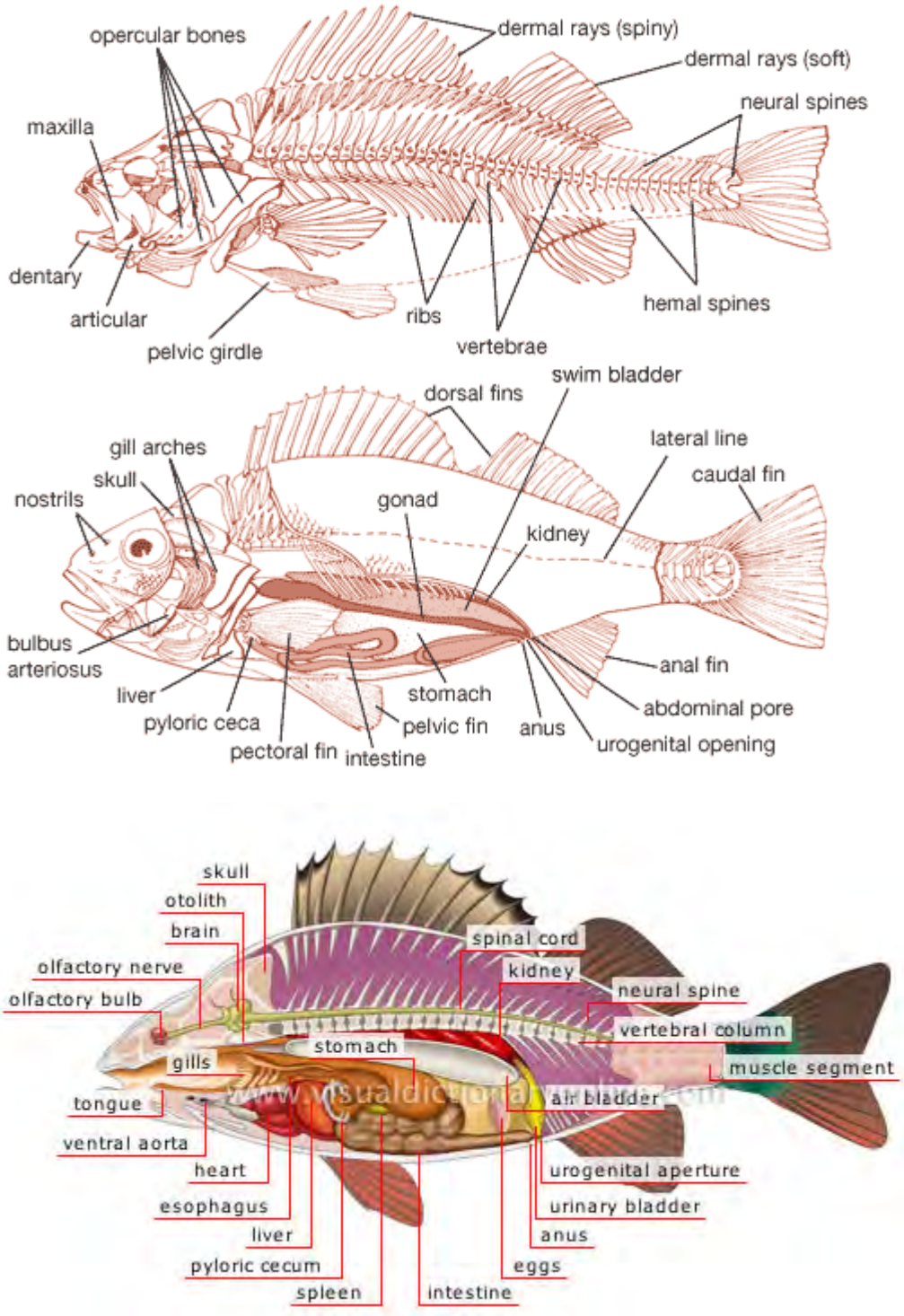


Lymphosarcoma on Northern pike



Lymphocystis

Figure 6 – General Internal Anatomy of Fish



APPENDIX A

Sample Log Sheets

Aqua Terre Solutions Fish Collection Log Sheet

Project No.

Licence No.

Account No.

Date:

Waterbody:

Location:

Weather:

Collectors:

Zone:

Easting:

Northing:

Datum:

Gear used:

Mesh size:

Height:

Length:

Depth range:

Date of set:

Time of set:

Duration of set:

Aqua Terre Solutions Fish Collection Log Sheet

Species collected:	Sample Name	Condition on retrieval	Released	Total Length (cm)	Fork Length (cm)	Total Weight (g)	Fillet Weight (g)	Offal Weight (g)	Sex	Egg Sac Condition	Stomach Content (Minnows, crayfish etc.)	External pathology:	Internal pathology:	Other notes and observations:
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
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		Live / Dead	Y / N						M / F					
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		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					
		Live / Dead	Y / N						M / F					

Attachment B-3 Sampling & Handling Protocols for Mammals and Birds

SNC·LAVALIN

Webequie Supply Road

Game Tissue Sampling Instructions and Guidance

October 6, 2020, Revised July 20, 2021

Notice to Reader

This report has been prepared and the work referred to in this report has been undertaken by the Environment & Geoscience business unit of SNC-Lavalin Inc. (SNC-Lavalin) for the exclusive use of Webequie First Nation (the Client), who has been party to the development of the scope of work and understands its limitations. The methodology, findings, conclusions, and recommendations in this report are based solely upon the scope of work and subject to the time and budgetary considerations described in the proposal and/or contract pursuant to which this report was issued. Any use, reliance on, or decision made by a third party based on this report is the sole responsibility of such third party. SNC-Lavalin accepts no liability or responsibility for any damages that may be suffered or incurred by any third party as a result of the use of, reliance on, or any decision made based on this report.

The findings, conclusions, and recommendations in this report (i) have been developed in a manner consistent with the level of skill normally exercised by professionals currently practicing under similar conditions in the area, and (ii) reflect SNC-Lavalin's best judgment based on information available at the time of preparation of this report. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report. The findings and conclusions contained in this report are valid only as of the date of this report and may be based, in part, upon information provided by others. If any of the information is inaccurate, new information is discovered, site conditions change, or applicable standards are amended, modifications to this report may be necessary. The results of this assessment should in no way be construed as a warranty that the subject site is free from any and all contamination.

Any soil and rock descriptions in this report and associated logs have been made with the intent of providing general information on the subsurface conditions of the site. This information should not be used as geotechnical data for any purpose unless specifically addressed in the text of this report. Groundwater conditions described in this report refer only to those observed at the location and time of observation noted in the report.

This report must be read as a whole, as sections taken out of context may be misleading. If discrepancies occur between the preliminary (draft) and final versions of this report, it is the final version that takes precedence. Nothing in this report is intended to constitute or provide a legal opinion.

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1. Game Tissue Sampling Procedure

1.1. Objectives

Game tissue sample collection and analysis will be undertaken to establish baseline risk associated game (mammal and bird) consumption by humans. Goals consist of:

- The analyses of selected tissue samples representative of game/muscle meat-organs preferentially consumed by community members and game with a high site fidelity. Analytical data will be used to determine baseline tissue concentrations of metals and associated potential risk; and
- The data will be retained to establish a historical database of metal concentrations in game, which will be used as reference to evaluate the impact of the Project.

Game tissue was originally collected in 2020, although only a limited amount of Moose and Caribou was obtained. The objective of this program is to collect edible small game mammal (i.e. Snowshoe hare) and aquatic and terrestrial bird game (Ruffed grouse, duck, Canada goose, etc.). There is no need to collect Caribou or Moose samples.

1.2. Sample Collection Method

Sample collection will be completed as follows:

- Identify game species of interest to the community (already determined);
- Identify individuals with access to tissue (i.e. in their freezer); and
- Obtain tissue samples from designated individuals and record pertinent sample collection data.

It is anticipated that due to COVID-19 related limitations, a community member will be performing sample collection.

1.3. General Considerations

SNC-Lavalin will supply disinfected sampling materials; therefore, SNC-Lavalin staff must have suitable disinfecting wipes and spray on-hand when dropping of the sampling materials.

Samples will be muscle meat and organs. Samples must not consist of ground meat or sausage since it is uncertain if more than one animal comprises the ground meat and what part of the animal the meat came from.

1.4. Sampling Locations

Samples collected should, as much as possible, come from animals in the immediate area of the supply road development. For animals with a relatively small home range (i.e. Snowshoe hare), the ideal sample would come from within the development area. For animals with a very large home range (i.e. Canada goose), the samples should be obtained in the area of the development in order that exposure to the development area was potentially possible.

1.5. Target Species

Target species consist of:

- Species of terrestrial birds consumed by the WFN (i.e. Ruffed grouse (partridge), Spruce grouse, Ptarmigan, etc.)
- Species of geese consumed by the WFN;
- Species of duck consumed by the WFN; and
- Small mammals consumed by the WFN (any species although preferably the most common)

1.6. Sampling Approach

The general approach is as follows:

1. SNC-Lavalin will drop-off sampling equipment and instructions at the Webequi First Nation (WFN) airport;
2. A designated community member who will be completing sample collection will pick up the sampling equipment and instructions;
3. The designated community member will then review the instructions and a call will then take place between SNC-Lavalin and the community member to review the sampling procedure and answer questions;
4. The designated community member will then conduct the sample collection and related data recording at pre-identified addresses in the community;
5. The designated community member will then contact SNC-Lavalin and arrange for a sample drop-off time at the WFN airport; and
6. SNC-Lavalin will then pickup the sample cooler with samples at the WFN and transfer them to the analytical laboratory.

Each of these steps is discussed in more detail below.

1.6.1. Step 1 - Equipment Drop-Off

Equipment and instructions will be provided to the WFN by SNC-Lavalin. Sampling equipment provided by SNC-Lavalin will consist of the following:

- Sample collection record form;
- A cooler for storage and shipping of samples;
- Alconox (a detergent to clean equipment between samples) – an SDS is provided in Appendix D;
- Disposable latex, PVC or nitrile gloves – for sample handling;
- Medium/Large Ziploc or Whirl Pack bags (approximately 1 per sample);
- Pen for notes – to be used on the sample record form (form provided in Appendix A);
- Waterproof indelible marker for labelling sample bags;
- Packing tape to seal cooler;
- Bubble wrap to pack in the cooler;
- 2 garbage bags (to contain samples and ice in cooler);
- Sample chains of custody (to be filled out by SNC-Lavalin); and
- Sample location map (for marking locations where game samples were harvested from).

As a COVID-19 precaution, SNC-Lavalin will disinfect the sampling materials immediately after dropping the materials at the airport.

Material to be provided by WFN consist of the following:

- Knife – to cut sample to required size if necessary; and
- Ice for sample storage – too be purchased in the community.

1.6.2. Step 2 – Pickup Equipment

SNC-Lavalin will call the designated community member at least one (1) day in advance of dropping off the sampling materials listed in Step 1 in order to notify the individual of the date and approximate time the materials will be dropped off. At the same time, a teleconference meeting time will be identified to discuss the sampling plan (see Step 3). The designated community member will retrieve the sampling materials and store them in a location suitable to the WFN.

1.6.3. Step 3 – Pre-Sampling Coordination Discussion

The designated community member should review the sampling procedure documents and sample record form prior to the sampling coordination discussion. The discussion will cover the following topics:

- Contact individual(s);
- Sampling procedure;
- Recording of data;
- Sample storage;
- Sample return; and
- Any questions that come up as part of the discussion.

The discussion will take place within two (2) business days following the drop-off of sampling materials and will take place at a time convenient for the designated community member.

SNC-Lavalin HIA staff who will take part in the call will consist of:

- SNC-Lavalin Contact

1.6.4. Step 4 – Sampling and Data Recording

The residences who will be supplying samples have been previously identified. The residences and samples are listed below:

- XXAdressXX – XXXNameXX – XXXSample TypeXXX
- XXAdressXX – XXXNameXX – XXXSample TypeXXX
- XXAdressXX – XXXNameXX – XXXSample TypeXXX
- XXAdressXX – XXXNameXX – XXXSample TypeXXX
- XXAdressXX – XXXNameXX – XXXSample TypeXXX
- XXAdressXX – XXXNameXX – XXXSample TypeXXX

The required sample size for each sample is 200 grams. This is equivalent to a sample the size of ½ to ¾ the size of a soda can, or just slightly less than the size of a ½ pound hamburger pattie. The designated community member who picks up the sample may have to use a knife to reduce the size of the resident's sample down for our purposes, in order to not take too much of the resident's food items. Once the resident has supplied a sample to the designated community member, the designated community member should do the following:

- Place the sample in a Ziploc or Whirlpak bag;

- Label the bag with a sample identifier using a permanent felt tipped marker. The sample identifier is unique/different for each sample in order that the analytical results can be associated with a specific sample. It is suggested to use an identifier structured as follows:
    - Species of the sample (MS=Moose, HR=Snowshoe hare, CB=Caribou, RG= Ruffed Grouse, SG= Spruce grouse, MD=Mallard duck, BD=Black duck, CG= Canada Goose, SnG=Snow Goose, etc.);
    - Sample Year (21=2021);
    - Sample Number (sequential from 1 to X for each sample);
    - Sample Type (MM=muscle meat, KD=Kidney, LV=Liver, HT=Heart);
    - For example – if the first sample is moose kidney and the second sample collected is Canada goose muscle meat, the sample identifier for the first sample would be MS-20-1-KD and the second sample would be CG-21-2-MM;
- Place the sample in a cooler on ice. If sampling is being conducted on multiple days or over a long time period in one day, store the samples in a freezer to avoid sample thawing. Samples must be kept frozen;
- Record sample data on the sample form. The data form is supplied in Appendix A. Fill in the following information:
    - Sample Identifier – The sample identifier is based on the system discussed above for creating a sample identifier. The identifier you list on the data form must match the one used on the sample bag;
    - Animal Species – Note the species type (Moose, Caribou, Canada goose, etc.);
    - Sample Type – Indicate what part of the animal the sample came from if the sample is muscle meat. You can refer to the general cut names shown on Figure 1 and 2 in Appendix A;
    - Date Harvested – Try and record at least the month and year that the animal was harvested;
    - Location – Indicate the location where the sample was harvested. You can indicate a lake, distance and direction from some feature like the community or a lake, etc.; and
    - Sample Description – SNC-Lavalin will fill in this section. Describe fat content (X% of sample), and sample condition (if any freezer burn is present, if there are any anomalies (i.e. cysts in liver, lesions, etc.)).
- Mark the sample location on the map (Appendix B). Make sure to use the sample identifier you have used for the actual sample;
- If a knife was used to cut the sample, wash the knife with an Alconox solution and rinse the knife with clean water;
    - Preparing an Alconox solution – mix 2 tablespoons of Alconox powder into 1 Litre of water and mix until all the powder is dissolved. This solution should be made in advance of sampling.
- Proceed to the next sample pickup location (residence) and repeat the preceding steps.

Keep samples frozen until SNC-Lavalin picks up the samples.

1.6.5. Step 5 – Sample Drop-Off Arrangements

Once all planned sampling is complete, call the SNC-Lavalin contact to arrange for pickup of the cooler.

The SNC-Lavalin contact is – XXXXXNameXXX – XXphonenumberXXX

Keep samples frozen until SNC-Lavalin picks up the samples. Package the samples in preparation of drop-off to SNC-Lavalin as follows:

- Place the frozen samples in a garbage bag, remove as much air as possible and knot the bag closed;
- Place ice in a separate garbage bag, remove as much air as possible from the bag and knot closed;
- Place the bag of ice in the cooler with the knot facing up so that if the ice melts, the water stay in the garbage bag. Place the garbage bag with the samples on top of the bag of ice, also with the knot facing up;
- Try and fill the volume of the cooler with ice and frozen samples. If spare space remains in the cooler, add bubble wrap as an insulator/packing;
- Place the completed (filled in with all relevant information) data form and sample location map into a Ziploc bag, seal the bag closed and place it in the cooler on top of the packing material/samples;
- Tape the cooler closed; then
- Take the cooler to the drop-off location.

This sampling packing should be completed immediately before drop-off so the ice does not melt.

1.6.6. Step 6 – SNC-Lavalin Sample Pickup and Shipping

Once the samples are received by SNC-Lavalin, SNC-Lavalin will inspect the samples, ensure they are packed properly for laboratory shipping (freeze if there is a delay between pickup and sample shipping) and record sample descriptions on the game tissue log sheet that was filled out by the designated community member.

1.7. Sample Submission to Laboratory (by SNC-Lavalin)

1.7.1. Sample Analytes

Analysis will consist of the following:

- Metals;
    - Antimony (Sb)
    - Arsenic (As)
    - Barium (Ba)
    - Beryllium (Be)
    - Bismuth (Bi)
    - Boron (B)
    - Cadmium (Cd)
    - Calcium (Ca)
    - Chromium (Cr)
    - Cobalt (Co)
    - Copper (Cu)
    - Iron (Fe)
    - Lead (Pb)
    - Magnesium (Mg)
    - Manganese (Mn)
    - Molybdenum (Mo)
    - Nickel (Ni)
    - Phosphorus (P)
    - Potassium (K)

- Selenium (Se)
- Silver (Ag)
- Sodium (Na)
- Strontium (Sr)
- Thallium (Tl)
- Tin (Sn)
- Titanium (Ti)
- Uranium (U)
- Vanadium (V)
- Zinc (Zn)

› Mercury;
› Methylmercury (select samples);
› $Chromium^{VI}$; and
› Moisture.

Each parameter/parameter group (i.e. “metals”) needs to be identified on the Chain-of-Custody (COC), as outlined below in this guidance. The laboratory knows that “metals” comprise a specific list of metal/metalloid parameters based on the quote number referenced on the COC

1.7.2. Sample Hold Time

Analytical methods identify hold times specific to various analytes. The hold time represents the timeperiod from sampling to date of extraction by the laboratory that cannot be exceeded without adding a qualifier to the analytical results. This qualifier usually implies that the sample results may be biased, which calls into question any decisions made based on the sample chemical quality. Sample hold times are as follows:

› Metals – 180 days;
› Mercury – 28 days;
› $Chromium^{VI}$ – 180 days; and
› Moisture – not applicable.

If samples are frozen, hold times are greatly extended. Plan sample shipping keeping in mind sample hold time. For example, if hold time for an analyte is 7 days, do not hold onto the samples and ship on Friday as day 5 since even with a 1 day travel time, the samples will not be received by the lab until the following Monday (day 8).

1.7.3. Laboratory Chain of Custody (COC)

Samples collected as part of an environmental monitoring program and submitted for laboratory analysis are required to be recorded on the Chain-of-Custody (COC). A partially pre-filled in COCs is included in Appendix C. A COC represents a legal document recording the paper trail of seizure, control, transfer, analysis and disposition of physical or electronic evidence. The Chain-of- Custody should include all project and client specific information required. The Chain-of-Custody is used to document the transfer of samples from one party to another (in this case SNC-Lavalin personnel to a laboratory).

If the COCs are not pre-filled out, add the following:

Project Information

- Add the project number and the name of the person who conducted the sampling.

Analysis Requested

- In the first vertical box write the following - Metals, incl. CrVI and Hg;
- In the second vertical box write the following – Methylmercury; and
- In the third vertical box write the following – Moisture; and
- Place an “X” in the box next to the sample ID and under the analysis requested.

Regulation 153 (2011)

- You do not need to check off anything here.

Other Regulations

- You don’t need to check off anything here.

Special Instructions

- Add – Refer to purchase request associated with quote;

Sample (Location) Identification

- Add sample identifiers;

Date Sampled

- Indicate the date that each sample was collected.

Time Sampled

- Indicate the time that each sample was collected.

Matrix

- Add – tissue

# of Bottles

- Identify the number of bags associated with each sample (should be 1 per sample).

Comments

- Add any applicable comments

Turnaround Time (TAT) Required

- Check Regular (Standard) TAT

The bottom of the chain of custody is filled out when the samples are sealed in the coolers for shipping.

Relinquished by

› Indicate the shipping persons name. This will be one of our staff.

Date

› Identify the date on which the chain of custody was relinquished.

Time

› Identify the date on which the chain of custody was relinquished.

Received by

› Leave blank.

Date (associated with “received by”)

› Leave blank.

Time (associated with “received by”)

› Leave blank.

jars used and not submitted

› Leave blank.

Laboratory use only section

› Leave blank.

If there are other blank fields, please contact SNC-Lavalin Contact () email X.X@snclavalin.com to obtain guidance on what to enter in the COC field.

1.7.4. Sample Packing

Samples must remain frozen during shipping and until receipt by the laboratory and will have to be packed on ice carefully. For each sample shipment (a shipment can comprise one (1) or more coolers) there will be up to four (4) items in each cooler. These items are:

› Ziploc bagged samples (ensure labels are legible);
› Approximately two (2) garbage bags. One bag with the sample bags (closed tightly) and one bag with the ice (closed tightly with the bag opening vertical in the cooler);
› Ice (in one of the garbage bags); and
› In one of the coolers, all completed COCs stored in a sealed Ziploc bag.

All coolers must be securely closed with packing tape, the valve (if present) must be sealed shut and the join between the closed lid and cooler body must be taped to limit water leakage if ice melts. The shipper will likely reject a cooler en-route if it is leaking water, which is why the lid must be sealed and the ice inside the cooler must be bagged in a manner that minimizes draining. All air gaps should be

packed with foam or bubble wrap or other material (not paper) to limit the amount of sample movement in the cooler.

Prior to sealing the coolers with packing tape, affix two shipping labels to each cooler (one on top, the other on the side). This label is pre-filled out and provided with the sampling equipment. If there are five coolers in a shipment, the labels should be marked to indicate “1 of 5”, “2 of 5”, etc. Tape cooler shut, including over the shipping label. The actual shipper will have to affix their own shipping label at the airport.

1.7.5. Sample Shipment

EIAM staff may have already arranged shipping methods which the samples will be part of. Samples are perishable and need to be received by the lab in a relatively short time period. Typically, samples would be shipped air direct to Toronto via Wasaya and probably Air Canada. The shipping information will need to have SNC-Lavalin contact information included so that Air Canada cargo can call SNC-Lavalin to retrieve the samples. Please identify the contact person with cell numbers as follows:

SNC-Lavalin Contact

Record flight routing information and relay this information to SNC-Lavalin Contact so we can track the shipment.

1.7.6. Labelling

If the samples are not dropped off at a laboratory depot by SNC-Lavalin and instead are shipped, additional labelling is required. Clearly label all freight with complete information such as destination name and phone of both the shipper and consignee. Use labels such as "Frozen", "Perishable" and orientation labels as required. An example label is provided in Figure 1 which can be printed and taped to the cooler(s).

Please ensure that any old labels are removed, or old marker labels on coolers are obscured.

1.8. Waste Disposal

Waste may consist of:

- Used Alconox solution;
- Paper/plastic packaging material;
- Latex/nitrile gloves; and
- Fish offal.

Alconox solution waste can be disposed of down a household or commercial drain into a sewer or septic system. Packaging material and waste gloves can be disposed of as household type waste as regular garbage. Fish offal can be discarded at the sampling site, unless considered unacceptable to WFN, otherwise this material can be discarded as household waste.

1.9. Main SNC-Lavalin Contacts

If you have questions, please contact:

- SNC-Lavalin Contact

2. Game Pathology Observation

The primary intent of the work is to establish baseline tissue metals concentrations. Although pathology observations do not directly assist in establishing baseline metals concentrations, the data may be used in the future. For example, if post construction observations indicate a degraded game health based on gross pathology, baseline pathology observations can be evaluated to qualitatively assess if the post construction observations are generally anomalous or consistent with pre-construction conditions. Some general pathological conditions are illustrated in Appendix E (adopted from Beckham, undated). For additional detailed information regarding parasites and diseases affecting a series of game animals, refer to Alaska Department of Fish and Game species specific listings of parasites and diseases at http://www.adfg.alaska.gov/index.cfm?adfg=disease.specieslist

3. Sample Logs

A copy of a sample log sheet is provided in Appendix A.

FIGURES

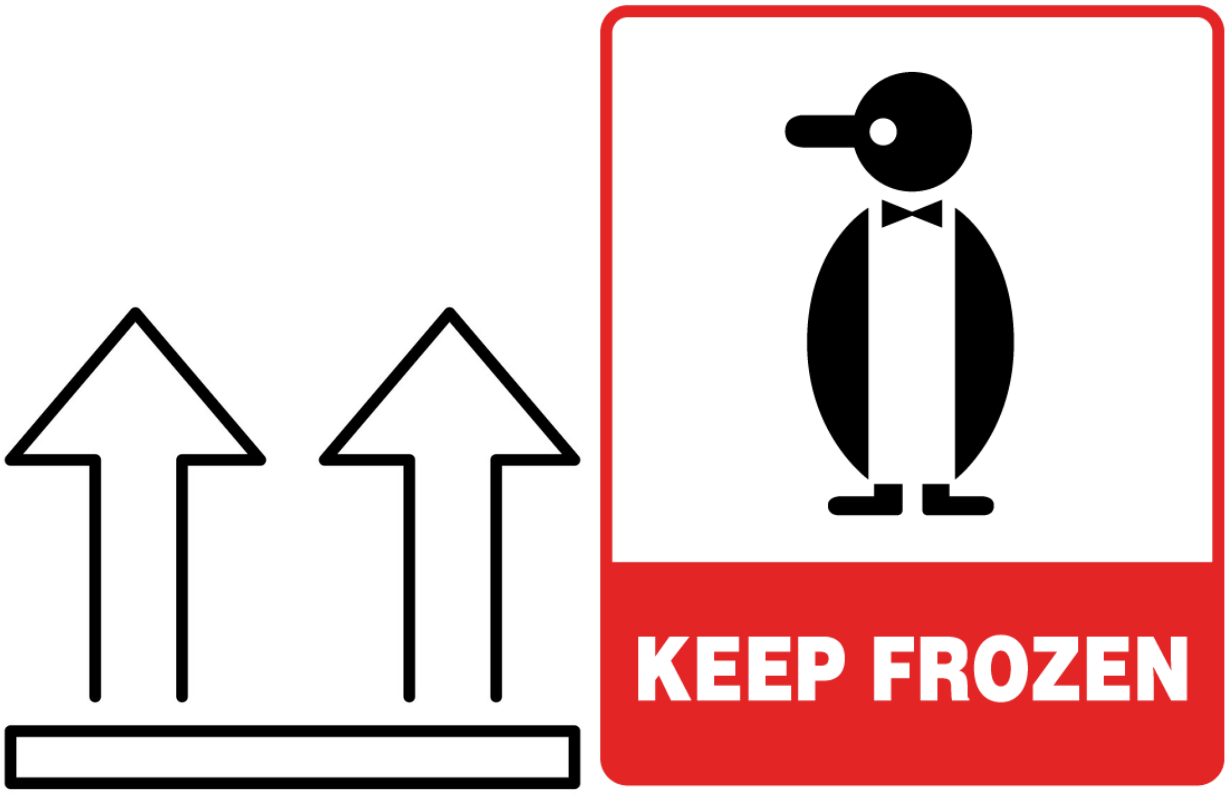


Figure 1 – Caution Labels

APPENDIX A

Game Tissue Log Sheet



GAME TISSUE LOG SHEET

Date:

Sampler Name:

Sample Identifier	Animal Species	Sample Type [1]	Date Harvested (dd/mm/yyyy)	Location [2]	Sex (M/F/Do Not Know)	Sample Description

1 - If the sample is muscle meat, try and identfy what type of part the sample came from (refer to guide in Appendix A.

2 - Indicate the location as best as possible (lake, xxx km northwest of the community, etc.) and mark the location on the map attached in Appendix B.

APPENDIX B

Map

Appendix C

Chain of Custody

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: SNC-Lavalin Inc	Company Name: SNC-Lavalin Inc	Quotation #: C03309	[X] Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable Processing Centre	Contact Name: [redacted]	P.O. #/ AFE#: PR12181	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 455 Rene Levesque Blvd West	Address: 235 Lesmill Road	Project #: 661910	Rush TAT (Surcharges will be applied)
Montreal, Quebec. H2Z 1Z3	Toronto, Ontario.	Site Location: Webequi	[ ] 1 Day [ ] 2 Days [ ] 3-4 Days
Phone: [redacted] Fax:	Phone: [redacted] Fax:	Site #:	Date Required:
Email: [redacted]	Email: [redacted]	Site Location Province: _____ Ontario	
		Sampled By: _____	Rush Confirmation #:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY

Regulation 153

[ ] Table 1 [ ] Res/Park [ ] Med/ Fine
[ ] Table 2 [ ] Ind/Comm [ ] Coarse
[ ] Table 3 [ ] Agri/ Other
[ ] Table _____

FOR RSC (PLEASE CIRCLE) Y / N

(NOT FOR RSC)

Other Regulations

[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] MISA [ ] Storm Sewer Bylaw
[ ] PWQO Region _____
[ ] Other (Specify) _____
[ ] REG 558 (MIN. 3 DAY TAT REQUIRED)
[ ] REG 406 Table _____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	Metals	CrVI	Mercury	Moisture	Methylmercury									HOLD- DO NOT ANALYZE	COMMENTS
1				Tissue			X	X	X	X											Retain portion on hold for other future analysis
2				Tissue			X	X	X	X											Retain portion on hold for other future analysis
3				Tissue			X	X	X	X											Retain portion on hold for other future analysis
4				Tissue			X	X	X	X											Retain portion on hold for other future analysis
5				Tissue			X	X	X	X											Retain portion on hold for other future analysis
6				Tissue			X	X	X	X											Retain portion on hold for other future analysis
7				Tissue			X	X	X	X											Retain portion on hold for other future analysis
8				Tissue			X	X	X	X											Retain portion on hold for other future analysis
9				Tissue			X	X	X	X											Retain portion on hold for other future analysis
10				Tissue			X	X	X	X											Retain portion on hold for other future analysis

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	

COOLING MEDIA PRESENT: Y / N

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #

APPENDIX D

Alconox SDS

Safety Data Sheet

Effective date: 11 May 2020 **Revision**: 11 May 2020
Trade Name: Alconox®

1 Identification of the substance/mixture and of the supplier

1.1 GHS Product identifier

Trade Name: Alconox®
Product number: 1101, 1103, 1104, 1104-1, 1112, 1112-1, 1125, 1150

1.2 Application of the substance / the mixture: Cleaning material/Detergent

1.2.1 Recommended dilution ratio: 1 – 2% in water

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer:
Alconox Inc.
30 Glenn St
White Plains, NY 10603
(914) 948-4040

Supplier:

Emergency telephone number:
ChemTel Inc
North America: 1-888-255-3924
International: +1 813-248-0573

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272, 29CFR1910/1200 and GHS requirements.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Eye damage, category 1.

Skin irritation, category 2.

Product at recommended dilution:
Eye irritation, category 2B

Hazard pictograms:



Signal word: Danger

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

Precautionary statements:
P264 Wash skin thoroughly after handling.

Effective date: 11 May 2020 **Revision**: 11 May 2020
Trade Name: Alconox®

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Hazardous Elements at Use Dilution:

Hazard Pictograms:



Signal Word: Warning
Hazard Statements:
H320 Causes eye irritation

Precautionary statements:
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P501 Dispose of contents and container as instructed in Section 13

Additional information: None.

Hazard description
Hazards Not Otherwise Classified (HNOC): May cause surfaces to become slippery if wet. Use caution in areas of foot traffic if on floors.

Information concerning particular hazards for humans and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:
The classification is according to EC regulation No. 1272, 29CFR1910/1200 and GHS Requirements, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization: Not determined or not available.

3.2 Description: None
3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2; H315 Eye Dam. 1; H318	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	2-16

Safety Data Sheet

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Hazardous components at use dilution (percentages by weight):

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Eye Irrit. 2; H319	0.12 - 0.28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Eye Irrit. 2; H319	0.08 – 0.22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Eye Irrit. 2; H319	0.02 – 0.16

3.4 Additional Information: None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

First aid measure at recommended dilution:

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.

After swallowing:

Rinse mouth thoroughly. Seek medical attention if irritation, discomfort, or vomiting develops.

5 Firefighting measures

Safety Data Sheet

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents: None

5.2 Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information:

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions:

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up:

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections: None

7 Handling and storage

7.1 Precautions for safe handling:

No expected hazards under normal use condition.

Avoid breathing mist or vapor if aerosolized.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

Safety Data Sheet

Effective date: 11 May 2020 **Revision**: 11 May 2020
Trade Name: Alconox®

8 Exposure controls/personal protection





8.1 Control parameters:

a) 7722-88-5, Tetrasodium Pyrophosphate, ACGIH TWA 10 mg/m3
b) 7758-29-4, Sodium Tripolyphosphate, ACGIH TWA 10 mg/m3
c) Dusts, non-specific OEL, Irish Code of Practice
   (i) Total inhalable 10 mg/m3 (8hr)
   (ii) Respirable 4 mg/m3 (8hr)
   (iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

Exposure Control and Personal Protective Equipment at recommended dilution:

Under normal use and operational conditions, no special personal protective equipment or engineering controls will be necessary. Handle with care.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower**: **Explosion limit upper**:	Not determined or notavailable. Not determined or notavailable.
Odor:	Not determined or not available.	**Vapor pressure at 20°C**:	Not determined or notavailable.
Odor threshold:	Not determined or not available.	**Vapor density**:	Not determined or notavailable.
pH-value:	9.5 (1% aqueous solution)	**Relative density**:	Not determined or notavailable.

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Melting/Freezing point:	Not determined or not available.	**Solubilities**:	Not determined or notavailable.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water)**:	Not determined or notavailable.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature**:	Not determined or notavailable.
Evaporation rate:	Not determined or not available.	**Decomposition temperature**:	Not determined or notavailable.

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity: Not determined or not available.
10.2 Chemical stability: Not determined or not available.
10.3 Possibility hazardous reactions: Not determined or not available.
10.4 Conditions to avoid: Not determined or not available.
10.5 Incompatible materials: Not determined or not available.
10.6 Hazardous decomposition products: Not determined or not available.

11 Toxicological information

11.1 Information on toxicological effects:

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product.

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye damage.

Tetrasodium Pyrophosphate: Risk of serious damage to eyes.

Product information at recommended dilution:

Eye irritation may occur upon direct contact with eyes. No specific hazards for skin contact, inhalation, or chronic exposure are expected within normal use parameters.

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

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STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.9 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: ADR, ADN, DOT, IMDG, IATA	None
14.2 UN Proper shipping name: ADR, ADN, DOT, IMDG, IATA	None
14.3 Transport hazard classes: ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD. QTY:** None

US DOT

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

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	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards**:	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

14.8 Transport/Additional information:

Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed as active.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Germany MAK: Not classified.
EC 648/2004 – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts
EC 551/2009 – This is not a laundry or dishwasher detergent
EC 907/2006 – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

NFPA: 1-0-0
HMIS: 1-0-0

At recommended dilution:
NFPA: 1-0-0
HMIS: 1-0-0

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

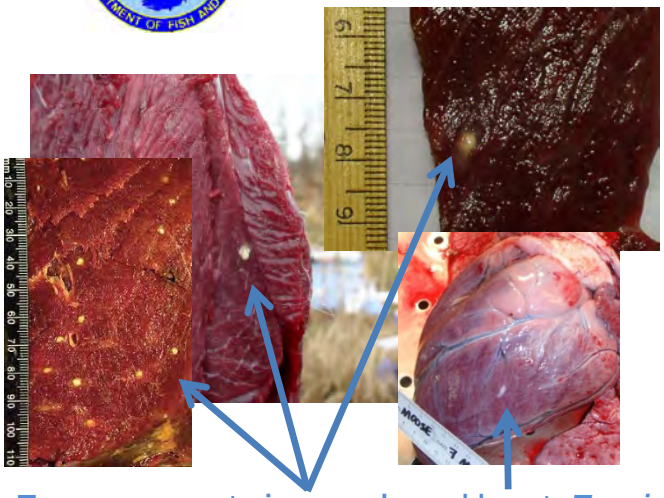
Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

APPENDIX E

Parasites and Diseases

What is this "thing" in my game?



Tapeworm cysts in muscle and heart- *Taenia*

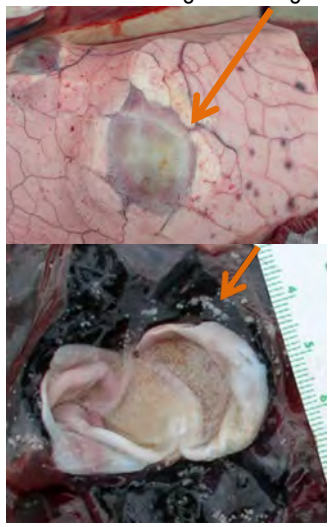
Cysts in the meat occurs in 50 to 70% of moose (*T. arctos*) and caribou (*T. krabbei*) while the adult tapeworm occurs in in the intestine of wolves and bears.

- **People cannot get it but do not feed raw meat to dogs** since they can get it just like a wolf. Also, feeding edible game meat to dogs is illegal.

Tapeworm cysts in lungs- *Echinococcus canadensus*

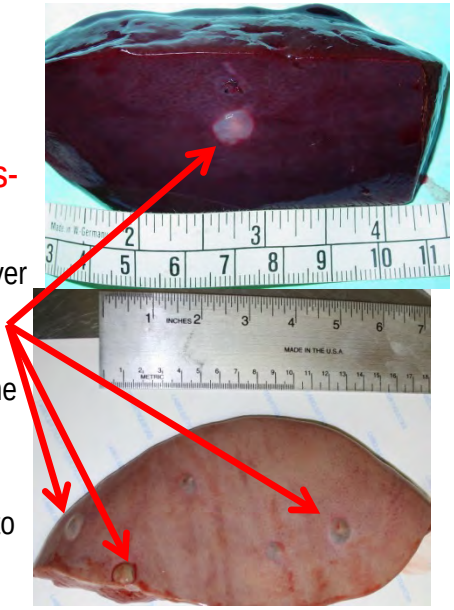
Cysts are common in the lungs of moose & caribou while the adult tapeworm occurs in the intestine of wolves & dogs

- People can only get it from dog or wolf fecal contamination so do not feed uncooked organs to dogs.



Tapeworm cysts in livers- *Taenia hydatigena*

- Cysts are common in the liver of moose, caribou, deer, sheep, goats, etc. while the adult tapeworm occurs in the intestine of wolves
- People cannot get it but do not feed uncooked organs to dogs since they can get it.

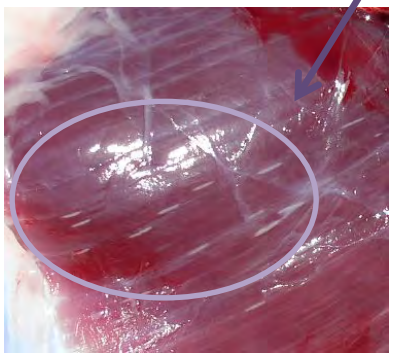


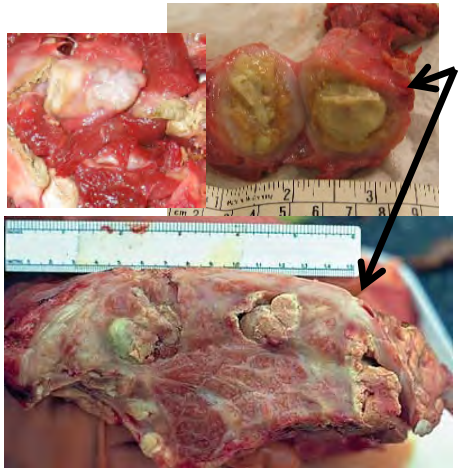


Sarcocystis in muscle and heart.

Less noticeable white streaks in the circles at left but common in the muscles of moose, caribou, etc. (and similar to rice breast in game birds). Spread by bears and coyotes, possibly wolves and foxes in feces.

- People cannot get it but do not feed uncooked organs to dogs since they can get it.





Abscesses- *"Pus pockets"*

Very common in moose and caribou muscles but can be found in or around the organs

- It is the immune response to an injury or infection.
- The yellow/green thick liquid to dry crumbly bits with a thick wall around.
- Avoid spreading pus during butchering.
- Don't eat the pus contaminated parts but the unaffected meat is edible
- Cooking is always recommended for the seen and unseen.



For more details, see "SPECIES" tab to "Wildlife Diseases & Parasites" links on the web at http://wildlife.alaska.gov

Make reports or send questions to:

dfg.dwc.vet@alaska.gov or call your local ADF&G office

ATTACHMENT C

Attachment C – Pooled FNFNES &
2022-2023 Survey Results Summary

AtkinsRéalis

Attachment C – Pooled FNFNES & 2022-2023 Country Food Survey Results Summary

Webequie First Nations

April 10, 2024

AtkinsRéalis Ref: 661910

Appendix C – Pooled FNFNES & 2022-2023 Country Food Survey Results Summary

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Executive Summary

This document provides a summary of the information and pooled data analysis results from Country Foods Consumption & Use Survey obtained by AtkinsRéalis for the Webequie Supply Road Project and the First Nations Food, Nutrition and Environment Study (FNFNES) combined. Although this dataset includes responses from up to 112 (i.e., 14 plus 98) survey participants, it should be noted that there are limitations and uncertainties associated with survey data collection and analysis, particularly if the survey responses are only partially completed and the number of respondents is relatively small.

1. Demographic Data

Tables A and **B** present the number and percentage of human receptors for different age groups, mean household size and gender of survey respondents.

Table A: The Number and Percentage of Respondents for Different Age Groups

	Age Groups			Mean Household Size
	Age < 15 years	Age 15 - 65 years	Age > 65 years	
Count:	201	264	22	4.35
Percentage (%):	41.3%	54.2%	4.5%	

Table B: Gender Structure of the Surveyed Population

	Respondents	
	Female	Male
Count:	58	54
Percentage (%):	51.8%	48.2%

2. Fish

Reported consumption of locally harvested fish in the past 12 months for all species combined and for each identified species in the study area is presented in **Table C**. Presented data show percentages of survey participants consuming harvesting fish in the WFN area, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table C: Consumption of Locally Harvested Fish in the Past 12 Months

	Any Fish	2. Trout, speckle (brook)	3. Trout, Lake	10. Whitefish, lake	11. Whitefish, round	18. Sauger	21. Walleye (yellow pickerel)	22. Northern pike	23. Muskie	24. Ling (Burbot or Maria)	27. Red (longnose) Sucker	28. White Sucker	29. Sturgeon (lake)
Percentage (%):	97.3%	15.2%	5.4%	74.1%	4.5%	0.0%	93.8%	58.0%	1.8%	6.3%	9.8%	38.4%	65.2%
Maximum (Days per Year):		126	7	364	40	0	364	364	10	60	30	160	120
Mean (Days per Year) for All Survey Participants:		0.71	0.03	6.79	0.14	0	10.93	4.80	0.04	0.19	0.15	2.31	1.38
Mean (Days per Year) for Consumers Only:		18.59	2.33	36.67	12.60	0	46.64	33.06	9.00	12.43	6.00	24.05	8.45

3. Land Mammals

Reported consumption of land mammals in the past 12 months for all species combined and for each identified species in the study area is presented in **Table D**. Presented data show percentages of survey participants consuming land mammals, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table D: Consumption of Land Mammals in the Past 12 Months

	Any Land Mammals	38. Moose meat	39. Moose liver	40. Moose kidney	41. Caribou meat	42. Caribou liver	43. Caribou kidney	44. Black bear meat	45. Black bear fat	46 Rabbit meat	47. Muskrat meat	48. Beaver meat
Percentage (%):	100.0%	99.1%	61.6%	36.6%	29.5%	10.7%	10.7%	0.0%	1.8%	29.5%	3.6%	29.5%
Maximum (Days per Year):		280	200	160	120	80	80	0	12	84	20	40
Mean (Days per Year) for All Survey Participants:		8.77	2.41	1.58	1.18	0.62	0.57	0	0.03	1.10	0.10	0.75
Mean (Days per Year) for Consumers Only:		35.33	15.64	17.22	16.03	23.17	21.25	0	6.00	13.27	11.75	9.09

4. Wild Birds

Reported consumption of wild birds in the past 12 months for all species combined and for each identified species in the study area is presented in **Table E**. Presented data show percentages of survey participants consuming wild birds, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table E: Consumption of Wild Birds in the Past 12 Months

	Any Wild Birds	54. Ducks (all combined)	70. Loon	72. Geese, Canada	74. Grouse (Blue, Ruffed)	75. Gray Partridge	78. Bird eggs
Percentage (%):	99.1%	43.8%	5.4%	99.1%	29.5%	14.3%	0.0%
Maximum (Days per Year):		56	20	140	60	40	0
Mean (Days per Year) for All Survey Participants:		0.46	0.07	6.39	0.76	0.27	0
Mean (Days per Year) for Consumers Only:		4.20	5.33	25.80	10.36	7.56	0

5. Wild Berries or Wild Nuts

Reported consumption of wild berries or wild nuts in the past 12 months for all species combined and for each identified species in the study area is presented in **Table F**. Presented data show percentages of survey participants consuming wild berries or wild nuts, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table F: Consumption of Wild Berries or Wild Nuts in the Past 12 Months

	Any Wild Berries or Wild Nuts	85. Wild Strawberry	90. Raspberry (wild)	91. Blueberries	95. Gooseberry/ currant	96. Serviceberry (June Berry, Saskatoon)
Percentage (%):	83.0%	30.4%	22.3%	79.5%	25.9%	8.9%
Maximum (Days per Year):		28	40	48	40	28
Mean (Days per Year) for All Survey Participants:		0.42	0.47	1.63	0.45	0.14
Mean (Days per Year) for Consumers Only:		5.53	8.36	8.19	6.93	6.20

6. Wild Plants, Tree Foods or Mushrooms

Reported consumption of wild plants, tree foods or mushrooms in the past 12 months for all species combined and for each identified species in the study area is presented in **Table G**. Presented data show percentages of survey participants consuming wild plants, tree foods or mushrooms, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table G: Consumption of Wild Plants, Tree Foods or Mushrooms in the Past 12 Months

	Any Wild Plants, Tree Foods or Mushrooms	118. Wihkes (Sweet flag/ Muskrat root)	119. Wild Rice	126. Dandelions	130. Labrador Tea leaves	131. Wintergreen (teaberry) leaves	133. Mint leaves	Mushrooms
Percentage (%):	38.4%	9.8%	1.8%	0.9%	24.1%	0.9%	2.7%	0.0%
Maximum (Days per Year):		336	12	7	182	4	336	0
Mean (Days per Year) for All Survey Participants:		1.12	0.03	0.02	1.68	0.01	0.79	0
Mean (Days per Year) for Consumers Only:		45.55	7.00	7.00	27.89	4.00	117.67	0

7. Homegrown / Cultivated Garden Vegetables or Fruit

Consumption of homegrown/cultivated garden vegetables or fruit in the past 12 months is presented in **Table H.**

Table H: Consumption of Homegrown/Cultivated Garden Vegetables or Fruit

	Any Homegrown/ Cultivated Vegetables or Fruit	Potatoes	Garden Type		
			Private	Community	Both
Percentage (%):	55.4%	55.4%	1.0%	57.1%	1.0%

8. Tap Water (Drinking Water)

Percentage of survey respondents having tap water in their homes, drinking tap water, reported tap water source, application of water treatment, and water intake expressed in cups per day are presented in **Table I**. **Table J** shows use of additional water sources and application of water treatment methods.

Table I: Reported Tap Water Source, Water Treatment and Water Intake per Day

Have Tap Water at Home	Drinking Tap Water	Tap Water Source	Application of Water Treatment	Water (Cups per Day)
Count	**Count**	**Water Treatment Plant**	**Yes**	**Maximum**
112	87	92.9%	57.1%	12
Percentage (%)	**Percentage (%)**	**Lake/Pond**	**No**	**Mean**
100.0%	77.7%	1.8%	42.9%	4.11
		No answer (%)		
		4.5%		
		Not sure (%)		
		0.9%		

Note: 87 out of 112 (77.7%) surveyed individuals reported drinking tap water.

Table J: Reported Additional Water Sources and Water Treatment Methods

	Additional Water Sources				Water Treatment Methods		
	Bottled	**Lake/Pond**	**Stream/River**	**Not Applicable**	**Boil**	**Filters**	**Boil/Filters**
Percentage (%):	31.3%	61.6%	1.8%	5.4%	38.4%	9.8%	9.8%

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ATTACHMENT D

Attachment D – 2022 Survey Results Summary

AtkinsRéalis

Attachment D – 2022-2023 Country Food Survey Results Summary

Webequie First Nation

April 10, 2024

AtkinsRéalis Ref: 661910

Attachment D –2022-2023 Country Food Survey Results Summary

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Executive Summary

This document provides a summary of the information and data analysis results from Country Foods Consumption & Use Survey obtained by AtkinsRéalis and prepared for the Webequie Supply Road Project. It should be noted that there are limitations and uncertainties associated with survey data collection and analysis, particularly if the survey responses are only partially completed and the number of respondents is relatively small, as it appears to be the case in this survey of fourteen (14) participants.

1. Demographic Data

The survey results indicate that 64.3% (9/14) of respondents' homes have children and teens (0-17 years old) who eat and drink the same food and beverages as the adults. **Table A** shows the number and percentage of human receptors for different age groups. Receptor age groups are presented in accordance with Health Canada guidance (Health Canada 2024). Gender of survey respondents as well as children and teens in their homes is presented in **Table B**.

Table A: The Number and Percentage of Respondents for Different Age Groups

	Age Groups for both Respondents and Present in Respondents Households				
	Infants (0-6 months)	Toddlers (7 months - 4 years)	Children (5-11 years)	Teens (12-19 years)	Adults (20-80 years)
Count:	4	7	6	9	14
Percentage (%):	10.0%	17.5%	15.0%	22.5%	35.0%

Table B: Gender Structure of the Surveyed Population

	Children and Teens Present in Respondents Household		Respondents Gender	
	Female	Male	Female	Male
Count:	16	10	5	9
Percentage (%):	61.5%	38.5%	35.7%	64.3%

Respondents were all adults, predominantly aged between 31 and 45 years old. Children and teens present in respondents' households were predominantly female (61.5%).

2. Fish

Reported consumption of locally harvested fish in the past 12 months for all species combined and for each identified species in the study area is presented in **Table C**. The consumption of fish expressed as the number of meals per week, typical preparation method, consumption of fish organs/eggs, and fish serving size expressed in palms per single meal are presented in Table D. **Table E** shows the number of meals expressed as maximum, median, and mean values for each fish species consumed over the past 12 months, as reported by the survey respondents.

Table C: Consumption of Locally Harvested Fish in the Past 12 Months

	Any Fish	Lake Trout	Speckled/ Brook Trout	Lake Sturgeon	White/ Red (Longnose) Sucker	Round Whitefish	Walleye	Yellow Pickerel	Sauger	Burbot/ Ling/ Mariah	Lake Whitefish	Northern Pike	Muskie/ Muskellunge
Count:	13	2	1	6	5	3	11	1	0	1	7	5	0
Percentage (%):	92.9%	14.3%	7.1%	42.9%	35.7%	21.4%	78.6%	7.1%	0.0%	7.1%	50.0%	35.7%	0.0%
Maximum (Days per Year):		7	126	84	7	21	364	0	0	0	364	364	0
Mean (Days per Year) for All Survey Participants:		0.50	9.00	8.00	0.50	1.50	60.50	0.00	0.00	0.00	36.50	27.00	0.00
Mean (Days per Year) for Consumers Only:		3.50	126.00	18.67	1.40	7.00	77.00	0.00	0.00	0.00	73.00	75.60	0.00

Note: 13 out of 14 (92.9%) surveyed individuals reported consumption of locally harvested fish.

Table D: Fish Meals per Week, Preparation Method, Consumption of Organs/Eggs, and Serving Size per Meal

	Number of Meals per Week	Servings Size (Palms) per Single Meal	Typical Preparation Method	Consumption of organs/eggs
	Maximum	**Maximum**	**Skin-off (%)**	**Yes (%)**
	3	3	69.2%	57.1%
	Median	**Median**	**Skin-on (%)**	**No (%)**
	1	1	30.8%	42.9%
	Mean	**Mean**		
All Survey Participants:	0.93	1.14		
Consumers Only:	1.30	1.33		

Table E: The Number of Meals of Each Fish Species Consumed Over the Past 12 Months

	Lake Trout	Speckled/ Brook Trout	Lake Sturgeon	White/ Red (Longnose) Sucker	Round Whitefish	Walleye	Yellow Pickerel	Sauger	Burbot/ Ling/ Mariah	Lake Whitefish	Northern Pike	Muskie/ Muskellunge	
	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Total Sum of Species-specific Mean Values (Meals per Year)
	1	40	16	0	6	156	24	0	30	72	72	0	
	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median	Median	
	1	40	3	0	5.5	12.5	24	0	30	20	15	0	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Total
All Survey Participants:	0.07	2.86	2.21	0.00	0.79	23.93	1.71	0.00	2.14	10.50	9.07	0.00	53.29
Consumers Only:	1.00	40.00	4.43	0.00	5.50	27.92	24.00	0.00	30.00	21.00	21.17	0.00	175.01

3. Animals that Frequent the Water

Survey reported consumption of Animals that Frequent the Water (i.e., aquatic to semi-aquatic mammals)in the past 12 months for all species combined and for each identified species in the study area is presented in **Table F**. Reported consumption expressed as the number of meals per week and serving size (palms per meal) are presented in **Table G**.

Table F: Consumption of Animals that Frequent the Water in the Past 12 Months

	Any Animals that Frequent the Water	Beaver Meat	Mink Meat	Muskrat Meat
Count:	6	4	0	1
Percentage (%):	42.9%	28.6%	0.0%	7.1%
Maximum (Days per Year):		21	0	14
Mean (Days per Year) for All Survey Participants:		3.50	0.00	1.00
Mean (Days per Year) for Consumers Only:		12.25	0.00	14.00

Note: 6 out of 14 (42.9%) surveyed individuals reported consumption of animals that frequent the water.

Table G: Consumption of the Animals that Frequent the Water (number of meals per week) and the Serving Size (palms per meal)

	Number of Meals per Week			Serving Size
	Beaver Meat	**Mink Meat**	**Muskrat Meat**	**(Palms[1] per Meal)**
	Maximum	**Maximum**	**Maximum**	**Maximum**
	2	1	0	1
	Median	**Median**	**Median**	**Median**
	1.5	1	0	1
	Mean	**Mean**	**Mean**	**Mean**
All Survey Participants:	0.21	0.07	0.00	0.29
Consumers Only:	0.50	0.17	0.00	0.67

1 – “Palms” represent the size of an adult human palm as a qualitative unit of measure to convert to consumption mass

Table H shows the number of meals of each species of Animal that Frequent the Water consumed over the past 12 months.

Table H: The Number of Meals of each Animal Species Consumed over the Past 12 Months

	Beaver Meat	Mink Meat	Muskrat Meat	
	Maximum	**Maximum**	**Maximum**	**Total Sum of Species-specific Mean Values (Meals per Year)**
	6	0	2	
	Median	**Median**	**Median**	
	2	0	2	
	Mean	**Mean**	**Mean**	**Total**

	Beaver Meat	Mink Meat	Muskrat Meat	
All Survey Participants:	0.79	0.00	0.14	0.93
Consumers Only:	1.83	0.00	0.33	2.17

4. Wild Game (Land Mammals)

Survey reported consumption of Wild Game (Land Mammals) in the past 12 months for all species combined and for each identified species in the study area is presented in **Table I**. Wild Game consumption expressed as the number of meals per week and serving size expressed in palms per single meal are presented in **Table J**. **Table K** shows the number of meals expressed as maximum, median, and mean values for each Wild Game (Land Animal) species consumed over the past 12 months, as reported by the survey respondents.

Table I: Consumption of Wild Game (Land Mammals) in the past 12 months

	Any Wild Game (Land Animals)	Moose Meat	Moose Liver	Moose Kidney		Caribou Meat	Caribou Liver	Caribou Kidney	Black Bear Meat	Black Bear Fat	Rabbit/ Hare Meat
Count:	13	13	7	4		3	0	0	0	1	3
Percentage (%):	92.9%	92.9%	50.0%	28.6%		21.4%	0.0%	0.0%	0.0%	7.1%	21.4%
Maximum (Days per Year):		280	70	0		28	0	0	0	0	84
Mean (Days per Year) for All Survey Participants:		46.50	6.50	0.00		2.00	0.00	0.00	0.00	0.00	14.00
Mean (Days per Year) for Consumers Only:		50.08	13.00	0.00		9.33	0.00	0.00	0.00	0.00	65.33

Note: 13 out of 14 (92.9%) surveyed individuals reported consumption of wild game (land animals).

Table J: Wild Game (Land Mammals) meals per week and serving size per meal

	Number of Meals per Week	Servings Size (Palms[1]) per Single Meal
	Maximum	**Maximum**
	4	3
	Median	**Median**
	2	1.5
	Mean	**Mean**
All Survey Participants:	2.04	1.36
Consumers Only:	2.19	1.46

1 – “Palms” represent the size of an adult human palm as a qualitative unit of measure to convert to consumption mass

Table K: The Number of Meals of each Wild Game (Land Mammals) Species Consumed over the Past 12 Months

	Moose Meat	Moose Liver	Moose Kidney	Caribou Meat	Caribou Liver	Caribou Kidney	Black Bear Meat	Black Bear Fat	Rabbit/ Hare Meat	
	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Maximum	Total Sum of Species-specific Mean Values (Meals per Year)
	40	10	10	30	0	0	0	1	4	
	Median	Median	Median	Median	Median	Median	Median	Median	Median	
	8	3	5.5	10	0	0	0	1	2.5	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Total
All Survey Participants:	14.71	1.00	0.79	3.00	0.00	0.00	0.00	0.07	0.36	19.93
Consumers Only:	15.85	4.67	5.50	14.00	0.00	0.00	0.00	1.00	2.50	43.51

5. Migratory Birds

Survey reported consumption of Migratory Birds in the past 12 months for all species combined and for each identified species in the study area is presented in **Table L**. Migratory Bird consumption expressed as the number of meals per week and serving size expressed in palms per single meal are presented in **Table M**. **Table N** shows the number of meals expressed as maximum, median, and mean values for each Migratory Bird species consumed over the past 12 months, as reported by the survey respondents.

Table L: Consumption of Migratory Birds in the Past 12 Months

	Any Migratory Birds	Goose (i.e., Canada goose, Snow goose, Swan)	Duck - Plant eaters (i.e., Gadwall, Redhead, Ring-necked, Wood duck, American widgeon)	Duck - omnivores (i.e., Mallard, Bufflehead, Northern pintail, White-winged scoter, Common goldeneye, American black duck)	Duck - fish eaters (i.e., Common merganser)	Common Loon	Crane	Bird eggs
Count:	14	14	3	2	2	0	0	0
Percentage (%):	100.0%	100.0%	21.4%	14.3%	14.3%	0.0%	0.0%	0.0%
Maximum (Days per Year):		140	28	28	0	0	0	0
Mean (Days per Year) for All Survey Participants:		27.50	2.00	2.00	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:		27.51	9.31	14.00	0.00	0.00	0.00	0.00

Note: 14 out of 14 (100%) surveyed individuals reported consumption of migratory birds.

Table M: Migratory Bird Meals per Week and Serving Size per Meal

	Number of Meals per Week	Servings Size (Palms[1]) per Single Meal
	Maximum	**Maximum**
	3	2
	Median	**Median**
	1	1
	Mean	**Mean**
Consumers / All Survey Participants:	1.19	1.21

1 – “Palms” represent the size of an adult human palm as a qualitative unit of measure to convert to consumption mass

Table N: The Number of Meals of each Migratory Bird Species Consumed over the Past 12 Months

	Goose (i.e., Canada goose, Snow goose, Swan)	Duck - Plant eaters (i.e., Gadwall, Redhead, Ring-necked, Wood duck, American widgeon)	Duck - omnivores (i.e., Mallard, Bufflehead, Northern pintail, White-winged scoter, Common goldeneye, American black duck)	Duck - fish eaters (i.e., Common merganser)	Crane	Bird eggs	
	Maximum	**Maximum**	**Maximum**	**Maximum**	**Maximum**	**Maximum**	**Total Sum of Species-**
	52	10	6	10	0	0	

	Goose (i.e., Canada goose, Snow goose, Swan)	Duck - Plant eaters (i.e., Gadwall, Redhead, Ring-necked, Wood duck, American widgeon)	Duck - omnivores (i.e., Mallard, Bufflehead, Northern pintail, White-winged scoter, Common goldeneye, American black duck)	Duck - fish eaters (i.e., Common merganser)	Crane	Bird eggs	
	Median	Median	Median	Median	Median	Median	specific Mean Values (Meals per Year)
	5	10	6	10	0	0	
	Mean	Mean	Mean	Mean	Mean	Mean	Total
All Survey Participants:	10.29	2.14	0.43	0.71	0.00	0.00	13.57
Consumers Only:	10.29	10.00	6.00	10.00	0.00	0.00	36.29

6. Non-Migratory Birds

Survey reported consumption of Non-Migratory Birds in the past 12 months for all species combined and for each identified species in the study area is presented in **Table O**. Non-Migratory Bird consumption expressed as the number of meals per week and serving size expressed in palms per single meal are presented in **Table P**. **Table Q** shows the number of meals expressed as maximum, median, and mean values for each Non-Migratory Bird species consumed over the past 12 months, as reported by the survey respondents.

Table O: Consumption of Non-Migratory Birds in the Past 12 Months

	Any Non-Migratory Birds	Grouse (Blue, Ruffed, Sharp-tailed)	Ptarmigan	Grey partridge
Count:	3	1	1	1
Percentage (%):	21.4%	7.1%	7.1%	7.1%
Maximum (Days per Year):		56	14	0
Mean (Days per Year) for All Survey Participants:		4.00	1.00	0.00
Mean (Weeks per Year) for Consumers Only:		56.00	14.00	0.00

Note: 3 out of 14 (21.4%) surveyed individuals reported consumption of non-migratory birds.

Table P: Non-Migratory Bird Meals per Week and Serving Size per Meal

	Number of Meals per Week	Servings Size (Palms[1]) per Single Meal
	Maximum	**Maximum**
	1	2
	Median	**Median**
	1	2
	Mean	**Mean**
All Survey Participants:	0.07	0.14
Consumers Only:	0.33	0.67

1 – “Palms” represent the size of an adult human palm as a qualitative unit of measure to convert to consumption mass

Table Q: The Number of Meals of each Non-Migratory Bird Species Consumed over the Past 12 Months

	Grouse (Blue, Ruffed, Sharp-tailed)	Ptarmigan	Grey partridge	
	Maximum	**Maximum**	**Maximum**	**Total Sum of Species-specific Mean Values (Meals per Year)**
	8	2	0	
	Median	**Median**	**Median**	
	8	2	0	
	Mean	**Mean**	**Mean**	**Total**
All Survey Participants:	0.57	0.14	0.00	0.71
Consumers Only:	2.67	0.67	0.00	3.33

7. Wild Berries

Survey reported consumption of Wild Berries in the past 12 months for all species combined and for each identified species in the study area is presented in **Table R**. Wild Berries consumption expressed as the number of meals per week and serving size expressed in fists per single meal are presented in **Table S**. **Table T** shows the number of meals expressed as maximum, median, and mean values for each Wild Berry species consumed over the past 12 months, as reported by the survey respondents.

Table R: Consumption of Wild Berries in the Past 12 Months

	Any Wild Berries	Blueberries	Wild Strawberry	Gooseberry/ Currant	Raspberry	Service Berry/ June Berry/ Saskatoon Berry
Count:	6	6	5	2	2	2
Percentage (%):	42.9%	42.9%	35.7%	14.3%	14.3%	14.3%
Maximum (Days per Year):		28	28	28	28	28
Mean (Days per Year) for All Survey Participants:		5.50	4.00	2.00	3.00	2.50
Mean (Days per Year) for Consumers Only:		12.81	11.20	14.00	21.00	17.50

Note: 6 out of 14 (42.9%) surveyed individuals reported consumption of wild berries.

Table S: Wild Berry Meals per Week and Serving Size per Meal

	Number of Meals per Week	Servings Size (Fists[1]) per Single Meal
	Maximum	**Maximum**
	3	1
	Median	**Median**
	1	0.5
	Mean	**Mean**
All Survey Participants:	0.79	0.43
Consumers Only:	1.83	1.00

1 – “Fist” represents the size of an adult human clenched fist as a qualitative unit of measure to convert to consumption mass

Table T: The Number of Meals of each Wild Berry Species Consumed over the Past 12 Months

		Blueberries	Wild Strawberry	Gooseberry/ Currant	Raspberry	Service Berry/June Berry/Saskatoon Berry	
		Maximum	**Maximum**	**Maximum**	**Maximum**	**Maximum**	**Total Sum of Species-specific Mean Values (Meals per Year)**
		12	10	10	10	2	
		Median	**Median**	**Median**	**Median**	**Median**	
		2	3.5	5.5	5	2	
		Mean	**Mean**	**Mean**	**Mean**	**Mean**	**Total**
All Survey Participants:		2.07	1.36	0.79	1.36	0.14	5.71
Consumers Only:		4.14	4.75	5.50	6.33	2.00	22.73

8. Wild Plants and Tree Foods

Survey reported consumption of Wild Plants and Tree Foods in the past 12 months for all species combined and for each identified species in the study area is presented in **Table U**. Regarding the consumption of Wild Plants or Tree Foods, variation in the provided answers appear not to allow a meaningful summary (overall) estimate of the quantity of wild plants or tree foods consumed in a single meal or occurrence. **Table V** shows the reported part(s) of each Wild Plant or Tree Food species that is typically consumed.

Table U: Consumption of Wild Plants and Tree Foods in the past 12 months

	Any Wild Plants or Tree Foods	Labrador Tea	Muskrat root	Wild rice	Dandelions	Mushrooms	Wintergreen (teaberry) leaves	Mint leaves	Cedar Tea	Bear Root	Homegrown/ Home Cultivated foods
Count:	10	8	1	0	0	0	0	1	10	2	0
Percentage (%):	71.4%	57.1%	7.1%	0.0%	0.0%	0.0%	0.0%	7.1%	71.4%	14.3%	0.0%
Maximum (Days per Year):		182	336	0	0	0	0	336	336	336	0
Mean (Days per Year) for All Survey Participants:		26.00	24.00	0.00	0.00	0.00	0.00	24.00	46.00	24.50	0.00
Mean (Days per Year) for Consumers Only:		45.50	336.00	0.00	0.00	0.00	0.00	336.00	64.40	171.50	0.00

Note: 10 out of 14 (71.4%) surveyed individuals reported consumption of wild plants and tree foods.

Table V: Part(s) of each Wild Plant or Tree Food Species Consumed

Labrador Tea	Muskrat root	Wild Rice	Dandelions	Wintergreen (Teaberry) Leaves	Mint leaves	Cedar Tea	Bear root	Mushrooms
Part of the Plant Consumed								
Leaf	**Root**	**Leaf**	**Leaf**	**Leaf**	**Leaf**	**Leaf**	**Root**	**Mushrooms**
28.6%	0.0%	0.0%	0.0%	0.0%	0.0%	21.4%	7.1%	0.0%
Whole Plant	**Whole Plant**	**Whole Plant**	**Whole Plant**	**Whole Plant**	**Whole Plant**	**Whole Plant**	**Whole Plant**	
28.6%	7.1%	0.0%	0.0%	0.0%	7.1%	42.9%	7.1%	

9. Homegrown / Cultivated Potatoes

The survey results indicate that 4 of 14 respondents (28.6%) consume homegrown/cultivated potatoes. **Table W** shows the frequency of consumption of homegrown/cultivated potatoes expressed in days per season and on an annual basis. Typical preparation method and servings size of homegrown/cultivated potatoes expressed in fists per single meal are presented in **Table X**.

Table W: Consumption of Homegrown/Cultivated Potatoes

Consumption of Potatoes	Days per Season			
	Spring	Summer	Fall	Winter
	35	21	21	0
Count	Maximum	Maximum	Maximum	Maximum
4	21	14	14	0
Percentage (%)	Mean	Mean	Mean	Mean
28.6%	2.50	1.50	1.50	0.00
	Days per Year			
All Survey Participants:	Maximum: 35		Mean: 5.53	
Consumers Only:	Maximum: 35		Mean: 19.25	

Note: 4 out of 14 (28.6%) surveyed individuals reported consumption of homegrown/cultivated potatoes.

Table X: Typical Preparation Method, Number of Meals per Day and Serving Size of Homegrown/Cultivated Potatoes

Typical Preparation Method	Number of Meals per Day	Servings Size (Fists[1]) per Single Meal
Boiled	**Maximum**	**Maximum**
25%	1	2
Boiled or Fried	**Median**	**Median**
25%	1	1.75
Cooked	**Mean (All Survey Participants)**	**Mean (All Survey Participants)**
25%	0.14	0.43
	Mean (Consumers Only)	**Mean (Consumers Only)**
	0.50	1.50

1 – “Fist” represents the size of an adult human clenched fist as a qualitative unit of measure to convert to consumption mass

10. Tap Water (Drinking Water)

Percentage of survey respondents drinking tap water, reported tap water source, application of water treatment, and water intake expressed in cups per day are presented in **Table Y**. **Table Z** shows use of additional water sources, and application of water treatment methods.

Table Y: Reported Tap Water Source, Water Treatment and Water Intake per Day

Drinking Tap Water	Tap Water Source	Application of Water Treatment	Water (Cups per Day)
Count	**Water Treatment Plant**	**Yes**	**Maximum**
5	50.0%	42.9%	12
Percentage (%)	**Lake/Pond**	**No**	**Median**
35.7%	7.1%	42.9%	8
	Not sure	**Not sure**	**Mean**
	7.1%	14.3%	6.79

Note: 5 out of 14 (35.7%) surveyed individuals reported drinking tap water.

Table Z: Reported Additional Water Sources and Water Treatment Methods

	Additional Water Sources				Water Treatment Methods			
	Bottled	**Lake/Pond**	**Water Treatment Plant**	**Water Well**	**Boil**	**Tablets**	**Softener**	**Filters (Including Brita)**
Percentage (%):	92.9%	64.3%	14.3%	0.0%	35.7%	0.0%	0.0%	42.9%

11. References

Health Canada. 2024. Federal Contaminated Site Risk Assessment in Canada: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), Version 4.0. Ottawa, ON: Health Canada. Catalogue No.: H129-114/2023E-PDF ISBN: 978-0-660-68497-0.

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ATTACHMENT E

Attachment E – FNFNES Survey Results Summary

AtkinsRéalis

Attachment E – FNFNES Survey Results Summary

Webequie First Nation

April 10, 2024

AtkinsRéalis Ref: 661910

Attachment E –FNFNES Survey Results Summary

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Executive Summary

This document provides a summary of the information and data analysis results from the First Nations Food, Nutrition and Environment Study (FNFNES) which includes country/traditional foods consumption and use survey questionnaire. Although this dataset includes responses from 98 survey participants, it should be noted that there are limitations and uncertainties associated with survey data collection and analysis, particularly if the survey responses are only partially completed and the number of respondents to a specific question is relatively small.

1. Demographic Data

Tables A and B present the number and percentage of respondents for different age groups, mean household size and gender of survey respondents.

Table A: The Number and Percentage of Respondents for Different Age Groups

	Age Groups			
	Age < 15 years	**Age 15 - 65 years**	**Age > 65 years**	**Mean Household Size**
Count:	177	249	21	4.56
Percentage (%):	39.6%	55.7%	4.7%	

Table B: Gender Structure of the Surveyed Population

	Respondents	
	Female	**Male**
Count:	53	45
Percentage (%):	54.1%	45.9%

2. Fish

Reported consumption of locally harvested fish in the past 12 months for all species combined and for each identified species in the study area is presented in **Table C**. Presented data show percentages of survey participants harvesting fish in the area, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table C: Consumption of Locally Harvested Fish in the Past 12 Months

	Any Fish	1. Trout (all combined)	2. Trout, speckle (brook)	3. Trout, Lake	4. Trout, Rainbow	5. Trout, Brown	6. Trout, splake	7. Salmon, chinook	8. Lake herring (Cisco)	9. Smelt	10. Whitefish, lake
Percentage (%):	98.0%	19.4%	16.3%	4.1%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	77.6%
Maximum (Days per Year):		30	55	3	3	0	0	0	0	0	144
Mean (Days per Year) for All Survey Participants:		0.14	0.48	0.02	0.01	0.00	0.00	0.00	0.00	0.00	6.46
Mean (Days per Year) for Consumers Only:		2.89	11.88	1.75	3.00	0.00	0.00	0.00	0.00	0.00	33.33

Table C (Cont'd)

		11. Whitefish, round	12. Sunfish, Bluegill	13. Sunfish, Pumpkinseed	14. Smallmouth Bass	15. Largemouth Bass	16. Rock Bass	17. White perch/ White Bass	18. Sauger	19. Yellow Perch	20. Mooneye
Percentage (%):		2.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):		40	0	0	0	10	0	0	0	0	0
Mean (Days per Year) for All Survey Participants:		0.11	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:		21.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00

Table C (Cont'd)

	21. Walleye (yellow pickerel)	22. Northern pike	23. Muskie	24. Ling (Burbot or Maria)	25. Brown bullhead catfish	26. Channel Catfish	27. Red (longnose) Sucker	28. White Sucker	29. Sturgeon (lake)	30. Eel	31. OTHER Fish
Percentage (%):	95.9%	61.2%	2.0%	6.1%	0.0%	0.0%	6.1%	38.8%	68.4%	0.0%	0.0%
Maximum (Days per Year):	210	168	10	60	0	0	30	160	120	0	0
Mean (Days per Year) for All Survey Participants:	10.33	4.52	0.05	0.22	0.00	0.00	0.15	2.62	1.32	0.00	0.00
Mean (Days per Year) for Consumers Only:	43.09	29.52	9.00	14.50	0.00	0.00	9.83	27.03	7.72	0.00	0.00

3. Land Mammals

Reported consumption of land mammals in the past 12 months for all species combined and for each identified species in the study area is presented in **Table D**. Presented data show percentages of survey participants consuming land mammals, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table D: Consumption of Land Mammals in the Past 12 Months

	Any Land Mammals	32. Deer Meat	33. Deer Liver	34. Deer Kidney	35. Elk Meat	36. Elk Liver	37. Elk Kidney	38. Moose Meat	39. Moose Liver	40. Moose Kidney	41. Caribou Meat	42. Caribou Liver	43. Caribou Kidney
Percentage (%):	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	63.3%	37.8%	30.6%	12.2%	12.2%
Maximum (Days per Year):		0	0	0	0	0	0	208	200	160	120	80	80
Mean (Days per Year) for All Survey Participants:		0.00	0.00	0.00	0.00	0.00	0.00	8.34	2.52	1.80	1.28	0.71	0.65
Mean (Days per Year) for Consumers Only:		0.00	0.00	0.00	0.00	0.00	0.00	33.38	15.94	19.08	16.70	23.17	21.25

Table D (Cont'd)

	44. Black bear Meat	45. Black bear Fat	46 Rabbit Meat	47. Muskrat Meat	48. Beaver Meat	49. Groundhog Meat	50. River otter Meat	51. Red squirrel Meat	52. Ground squirrel Meat	53. OTHER Land Mammals	Moose Heart
Percentage (%):	0.0%	1.0%	30.6%	3.1%	29.6%	0.0%	0.0%	0.0%	0.0%	2.0%	
Maximum (Days per Year):	0	12	24	20	40	0	0	0	0		16
Mean (Days per Year) for All Survey Participants:	0.00	0.03	0.62	0.08	0.64	0.00	0.00	0.00	0.00		0.07
Mean (Days per Year) for Consumers Only:	0.00	12.00	8.07	11.00	8.66	0.00	0.00	0.00	0.00		14.50

4. Wild Birds

Reported consumption of wild birds in the past 12 months for all species combined and for each identified species in the study area is presented in **Table E**. Presented data show percentages of survey participants consuming wild birds, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table E: Consumption of wild birds in the past 12 months

	Any Wild Birds	54. Ducks (all combined)	55. Scoter (surf, white winged, black)	56. Redhead	57. Canvasback	58. Wood Duck	59. Ring necked Duck	60. Ruddy Duck	61. American Wigeon	62. Northern Pintail	63. Northern Shoveler	64. Gadwall	65. Mallard	66. American black
Percentage (%):	99.0%	45.9%	9.2%	1.0%	0.0%	2.0%	13.3%	0.0%	1.0%	2.0%	0.0%	1.0%	40.8%	1.0%
Maximum (Days per Year):		36												
Mean (Days per Year) for All Survey Participants:		0.38												
Mean (Days per Year) for Consumers Only:		3.33												

Table E (Cont'd)

	67. Teal	68. Golden eye	69. Bufflehead	70. Loon	71. Merganser	72. Geese, Canada	73. Geese, Snow	74. Grouse (Blue, Ruffed)	75. Gray Partridge	76. Pheasant, ring-necked	77. Wild turkey	78. Bird eggs	79. OTHER Wild Birds
Percentage (%):	0.0%	5.1%	3.1%	6.1%	6.1%	99.0%	13.3%	32.7%	15.3%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):		4	4	20	7	120	72	60	40	0	0	0	0
Mean (Days per Year) for All Survey Participants:		0.03	0.03	0.08	0.07	6.32	0.35	0.73	0.31	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:		2.60	4.00	5.33	4.33	25.56	10.62	8.94	8.07	0.00	0.00	0.00	0.00

5. Wild Berries or Wild Nuts

Reported consumption of wild berries or wild nuts in the past 12 months for all species combined and for each identified species in the study area is presented in **Table F**. Presented data show percentages of survey participants consuming wild berries or wild nuts, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table F: Consumption of wild berries or wild nuts in the past 12 months

	Any Wild Berries or Wild Nuts	80. Bunchberries	81. Crowberry	82. Teaberry (wintergreen)	83. Buffaloberry	84. Bearberry	85. Wild Strawberry	86. Thimbleberries (salmonberry)	87. Cloudberries (bakeapple)	88. Blackberry, large	89. Black raspberry
Percentage (%):	88.8%	1.0%	2.0%	0.0%	0.0%	2.0%	29.6%	1.0%	0.0%	2.0%	3.1%
Maximum (Days per Year):		6	10	0	0	6	12	3	0	10	12
Mean (Days per Year) for All Survey Participants:		0.02	0.03	0.00	0.00	0.02	0.34	0.01	0.00	0.04	0.05
Mean (Days per Year) for Consumers Only:		6.00	6.00	0.00	0.00	4.00	4.55	3.00	0.00	8.00	6.67

Table F (Cont'd)

	90. Raspberry (wild)	91. Blueberries	92. Cranberry (low-bush/ lingonberry, bog)	93. Highbush Cranberry (Squashberry, Mooseberry)	94. Blue huckleberry	95. Gooseberry/ currant	96. Serviceberry (juneberry, Saskatoon)	97. Rose hips (prickly rose)	98. Cherry (pin, chokecherry)	99. Hawthorn
Percentage (%):	23.5%	84.7%	3.1%	1.0%	2.0%	27.6%	8.2%	0.0%	2.0%	2.0%
Maximum (Days per Year):	40	48	6	12	12	40	8	0	10	2
Mean (Days per Year) for All Survey Participants:	0.43	1.66	0.04	0.03	0.06	0.44	0.07	0.00	0.03	0.01
Mean (Days per Year) for Consumers Only:	7.26	7.86	4.67	12.00	11.00	6.41	3.38	0.00	6.00	2.00

Table F (Cont'd)

	100. Crabapple	101. Sumac	102. Juniper	103. Hickory nuts	104. Hazelnut	105. Acorns	106. Walnuts	107. OTHER Berries
Percentage (%):	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):	0	0	12	0	0	0	0	0
Mean (Days per Year) for All Survey Participants:	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:	0.00	0.00	11.00	0.00	0.00	0.00	0.00	0.00

6. Wild Plants, Tree Foods or Mushrooms

Reported consumption of wild plants, tree foods or mushrooms in the past 12 months for all species combined and for each identified species in the study area is presented in **Table G**. Presented data show percentages of survey participants consuming wild plants, tree foods or mushrooms, including the maximum and the mean number of days per year for all survey participants and the consumers only.

Table G: Consumption of Wild Plants, Tree Foods or Mushrooms in the Past 12 Months

	Any Wild Plants, Tree Foods or Mushrooms	108. Wild onion (Canada)	109. Wild leek	110. Wild ginger	111. Wood Lily	112. Jerusalem artichoke	113. Thistle	114. Indian cucumber	115. Wild iris	116. Arrowhead	117. Bulrush/ cattail
Percentage (%):	33.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):		0	0	0	0	0	0	0	0	0	0
Mean (Days per Year) for All Survey Participants:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table G (Cont'd)

	118. Wihkes (Sweet flag/ Muskrat root)	119. Wild rice	120. Fiddleheads (Ostrich fern)	121. Thimbleberry, salmonberry shoots	122. Horsetail shoots	123. Lamb's quarters	124. Sorrel	125. Fireweed	126. Dandelions	127. Dock
Percentage (%):	10.2%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
Maximum (Days per Year):	60	12	0	0	0	0	0	0	7	0
Mean (Days per Year) for All Survey Participants:	0.42	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Mean (Days per Year) for Consumers Only:	16.50	7.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00

Table G (Cont'd)

	128. Cow parsnip	129. Raspberry leaves	130. Labrador Tea leaves	131. Wintergreen (teaberry) leaves	132. Bunchberry leaves	133. Mint leaves	134. Stinging nettle leaves	135. Hemp nettle leaves	136. Wild basil	137. Gold thread root tea
Percentage (%):	0.0%	0.0%	19.4%	1.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):	0	0	60	4	0	12	0	0	0	0
Mean (Days per Year) for All Survey Participants:	0.00	0.00	0.99	0.01	0.00	0.04	0.00	0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:	0.00	0.00	20.47	4.00	0.00	8.50	0.00	0.00	0.00	0.00

Table G (Cont'd)

	TREEFOODS	138. Maple syrup	139. Jack pine needle tea	140. Pine pitch	141. White Pine seeds/nut	142. Poplar (cottonwood) inner bark	143. Poplar buds	144. Spruce (black or white) inner bark	145. Spruce (black or white) pitch	146. Aspen bark, twigs
Percentage (%):	16.3%	2.0%	1.0%	0.0%	0.0%	2.0%	1.0%	1.0%	0.0%	0.0%
Maximum (Days per Year):		12	16	0	0	8	8	8	0	0
Mean (Days per Year) for All Survey Participants:		0.04	0.04	0.00	0.00	0.03	0.02	0.02	0.00	0.00
Mean (Days per Year) for Consumers Only:		7.00	16.00	0.00	0.00	5.00	8.00	8.00	0.00	0.00

Table G (Cont'd)

	147. Mullein	MUSHROOMS	148. Pine mushroom (White Matsutake)	149. Chanterelle	150. Other wild plants
Percentage (%):	31.6%	0.0%	0.0%	0.0%	0.0%
Maximum (Days per Year):	288		0	0	0
Mean (Days per Year) for All Survey Participants:	2.85		0.00	0.00	0.00
Mean (Days per Year) for Consumers Only:	36.03		0.00	0.00	0.00

7. Homegrown / Cultivated Garden Vegetables or Fruit

Consumption of homegrown/cultivated garden vegetables or fruit in the past 12 months is presented in **Table H**.

Table H: Consumption of Homegrown/Cultivated Garden Vegetables or Fruit

	Any Homegrown/ Cultivated Vegetables or Fruit	Potatoes	Garden Type		
			Private	Community	Both
Percentage (%):	59.2%	59.2%	1.0%	57.1%	1.0%

8. Tap Water (Drinking Water)

Percentage of survey respondents having tap water in their homes, drinking tap water, reported tap water source, application of water treatment, and water intake expressed in cups per day are presented in **Table I**. **Table J** shows the main source of water, use of additional water sources, and application of water treatment methods.

Table I: Reported Tap Water Source, Water Treatment and Water Intake per Day

Have Tap Water at Home	Drinking Tap Water	Tap Water Source	Application of Water Treatment	Water (Cups per Day)
Count	Count	Water Treatment Plant	Yes	Maximum
98	82	99.0%	59.2%	10
Percentage (%)	Percentage (%)	Lake/Pond	No	Mean
100.0%	83.7%	1.0%	40.8%	3.58

Note: 82 out of 98 (83.7%) surveyed individuals reported drinking tap water.

Table J: The Main Source of Water, Reported Additional Water Sources and Water Treatment Methods

	Main Source of Water				Additional Water Sources				Water Treatment Methods		
	Tap	Bottled	Tap/Bottled	Other	Bottled	Lake/Pond	Stream/River	Not Applicable	Boil	Filters	Boil/Filters
Percentage (%):	51.0%	9.2%	3.1%	13.3%	22.4%	69.4%	2.0%	6.1%	43.9%	10.2%	6.1%

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ATTACHMENT F

Attachment F – Certificates of Analyses

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-03-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329706
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6400
Received: 2020/08/24, 11:50

Sample Matrix: Tissue
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	1	2020/08/28	2020/08/29	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	4	2020/08/28	2020/08/31	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	5	N/A	2020/09/03	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	5	N/A	2020/08/28	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	5	N/A	2020/08/26	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-03-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329706
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6400
Received: 2020/08/24, 11:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NLE875	NLE876		NLE877		NLE878		
Sampling Date		2020/08/19 16:07	2020/08/19 16:22		2020/08/19 14:55		2020/08/19 16:52		
COC Number		785389-03-01	785389-03-01		785389-03-01		785389-03-01		
	UNITS	WFWC20-04	WFWC20-05	QC Batch	NPWC20-01	QC Batch	PKWC20-02	RDL	QC Batch
Nutritional Parameters									
Moisture	g/100g	74.8	78.4	6910943	81.8	6911971	80.2	0.1	6910943

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		NLE879		
Sampling Date		2020/08/19 17:29		
COC Number		785389-03-01		
	UNITS	PKWC20-05	RDL	QC Batch
Nutritional Parameters				
Moisture	g/100g	77.9	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE875	NLE876		NLE877			NLE877		
Sampling Date		2020/08/19 16:07	2020/08/19 16:22		2020/08/19 14:55			2020/08/19 14:55		
COC Number		785389-03-01	785389-03-01		785389-03-01			785389-03-01		
	UNITS	WFWC20-04	WFWC20-05	QC Batch	NPWC20-01	RDL	QC Batch	NPWC20-01 Lab-Dup	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	<0.18	<0.18	6914920	<0.18	0.18	6914920			
Metals										
Mercury (Hg)	ug/g	0.036	0.081	6921096	0.065	0.005	6921092	0.062	0.005	6921092
Arsenic (As)	ug/g	<0.1	<0.1	6912503	<0.1	0.1	6912631			
Antimony (Sb)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Barium (Ba)	ug/g	<0.3	<0.3	6912503	<0.3	0.3	6912631			
Beryllium (Be)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Bismuth (Bi)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Boron (B)	ug/g	<0.5	<0.5	6912503	<0.5	0.5	6912631			
Cadmium (Cd)	ug/g	<0.01	<0.01	6912503	<0.01	0.01	6912631			
Calcium (Ca)	ug/g	410	1000	6912503	1500	50	6912631			
Cesium (Cs)	ug/g	0.023	0.015	6912503	0.017	0.005	6912631			
Chromium (Cr)	ug/g	<0.3	<0.3	6912503	<0.3	0.3	6912631			
Cobalt (Co)	ug/g	<0.005	<0.005	6912503	<0.005	0.005	6912631			
Copper (Cu)	ug/g	<0.5	<0.5	6912503	<0.5	0.5	6912631			
Iron (Fe)	ug/g	4	5	6912503	<3	3	6912631			
Lead (Pb)	ug/g	<0.03	<0.03	6912503	<0.03	0.03	6912631			
Magnesium (Mg)	ug/g	250	240	6912503	260	100	6912631			
Manganese (Mn)	ug/g	<0.3	<0.3	6912503	0.8	0.3	6912631			
Molybdenum (Mo)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Nickel (Ni)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Phosphorus (P)	ug/g	2100	2200	6912503	2900	500	6912631			
Potassium (K)	ug/g	3700	3300	6912503	3400	100	6912631			
Selenium (Se)	ug/g	0.16	0.14	6912503	0.12	0.04	6912631			
Silver (Ag)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			
Sodium (Na)	ug/g	450	590	6912503	420	50	6912631			
Strontium (Sr)	ug/g	<0.5	<0.5	6912503	<0.5	0.5	6912631			
Thallium (Tl)	ug/g	<0.003	<0.003	6912503	0.005	0.003	6912631			
Tin (Sn)	ug/g	<0.3	<0.3	6912503	<0.3	0.3	6912631			
Titanium (Ti)	ug/g	1.1	1.2	6912503	1.4	0.5	6912631			
Uranium (U)	ug/g	<0.005	<0.005	6912503	<0.005	0.005	6912631			
Vanadium (V)	ug/g	<0.05	<0.05	6912503	<0.05	0.05	6912631			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE875	NLE876		NLE877			NLE877		
Sampling Date		2020/08/19 16:07	2020/08/19 16:22		2020/08/19 14:55			2020/08/19 14:55		
COC Number		785389-03-01	785389-03-01		785389-03-01			785389-03-01		
	UNITS	WFWC20-04	WFWC20-05	QC Batch	NPWC20-01	RDL	QC Batch	NPWC20-01 Lab-Dup	RDL	QC Batch
Zinc (Zn)	ug/g	5	7	6912503	8	2	6912631			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE878		NLE879		
Sampling Date		2020/08/19 16:52		2020/08/19 17:29		
COC Number		785389-03-01		785389-03-01		
	UNITS	PKWC20-02	QC Batch	PKWC20-05	RDL	QC Batch
Inorganics						
Chromium (VI)	ug/g	<0.18	6914932	<0.18	0.18	6914920
Metals						
Mercury (Hg)	ug/g	0.24	6921096	0.27	0.005	6921096
Arsenic (As)	ug/g	<0.1	6912503	<0.1	0.1	6912631
Antimony (Sb)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Barium (Ba)	ug/g	<0.3	6912503	<0.3	0.3	6912631
Beryllium (Be)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Bismuth (Bi)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Boron (B)	ug/g	<0.5	6912503	<0.5	0.5	6912631
Cadmium (Cd)	ug/g	<0.01	6912503	<0.01	0.01	6912631
Calcium (Ca)	ug/g	180	6912503	1700	50	6912631
Cesium (Cs)	ug/g	0.050	6912503	0.051	0.005	6912631
Chromium (Cr)	ug/g	<0.3	6912503	<0.3	0.3	6912631
Cobalt (Co)	ug/g	<0.005	6912503	<0.005	0.005	6912631
Copper (Cu)	ug/g	<0.5	6912503	<0.5	0.5	6912631
Iron (Fe)	ug/g	<3	6912503	5	3	6912631
Lead (Pb)	ug/g	<0.03	6912503	<0.03	0.03	6912631
Magnesium (Mg)	ug/g	260	6912503	280	100	6912631
Manganese (Mn)	ug/g	<0.3	6912503	0.4	0.3	6912631
Molybdenum (Mo)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Nickel (Ni)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Phosphorus (P)	ug/g	1900	6912503	3200	500	6912631
Potassium (K)	ug/g	4000	6912503	3700	100	6912631
Selenium (Se)	ug/g	0.15	6912503	0.15	0.04	6912631
Silver (Ag)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Sodium (Na)	ug/g	570	6912503	550	50	6912631
Strontium (Sr)	ug/g	<0.5	6912503	<0.5	0.5	6912631
Thallium (Tl)	ug/g	0.004	6912503	0.005	0.003	6912631
Tin (Sn)	ug/g	<0.3	6912503	<0.3	0.3	6912631
Titanium (Ti)	ug/g	1.0	6912503	1.8	0.5	6912631
Uranium (U)	ug/g	<0.005	6912503	<0.005	0.005	6912631
Vanadium (V)	ug/g	<0.05	6912503	<0.05	0.05	6912631
Zinc (Zn)	ug/g	6	6912503	5	2	6912631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE875
Sample ID: WFWC20-04
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE876
Sample ID: WFWC20-05
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE877
Sample ID: NPWC20-01
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE877 Dup
Sample ID: NPWC20-01
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel

BV Labs ID: NLE878
Sample ID: PKWC20-02
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE879
Sample ID: PKWC20-05
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-0.3°C

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.
Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6910943	Moisture	2020/08/26					<0.1	g/100g	1.3	20	105	N/A
6911971	Moisture	2020/08/26					<0.1	g/100g	0.13	20	105	N/A
6912503	Antimony (Sb)	2020/08/28	93	75 - 125	96	80 - 120	<0.05	ug/g	NC	30		
6912503	Arsenic (As)	2020/08/28	93	75 - 125	93	80 - 120	<0.1	ug/g	NC	30	98	70 - 130
6912503	Barium (Ba)	2020/08/28	92	75 - 125	96	80 - 120	<0.3	ug/g	NC	30		
6912503	Beryllium (Be)	2020/08/28	92	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912503	Bismuth (Bi)	2020/08/28	97	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
6912503	Boron (B)	2020/08/28	89	75 - 125	95	80 - 120	<0.5	ug/g	NC	30		
6912503	Cadmium (Cd)	2020/08/28	90	75 - 125	93	80 - 120	<0.01	ug/g	NC	30	93	70 - 130
6912503	Calcium (Ca)	2020/08/28	103	75 - 125	97	80 - 120	<50	ug/g	0.021	30		
6912503	Cesium (Cs)	2020/08/28	93	N/A	95	N/A	<0.005	ug/g	3.3	30		
6912503	Chromium (Cr)	2020/08/28	90	75 - 125	91	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912503	Cobalt (Co)	2020/08/28	92	75 - 125	93	80 - 120	<0.005	ug/g	NC	30	96	70 - 130
6912503	Copper (Cu)	2020/08/28	92	75 - 125	92	80 - 120	<0.5	ug/g	NC	30	90	70 - 130
6912503	Iron (Fe)	2020/08/28	93	75 - 125	95	80 - 120	<3	ug/g	3.1	30	89	70 - 130
6912503	Lead (Pb)	2020/08/28	93	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	95	70 - 130
6912503	Magnesium (Mg)	2020/08/28	98	75 - 125	99	80 - 120	<100	ug/g	0.22	30		
6912503	Manganese (Mn)	2020/08/28	91	75 - 125	92	80 - 120	<0.3	ug/g	NC	30	88	70 - 130
6912503	Molybdenum (Mo)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	95	70 - 130
6912503	Nickel (Ni)	2020/08/28	92	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	90	60 - 140
6912503	Phosphorus (P)	2020/08/28	NC	75 - 125	126	80 - 120	<50	ug/g	2.0	30		
6912503	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	0.31	30		
6912503	Selenium (Se)	2020/08/28	92	75 - 125	94	80 - 120	<0.04	ug/g	0.57	30	94	70 - 130
6912503	Silver (Ag)	2020/08/28	87	75 - 125	90	80 - 120	<0.05	ug/g	NC	30		
6912503	Sodium (Na)	2020/08/28	94	75 - 125	93	80 - 120	<50	ug/g	0.44	30		
6912503	Strontium (Sr)	2020/08/28	91	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	88	70 - 130
6912503	Thallium (Tl)	2020/08/28	89	75 - 125	91	80 - 120	<0.003	ug/g	NC	30		
6912503	Tin (Sn)	2020/08/28	92	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912503	Titanium (Ti)	2020/08/28	93	75 - 125	93	80 - 120	<0.5	ug/g	5.0	30		
6912503	Uranium (U)	2020/08/28	94	N/A	95	N/A	<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912503	Vanadium (V)	2020/08/28	90	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	90	70 - 130
6912503	Zinc (Zn)	2020/08/28	93	75 - 125	92	80 - 120	<2	ug/g	6.7	30	93	70 - 130
6912631	Antimony (Sb)	2020/08/28	86	75 - 125	91	80 - 120	<0.05	ug/g	NC	30		
6912631	Arsenic (As)	2020/08/28	91	75 - 125	95	80 - 120	<0.1	ug/g	NC	30	91	70 - 130
6912631	Barium (Ba)	2020/08/28	89	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912631	Beryllium (Be)	2020/08/28	91	75 - 125	94	80 - 120	<0.05	ug/g	NC	30		
6912631	Bismuth (Bi)	2020/08/28	94	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912631	Boron (B)	2020/08/28	90	75 - 125	89	80 - 120	<0.5	ug/g	NC	30		
6912631	Cadmium (Cd)	2020/08/28	88	75 - 125	92	80 - 120	<0.01	ug/g	NC	30	83	70 - 130
6912631	Calcium (Ca)	2020/08/28	95	75 - 125	99	80 - 120	<50	ug/g	0.047	30		
6912631	Cesium (Cs)	2020/08/28					<0.005	ug/g	9.1	30		
6912631	Chromium (Cr)	2020/08/28	93	75 - 125	96	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912631	Cobalt (Co)	2020/08/28	94	75 - 125	97	80 - 120	<0.005	ug/g	NC	30	91	70 - 130
6912631	Copper (Cu)	2020/08/28	94	75 - 125	95	80 - 120	<0.5	ug/g	NC	30	83	70 - 130
6912631	Iron (Fe)	2020/08/28	94	75 - 125	98	80 - 120	<3	ug/g	NC	30	85	70 - 130
6912631	Lead (Pb)	2020/08/28	89	75 - 125	96	80 - 120	<0.03	ug/g	NC	30	80	70 - 130
6912631	Magnesium (Mg)	2020/08/28	98	75 - 125	97	80 - 120	<100	ug/g	1.5	30		
6912631	Manganese (Mn)	2020/08/28	90	75 - 125	93	80 - 120	<0.3	ug/g	NC	30	82	70 - 130
6912631	Molybdenum (Mo)	2020/08/28	88	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	86	70 - 130
6912631	Nickel (Ni)	2020/08/28	97	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	87	60 - 140
6912631	Phosphorus (P)	2020/08/28			113	80 - 120	<50	ug/g	0.67	30		
6912631	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	1.8	30		
6912631	Selenium (Se)	2020/08/28	94	75 - 125	100	80 - 120	<0.04	ug/g	0.47	30	89	70 - 130
6912631	Silver (Ag)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30		
6912631	Sodium (Na)	2020/08/28	94	75 - 125	102	80 - 120	<50	ug/g	2.3	30		
6912631	Strontium (Sr)	2020/08/28	88	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	80	70 - 130
6912631	Thallium (Tl)	2020/08/28	87	75 - 125	93	80 - 120	<0.003	ug/g	NC	30		
6912631	Tin (Sn)	2020/08/28	88	75 - 125	92	80 - 120	<0.3	ug/g	NC	30		
6912631	Titanium (Ti)	2020/08/28	89	75 - 125	94	80 - 120	<0.5	ug/g	3.6	30		
6912631	Uranium (U)	2020/08/28					<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912631	Vanadium (V)	2020/08/28	94	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	88	70 - 130
6912631	Zinc (Zn)	2020/08/28	90	75 - 125	95	80 - 120	<2	ug/g	1.8	30	87	70 - 130
6914920	Chromium (VI)	2020/08/31	49 (1)	70 - 130	88	80 - 120	<0.18	ug/g	NC	35		
6914932	Chromium (VI)	2020/08/29	54 (1)	70 - 130	87	80 - 120	<0.18	ug/g	NC	35		
6921092	Mercury (Hg)	2020/09/03	93	70 - 130			<0.005	ug/g	5.3	35	90	70 - 130
6921096	Mercury (Hg)	2020/09/03	86.66%	70 - 130			<0.005	ug/g	3.6	35	87	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

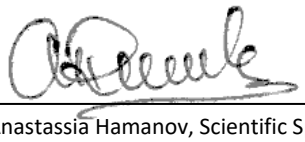
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6400
Report Date: 2020/09/14

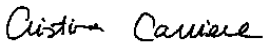
SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist



Cristina Carriere, Senior Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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24-Aug-20 11:50
Ema Gitej
C0L6400

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:			
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309	J_L FZ-46	y:
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:			Bottle Order #: 785389
Address:	455 René-Lévesque Blvd. West Montreal QC H2Z 1Z3	Address:	1145 Hunt Club Road Suite 120 Ottawa ON K1V 0Y3	Project:	6161910	COC #: C#785389-03-01	Project Manager: Ema Gitej
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 228 Fax:	Project Name:	Webequie Supply Road		
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@sncla	Site #:	Winisk River Channel		
				Sampled By:	Holly Dodds+Ashley McGrath		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine; ☐ Table 2 ☐ Ind/Comm ☐ Coarse; ☐ Table 3 ☐ Agri/Other ☐ For RSC; ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw; ☐ Reg 558 ☐ Storm Sewer Bylaw; ☐ MISA Municipality ___; ☐ PWQO ☐ Reg 406 Table ___; ☐ Other ___

Include Criteria on Certificate of Analysis (Y/N)? ___

Special Instructions: Refer to request associated with quote.

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Metals, incl. Cr VI and Hg	Moisture	# of Bottles	Comments
1		WFWC20-04	08/19/2020	16:07	TISSUE		X	X	1	
2		WFWC20-05	08/19/2020	16:22	TISSUE		X	X	1	
3		NPWC20-01	08/19/2020	14:55	TISSUE		X	X	1	
4		PKWC20-02	08/19/2020	16:52	TISSUE		X	X	1	
5		PKWC20-05	08/19/2020	17:29	TISSUE		X	X	1	
6										
7										
8										
9										
10										

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Holly Dodds / ASHLEY MCGRATH	20/08/24	10:00am		20/08/24	1150	

Laboratory Use Only: Time Sensitive; Temperature (°C) on Receipt: 0.1 | 0.1 ice; Custody Seal Present: Yes ☒ / No ☐; Intact: Yes ☒ / No ☐

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISK LAKE
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-02-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329707
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6411
Received: 2020/08/24, 11:50

Sample Matrix: Tissue
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	5	2020/08/28	2020/08/29	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	5	2020/08/28	2020/08/31	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	10	N/A	2020/09/03	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	9	N/A	2020/08/28	CAM SOP-00447	EPA 6020B m/200.3 m
Metals in Tissue by ICPMS	1	N/A	2020/08/31	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	7	N/A	2020/08/26	CAM SOP-00715	AOAC methodology
Moisture	3	N/A	2020/08/27	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISK LAKE
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-02-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329707
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6411
Received: 2020/08/24, 11:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NLE921		NLE922		NLE923	NLE924		
Sampling Date		2020/08/21 15:33		2020/08/21 15:58		2020/08/21 17:03	2020/08/21 17:16		
COC Number		785389-02-01		785389-02-01		785389-02-01	785389-02-01		
	UNITS	WLNP20-01	QC Batch	WLNP20-02	QC Batch	WLPK20-01	WLPK20-02	RDL	QC Batch
Nutritional Parameters									
Moisture	g/100g	79.2	6911971	79.1	6910943	80.3	80.2	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		NLE925		NLE926		NLE927	NLE928	NLE929		
Sampling Date		2020/08/21 17:37		2020/08/21 17:46		2020/08/21 17:54	2020/08/21 18:00	2020/08/21 18:04		
COC Number		785389-02-01		785389-02-01		785389-02-01	785389-02-01	785389-02-01		
	UNITS	WLPK20-04	QC Batch	WLPK20-05	QC Batch	WLWF20-01	WLWF20-02	WLWF20-03	RDL	QC Batch
Nutritional Parameters										
Moisture	g/100g	79.2	6910943	79.2	6911971	80.5	81.8	83.6	0.1	6913338

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		NLE930		
Sampling Date		2020/08/21 18:10		
COC Number		785389-02-01		
	UNITS	WLWF20-04	RDL	QC Batch
Nutritional Parameters				
Moisture	g/100g	81.4	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE921		NLE922		NLE923		
Sampling Date		2020/08/21 15:33		2020/08/21 15:58		2020/08/21 17:03		
COC Number		785389-02-01		785389-02-01		785389-02-01		
	UNITS	WLNP20-01	QC Batch	WLNP20-02	QC Batch	WLPK20-01	RDL	QC Batch
Inorganics								
Chromium (VI)	ug/g	<0.18	6914920	<0.18	6914932	<0.18	0.18	6914920
Metals								
Mercury (Hg)	ug/g	0.063	6921096	0.18	6921096	0.048	0.005	6921096
Arsenic (As)	ug/g	<0.1	6912631	<0.1	6912503	<0.1	0.1	6912631
Antimony (Sb)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Barium (Ba)	ug/g	<0.3	6912631	<0.3	6912503	<0.3	0.3	6912631
Beryllium (Be)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Bismuth (Bi)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Boron (B)	ug/g	<0.5	6912631	<0.5	6912503	<0.5	0.5	6912631
Cadmium (Cd)	ug/g	<0.01	6912631	<0.01	6912503	<0.01	0.01	6912631
Calcium (Ca)	ug/g	250	6912631	520	6912503	89	50	6912631
Cesium (Cs)	ug/g	0.014	6912631	0.028	6912503	0.037	0.005	6912631
Chromium (Cr)	ug/g	<0.3	6912631	<0.3	6912503	<0.3	0.3	6912631
Cobalt (Co)	ug/g	<0.005	6912631	<0.005	6912503	<0.005	0.005	6912631
Copper (Cu)	ug/g	<0.5	6912631	<0.5	6912503	<0.5	0.5	6912631
Iron (Fe)	ug/g	<3	6912631	<3	6912503	<3	3	6912631
Lead (Pb)	ug/g	<0.03	6912631	<0.03	6912503	<0.03	0.03	6912631
Magnesium (Mg)	ug/g	270	6912631	270	6912503	250	100	6912631
Manganese (Mn)	ug/g	<0.3	6912631	<0.3	6912503	<0.3	0.3	6912631
Molybdenum (Mo)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Nickel (Ni)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Phosphorus (P)	ug/g	2400	6912631	2000	6912503	2200	500	6912631
Potassium (K)	ug/g	3600	6912631	3700	6912503	3700	100	6912631
Selenium (Se)	ug/g	0.12	6912631	0.14	6912503	0.16	0.04	6912631
Silver (Ag)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Sodium (Na)	ug/g	470	6912631	540	6912503	520	50	6912631
Strontium (Sr)	ug/g	<0.5	6912631	<0.5	6912503	<0.5	0.5	6912631
Thallium (Tl)	ug/g	0.004	6912631	<0.003	6912503	<0.003	0.003	6912631
Tin (Sn)	ug/g	<0.3	6912631	<0.3	6912503	<0.3	0.3	6912631
Titanium (Ti)	ug/g	1.2	6912631	1.1	6912503	1.0	0.5	6912631
Uranium (U)	ug/g	<0.005	6912631	<0.005	6912503	<0.005	0.005	6912631
Vanadium (V)	ug/g	<0.05	6912631	<0.05	6912503	<0.05	0.05	6912631
Zinc (Zn)	ug/g	7	6912631	14	6912503	4	2	6912631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE923			NLE924		NLE925		
Sampling Date		2020/08/21 17:03			2020/08/21 17:16		2020/08/21 17:37		
COC Number		785389-02-01			785389-02-01		785389-02-01		
	UNITS	WLPK20-01 Lab-Dup	RDL	QC Batch	WLPK20-02	QC Batch	WLPK20-04	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g				<0.18	6914920	<0.18	0.18	6914920
Metals									
Mercury (Hg)	ug/g	0.047	0.005	6921096	0.078	6921096	0.056	0.005	6921096
Arsenic (As)	ug/g	<0.1	0.1	6912631	<0.1	6912631	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	0.3	6912631	<0.3	6912631	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	0.5	6912631	<0.5	6912631	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	0.01	6912631	<0.01	6912631	<0.01	0.01	6912503
Calcium (Ca)	ug/g	90	50	6912631	1500	6912631	2000	50	6912503
Cesium (Cs)	ug/g	0.040	0.005	6912631	0.026	6912631	0.023	0.005	6912503
Chromium (Cr)	ug/g	<0.3	0.3	6912631	<0.3	6912631	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	0.005	6912631	<0.005	6912631	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	0.5	6912631	<0.5	6912631	<0.5	0.5	6912503
Iron (Fe)	ug/g	<3	3	6912631	<3	6912631	3	3	6912503
Lead (Pb)	ug/g	<0.03	0.03	6912631	<0.03	6912631	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	250	100	6912631	280	6912631	290	100	6912503
Manganese (Mn)	ug/g	<0.3	0.3	6912631	<0.3	6912631	<0.3	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	0.05	6912631	<0.05	6912631	0.10	0.05	6912503
Phosphorus (P)	ug/g	2200	500	6912631	3000	6912631	2700	500	6912503
Potassium (K)	ug/g	3700	100	6912631	3800	6912631	3800	100	6912503
Selenium (Se)	ug/g	0.16	0.04	6912631	0.17	6912631	0.15	0.04	6912503
Silver (Ag)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503
Sodium (Na)	ug/g	510	50	6912631	470	6912631	590	50	6912503
Strontium (Sr)	ug/g	<0.5	0.5	6912631	<0.5	6912631	<0.5	0.5	6912503
Thallium (Tl)	ug/g	<0.003	0.003	6912631	<0.003	6912631	0.003	0.003	6912503
Tin (Sn)	ug/g	<0.3	0.3	6912631	<0.3	6912631	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.1	0.5	6912631	1.4	6912631	1.5	0.5	6912503
Uranium (U)	ug/g	<0.005	0.005	6912631	<0.005	6912631	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	0.05	6912631	<0.05	6912631	<0.05	0.05	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE923			NLE924		NLE925		
Sampling Date		2020/08/21 17:03			2020/08/21 17:16		2020/08/21 17:37		
COC Number		785389-02-01			785389-02-01		785389-02-01		
	UNITS	WLPK20-01 Lab-Dup	RDL	QC Batch	WLPK20-02	QC Batch	WLPK20-04	RDL	QC Batch
Zinc (Zn)	ug/g	4	2	6912631	5	6912631	6	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE926		NLE927	NLE928		NLE929		
Sampling Date		2020/08/21 17:46		2020/08/21 17:54	2020/08/21 18:00		2020/08/21 18:04		
COC Number		785389-02-01		785389-02-01	785389-02-01		785389-02-01		
	UNITS	WLPK20-05	QC Batch	WLWF20-01	WLWF20-02	RDL	WLWF20-03	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	<0.18	6914920	<0.18	<0.18	0.18	<0.18	0.18	6914932
Metals									
Mercury (Hg)	ug/g	0.059	6921096	0.030	0.022	0.005	0.030	0.005	6921096
Arsenic (As)	ug/g	<0.1	6912631	<0.1	<0.1	0.1	<0.1	0.1	6912631
Antimony (Sb)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Barium (Ba)	ug/g	<0.3	6912631	<0.3	<0.3	0.3	0.3	0.3	6912631
Beryllium (Be)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Bismuth (Bi)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Boron (B)	ug/g	<0.5	6912631	<0.5	<0.5	0.5	<0.5	0.5	6912631
Cadmium (Cd)	ug/g	<0.01	6912631	<0.01	<0.01	0.01	<0.01	0.01	6912631
Calcium (Ca)	ug/g	740	6912631	1100	5700	50	8700	50	6912631
Cesium (Cs)	ug/g	0.033	6912631	0.005	<0.005	0.005	<0.005	0.005	6912631
Chromium (Cr)	ug/g	<0.3	6912631	<0.3	<0.3	0.3	<0.3	0.3	6912631
Cobalt (Co)	ug/g	<0.005	6912631	<0.005	<0.005	0.005	<0.005	0.005	6912631
Copper (Cu)	ug/g	<0.5	6912631	0.6	0.6	0.5	<0.5	0.5	6912631
Iron (Fe)	ug/g	<3	6912631	4	6	3	6	3	6912631
Lead (Pb)	ug/g	<0.03	6912631	<0.03	<0.03	0.03	<0.03	0.03	6912631
Magnesium (Mg)	ug/g	270	6912631	210	280	100	300	100	6912631
Manganese (Mn)	ug/g	<0.3	6912631	<0.3	0.9	0.3	1.2	0.3	6912631
Molybdenum (Mo)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Nickel (Ni)	ug/g	<0.05	6912631	<0.05	0.06	0.05	<0.05	0.05	6912631
Phosphorus (P)	ug/g	2600	6912631	2200	4700	500	6000	3000	6912631
Potassium (K)	ug/g	3700	6912631	2700	2500	100	1700	100	6912631
Selenium (Se)	ug/g	0.17	6912631	0.13	0.15	0.04	0.13	0.04	6912631
Silver (Ag)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Sodium (Na)	ug/g	590	6912631	450	560	50	430	50	6912631
Strontium (Sr)	ug/g	<0.5	6912631	0.5	2.2	0.5	3.1	0.5	6912631
Thallium (Tl)	ug/g	<0.003	6912631	<0.003	<0.003	0.003	<0.003	0.003	6912631
Tin (Sn)	ug/g	<0.3	6912631	<0.3	<0.3	0.3	<0.3	0.3	6912631
Titanium (Ti)	ug/g	1.3	6912631	1.1	2.4	0.5	3.0	0.5	6912631
Uranium (U)	ug/g	<0.005	6912631	<0.005	<0.005	0.005	<0.005	0.005	6912631
Vanadium (V)	ug/g	<0.05	6912631	<0.05	<0.05	0.05	<0.05	0.05	6912631
Zinc (Zn)	ug/g	5	6912631	11	22	2	20	2	6912631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE930		
Sampling Date		2020/08/21 18:10		
COC Number		785389-02-01		
	UNITS	WLWF20-04	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	<0.18	0.18	6914932
Metals				
Mercury (Hg)	ug/g	0.012	0.005	6921096
Arsenic (As)	ug/g	<0.1	0.1	6912631
Antimony (Sb)	ug/g	<0.05	0.05	6912631
Barium (Ba)	ug/g	<0.3	0.3	6912631
Beryllium (Be)	ug/g	<0.05	0.05	6912631
Bismuth (Bi)	ug/g	<0.05	0.05	6912631
Boron (B)	ug/g	<0.5	0.5	6912631
Cadmium (Cd)	ug/g	<0.01	0.01	6912631
Calcium (Ca)	ug/g	270	50	6912631
Cesium (Cs)	ug/g	0.015	0.005	6912631
Chromium (Cr)	ug/g	<0.3	0.3	6912631
Cobalt (Co)	ug/g	<0.005	0.005	6912631
Copper (Cu)	ug/g	<0.5	0.5	6912631
Iron (Fe)	ug/g	<3	3	6912631
Lead (Pb)	ug/g	<0.03	0.03	6912631
Magnesium (Mg)	ug/g	230	100	6912631
Manganese (Mn)	ug/g	<0.3	0.3	6912631
Molybdenum (Mo)	ug/g	<0.05	0.05	6912631
Nickel (Ni)	ug/g	<0.05	0.05	6912631
Phosphorus (P)	ug/g	2100	500	6912631
Potassium (K)	ug/g	3300	100	6912631
Selenium (Se)	ug/g	0.16	0.04	6912631
Silver (Ag)	ug/g	<0.05	0.05	6912631
Sodium (Na)	ug/g	590	50	6912631
Strontium (Sr)	ug/g	<0.5	0.5	6912631
Thallium (Tl)	ug/g	<0.003	0.003	6912631
Tin (Sn)	ug/g	<0.3	0.3	6912631
Titanium (Ti)	ug/g	1.1	0.5	6912631
Uranium (U)	ug/g	<0.005	0.005	6912631
Vanadium (V)	ug/g	<0.05	0.05	6912631
Zinc (Zn)	ug/g	5	2	6912631

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE921
Sample ID: WLNP20-01
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE922
Sample ID: WLNP20-02
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE923
Sample ID: WLPK20-01
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE923 Dup
Sample ID: WLPK20-01
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu

BV Labs ID: NLE924
Sample ID: WLPK20-02
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE925
Sample ID: WLPK20-04
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE926
Sample ID: WLPK20-05
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE927
Sample ID: WLWF20-01
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6913338	N/A	2020/08/27	Priya Desai

BV Labs ID: NLE928
Sample ID: WLWF20-02
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6913338	N/A	2020/08/27	Priya Desai

BV Labs ID: NLE929
Sample ID: WLWF20-03
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/31	Daniel Teclu
Moisture		6913338	N/A	2020/08/27	Priya Desai

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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE930
Sample ID: WLWF20-04
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921096	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912631	N/A	2020/08/28	Daniel Teclu
Moisture		6911971	N/A	2020/08/26	Priya Desai

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BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	0.0°C

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.
Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6910943	Moisture	2020/08/26					<0.1	g/100g	1.3	20	105	N/A
6911971	Moisture	2020/08/26					<0.1	g/100g	0.13	20	105	N/A
6912503	Antimony (Sb)	2020/08/28	93	75 - 125	96	80 - 120	<0.05	ug/g	NC	30		
6912503	Arsenic (As)	2020/08/28	93	75 - 125	93	80 - 120	<0.1	ug/g	NC	30	98	70 - 130
6912503	Barium (Ba)	2020/08/28	92	75 - 125	96	80 - 120	<0.3	ug/g	NC	30		
6912503	Beryllium (Be)	2020/08/28	92	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912503	Bismuth (Bi)	2020/08/28	97	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
6912503	Boron (B)	2020/08/28	89	75 - 125	95	80 - 120	<0.5	ug/g	NC	30		
6912503	Cadmium (Cd)	2020/08/28	90	75 - 125	93	80 - 120	<0.01	ug/g	NC	30	93	70 - 130
6912503	Calcium (Ca)	2020/08/28	103	75 - 125	97	80 - 120	<50	ug/g	0.021	30		
6912503	Cesium (Cs)	2020/08/28	93	N/A	95	N/A	<0.005	ug/g	3.3	30		
6912503	Chromium (Cr)	2020/08/28	90	75 - 125	91	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912503	Cobalt (Co)	2020/08/28	92	75 - 125	93	80 - 120	<0.005	ug/g	NC	30	96	70 - 130
6912503	Copper (Cu)	2020/08/28	92	75 - 125	92	80 - 120	<0.5	ug/g	NC	30	90	70 - 130
6912503	Iron (Fe)	2020/08/28	93	75 - 125	95	80 - 120	<3	ug/g	3.1	30	89	70 - 130
6912503	Lead (Pb)	2020/08/28	93	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	95	70 - 130
6912503	Magnesium (Mg)	2020/08/28	98	75 - 125	99	80 - 120	<100	ug/g	0.22	30		
6912503	Manganese (Mn)	2020/08/28	91	75 - 125	92	80 - 120	<0.3	ug/g	NC	30	88	70 - 130
6912503	Molybdenum (Mo)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	95	70 - 130
6912503	Nickel (Ni)	2020/08/28	92	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	90	60 - 140
6912503	Phosphorus (P)	2020/08/28	NC	75 - 125	126	80 - 120	<50	ug/g	2.0	30		
6912503	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	0.31	30		
6912503	Selenium (Se)	2020/08/28	92	75 - 125	94	80 - 120	<0.04	ug/g	0.57	30	94	70 - 130
6912503	Silver (Ag)	2020/08/28	87	75 - 125	90	80 - 120	<0.05	ug/g	NC	30		
6912503	Sodium (Na)	2020/08/28	94	75 - 125	93	80 - 120	<50	ug/g	0.44	30		
6912503	Strontium (Sr)	2020/08/28	91	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	88	70 - 130
6912503	Thallium (Tl)	2020/08/28	89	75 - 125	91	80 - 120	<0.003	ug/g	NC	30		
6912503	Tin (Sn)	2020/08/28	92	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912503	Titanium (Ti)	2020/08/28	93	75 - 125	93	80 - 120	<0.5	ug/g	5.0	30		
6912503	Uranium (U)	2020/08/28	94	N/A	95	N/A	<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912503	Vanadium (V)	2020/08/28	90	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	90	70 - 130
6912503	Zinc (Zn)	2020/08/28	93	75 - 125	92	80 - 120	<2	ug/g	6.7	30	93	70 - 130
6912631	Antimony (Sb)	2020/08/28	86	75 - 125	91	80 - 120	<0.05	ug/g	NC	30		
6912631	Arsenic (As)	2020/08/28	91	75 - 125	95	80 - 120	<0.1	ug/g	NC	30	91	70 - 130
6912631	Barium (Ba)	2020/08/28	89	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912631	Beryllium (Be)	2020/08/28	91	75 - 125	94	80 - 120	<0.05	ug/g	NC	30		
6912631	Bismuth (Bi)	2020/08/28	94	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912631	Boron (B)	2020/08/28	90	75 - 125	89	80 - 120	<0.5	ug/g	NC	30		
6912631	Cadmium (Cd)	2020/08/28	88	75 - 125	92	80 - 120	<0.01	ug/g	NC	30	83	70 - 130
6912631	Calcium (Ca)	2020/08/28	95	75 - 125	99	80 - 120	<50	ug/g	0.047	30		
6912631	Cesium (Cs)	2020/08/28					<0.005	ug/g	9.1	30		
6912631	Chromium (Cr)	2020/08/28	93	75 - 125	96	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912631	Cobalt (Co)	2020/08/28	94	75 - 125	97	80 - 120	<0.005	ug/g	NC	30	91	70 - 130
6912631	Copper (Cu)	2020/08/28	94	75 - 125	95	80 - 120	<0.5	ug/g	NC	30	83	70 - 130
6912631	Iron (Fe)	2020/08/28	94	75 - 125	98	80 - 120	<3	ug/g	NC	30	85	70 - 130
6912631	Lead (Pb)	2020/08/28	89	75 - 125	96	80 - 120	<0.03	ug/g	NC	30	80	70 - 130
6912631	Magnesium (Mg)	2020/08/28	98	75 - 125	97	80 - 120	<100	ug/g	1.5	30		
6912631	Manganese (Mn)	2020/08/28	90	75 - 125	93	80 - 120	<0.3	ug/g	NC	30	82	70 - 130
6912631	Molybdenum (Mo)	2020/08/28	88	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	86	70 - 130
6912631	Nickel (Ni)	2020/08/28	97	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	87	60 - 140
6912631	Phosphorus (P)	2020/08/28			113	80 - 120	<50	ug/g	0.67	30		
6912631	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	1.8	30		
6912631	Selenium (Se)	2020/08/28	94	75 - 125	100	80 - 120	<0.04	ug/g	0.47	30	89	70 - 130
6912631	Silver (Ag)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30		
6912631	Sodium (Na)	2020/08/28	94	75 - 125	102	80 - 120	<50	ug/g	2.3	30		
6912631	Strontium (Sr)	2020/08/28	88	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	80	70 - 130
6912631	Thallium (Tl)	2020/08/28	87	75 - 125	93	80 - 120	<0.003	ug/g	NC	30		
6912631	Tin (Sn)	2020/08/28	88	75 - 125	92	80 - 120	<0.3	ug/g	NC	30		
6912631	Titanium (Ti)	2020/08/28	89	75 - 125	94	80 - 120	<0.5	ug/g	3.6	30		
6912631	Uranium (U)	2020/08/28					<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912631	Vanadium (V)	2020/08/28	94	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	88	70 - 130
6912631	Zinc (Zn)	2020/08/28	90	75 - 125	95	80 - 120	<2	ug/g	1.8	30	87	70 - 130
6913338	Moisture	2020/08/27					<0.1	g/100g	5.2	20	104	N/A
6914920	Chromium (VI)	2020/08/31	49 (1)	70 - 130	88	80 - 120	<0.18	ug/g	NC	35		
6914932	Chromium (VI)	2020/08/29	54 (1)	70 - 130	87	80 - 120	<0.18	ug/g	NC	35		
6921096	Mercury (Hg)	2020/09/03	86.66%	70 - 130			<0.005	ug/g	3.6	35	87	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6411
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

<original signed by>

Anastassia Hamanov, Scientific Specialist

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Laboratories
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24-Aug-20 11:50
Ema Gitej
C0L6411
J_L FZ-46

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:	
Address:	455 René-Lévesque Blvd. West Montreal QC H2Z 1Z3	Address:	1145 Hunt Club Road Suite 120 Ottawa ON K1V 0Y3	Project:	Idol910
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 228 Fax:	Project Name:	Webequie Supply Road
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@snclavalin.com	Site #:	Winisk Lake
				Sampled By:	Holly Dodds + Ashley McGrath

Bottle Order #: 785389
COC #: C#785389-02-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Reg 406 Table ☐ Other

Special Instructions: Refer to request associated with quote.

Include Criteria on Certificate of Analysis (Y/N)? ____

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ____ Time Required: ____ ☐
Rush Confirmation Number: ____ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Metals, incl. CrVI and Hg	Moisture	# of Bottles	Comments
1		WLNP20-01	08/21/2020	15:33	TISSUE		X	X	1	
2		WLNP20-02	08/21/2020	15:58	TISSUE		X	X	1	
3		WLPK20-01	08/21/2020	17:03	TISSUE		X	X	1	
4		WLPK20-02	08/21/2020	17:16	TISSUE		X	X	1	
5		WLPK20-04	08/21/2020	17:37	TISSUE		X	X	1	
6		WLPK20-05	08/21/2020	17:46	TISSUE		X	X	1	
7		WLWF20-01	08/21/2020	17:54	TISSUE		X	X	1	
8		WLWF20-02	08/21/2020	18:00	TISSUE		X	X	1	
9		WLWF20-03	08/21/2020	18:04	TISSUE		X	X	1	
10		WLWF20-04	08/21/2020	18:10	TISSUE		X	X	1	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Holly McGrath/ASHLEY MCGRATH	20/08/24	10:09	JENNIFER DOWMAN	20/08/24	11:50	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 0 0 0 ICE
Custody Seal Present: Yes ✓ No
Intact

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-01-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329708
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6425
Received: 2020/08/24, 11:50

Sample Matrix: Tissue
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	1	2020/08/28	2020/08/29	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	3	2020/08/28	2020/08/31	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	4	N/A	2020/09/03	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	4	N/A	2020/08/28	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	4	N/A	2020/08/26	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-01-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329708
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6425
Received: 2020/08/24, 11:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
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BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NLE991		NLE992		NLE993	NLE994		
Sampling Date		2020/08/19 15:22		2020/08/19 15:54		2020/08/19 16:34	2020/08/19 16:45		
COC Number		785389-01-01		785389-01-01		785389-01-01	785389-01-01		
	UNITS	WFWC20-01	QC Batch	NPWC20-03	QC Batch	NPWC20-04	NPWC20-05	RDL	QC Batch
Nutritional Parameters									
Moisture	g/100g	78.3	6911971	80.1	6910943	79.8	80.1	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE991			NLE991			NLE992		
Sampling Date		2020/08/19 15:22			2020/08/19 15:22			2020/08/19 15:54		
COC Number		785389-01-01			785389-01-01			785389-01-01		
	UNITS	WFWC20-01	RDL	QC Batch	WFWC20-01 Lab-Dup	RDL	QC Batch	NPWC20-03	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	<0.18	0.18	6914920				<0.18	0.18	6914932
Metals										
Mercury (Hg)	ug/g	0.075	0.005	6921092				0.083	0.005	6921092
Arsenic (As)	ug/g	<0.1	0.1	6912503	<0.1	0.1	6912503	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	0.3	6912503	<0.3	0.3	6912503	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	0.5	6912503	<0.5	0.5	6912503	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	0.01	6912503	<0.01	0.01	6912503	<0.01	0.01	6912503
Calcium (Ca)	ug/g	82	50	6912503	82	50	6912503	780	50	6912503
Cesium (Cs)	ug/g	0.016	0.005	6912503	0.015	0.005	6912503	0.031	0.005	6912503
Chromium (Cr)	ug/g	<0.3	0.3	6912503	<0.3	0.3	6912503	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	0.005	6912503	<0.005	0.005	6912503	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	0.5	6912503	<0.5	0.5	6912503	<0.5	0.5	6912503
Iron (Fe)	ug/g	4	3	6912503	4	3	6912503	<3	3	6912503
Lead (Pb)	ug/g	<0.03	0.03	6912503	<0.03	0.03	6912503	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	240	100	6912503	240	100	6912503	300	100	6912503
Manganese (Mn)	ug/g	<0.3	0.3	6912503	<0.3	0.3	6912503	0.4	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Phosphorus (P)	ug/g	1900	500	6912503	1900	500	6912503	2200	500	6912503
Potassium (K)	ug/g	3400	100	6912503	3400	100	6912503	3800	100	6912503
Selenium (Se)	ug/g	0.15	0.04	6912503	0.15	0.04	6912503	0.12	0.04	6912503
Silver (Ag)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503
Sodium (Na)	ug/g	430	50	6912503	430	50	6912503	480	50	6912503
Strontium (Sr)	ug/g	<0.5	0.5	6912503	<0.5	0.5	6912503	<0.5	0.5	6912503
Thallium (Tl)	ug/g	<0.003	0.003	6912503	<0.003	0.003	6912503	0.004	0.003	6912503
Tin (Sn)	ug/g	<0.3	0.3	6912503	<0.3	0.3	6912503	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.0	0.5	6912503	1.0	0.5	6912503	1.2	0.5	6912503
Uranium (U)	ug/g	<0.005	0.005	6912503	<0.005	0.005	6912503	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	0.05	6912503	<0.05	0.05	6912503	<0.05	0.05	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE991			NLE991			NLE992		
Sampling Date		2020/08/19 15:22			2020/08/19 15:22			2020/08/19 15:54		
COC Number		785389-01-01			785389-01-01			785389-01-01		
	UNITS	WFWC20-01	RDL	QC Batch	WFWC20-01 Lab-Dup	RDL	QC Batch	NPWC20-03	RDL	QC Batch
Zinc (Zn)	ug/g	5	2	6912503	5	2	6912503	6	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLE993	NLE994		
Sampling Date		2020/08/19 16:34	2020/08/19 16:45		
COC Number		785389-01-01	785389-01-01		
	UNITS	NPWC20-04	NPWC20-05	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	<0.18	<0.18	0.18	6914920
Metals					
Mercury (Hg)	ug/g	0.14	0.057	0.005	6921092
Arsenic (As)	ug/g	<0.1	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	<0.01	0.01	6912503
Calcium (Ca)	ug/g	1300	1800	50	6912503
Cesium (Cs)	ug/g	0.024	0.019	0.005	6912503
Chromium (Cr)	ug/g	<0.3	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	<0.5	0.5	6912503
Iron (Fe)	ug/g	<3	<3	3	6912503
Lead (Pb)	ug/g	<0.03	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	300	290	100	6912503
Manganese (Mn)	ug/g	0.6	1.6	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	<0.05	0.05	6912503
Phosphorus (P)	ug/g	2400	2500	500	6912503
Potassium (K)	ug/g	3800	3400	100	6912503
Selenium (Se)	ug/g	0.15	0.12	0.04	6912503
Silver (Ag)	ug/g	<0.05	<0.05	0.05	6912503
Sodium (Na)	ug/g	380	480	50	6912503
Strontium (Sr)	ug/g	<0.5	<0.5	0.5	6912503
Thallium (Tl)	ug/g	<0.003	0.004	0.003	6912503
Tin (Sn)	ug/g	<0.3	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.3	1.3	0.5	6912503
Uranium (U)	ug/g	<0.005	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	<0.05	0.05	6912503
Zinc (Zn)	ug/g	6	10	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLE991
Sample ID: WFWC20-01
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE991 Dup
Sample ID: WFWC20-01
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad

BV Labs ID: NLE992
Sample ID: NPWC20-03
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE993
Sample ID: NPWC20-04
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLE994
Sample ID: NPWC20-05
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.0°C

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.
Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6910943	Moisture	2020/08/26					<0.1	g/100g	1.3	20	105	N/A
6911971	Moisture	2020/08/26					<0.1	g/100g	0.13	20	105	N/A
6912503	Antimony (Sb)	2020/08/28	93	75 - 125	96	80 - 120	<0.05	ug/g	NC	30		
6912503	Arsenic (As)	2020/08/28	93	75 - 125	93	80 - 120	<0.1	ug/g	NC	30	98	70 - 130
6912503	Barium (Ba)	2020/08/28	92	75 - 125	96	80 - 120	<0.3	ug/g	NC	30		
6912503	Beryllium (Be)	2020/08/28	92	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912503	Bismuth (Bi)	2020/08/28	97	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
6912503	Boron (B)	2020/08/28	89	75 - 125	95	80 - 120	<0.5	ug/g	NC	30		
6912503	Cadmium (Cd)	2020/08/28	90	75 - 125	93	80 - 120	<0.01	ug/g	NC	30	93	70 - 130
6912503	Calcium (Ca)	2020/08/28	103	75 - 125	97	80 - 120	<50	ug/g	0.021	30		
6912503	Cesium (Cs)	2020/08/28	93	N/A	95	N/A	<0.005	ug/g	3.3	30		
6912503	Chromium (Cr)	2020/08/28	90	75 - 125	91	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912503	Cobalt (Co)	2020/08/28	92	75 - 125	93	80 - 120	<0.005	ug/g	NC	30	96	70 - 130
6912503	Copper (Cu)	2020/08/28	92	75 - 125	92	80 - 120	<0.5	ug/g	NC	30	90	70 - 130
6912503	Iron (Fe)	2020/08/28	93	75 - 125	95	80 - 120	<3	ug/g	3.1	30	89	70 - 130
6912503	Lead (Pb)	2020/08/28	93	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	95	70 - 130
6912503	Magnesium (Mg)	2020/08/28	98	75 - 125	99	80 - 120	<100	ug/g	0.22	30		
6912503	Manganese (Mn)	2020/08/28	91	75 - 125	92	80 - 120	<0.3	ug/g	NC	30	88	70 - 130
6912503	Molybdenum (Mo)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	95	70 - 130
6912503	Nickel (Ni)	2020/08/28	92	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	90	60 - 140
6912503	Phosphorus (P)	2020/08/28	NC	75 - 125	126	80 - 120	<50	ug/g	2.0	30		
6912503	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	0.31	30		
6912503	Selenium (Se)	2020/08/28	92	75 - 125	94	80 - 120	<0.04	ug/g	0.57	30	94	70 - 130
6912503	Silver (Ag)	2020/08/28	87	75 - 125	90	80 - 120	<0.05	ug/g	NC	30		
6912503	Sodium (Na)	2020/08/28	94	75 - 125	93	80 - 120	<50	ug/g	0.44	30		
6912503	Strontium (Sr)	2020/08/28	91	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	88	70 - 130
6912503	Thallium (Tl)	2020/08/28	89	75 - 125	91	80 - 120	<0.003	ug/g	NC	30		
6912503	Tin (Sn)	2020/08/28	92	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912503	Titanium (Ti)	2020/08/28	93	75 - 125	93	80 - 120	<0.5	ug/g	5.0	30		
6912503	Uranium (U)	2020/08/28	94	N/A	95	N/A	<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912503	Vanadium (V)	2020/08/28	90	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	90	70 - 130
6912503	Zinc (Zn)	2020/08/28	93	75 - 125	92	80 - 120	<2	ug/g	6.7	30	93	70 - 130
6914920	Chromium (VI)	2020/08/31	49 (1)	70 - 130	88	80 - 120	<0.18	ug/g	NC	35		
6914932	Chromium (VI)	2020/08/29	54 (1)	70 - 130	87	80 - 120	<0.18	ug/g	NC	35		
6921092	Mercury (Hg)	2020/09/03	93	70 - 130			<0.005	ug/g	5.3	35	90	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6425
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

<original signed by>

Anastassia Hamanov, Scientific Specialist

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

24-Aug-20 11:50
Ema Gitej
C0L6425
J_L FZ-46

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309	Bottle Order #: 785389
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:		
Address:	455 René-Lévesque Blvd. West	Address:	1145 Hunt Club Road Suite 120	Project:	161910	
	Montreal QC H2Z 1Z3		Ottawa ON K1V 0Y3	Project Name:	Wekequie Supply Road	COC #: C#785389-01-01
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel	(613) 226-2456 Ext: 228 Fax:	Site #:	Winiskisis Channel	Project Manager: Ema Gitej
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@sncla	Sampled By:	Holly Dodds + Ashley McGrath	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☐ PWQO ☐ Reg 406 Table ___
- ☐ Other ___

Special Instructions: Refer to request associated with quote.

Include Criteria on Certificate of Analysis (Y/N)? ___

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Metals, incl. CrVI and Hg	Moisture	# of Bottles	Comments
1		WFWC20-01	08/19/2020	15:22	TISSUE		X	X	1	
2		NPWC20-03	08/19/2020	15:54	TISSUE		X	X	1	
3		NPWC20-04	08/19/2020	16:34	TISSUE		X	X	1	
4		NPWC20-05	08/19/2020	16:45	TISSUE		X	X	1	
5					~~TISSUE~~				NN	
6										
7										
8										
9										
10										

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ashley McGrath / ASHLEY MCGRATH	20/08/24	10:14	DAVID WAMAN	2020/08/24	1150	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
	-2 | 0 | -1 | 0.2	Intact	F	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINSK LAKE & WINISKISIS CHANNE
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-04-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329709
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6440
Received: 2020/08/24, 11:50

Sample Matrix: Tissue
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	5	2020/08/28	2020/08/31	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	5	N/A	2020/09/03	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	5	N/A	2020/08/28	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	5	N/A	2020/08/26	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINSK LAKE & WINISKISIS CHANNE
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-04-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329709
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6440
Received: 2020/08/24, 11:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
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BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NLF071	NLF072	NLF073	NLF074	NLF074	NLF075		
Sampling Date		2020/08/21 16:06	2020/08/21 16:24	2020/08/21 16:36	2020/08/21 17:29	2020/08/21 17:29	2020/08/19 17:13		
COC Number		785389-04-01	785389-04-01	785389-04-01	785389-04-01	785389-04-01	785389-04-01		
	UNITS	WLNP20-03	WLNP20-04	WLNP20-05	WLPK20-03	WLPK20-03 Lab-Dup	PKWC20-04	RDL	QC Batch
Nutritional Parameters									
Moisture	g/100g	79.3	79.9	78.4	78.6	78.7	80.7	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLF071			NLF071			NLF072	NLF073		
Sampling Date		2020/08/21 16:06			2020/08/21 16:06			2020/08/21 16:24	2020/08/21 16:36		
COC Number		785389-04-01			785389-04-01			785389-04-01	785389-04-01		
	UNITS	WLNP20-03	RDL	QC Batch	WLNP20-03 Lab-Dup	RDL	QC Batch	WLNP20-04	WLNP20-05	RDL	QC Batch
Inorganics											
Chromium (VI)	ug/g	<0.18	0.18	6914920	<0.18	0.18	6914920	<0.18	<0.18	0.18	6914920
Metals											
Mercury (Hg)	ug/g	0.19	0.005	6921092				0.067	0.25	0.005	6921092
Arsenic (As)	ug/g	<0.1	0.1	6912503				<0.1	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	0.3	6912503				<0.3	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	0.5	6912503				<0.5	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	0.01	6912503				<0.01	<0.01	0.01	6912503
Calcium (Ca)	ug/g	930	50	6912503				1000	1600	50	6912503
Cesium (Cs)	ug/g	0.030	0.005	6912503				0.026	0.022	0.005	6912503
Chromium (Cr)	ug/g	<0.3	0.3	6912503				<0.3	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	0.005	6912503				<0.005	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	0.5	6912503				<0.5	<0.5	0.5	6912503
Iron (Fe)	ug/g	<3	3	6912503				<3	<3	3	6912503
Lead (Pb)	ug/g	<0.03	0.03	6912503				<0.03	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	310	100	6912503				270	320	100	6912503
Manganese (Mn)	ug/g	0.5	0.3	6912503				0.4	0.7	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Phosphorus (P)	ug/g	2300	500	6912503				2200	2500	500	6912503
Potassium (K)	ug/g	4100	100	6912503				3600	3900	100	6912503
Selenium (Se)	ug/g	0.15	0.04	6912503				0.12	0.15	0.04	6912503
Silver (Ag)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503
Sodium (Na)	ug/g	480	50	6912503				280	530	50	6912503
Strontium (Sr)	ug/g	<0.5	0.5	6912503				<0.5	<0.5	0.5	6912503
Thallium (Tl)	ug/g	<0.003	0.003	6912503				<0.003	<0.003	0.003	6912503
Tin (Sn)	ug/g	<0.3	0.3	6912503				<0.3	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.3	0.5	6912503				1.2	1.4	0.5	6912503
Uranium (U)	ug/g	<0.005	0.005	6912503				<0.005	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	0.05	6912503				<0.05	<0.05	0.05	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLF071			NLF071			NLF072	NLF073		
Sampling Date		2020/08/21 16:06			2020/08/21 16:06			2020/08/21 16:24	2020/08/21 16:36		
COC Number		785389-04-01			785389-04-01			785389-04-01	785389-04-01		
	UNITS	WLNP20-03	RDL	QC Batch	WLNP20-03 Lab-Dup	RDL	QC Batch	WLNP20-04	WLNP20-05	RDL	QC Batch
Zinc (Zn)	ug/g	11	2	6912503				12	8	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLF074	NLF075		
Sampling Date		2020/08/21 17:29	2020/08/19 17:13		
COC Number		785389-04-01	785389-04-01		
	UNITS	WLPK20-03	PKWC20-04	RDL	QC Batch
Inorganics					
Chromium (VI)	ug/g	<0.18	<0.18	0.18	6914920
Metals					
Mercury (Hg)	ug/g	0.057	0.17	0.005	6921092
Arsenic (As)	ug/g	<0.1	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	<0.01	0.01	6912503
Calcium (Ca)	ug/g	130	2600	50	6912503
Cesium (Cs)	ug/g	0.035	0.037	0.005	6912503
Chromium (Cr)	ug/g	<0.3	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	<0.5	0.5	6912503
Iron (Fe)	ug/g	<3	<3	3	6912503
Lead (Pb)	ug/g	<0.03	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	270	280	100	6912503
Manganese (Mn)	ug/g	<0.3	<0.3	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	<0.05	0.05	6912503
Phosphorus (P)	ug/g	2000	2800	500	6912503
Potassium (K)	ug/g	4100	3600	100	6912503
Selenium (Se)	ug/g	0.17	0.16	0.04	6912503
Silver (Ag)	ug/g	<0.05	<0.05	0.05	6912503
Sodium (Na)	ug/g	480	500	50	6912503
Strontium (Sr)	ug/g	<0.5	<0.5	0.5	6912503
Thallium (Tl)	ug/g	0.003	0.005	0.003	6912503
Tin (Sn)	ug/g	<0.3	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.0	1.4	0.5	6912503
Uranium (U)	ug/g	<0.005	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	<0.05	0.05	6912503
Zinc (Zn)	ug/g	5	5	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLF071
Sample ID: WLNP20-03
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF071 Dup
Sample ID: WLNP20-03
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila

BV Labs ID: NLF072
Sample ID: WLNP20-04
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF073
Sample ID: WLNP20-05
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF074
Sample ID: WLPK20-03
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLF074 Dup
Sample ID: WLPK20-03
Matrix: Tissue

Collected: 2020/08/21
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF075
Sample ID: PKWC20-04
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

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BV Labs Job #: C0L6440
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6440
Report Date: 2020/09/14

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6911971	Moisture	2020/08/26					<0.1	g/100g	0.13	20	105	N/A
6912503	Antimony (Sb)	2020/08/28	93	75 - 125	96	80 - 120	<0.05	ug/g	NC	30		
6912503	Arsenic (As)	2020/08/28	93	75 - 125	93	80 - 120	<0.1	ug/g	NC	30	98	70 - 130
6912503	Barium (Ba)	2020/08/28	92	75 - 125	96	80 - 120	<0.3	ug/g	NC	30		
6912503	Beryllium (Be)	2020/08/28	92	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912503	Bismuth (Bi)	2020/08/28	97	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
6912503	Boron (B)	2020/08/28	89	75 - 125	95	80 - 120	<0.5	ug/g	NC	30		
6912503	Cadmium (Cd)	2020/08/28	90	75 - 125	93	80 - 120	<0.01	ug/g	NC	30	93	70 - 130
6912503	Calcium (Ca)	2020/08/28	103	75 - 125	97	80 - 120	<50	ug/g	0.021	30		
6912503	Cesium (Cs)	2020/08/28	93	N/A	95	N/A	<0.005	ug/g	3.3	30		
6912503	Chromium (Cr)	2020/08/28	90	75 - 125	91	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912503	Cobalt (Co)	2020/08/28	92	75 - 125	93	80 - 120	<0.005	ug/g	NC	30	96	70 - 130
6912503	Copper (Cu)	2020/08/28	92	75 - 125	92	80 - 120	<0.5	ug/g	NC	30	90	70 - 130
6912503	Iron (Fe)	2020/08/28	93	75 - 125	95	80 - 120	<3	ug/g	3.1	30	89	70 - 130
6912503	Lead (Pb)	2020/08/28	93	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	95	70 - 130
6912503	Magnesium (Mg)	2020/08/28	98	75 - 125	99	80 - 120	<100	ug/g	0.22	30		
6912503	Manganese (Mn)	2020/08/28	91	75 - 125	92	80 - 120	<0.3	ug/g	NC	30	88	70 - 130
6912503	Molybdenum (Mo)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	95	70 - 130
6912503	Nickel (Ni)	2020/08/28	92	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	90	60 - 140
6912503	Phosphorus (P)	2020/08/28	NC	75 - 125	126	80 - 120	<50	ug/g	2.0	30		
6912503	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	0.31	30		
6912503	Selenium (Se)	2020/08/28	92	75 - 125	94	80 - 120	<0.04	ug/g	0.57	30	94	70 - 130
6912503	Silver (Ag)	2020/08/28	87	75 - 125	90	80 - 120	<0.05	ug/g	NC	30		
6912503	Sodium (Na)	2020/08/28	94	75 - 125	93	80 - 120	<50	ug/g	0.44	30		
6912503	Strontium (Sr)	2020/08/28	91	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	88	70 - 130
6912503	Thallium (Tl)	2020/08/28	89	75 - 125	91	80 - 120	<0.003	ug/g	NC	30		
6912503	Tin (Sn)	2020/08/28	92	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912503	Titanium (Ti)	2020/08/28	93	75 - 125	93	80 - 120	<0.5	ug/g	5.0	30		
6912503	Uranium (U)	2020/08/28	94	N/A	95	N/A	<0.005	ug/g	NC	30		
6912503	Vanadium (V)	2020/08/28	90	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	90	70 - 130

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912503	Zinc (Zn)	2020/08/28	93	75 - 125	92	80 - 120	<2	ug/g	6.7	30	93	70 - 130
6914920	Chromium (VI)	2020/08/31	49 (1)	70 - 130	88	80 - 120	<0.18	ug/g	NC	35		
6921092	Mercury (Hg)	2020/09/03	93	70 - 130			<0.005	ug/g	5.3	35	90	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

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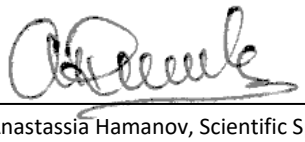
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6440
Report Date: 2020/09/14

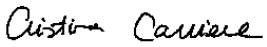
SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist



Cristina Carriere, Senior Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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24-Aug-20 11:50
Ema Gitej
C0L6440
J_L FZ-46

Page 1 of 1

Bottle Order #: 785389

COC #: C#785389-04-01

Project Manager: Ema Gitej

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:	
Address:	455 René-Lévesque Blvd. West Montreal QC H2Z 1Z3	Address:	1145 Hunt Club Road Suite 120 Ottawa ON K1V 0Y3	Project:	661910
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 228 Fax:	Project Name:	Wekweeti Supply Road
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@snclavalin.com	Site #:	Winisk (ON/NL) and Minas as (Champion/NC)
				Sampled By:	Holly Dodds + Ashley McGrath

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___

Other Regulations: ☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ☐ PWQO ☐ Reg 406 Table ☐ Other

Special Instructions: Refer to request associated with quote.

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Metals, incl Cr VI and Hg	Moisture	# of Bottles	Comments
1		WLNP20-03	08/21/2020	16:06	TISSUE		X	X	1	
2		WLNP20-04	08/21/2020	16:24	TISSUE		X	X	1	
3		WLNP20-05	08/21/2020	16:36	TISSUE		X	X	1	
4		WLPK20-03	08/21/2020	17:29	TISSUE		X	X	1	
5		PKWC20-04	08/19/2020	17:13	TISSUE		X	X	1	
6										
7										
8										
9										
10										

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Ashley McGrath / ASHLEY MCGRATH	20/08/24	10:19	[signature]	2020/08/24	11:50	

Laboratory Use Only: Time Sensitive | Temperature (°C) on Receipt: 5 | 1 | 5 | 1.2 | Custody Seal Present: Yes ☒ / No ☐ | Intact: Yes ☒ / No ☐

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-05-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329712
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6451
Received: 2020/08/24, 11:50

Sample Matrix: Tissue
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	2	2020/08/28	2020/08/29	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	3	2020/08/28	2020/08/31	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	5	N/A	2020/09/03	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	5	N/A	2020/08/28	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	5	N/A	2020/08/26	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your P.O. #: PO PENDING
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 785389-05-01

Attention: Tahina Choudhury

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2020/09/14
Report #: R6329712
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0L6451
Received: 2020/08/24, 11:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NLF121		NLF122		NLF123	NLF124		
Sampling Date		2020/08/19 15:06		2020/08/19 16:15		2020/08/19 17:02	2020/08/19 15:35		
COC Number		785389-05-01		785389-05-01		785389-05-01	785389-05-01		
	UNITS	NPWC20-02	QC Batch	PKWC20-01	QC Batch	PKWC20-03	WFWC20-02	RDL	QC Batch
Nutritional Parameters									
Moisture	g/100g	80.8	6910943	80.7	6911971	78.8	78.1	0.1	6910943

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs ID		NLF125		
Sampling Date		2020/08/19 15:41		
COC Number		785389-05-01		
	UNITS	WFWC20-03	RDL	QC Batch
Nutritional Parameters				
Moisture	g/100g	78.7	0.1	6911971

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLF121	NLF122	NLF123		NLF124	NLF125		
Sampling Date		2020/08/19 15:06	2020/08/19 16:15	2020/08/19 17:02		2020/08/19 15:35	2020/08/19 15:41		
COC Number		785389-05-01	785389-05-01	785389-05-01		785389-05-01	785389-05-01		
	UNITS	NPWC20-02	PKWC20-01	PKWC20-03	QC Batch	WFWC20-02	WFWC20-03	RDL	QC Batch
Inorganics									
Chromium (VI)	ug/g	<0.18	<0.18	<0.18	6914920	<0.18	<0.18	0.18	6914932
Metals									
Mercury (Hg)	ug/g	0.22	0.29	0.34	6921092	0.088	0.079	0.005	6921092
Arsenic (As)	ug/g	<0.1	<0.1	<0.1	6912503	<0.1	<0.1	0.1	6912503
Antimony (Sb)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Barium (Ba)	ug/g	<0.3	<0.3	<0.3	6912503	<0.3	<0.3	0.3	6912503
Beryllium (Be)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Bismuth (Bi)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Boron (B)	ug/g	<0.5	<0.5	<0.5	6912503	<0.5	<0.5	0.5	6912503
Cadmium (Cd)	ug/g	<0.01	<0.01	<0.01	6912503	<0.01	<0.01	0.01	6912503
Calcium (Ca)	ug/g	1300	1200	140	6912503	88	440	50	6912503
Cesium (Cs)	ug/g	0.025	0.057	0.048	6912503	0.018	0.022	0.005	6912503
Chromium (Cr)	ug/g	<0.3	<0.3	<0.3	6912503	<0.3	<0.3	0.3	6912503
Cobalt (Co)	ug/g	<0.005	<0.005	<0.005	6912503	<0.005	<0.005	0.005	6912503
Copper (Cu)	ug/g	<0.5	<0.5	<0.5	6912503	<0.5	<0.5	0.5	6912503
Iron (Fe)	ug/g	4	3	4	6912503	7	5	3	6912503
Lead (Pb)	ug/g	<0.03	<0.03	<0.03	6912503	<0.03	<0.03	0.03	6912503
Magnesium (Mg)	ug/g	260	270	260	6912503	230	220	100	6912503
Manganese (Mn)	ug/g	0.7	<0.3	<0.3	6912503	<0.3	<0.3	0.3	6912503
Molybdenum (Mo)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Nickel (Ni)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Phosphorus (P)	ug/g	2300	2200	1900	6912503	1900	1900	500	6912503
Potassium (K)	ug/g	3500	3800	3900	6912503	3400	3100	100	6912503
Selenium (Se)	ug/g	0.12	0.15	0.16	6912503	0.16	0.14	0.04	6912503
Silver (Ag)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Sodium (Na)	ug/g	540	560	530	6912503	460	570	50	6912503
Strontium (Sr)	ug/g	<0.5	<0.5	<0.5	6912503	<0.5	<0.5	0.5	6912503
Thallium (Tl)	ug/g	<0.003	0.003	0.004	6912503	<0.003	<0.003	0.003	6912503
Tin (Sn)	ug/g	<0.3	<0.3	<0.3	6912503	<0.3	<0.3	0.3	6912503
Titanium (Ti)	ug/g	1.2	1.2	1.0	6912503	1.0	1.0	0.5	6912503
Uranium (U)	ug/g	<0.005	<0.005	<0.005	6912503	<0.005	<0.005	0.005	6912503
Vanadium (V)	ug/g	<0.05	<0.05	<0.05	6912503	<0.05	<0.05	0.05	6912503
Zinc (Zn)	ug/g	9	5	6	6912503	8	10	2	6912503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NLF125		
Sampling Date		2020/08/19 15:41		
COC Number		785389-05-01		
	UNITS	WFWC20-03 Lab-Dup	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	<0.18	0.18	6914932

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLF121
Sample ID: NPWC20-02
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF122
Sample ID: PKWC20-01
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF123
Sample ID: PKWC20-03
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914920	2020/08/28	2020/08/31	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF124
Sample ID: WFWC20-02
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6910943	N/A	2020/08/26	Priya Desai

BV Labs ID: NLF125
Sample ID: WFWC20-03
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota
Mercury in Tissue by CVAA	CV/AA	6921092	N/A	2020/09/03	Meghaben Patel
Metals in Tissue by ICPMS	ICP1/MS	6912503	N/A	2020/08/28	Arefa Dabhad
Moisture		6911971	N/A	2020/08/26	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

TEST SUMMARY

BV Labs ID: NLF125 Dup
Sample ID: WFWC20-03
Matrix: Tissue

Collected: 2020/08/19
Shipped:
Received: 2020/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6914932	2020/08/28	2020/08/29	Rupinder Sihota

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.
Hexavalent Chromium in Soil by IC: Analysis was performed using unvalidated procedure for Cr6l. Results are for information only.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6910943	Moisture	2020/08/26					<0.1	g/100g	1.3	20	105	N/A
6911971	Moisture	2020/08/26					<0.1	g/100g	0.13	20	105	N/A
6912503	Antimony (Sb)	2020/08/28	93	75 - 125	96	80 - 120	<0.05	ug/g	NC	30		
6912503	Arsenic (As)	2020/08/28	93	75 - 125	93	80 - 120	<0.1	ug/g	NC	30	98	70 - 130
6912503	Barium (Ba)	2020/08/28	92	75 - 125	96	80 - 120	<0.3	ug/g	NC	30		
6912503	Beryllium (Be)	2020/08/28	92	75 - 125	98	80 - 120	<0.05	ug/g	NC	30		
6912503	Bismuth (Bi)	2020/08/28	97	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
6912503	Boron (B)	2020/08/28	89	75 - 125	95	80 - 120	<0.5	ug/g	NC	30		
6912503	Cadmium (Cd)	2020/08/28	90	75 - 125	93	80 - 120	<0.01	ug/g	NC	30	93	70 - 130
6912503	Calcium (Ca)	2020/08/28	103	75 - 125	97	80 - 120	<50	ug/g	0.021	30		
6912503	Cesium (Cs)	2020/08/28	93	N/A	95	N/A	<0.005	ug/g	3.3	30		
6912503	Chromium (Cr)	2020/08/28	90	75 - 125	91	80 - 120	<0.3	ug/g	NC	30	79	60 - 140
6912503	Cobalt (Co)	2020/08/28	92	75 - 125	93	80 - 120	<0.005	ug/g	NC	30	96	70 - 130
6912503	Copper (Cu)	2020/08/28	92	75 - 125	92	80 - 120	<0.5	ug/g	NC	30	90	70 - 130
6912503	Iron (Fe)	2020/08/28	93	75 - 125	95	80 - 120	<3	ug/g	3.1	30	89	70 - 130
6912503	Lead (Pb)	2020/08/28	93	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	95	70 - 130
6912503	Magnesium (Mg)	2020/08/28	98	75 - 125	99	80 - 120	<100	ug/g	0.22	30		
6912503	Manganese (Mn)	2020/08/28	91	75 - 125	92	80 - 120	<0.3	ug/g	NC	30	88	70 - 130
6912503	Molybdenum (Mo)	2020/08/28	89	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	95	70 - 130
6912503	Nickel (Ni)	2020/08/28	92	75 - 125	92	80 - 120	<0.05	ug/g	NC	30	90	60 - 140
6912503	Phosphorus (P)	2020/08/28	NC	75 - 125	126	80 - 120	<50	ug/g	2.0	30		
6912503	Potassium (K)	2020/08/28	NC	75 - 125	91	80 - 120	<100	ug/g	0.31	30		
6912503	Selenium (Se)	2020/08/28	92	75 - 125	94	80 - 120	<0.04	ug/g	0.57	30	94	70 - 130
6912503	Silver (Ag)	2020/08/28	87	75 - 125	90	80 - 120	<0.05	ug/g	NC	30		
6912503	Sodium (Na)	2020/08/28	94	75 - 125	93	80 - 120	<50	ug/g	0.44	30		
6912503	Strontium (Sr)	2020/08/28	91	75 - 125	91	80 - 120	<0.5	ug/g	NC	30	88	70 - 130
6912503	Thallium (Tl)	2020/08/28	89	75 - 125	91	80 - 120	<0.003	ug/g	NC	30		
6912503	Tin (Sn)	2020/08/28	92	75 - 125	94	80 - 120	<0.3	ug/g	NC	30		
6912503	Titanium (Ti)	2020/08/28	93	75 - 125	93	80 - 120	<0.5	ug/g	5.0	30		
6912503	Uranium (U)	2020/08/28	94	N/A	95	N/A	<0.005	ug/g	NC	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6912503	Vanadium (V)	2020/08/28	90	75 - 125	91	80 - 120	<0.05	ug/g	NC	30	90	70 - 130
6912503	Zinc (Zn)	2020/08/28	93	75 - 125	92	80 - 120	<2	ug/g	6.7	30	93	70 - 130
6914920	Chromium (VI)	2020/08/31	49 (1)	70 - 130	88	80 - 120	<0.18	ug/g	NC	35		
6914932	Chromium (VI)	2020/08/29	54 (1)	70 - 130	87	80 - 120	<0.18	ug/g	NC	35		
6921092	Mercury (Hg)	2020/09/03	93	70 - 130			<0.005	ug/g	5.3	35	90	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results

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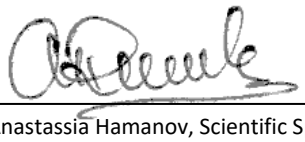
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0L6451
Report Date: 2020/09/14

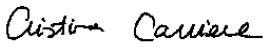
SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: PO PENDING
Sampler Initials: HD

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist



Cristina Carriere, Senior Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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24-Aug-20 11:50
Ema Gitej
C0L6451

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309	Bottle Order #: .785389
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:	6616910	
Address:	455 René-Lévesque Blvd. West Montreal QC H2Z 1Z3	Address:	1145 Hunt Club Road Suite 120 Ottawa ON K1V 0Y3	Project:	Webequie Supply Road	COC #: C#785389-05-01
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 228 Fax:	Project Name:	Winisk River Channel	Project Manager: Ema Gitej
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@sncla	Site #:		
				Sampled By:	Holly Dodds + Ashley McGrath	

J L FZ-46

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	Refer to request associated with quote.

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle) Metals / Hg / Cr VI	Metals incl. CrVI and Hg	Moisture								# of Bottles	Comments
1		NPWC20-02	08/19/2020	15:06	TISSUE		X	X								1	
2		PKWC20-01	08/19/2020	16:15	TISSUE		X	X								1	
3		PKWC20-03	08/19/2020	17:02	TISSUE		X	X								1	
4		WFWC20-02	08/19/2020	15:35	TISSUE		X	X								1	
5		WFWC20-03	08/19/2020	15:41	TISSUE		X	X								1	
6																	
7																	
8																	
9																	
10																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Holly McGrath/ASHLEY MCGRATH	20/08/24	10:23am	[illegible]	20/08/24	11:50	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present	Yes	No
	4.2 3 ICE	Intact	☒	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: PR12181
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE
Your C.O.C. #: na

Attention: Patricia Videla

SNC-Lavalin Inc
235 Lesmill Road
Toronto, ON
CANADA M3B 2V1

Report Date: 2020/11/21
Report #: R6419834
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0S2427
Received: 2020/10/26, 18:55

Sample Matrix: Tissue
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	5	2020/11/04	2020/11/04	CAM SOP-00436	EPA 3060/7199 m
Mercury in Tissue by CVAA	5	N/A	2020/11/11	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	5	N/A	2020/11/04	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	5	N/A	2020/10/29	CAM SOP-00715	AOAC methodology

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

Your P.O. #: PR12181
Your Project #: 661910
Site#: WINISKISIS CHANNEL
Site Location: WEBEQUIE
Your C.O.C. #: na

Attention: Patricia Videla

SNC-Lavalin Inc
235 Lesmill Road
Toronto, ON
CANADA M3B 2V1

Report Date: 2020/11/21
Report #: R6419834
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0S2427
Received: 2020/10/26, 18:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

RESULTS OF ANALYSES OF TISSUE

BV Labs ID		NZL621	NZL622	NZL623	NZL624	NZL625		
Sampling Date		2020/10/18 18:00	2020/10/18 18:00	2020/10/18 18:00	2020/10/17 12:00	2020/10/17 12:00		
COC Number		na	na	na	na	na		
	UNITS	MS-20-1-KD	MS-20-2-LV	MS-20-3-MM	CB-20-4-LV	CB-20-5-MM	RDL	QC Batch
Nutritional Parameters								
Moisture	g/100g	76.8	72.6	76.9	75.0	75.5	0.1	7027271

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NZL621	NZL622	NZL623		NZL624			NZL624		
Sampling Date		2020/10/18 18:00	2020/10/18 18:00	2020/10/18 18:00		2020/10/17 12:00			2020/10/17 12:00		
COC Number		na	na	na		na			na		
	UNITS	MS-20-1-KD	MS-20-2-LV	MS-20-3-MM	RDL	CB-20-4-LV	RDL	QC Batch	CB-20-4-LV Lab-Dup	RDL	QC Batch
Inorganics											
Chromium (VI)	ug/g	<0.18	<0.18	<0.18	0.18	<0.18	0.18	7037094			
Metals											
Mercury (Hg)	ug/g	0.029	0.010	<0.005	0.005	0.73	0.01	7048968	0.74	0.01	7048968
Arsenic (As)	ug/g	<0.1	<0.1	<0.1	0.1	<0.1	0.1	7033081	<0.1	0.1	7033081
Antimony (Sb)	ug/g	<0.05	<0.05	<0.05	0.05	<0.05	0.05	7033081	<0.05	0.05	7033081
Barium (Ba)	ug/g	<0.3	<0.3	<0.3	0.3	<0.3	0.3	7033081	<0.3	0.3	7033081
Beryllium (Be)	ug/g	<0.05	<0.05	<0.05	0.05	<0.05	0.05	7033081	<0.05	0.05	7033081
Bismuth (Bi)	ug/g	<0.05	<0.05	<0.05	0.05	<0.05	0.05	7033081	<0.05	0.05	7033081
Boron (B)	ug/g	<0.5	<0.5	<0.5	0.5	<0.5	0.5	7033081	<0.5	0.5	7033081
Cadmium (Cd)	ug/g	0.35	0.13	<0.01	0.01	1.6	0.01	7033081	1.5	0.01	7033081
Calcium (Ca)	ug/g	100	66	<50	50	67	50	7033081	66	50	7033081
Cesium (Cs)	ug/g	0.14	0.050	0.13	0.005	0.43	0.005	7033081	0.42	0.005	7033081
Chromium (Cr)	ug/g	<0.3	<0.3	<0.3	0.3	<0.3	0.3	7033081	<0.3	0.3	7033081
Cobalt (Co)	ug/g	0.035	0.10	<0.005	0.005	0.017	0.005	7033081	0.015	0.005	7033081
Copper (Cu)	ug/g	3.2	20	1.4	0.5	48	0.5	7033081	46	0.5	7033081
Iron (Fe)	ug/g	150	150	25	3	120	3	7033081	120	3	7033081
Lead (Pb)	ug/g	<0.03	<0.03	<0.03	0.03	0.06	0.03	7033081	0.06	0.03	7033081
Magnesium (Mg)	ug/g	140	150	220	100	170	100	7033081	170	100	7033081
Manganese (Mn)	ug/g	2.6	2.8	0.4	0.3	3.4	0.3	7033081	3.2	0.3	7033081
Molybdenum (Mo)	ug/g	0.33	1.2	<0.05	0.05	0.59	0.05	7033081	0.57	0.05	7033081
Nickel (Ni)	ug/g	<0.05	<0.05	<0.05	0.05	<0.05	0.05	7033081	<0.05	0.05	7033081
Phosphorus (P)	ug/g	1800	2800	1500	300	2300	300	7033081	2700	300	7033081
Potassium (K)	ug/g	2700	2000	3300	100	2700	100	7033081	2700	100	7033081
Selenium (Se)	ug/g	0.49	0.18	0.05	0.04	0.79	0.04	7033081	0.75	0.04	7033081
Silver (Ag)	ug/g	<0.05	<0.05	<0.05	0.05	0.26	0.05	7033081	0.24	0.05	7033081
Sodium (Na)	ug/g	1400	1500	520	50	1100	50	7033081	1100	50	7033081
Strontium (Sr)	ug/g	<0.5	<0.5	<0.5	0.5	<0.5	0.5	7033081	<0.5	0.5	7033081
Thallium (Tl)	ug/g	0.009	<0.003	<0.003	0.003	0.005	0.003	7033081	0.005	0.003	7033081
Tin (Sn)	ug/g	<0.3	<0.3	<0.3	0.3	<0.3	0.3	7033081	<0.3	0.3	7033081
Titanium (Ti)	ug/g	1.5	2.3	1.4	0.5	2.1	0.5	7033081	2.0	0.5	7033081
Uranium (U)	ug/g	<0.005	<0.005	<0.005	0.005	<0.005	0.005	7033081	<0.005	0.005	7033081
Vanadium (V)	ug/g	<0.05	<0.05	<0.05	0.05	<0.05	0.05	7033081	<0.05	0.05	7033081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NZL621	NZL622	NZL623		NZL624			NZL624		
Sampling Date		2020/10/18 18:00	2020/10/18 18:00	2020/10/18 18:00		2020/10/17 12:00			2020/10/17 12:00		
COC Number		na	na	na		na			na		
	UNITS	MS-20-1-KD	MS-20-2-LV	MS-20-3-MM	RDL	CB-20-4-LV	RDL	QC Batch	CB-20-4-LV Lab-Dup	RDL	QC Batch
Zinc (Zn)	ug/g	19	20	28	2	33	2	7033081	33	2	7033081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

BV Labs ID		NZL625		
Sampling Date		2020/10/17 12:00		
COC Number		na		
	UNITS	CB-20-5-MM	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	<0.18	0.18	7037094
Metals				
Mercury (Hg)	ug/g	0.011	0.005	7048968
Arsenic (As)	ug/g	<0.1	0.1	7033081
Antimony (Sb)	ug/g	<0.05	0.05	7033081
Barium (Ba)	ug/g	<0.3	0.3	7033081
Beryllium (Be)	ug/g	<0.05	0.05	7033081
Bismuth (Bi)	ug/g	<0.05	0.05	7033081
Boron (B)	ug/g	<0.5	0.5	7033081
Cadmium (Cd)	ug/g	<0.01	0.01	7033081
Calcium (Ca)	ug/g	<50	50	7033081
Cesium (Cs)	ug/g	0.55	0.005	7033081
Chromium (Cr)	ug/g	<0.3	0.3	7033081
Cobalt (Co)	ug/g	<0.005	0.005	7033081
Copper (Cu)	ug/g	2.3	0.5	7033081
Iron (Fe)	ug/g	36	3	7033081
Lead (Pb)	ug/g	<0.03	0.03	7033081
Magnesium (Mg)	ug/g	240	100	7033081
Manganese (Mn)	ug/g	0.6	0.3	7033081
Molybdenum (Mo)	ug/g	<0.05	0.05	7033081
Nickel (Ni)	ug/g	<0.05	0.05	7033081
Phosphorus (P)	ug/g	1700	300	7033081
Potassium (K)	ug/g	3400	100	7033081
Selenium (Se)	ug/g	0.13	0.04	7033081
Silver (Ag)	ug/g	<0.05	0.05	7033081
Sodium (Na)	ug/g	590	50	7033081
Strontium (Sr)	ug/g	<0.5	0.5	7033081
Thallium (Tl)	ug/g	<0.003	0.003	7033081
Tin (Sn)	ug/g	<0.3	0.3	7033081
Titanium (Ti)	ug/g	1.4	0.5	7033081
Uranium (U)	ug/g	<0.005	0.005	7033081
Vanadium (V)	ug/g	<0.05	0.05	7033081
Zinc (Zn)	ug/g	28	2	7033081

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

TEST SUMMARY

BV Labs ID: NZL621
Sample ID: MS-20-1-KD
Matrix: Tissue

Collected: 2020/10/18
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	7037094	2020/11/04	2020/11/04	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti
Moisture		7027271	N/A	2020/10/29	Priya Desai

BV Labs ID: NZL622
Sample ID: MS-20-2-LV
Matrix: Tissue

Collected: 2020/10/18
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	7037094	2020/11/04	2020/11/04	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti
Moisture		7027271	N/A	2020/10/29	Priya Desai

BV Labs ID: NZL623
Sample ID: MS-20-3-MM
Matrix: Tissue

Collected: 2020/10/18
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	7037094	2020/11/04	2020/11/04	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti
Moisture		7027271	N/A	2020/10/29	Priya Desai

BV Labs ID: NZL624
Sample ID: CB-20-4-LV
Matrix: Tissue

Collected: 2020/10/17
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	7037094	2020/11/04	2020/11/04	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti
Moisture		7027271	N/A	2020/10/29	Priya Desai

BV Labs ID: NZL624 Dup
Sample ID: CB-20-4-LV
Matrix: Tissue

Collected: 2020/10/17
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

TEST SUMMARY

BV Labs ID: NZL625
Sample ID: CB-20-5-MM
Matrix: Tissue

Collected: 2020/10/17
Shipped:
Received: 2020/10/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	7037094	2020/11/04	2020/11/04	Violeta Porcila
Mercury in Tissue by CVAA	CV/AA	7048968	N/A	2020/11/11	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7033081	N/A	2020/11/04	Prempal Bhatti
Moisture		7027271	N/A	2020/10/29	Priya Desai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.7°C

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7027271	DPY	QC Standard	Moisture	2020/10/29		109	%	N/A
7027271	DPY	Method Blank	Moisture	2020/10/29	<0.1		g/100g	
7027271	DPY	RPD	Moisture	2020/10/29	0.29		%	20
7033081	PBA	Matrix Spike [NZL624-01]	Arsenic (As)	2020/11/04		100	%	75 - 125
			Antimony (Sb)	2020/11/04		98	%	75 - 125
			Barium (Ba)	2020/11/04		95	%	75 - 125
			Beryllium (Be)	2020/11/04		98	%	75 - 125
			Bismuth (Bi)	2020/11/04		101	%	75 - 125
			Boron (B)	2020/11/04		94	%	75 - 125
			Cadmium (Cd)	2020/11/04		99	%	75 - 125
			Calcium (Ca)	2020/11/04		98	%	75 - 125
			Cesium (Cs)	2020/11/04		92	%	75 - 125
			Chromium (Cr)	2020/11/04		98	%	75 - 125
			Cobalt (Co)	2020/11/04		100	%	75 - 125
			Copper (Cu)	2020/11/04		NC	%	75 - 125
			Iron (Fe)	2020/11/04		100	%	75 - 125
			Lead (Pb)	2020/11/04		100	%	75 - 125
			Magnesium (Mg)	2020/11/04		104	%	75 - 125
			Manganese (Mn)	2020/11/04		98	%	75 - 125
			Molybdenum (Mo)	2020/11/04		98	%	75 - 125
			Nickel (Ni)	2020/11/04		101	%	75 - 125
			Phosphorus (P)	2020/11/04		NC	%	75 - 125
			Potassium (K)	2020/11/04		NC	%	75 - 125
			Selenium (Se)	2020/11/04		102	%	75 - 125
			Silver (Ag)	2020/11/04		99	%	75 - 125
			Sodium (Na)	2020/11/04		NC	%	75 - 125
			Strontium (Sr)	2020/11/04		98	%	75 - 125
			Thallium (Tl)	2020/11/04		99	%	75 - 125
			Tin (Sn)	2020/11/04		92	%	75 - 125
			Titanium (Ti)	2020/11/04		87	%	75 - 125
			Uranium (U)	2020/11/04		101	%	75 - 125
			Vanadium (V)	2020/11/04		98	%	75 - 125
			Zinc (Zn)	2020/11/04		NC	%	75 - 125
7033081	PBA	QC Standard	Arsenic (As)	2020/11/04		107	%	70 - 130
			Cadmium (Cd)	2020/11/04		93	%	70 - 130
			Chromium (Cr)	2020/11/04		70	%	60 - 140
			Cobalt (Co)	2020/11/04		99	%	70 - 130
			Copper (Cu)	2020/11/04		88	%	70 - 130
			Iron (Fe)	2020/11/04		93	%	70 - 130
			Lead (Pb)	2020/11/04		87	%	70 - 130
			Manganese (Mn)	2020/11/04		91	%	70 - 130
			Molybdenum (Mo)	2020/11/04		97	%	70 - 130
			Nickel (Ni)	2020/11/04		90	%	60 - 140
			Selenium (Se)	2020/11/04		99	%	70 - 130
			Strontium (Sr)	2020/11/04		88	%	70 - 130
			Vanadium (V)	2020/11/04		92	%	70 - 130
			Zinc (Zn)	2020/11/04		94	%	70 - 130
7033081	PBA	Spiked Blank	Arsenic (As)	2020/11/04		98	%	80 - 120
			Antimony (Sb)	2020/11/04		101	%	80 - 120
			Barium (Ba)	2020/11/04		97	%	80 - 120

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Beryllium (Be)	2020/11/04		94	%	80 - 120
			Bismuth (Bi)	2020/11/04		103	%	80 - 120
			Boron (B)	2020/11/04		90	%	80 - 120
			Cadmium (Cd)	2020/11/04		99	%	80 - 120
			Calcium (Ca)	2020/11/04		101	%	80 - 120
			Cesium (Cs)	2020/11/04		94	%	80 - 120
			Chromium (Cr)	2020/11/04		95	%	80 - 120
			Cobalt (Co)	2020/11/04		98	%	80 - 120
			Copper (Cu)	2020/11/04		96	%	80 - 120
			Iron (Fe)	2020/11/04		100	%	80 - 120
			Lead (Pb)	2020/11/04		98	%	80 - 120
			Magnesium (Mg)	2020/11/04		107	%	80 - 120
			Manganese (Mn)	2020/11/04		97	%	80 - 120
			Molybdenum (Mo)	2020/11/04		99	%	80 - 120
			Nickel (Ni)	2020/11/04		98	%	80 - 120
			Phosphorus (P)	2020/11/04		137 (1)	%	80 - 120
			Potassium (K)	2020/11/04		103	%	80 - 120
			Selenium (Se)	2020/11/04		106	%	80 - 120
			Silver (Ag)	2020/11/04		101	%	80 - 120
			Sodium (Na)	2020/11/04		98	%	80 - 120
			Strontium (Sr)	2020/11/04		96	%	80 - 120
			Thallium (Tl)	2020/11/04		97	%	80 - 120
			Tin (Sn)	2020/11/04		99	%	80 - 120
			Titanium (Ti)	2020/11/04		96	%	80 - 120
			Uranium (U)	2020/11/04		100	%	80 - 120
			Vanadium (V)	2020/11/04		95	%	80 - 120
			Zinc (Zn)	2020/11/04		98	%	80 - 120
7033081	PBA	Method Blank	Arsenic (As)	2020/11/04	<0.1		ug/g	
			Antimony (Sb)	2020/11/04	<0.05		ug/g	
			Barium (Ba)	2020/11/04	<0.3		ug/g	
			Beryllium (Be)	2020/11/04	<0.05		ug/g	
			Bismuth (Bi)	2020/11/04	<0.05		ug/g	
			Boron (B)	2020/11/04	<0.5		ug/g	
			Cadmium (Cd)	2020/11/04	<0.01		ug/g	
			Calcium (Ca)	2020/11/04	<50		ug/g	
			Cesium (Cs)	2020/11/04	<0.005		ug/g	
			Chromium (Cr)	2020/11/04	<0.3		ug/g	
			Cobalt (Co)	2020/11/04	<0.005		ug/g	
			Copper (Cu)	2020/11/04	<0.5		ug/g	
			Iron (Fe)	2020/11/04	<3		ug/g	
			Lead (Pb)	2020/11/04	<0.03		ug/g	
			Magnesium (Mg)	2020/11/04	<100		ug/g	
			Manganese (Mn)	2020/11/04	<0.3		ug/g	
			Molybdenum (Mo)	2020/11/04	<0.05		ug/g	
			Nickel (Ni)	2020/11/04	<0.05		ug/g	
			Phosphorus (P)	2020/11/04	<50		ug/g	
			Potassium (K)	2020/11/04	<100		ug/g	
			Selenium (Se)	2020/11/04	<0.04		ug/g	
			Silver (Ag)	2020/11/04	<0.05		ug/g	
			Sodium (Na)	2020/11/04	<50		ug/g	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Strontium (Sr)	2020/11/04	<0.5		ug/g	
			Thallium (Tl)	2020/11/04	<0.003		ug/g	
			Tin (Sn)	2020/11/04	<0.3		ug/g	
			Titanium (Ti)	2020/11/04	<0.5		ug/g	
			Uranium (U)	2020/11/04	<0.005		ug/g	
			Vanadium (V)	2020/11/04	<0.05		ug/g	
			Zinc (Zn)	2020/11/04	<2		ug/g	
7033081	PBA	RPD [NZL624-01]	Arsenic (As)	2020/11/04	NC		%	30
			Antimony (Sb)	2020/11/04	NC		%	30
			Barium (Ba)	2020/11/04	NC		%	30
			Beryllium (Be)	2020/11/04	NC		%	30
			Bismuth (Bi)	2020/11/04	NC		%	30
			Boron (B)	2020/11/04	NC		%	30
			Cadmium (Cd)	2020/11/04	3.4		%	30
			Calcium (Ca)	2020/11/04	2.1		%	30
			Cesium (Cs)	2020/11/04	3.3		%	30
			Chromium (Cr)	2020/11/04	NC		%	30
			Cobalt (Co)	2020/11/04	13		%	30
			Copper (Cu)	2020/11/04	4.2		%	30
			Iron (Fe)	2020/11/04	0.42		%	30
			Lead (Pb)	2020/11/04	5.0		%	30
			Magnesium (Mg)	2020/11/04	1.5		%	30
			Manganese (Mn)	2020/11/04	4.6		%	30
			Molybdenum (Mo)	2020/11/04	3.1		%	30
			Nickel (Ni)	2020/11/04	NC		%	30
			Phosphorus (P)	2020/11/04	13		%	30
			Potassium (K)	2020/11/04	1.0		%	30
			Selenium (Se)	2020/11/04	5.3		%	30
			Silver (Ag)	2020/11/04	6.9		%	30
			Sodium (Na)	2020/11/04	0.17		%	30
			Strontium (Sr)	2020/11/04	NC		%	30
			Thallium (Tl)	2020/11/04	3.6		%	30
			Tin (Sn)	2020/11/04	NC		%	30
			Titanium (Ti)	2020/11/04	3.7		%	30
			Uranium (U)	2020/11/04	NC		%	30
			Vanadium (V)	2020/11/04	NC		%	30
			Zinc (Zn)	2020/11/04	0.26		%	30
7037094	VP2	Matrix Spike	Chromium (VI)	2020/11/04		78	%	70 - 130
7037094	VP2	Spiked Blank	Chromium (VI)	2020/11/04		89	%	80 - 120
7037094	VP2	Method Blank	Chromium (VI)	2020/11/04	<0.18		ug/g	
7037094	VP2	RPD	Chromium (VI)	2020/11/04	NC		%	35
7048968	MEN	Matrix Spike [NZL624-01]	Mercury (Hg)	2020/11/11		NC	%	70 - 130
7048968	MEN	QC Standard	Mercury (Hg)	2020/11/11		85	%	70 - 130
7048968	MEN	Method Blank	Mercury (Hg)	2020/11/11	<0.005		ug/g	

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7048968	MEN	RPD [NZL624-01]	Mercury (Hg)	2020/11/11	1.3		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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BV Labs Job #: C0S2427
Report Date: 2020/11/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE
Your P.O. #: PR12181
Sampler Initials: AM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

<original signed by>

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

<original signed by>

Cristina Carriere, Senior Scientific Specialist

<original signed by>

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

26-Oct-20 18:55

Ema Gitej

C0S2427

ASR E7-46

10 Campobello Road, Mississauga, Ontario L5N 2L8
ne: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
M FCD-01191/6

CHAIN OF CUSTODY RECORD

Page 1 of 1

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: SNC-Lavalin Inc	Company Name: SNC-Lavalin Inc	Quotation #: C03309	[X] Regular TAT (5-7 days) Most analyses
Contact Name: Accounts Payable Processing Centre	Contact Name: Patricia Videla	P.O. #/ AFE#: PR12181	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 455 Rene Levesque Blvd West	Address: 235 Lesmill Road	Project #: 661910	Rush TAT (Surcharges will be applied)
Montreal, Quebec. H2Z 1Z3	Toronto, Ontario.	Site Location: Webequi	[ ] 1 Day [ ] 2 Days [ ] 3-4 Days
Phone: 1-844-855-1133 Fax:	Phone: +1(416)635-5882 x 55814 Fax:	Site #: Winiskisis Channel	
Email: payables@snclavalin.com	Email: Patricia.Videla@snclavalin.com	Site Location Province: Ontario	Date Required:
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Sampled By:	Rush Confirmation #:

Regulation 153	Other Regulations
[ ] Table 1 [ ] Res/Park [ ] Med/ Fine	[ ] CCME [ ] Sanitary Sewer Bylaw
[ ] Table 2 [ ] Ind/Comm [ ] Coarse	[ ] MISA [ ] Storm Sewer Bylaw
[ ] Table 3 [ ] Agri/ Other	[ ] PWQO Region ____
[ ] Table ____	[ ] Other (Specify) ____
FOR RSC (PLEASE CIRCLE) Y / N	[ ] REG 558 (MIN. 3 DAY TAT REQUIRED)
(NOT FOR RSC)	[ ] REG 406 Table ____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analysis Requested

LABORATORY USE ONLY

CUSTODY SEAL Present Y / N Intact Y

COOLER TEMPERATURES 2020/10/26 DS: -1.1, -2.3

COOLING MEDIA PRESENT: Y / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	Metals	CrVI	Mercury	Moisture	Methylmercury	HOLD- DO NOT ANALYZE	COMMENTS
1	MS-20-1-KD	2020/10/18	18:00	Tissue	1		X	X	X	X			Retain portion on hold for other future analysis
2	MS-20-2-LV	2020/10/18	18:00	Tissue	1		X	X	X	X			Retain portion on hold for other future analysis
3	MS-20-3-MM	2020/10/18	18:00	Tissue	1		X	X	X	X	X		Retain portion on hold for other future analysis
4	CB-20-4-LV	2020/10/17	12:00	Tissue	1		X	X	X	X			Retain portion on hold for other future analysis
5	CB-20-5-MM	2020/10/17	12:00	Tissue	1		X	X	X	X	X		Retain portion on hold for other future analysis
6				Tissue			X	X	X	X			Retain portion on hold for other future analysis
7				Tissue			X	X	X	X			Retain portion on hold for other future analysis
8				Tissue			X	X	X	X			Retain portion on hold for other future analysis
9				Tissue			X	X	X	X			Retain portion on hold for other future analysis
10				Tissue			X	X	X	X			Retain portion on hold for other future analysis

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
Ashley McGrath	2020/10/26	21:00	DS	20/10/26	18:55	
			DeShan			

Methyl Mercury Results

Flett Research Ltd.
440 DeSalaberry Ave. Winnipeg, MB R2L 0Y7
Fax/Phone (204) 667-2505
E-mail: flett@flettresearch.ca Webpage: http://www.flettresearch.ca

CLIENT: Bureau Veritas - Missisauga: C0S2427
6740 Campobello Road
Mississauga, ON L5N 2L8

Matrix: Tissue (wet)
Transaction ID: 897
PO/Contract No.:
Date Received: November 10, 2020
Date Analysed: November 19, 2020
Sampling Date: October 17, 2020 to October 18, 2020
Analyst(s): Xiang W.
Date Issued: November 20, 2020

Analytical Method: M10220: Methyl Mercury in Tissue by Digestion, Aqueous Ethylation, Purge & Trap, and CVAFS with an Automated System (Version 4)

Comments: Samples were minced prior to arrivial at Flett Research.

Detection Limit: ML = 4 ng/g MDL=1 ng/g. The MDL is based on greater than 7 replicates of analytical blanks (98% confidence level) and a 100 mg wet sample size. For reporting purpose samples will be flagged below the ML which is considered a practical quantitation limit.

Estimated Uncertainty: The estimated uncertainty of this method has been determined to be ± 13% at a concentration level of 4470 ng/g (95% confidence)

Results authorized by Dr. Robert J. Flett, Chief Scientist

QUALITY DATA

Blanks		Pg of CH_3Hg in the Ethylation Blank	Mean Gross Peak Area	CH_3Hg in the Ethylation Blank (ng/L) assumes volume in the vial is 30mL
	Ethylation blank (H_2O+Reagents)	0.27	12.61	0.009
	Mean Eth. Blank (last 30 runs)	0.19		
		Net Pg CH_3Hg in the Method Blank (Eth. Blank subtracted)	Gross Peak Area	Equivalent CH_3Hg in the Method Blank (ng/g) [Eth. Blank subtracted] Uses the MeanWeight of all the samples in the batch
	Method Blank 1	0.05	15.17	0.160
	Method Blank 2	0.01	13.17	0.035
	Method Blank 3	0.02	13.72	0.070
	Mean Method Blank			0.088

Mean Calibration Factor (area units / pg)	46.84 ± 4.9 %RSD

Spike Recovery Matrix Spike (MS) and Matrix Spike Duplicate (MSD)	Sample ID (Details)	Sample Type	Gross Peak Area	Weight of Sample added to the digestion vial (g)	% CH_3Hg Recovery Used for Calculations	Net CH_3Hg as Hg (ng/g)	**CH_3Hg Recovery (%)**	
	NZL623 (MS-20-3-MM)	MS4	1753.06	0.04579	100%	106.09	103.6	
		MS4D	1732.33	0.04158	100%	118.00	99.6	%RPD=3.9
	Mean of Spike Recoveries						**101.6**	
QC Samples Reference Material (RM)	DORM4 (355 ng/g)	(beginning of run)	918.10	0.00797	100%	343	96.5	
		(end of run)	882.24	0.00797	100%	329	92.7	
	Mean of RM Recoveries						**94.6**	
Alternate Source Standard (A.S.S)	A.S.S.-Alfa ID1302 (1000 ng/L)		1402.48		Net CH3Hg as Hg (ng/L) ->	989	**98.9**	

LAB ID	Sampling Details	Sample ID	Date Sampled	Time Sampled	Sample Type	Gross Peak Area	Weight of Wet Sample added to the Digestion vial (g)	% CH_3Hg Recovery Used for Calculations	**Net CH_3Hg as Hg in the sample (ng/g wet wt.)** [Ethylation & Method Blank subtracted] [Recovery corrected] As Analyzed	
102753	NZL623	MS-20-3-MM	October 18, 2020			61.41	0.04563	101.6%	**~ 2.88**	
102754	NZL625	CB-20-5-MM	October 17, 2020		**DupA1**	113.07	0.04518	101.6%	**6.10**	
102754	NZL625	CB-20-5-MM	October 17, 2020		**DupA2**	113.03	0.04469	101.6%	**6.16**	

* : See 'Comments' section above for discussion.

~ : Result below the official detection limit for this analyte in this matrix.

Dup : Duplicate - two subsamples of the same sample carried through the analytical procedure in an identical manner.

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Note: Results relate only to the items tested.

ISO/IEC 17025:2017 Accredited with the Canadian Association of Laboratory Accreditation

Your P.O. #: 11892
Your Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 787636-01-01

Attention: Patricia Videla

SNC-Lavalin Inc
235 Lesmill Road
Toronto, ON
CANADA M3B 2V1

Report Date: 2020/10/21
Report #: R6377961
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0P8445
Received: 2020/10/02, 12:05

Sample Matrix: Vegetation
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hexavalent Chromium in Soil by IC (1)	6	2020/10/05	2020/10/06	CAM SOP-00436	EPA 3060/7199 m
Mercury in Vegetation by CVAA	6	2020/10/06	2020/10/08	CAM SOP-00453	Health Canada Method
Metals in Vegetation by ICPMS	6	N/A	2020/10/07	CAM SOP-00447	EPA 6020/200.3 m
Moisture	6	N/A	2020/10/05	CAM SOP-00445	Carter 2nd ed 51.2 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
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Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Soils are reported on a dry weight basis unless otherwise specified.

Your P.O. #: 11892
Your Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 787636-01-01

Attention: Patricia Videla

SNC-Lavalin Inc
235 Lesmill Road
Toronto, ON
CANADA M3B 2V1

Report Date: 2020/10/21
Report #: R6377961
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0P8445
Received: 2020/10/02, 12:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

RESULTS OF ANALYSES OF VEGETATION

BV Labs ID		NUH190	NUH191	NUH192	NUH193	NUH194	NUH195		
Sampling Date		2020/09/22 12:38	2020/09/22 13:29	2020/09/22 14:12	2020/09/23 10:38	2020/09/23 11:46	2020/09/24 10:53		
COC Number		787636-01-01	787636-01-01	787636-01-01	787636-01-01	787636-01-01	787636-01-01		
	UNITS	L1-CW-20-1	L2-SA-20-1	L2-LT-20-1	L3-WK-20-01	L3-WK-20-02	L4-LT-20-01	RDL	QC Batch
Inorganics									
Moisture	%	57	68	50	69	68	57	1.0	6984795

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

ELEMENTS BY ICP/MS (VEGETATION)

BV Labs ID		NUH190		NUH191		NUH192	NUH193		
Sampling Date		2020/09/22 12:38		2020/09/22 13:29		2020/09/22 14:12	2020/09/23 10:38		
COC Number		787636-01-01		787636-01-01		787636-01-01	787636-01-01		
	UNITS	L1-CW-20-1	QC Batch	L2-SA-20-1	QC Batch	L2-LT-20-1	L3-WK-20-01	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	6984926	<0.05	6984926	<0.05	<0.05	0.05	6984926
Arsenic (As)	ug/g	<0.1	6984926	<0.1	6984926	<0.1	<0.1	0.1	6984926
Barium (Ba)	ug/g	5.1	6984926	16.9	6984926	38.6	4.6	0.3	6984926
Beryllium (Be)	ug/g	<0.05	6984926	<0.05	6984926	<0.05	<0.05	0.05	6984926
Bismuth (Bi)	ug/g	<0.05	6984926	<0.05	6984926	<0.05	<0.05	0.05	6984926
Boron (B)	ug/g	4.7	6984926	4.7	6984926	7.6	4.8	0.5	6984926
Cadmium (Cd)	ug/g	<0.01	6984926	<0.01	6984926	<0.01	<0.01	0.01	6984926
Calcium (Ca)	ug/g	6680	6984926	3620	6998760	3370	1560	50	6984926
Chromium (Cr)	ug/g	<0.3	6984926	<0.3	6984926	<0.3	<0.3	0.3	6984926
Cobalt (Co)	ug/g	<0.005	6984926	<0.005	6984926	<0.005	<0.005	0.005	6984926
Copper (Cu)	ug/g	0.9	6984926	1.5	6984926	2.1	0.6	0.5	6984926
Iron (Fe)	ug/g	10	6984926	7	6984926	19	109	3	6984926
Lead (Pb)	ug/g	<0.03	6984926	<0.03	6984926	<0.03	0.03	0.03	6984926
Magnesium (Mg)	ug/g	340	6984926	577	6984926	966	321	100	6984926
Manganese (Mn)	ug/g	36.5	6984926	28.0	6984926	138	7.3	0.3	6984926
Molybdenum (Mo)	ug/g	0.36	6984926	0.13	6984926	<0.05	0.11	0.05	6984926
Nickel (Ni)	ug/g	0.06	6998760	0.05	6998760	<0.05	<0.05	0.05	6998760
Phosphorus (P)	ug/g	351	6984926	465	6984926	732	537	50	6984926
Potassium (K)	ug/g	1470	6984926	3720	6984926	2870	3840	100	6984926
Selenium (Se)	ug/g	<0.04	6984926	<0.04	6984926	<0.04	<0.04	0.04	6984926
Silver (Ag)	ug/g	<0.05	6984926	<0.05	6984926	<0.05	<0.05	0.05	6984926
Sodium (Na)	ug/g	<50	6984926	<50	6984926	<50	164	50	6984926
Strontium (Sr)	ug/g	9.7	6984926	3.4	6984926	5.2	4.8	0.5	6984926
Thallium (Tl)	ug/g	<0.003	6984926	<0.003	6984926	<0.003	<0.003	0.003	6984926
Tin (Sn)	ug/g	<0.3	6984926	<0.3	6984926	<0.3	<0.3	0.3	6984926
Titanium (Ti)	ug/g	<0.5	6984926	<0.5	6984926	0.7	<0.5	0.5	6984926
Uranium (U)	ug/g	<0.005	6984926	<0.005	6984926	<0.005	<0.005	0.005	6984926
Vanadium (V)	ug/g	<0.05	6984926	<0.05	6984926	<0.05	<0.05	0.05	6984926
Zinc (Zn)	ug/g	6	6984926	6	6984926	12	8	2	6984926

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

ELEMENTS BY ICP/MS (VEGETATION)

BV Labs ID		NUH193			NUH194		NUH195		
Sampling Date		2020/09/23 10:38			2020/09/23 11:46		2020/09/24 10:53		
COC Number		787636-01-01			787636-01-01		787636-01-01		
	UNITS	L3-WK-20-01 Lab-Dup	RDL	QC Batch	L3-WK-20-02	QC Batch	L4-LT-20-01	RDL	QC Batch
Metals									
Antimony (Sb)	ug/g	<0.05	0.05	6984926	<0.05	6984926	<0.05	0.05	6984926
Arsenic (As)	ug/g	<0.1	0.1	6984926	<0.1	6984926	<0.1	0.1	6984926
Barium (Ba)	ug/g	4.6	0.3	6984926	4.3	6984926	23.0	0.3	6984926
Beryllium (Be)	ug/g	<0.05	0.05	6984926	<0.05	6984926	<0.05	0.05	6984926
Bismuth (Bi)	ug/g	<0.05	0.05	6984926	<0.05	6984926	<0.05	0.05	6984926
Boron (B)	ug/g	4.8	0.5	6984926	4.1	6984926	8.9	0.5	6984926
Cadmium (Cd)	ug/g	<0.01	0.01	6984926	0.01	6984926	<0.01	0.01	6984926
Calcium (Ca)	ug/g	1540	50	6984926	1570	6984926	2690	50	6984926
Chromium (Cr)	ug/g	<0.3	0.3	6984926	<0.3	6984926	<0.3	0.3	6984926
Cobalt (Co)	ug/g	<0.005	0.005	6984926	0.011	6984926	<0.005	0.005	6984926
Copper (Cu)	ug/g	0.5	0.5	6984926	<0.5	6984926	1.8	0.5	6984926
Iron (Fe)	ug/g	109	3	6984926	197	6984926	17	3	6984926
Lead (Pb)	ug/g	0.03	0.03	6984926	<0.03	6984926	<0.03	0.03	6984926
Magnesium (Mg)	ug/g	320	100	6984926	359	6984926	772	100	6984926
Manganese (Mn)	ug/g	7.3	0.3	6984926	5.6	6984926	188	0.3	6984926
Molybdenum (Mo)	ug/g	0.10	0.05	6984926	0.16	6984926	<0.05	0.05	6984926
Nickel (Ni)	ug/g				<0.05	6984926	0.07	0.05	6998760
Phosphorus (P)	ug/g	551	50	6984926	576	6984926	530	50	6984926
Potassium (K)	ug/g	3770	100	6984926	2720	6984926	2250	100	6984926
Selenium (Se)	ug/g	<0.04	0.04	6984926	<0.04	6984926	<0.04	0.04	6984926
Silver (Ag)	ug/g	<0.05	0.05	6984926	<0.05	6984926	<0.05	0.05	6984926
Sodium (Na)	ug/g	161	50	6984926	196	6984926	<50	50	6984926
Strontium (Sr)	ug/g	4.8	0.5	6984926	3.9	6984926	2.8	0.5	6984926
Thallium (Tl)	ug/g	0.003	0.003	6984926	0.004	6984926	<0.003	0.003	6984926
Tin (Sn)	ug/g	<0.3	0.3	6984926	<0.3	6984926	<0.3	0.3	6984926
Titanium (Ti)	ug/g	<0.5	0.5	6984926	<0.5	6984926	0.5	0.5	6984926
Uranium (U)	ug/g	<0.005	0.005	6984926	<0.005	6984926	<0.005	0.005	6984926
Vanadium (V)	ug/g	<0.05	0.05	6984926	<0.05	6984926	<0.05	0.05	6984926
Zinc (Zn)	ug/g	8	2	6984926	8	6984926	9	2	6984926

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

ELEMENTS BY ATOMIC SPECTROSCOPY (VEGETATION)

BV Labs ID		NUH190		NUH191		NUH192		NUH193		
Sampling Date		2020/09/22 12:38		2020/09/22 13:29		2020/09/22 14:12		2020/09/23 10:38		
COC Number		787636-01-01		787636-01-01		787636-01-01		787636-01-01		
	UNITS	L1-CW-20-1	RDL	L2-SA-20-1	RDL	L2-LT-20-1	RDL	L3-WK-20-01	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	<0.90 (1)	0.90	<0.18	0.18	<0.90 (1)	0.90	<0.18	0.18	6983821
Metals										
Mercury (Hg)	ug/g	0.01	0.01	<0.01	0.01	<0.01	0.01	<0.01	0.01	6985933

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to sample matrix, sample required dilution. The detection limits were adjusted accordingly

BV Labs ID		NUH193			NUH194			NUH194		
Sampling Date		2020/09/23 10:38			2020/09/23 11:46			2020/09/23 11:46		
COC Number		787636-01-01			787636-01-01			787636-01-01		
	UNITS	L3-WK-20-01 Lab-Dup	RDL	QC Batch	L3-WK-20-02	RDL	QC Batch	L3-WK-20-02 Lab-Dup	RDL	QC Batch
Inorganics										
Chromium (VI)	ug/g	<0.18	0.18	6983821	<0.18	0.18	6983821			
Metals										
Mercury (Hg)	ug/g				<0.01	0.01	6985933	<0.01	0.01	6985933

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

BV Labs ID		NUH195		
Sampling Date		2020/09/24 10:53		
COC Number		787636-01-01		
	UNITS	L4-LT-20-01	RDL	QC Batch
Inorganics				
Chromium (VI)	ug/g	<0.90 (1)	0.90	6983821
Metals				
Mercury (Hg)	ug/g	<0.01	0.01	6985933

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
(1) Due to sample matrix, sample required dilution. The detection limits were adjusted accordingly

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

TEST SUMMARY

BV Labs ID: NUH190
Sample ID: L1-CW-20-1
Matrix: Vegetation

Collected: 2020/09/22
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

BV Labs ID: NUH191
Sample ID: L2-SA-20-1
Matrix: Vegetation

Collected: 2020/09/22
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

BV Labs ID: NUH192
Sample ID: L2-LT-20-1
Matrix: Vegetation

Collected: 2020/09/22
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

BV Labs ID: NUH193
Sample ID: L3-WK-20-01
Matrix: Vegetation

Collected: 2020/09/23
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

BV Labs ID: NUH193 Dup
Sample ID: L3-WK-20-01
Matrix: Vegetation

Collected: 2020/09/23
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

TEST SUMMARY

BV Labs ID: NUH194
Sample ID: L3-WK-20-02
Matrix: Vegetation

Collected: 2020/09/23
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

BV Labs ID: NUH194 Dup
Sample ID: L3-WK-20-02
Matrix: Vegetation

Collected: 2020/09/23
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel

BV Labs ID: NUH195
Sample ID: L4-LT-20-01
Matrix: Vegetation

Collected: 2020/09/24
Shipped:
Received: 2020/10/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	6983821	2020/10/05	2020/10/06	Violeta Porcila
Mercury in Vegetation by CVAA	CV/AA	6985933	2020/10/06	2020/10/08	Meghaben Patel
Metals in Vegetation by ICPMS	ICP1/MS	6984926	N/A	2020/10/07	Arefa Dabhad
Moisture	BAL	6984795	N/A	2020/10/05	Min Yang

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C

Sample NUH191 [L2-SA-20-1] : Calcium results may be variable due to heterogeneous distribution of Calcium in the sample

Sample NUH190, Metals in Vegetation by ICPMS: Test repeated.
Sample NUH191, Metals in Vegetation by ICPMS: Test repeated.
Sample NUH192, Metals in Vegetation by ICPMS: Test repeated.
Sample NUH193, Metals in Vegetation by ICPMS: Test repeated.
Sample NUH195, Metals in Vegetation by ICPMS: Test repeated.

Results relate only to the items tested.

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BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6983821	VP2	Matrix Spike [NUH193-01]	Chromium (VI)	2020/10/06		2.4 (1)	%	70 - 130
6983821	VP2	Spiked Blank	Chromium (VI)	2020/10/06		90	%	80 - 120
6983821	VP2	Method Blank	Chromium (VI)	2020/10/06	<0.18		ug/g	
6983821	VP2	RPD [NUH193-01]	Chromium (VI)	2020/10/06	NC		%	35
6984795	CYN	RPD	Moisture	2020/10/06	0		%	20
6984926	ADA	Matrix Spike [NUH193-01]	Calcium (Ca)	2020/10/07		103	%	75 - 125
			Magnesium (Mg)	2020/10/07		107	%	75 - 125
			Potassium (K)	2020/10/07		76	%	75 - 125
			Sodium (Na)	2020/10/07		100	%	75 - 125
			Antimony (Sb)	2020/10/07		97	%	75 - 125
			Arsenic (As)	2020/10/07		99	%	75 - 125
			Barium (Ba)	2020/10/07		99	%	75 - 125
			Beryllium (Be)	2020/10/07		97	%	75 - 125
			Bismuth (Bi)	2020/10/07		97	%	75 - 125
			Boron (B)	2020/10/07		91	%	75 - 125
			Cadmium (Cd)	2020/10/07		95	%	75 - 125
			Chromium (Cr)	2020/10/07		99	%	75 - 125
			Cobalt (Co)	2020/10/07		96	%	75 - 125
			Copper (Cu)	2020/10/07		98	%	75 - 125
			Iron (Fe)	2020/10/07		98	%	75 - 125
			Lead (Pb)	2020/10/07		92	%	75 - 125
			Manganese (Mn)	2020/10/07		97	%	75 - 125
			Molybdenum (Mo)	2020/10/07		97	%	75 - 125
			Nickel (Ni)	2020/10/07		99	%	75 - 125
			Phosphorus (P)	2020/10/07		-20 (2)	%	75 - 125
			Selenium (Se)	2020/10/07		99	%	75 - 125
			Silver (Ag)	2020/10/07		93	%	75 - 125
			Strontium (Sr)	2020/10/07		97	%	75 - 125
			Thallium (Tl)	2020/10/07		93	%	75 - 125
			Tin (Sn)	2020/10/07		93	%	75 - 125
			Titanium (Ti)	2020/10/07		86	%	75 - 125
			Uranium (U)	2020/10/07		101	%	75 - 125
			Vanadium (V)	2020/10/07		101	%	75 - 125
			Zinc (Zn)	2020/10/07		99	%	75 - 125
6984926	ADA	QC Standard	Calcium (Ca)	2020/10/07		94	%	70 - 130
			Magnesium (Mg)	2020/10/07		102	%	70 - 130
			Potassium (K)	2020/10/07		96	%	70 - 130
			Sodium (Na)	2020/10/07		82	%	70 - 130
			Arsenic (As)	2020/10/07		98	%	70 - 130
			Boron (B)	2020/10/07		84	%	70 - 130
			Cadmium (Cd)	2020/10/07		92	%	70 - 130
			Cobalt (Co)	2020/10/07		89	%	70 - 130
			Copper (Cu)	2020/10/07		95	%	70 - 130
			Lead (Pb)	2020/10/07		96	%	70 - 130
			Manganese (Mn)	2020/10/07		102	%	70 - 130
			Nickel (Ni)	2020/10/07		74	%	42 - 78
			Phosphorus (P)	2020/10/07		101	%	70 - 130
			Strontium (Sr)	2020/10/07		95	%	70 - 130

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Thallium (Tl)	2020/10/07		94	%	70 - 130
			Uranium (U)	2020/10/07		49 (2)	%	23 - 40
			Vanadium (V)	2020/10/07		42	%	28 - 52
			Zinc (Zn)	2020/10/07		92	%	70 - 130
6984926	ADA	Spiked Blank	Calcium (Ca)	2020/10/07		100	%	80 - 120
			Magnesium (Mg)	2020/10/07		99	%	80 - 120
			Potassium (K)	2020/10/07		98	%	80 - 120
			Sodium (Na)	2020/10/07		103	%	80 - 120
			Antimony (Sb)	2020/10/07		98	%	80 - 120
			Arsenic (As)	2020/10/07		99	%	80 - 120
			Barium (Ba)	2020/10/07		99	%	80 - 120
			Beryllium (Be)	2020/10/07		96	%	80 - 120
			Bismuth (Bi)	2020/10/07		99	%	80 - 120
			Boron (B)	2020/10/07		91	%	80 - 120
			Cadmium (Cd)	2020/10/07		96	%	80 - 120
			Chromium (Cr)	2020/10/07		99	%	80 - 120
			Cobalt (Co)	2020/10/07		97	%	80 - 120
			Copper (Cu)	2020/10/07		98	%	80 - 120
			Iron (Fe)	2020/10/07		99	%	80 - 120
			Lead (Pb)	2020/10/07		93	%	80 - 120
			Manganese (Mn)	2020/10/07		100	%	80 - 120
			Molybdenum (Mo)	2020/10/07		97	%	80 - 120
			Nickel (Ni)	2020/10/07		99	%	80 - 120
			Phosphorus (P)	2020/10/07		134 (2)	%	80 - 120
			Selenium (Se)	2020/10/07		99	%	80 - 120
			Silver (Ag)	2020/10/07		96	%	80 - 120
			Strontium (Sr)	2020/10/07		95	%	80 - 120
			Thallium (Tl)	2020/10/07		93	%	80 - 120
			Tin (Sn)	2020/10/07		100	%	80 - 120
			Titanium (Ti)	2020/10/07		100	%	80 - 120
			Uranium (U)	2020/10/07		103	%	80 - 120
			Vanadium (V)	2020/10/07		101	%	80 - 120
			Zinc (Zn)	2020/10/07		97	%	80 - 120
6984926	ADA	Method Blank	Calcium (Ca)	2020/10/07	<50		ug/g	
			Magnesium (Mg)	2020/10/07	<100		ug/g	
			Potassium (K)	2020/10/07	<100		ug/g	
			Sodium (Na)	2020/10/07	<50		ug/g	
			Antimony (Sb)	2020/10/07	<0.05		ug/g	
			Arsenic (As)	2020/10/07	<0.1		ug/g	
			Barium (Ba)	2020/10/07	<0.3		ug/g	
			Beryllium (Be)	2020/10/07	<0.05		ug/g	
			Bismuth (Bi)	2020/10/07	<0.05		ug/g	
			Boron (B)	2020/10/07	<0.5		ug/g	
			Cadmium (Cd)	2020/10/07	<0.01		ug/g	
			Chromium (Cr)	2020/10/07	<0.3		ug/g	
			Cobalt (Co)	2020/10/07	<0.005		ug/g	
			Copper (Cu)	2020/10/07	<0.5		ug/g	
			Iron (Fe)	2020/10/07	<3		ug/g	
			Lead (Pb)	2020/10/07	<0.03		ug/g	
			Manganese (Mn)	2020/10/07	<0.3		ug/g	

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Molybdenum (Mo)	2020/10/07	<0.05		ug/g	
			Nickel (Ni)	2020/10/07	0.07, RDL=0.05		ug/g	
			Phosphorus (P)	2020/10/07	<50		ug/g	
			Selenium (Se)	2020/10/07	<0.04		ug/g	
			Silver (Ag)	2020/10/07	<0.05		ug/g	
			Strontium (Sr)	2020/10/07	<0.5		ug/g	
			Thallium (Tl)	2020/10/07	<0.003		ug/g	
			Tin (Sn)	2020/10/07	<0.3		ug/g	
			Titanium (Ti)	2020/10/07	<0.5		ug/g	
			Uranium (U)	2020/10/07	<0.005		ug/g	
			Vanadium (V)	2020/10/07	<0.05		ug/g	
			Zinc (Zn)	2020/10/07	<2		ug/g	
6984926	ADA	RPD [NUH193-01]	Calcium (Ca)	2020/10/07	1.7		%	30
			Magnesium (Mg)	2020/10/07	0.35		%	30
			Potassium (K)	2020/10/07	1.8		%	30
			Sodium (Na)	2020/10/07	2.0		%	30
			Antimony (Sb)	2020/10/07	NC		%	30
			Arsenic (As)	2020/10/07	NC		%	30
			Barium (Ba)	2020/10/07	1.3		%	30
			Beryllium (Be)	2020/10/07	NC		%	30
			Bismuth (Bi)	2020/10/07	NC		%	30
			Boron (B)	2020/10/07	0.22		%	30
			Cadmium (Cd)	2020/10/07	NC		%	30
			Chromium (Cr)	2020/10/07	NC		%	30
			Cobalt (Co)	2020/10/07	NC		%	30
			Copper (Cu)	2020/10/07	3.9		%	30
			Iron (Fe)	2020/10/07	0.054		%	30
			Lead (Pb)	2020/10/07	2.7		%	30
			Manganese (Mn)	2020/10/07	0.88		%	30
			Molybdenum (Mo)	2020/10/07	3.4		%	30
			Phosphorus (P)	2020/10/07	2.6		%	30
			Selenium (Se)	2020/10/07	NC		%	30
			Silver (Ag)	2020/10/07	NC		%	30
			Strontium (Sr)	2020/10/07	0.57		%	30
			Thallium (Tl)	2020/10/07	4.2		%	30
			Tin (Sn)	2020/10/07	NC		%	30
			Titanium (Ti)	2020/10/07	NC		%	30
			Uranium (U)	2020/10/07	NC		%	30
			Vanadium (V)	2020/10/07	NC		%	30
			Zinc (Zn)	2020/10/07	2.2		%	30
6985933	MPD	Matrix Spike [NUH194-01]	Mercury (Hg)	2020/10/08		101	%	75 - 125
6985933	MPD	QC Standard	Mercury (Hg)	2020/10/08		98	%	70 - 130
6985933	MPD	Method Blank	Mercury (Hg)	2020/10/08	<0.01		ug/g	
6985933	MPD	RPD [NUH194-01]	Mercury (Hg)	2020/10/08	NC		%	35
6998760	ADA	Matrix Spike	Calcium (Ca)	2020/10/14		104	%	75 - 125
			Nickel (Ni)	2020/10/14		94	%	75 - 125
6998760	ADA	QC Standard	Calcium (Ca)	2020/10/14		97	%	70 - 130
			Nickel (Ni)	2020/10/14		71	%	42 - 78

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0P8445
Report Date: 2020/10/21

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 11892
Sampler Initials: GG

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6998760	ADA	Spiked Blank	Calcium (Ca)	2020/10/14		99	%	80 - 120
			Nickel (Ni)	2020/10/14		97	%	80 - 120
6998760	ADA	Method Blank	Calcium (Ca)	2020/10/14	<50		ug/g	
			Nickel (Ni)	2020/10/14	<0.05		ug/g	
6998760	ADA	RPD	Calcium (Ca)	2020/10/14	7.5		%	30
			Nickel (Ni)	2020/10/14	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.The sample was reanalyzed with the same results

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

<original signed by>

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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02-Oct-20 12:05
Ema Gitej
C0P8445
THP ENV-809

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C03309
Attention:	Accounts Payable	Attention:	Tahina Choudhury	P.O. #:	
Address:	455 René-Lévesque Blvd. West	Address:	1145 Hunt Club Road Suite 120	Project:	661910
	Montreal QC H2Z 1Z3		Ottawa ON K1V 0Y3	Project Name:	Wabaquasi Supply Road
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 228 Fax:	Site #:	
Email:	payables@snclavalin.com	Email:	Tahina.Choudhury@snclavalin.com; ON_labdata@sncla	Sampled By:	Gwyneth Cyprys / David Hinchforth

Bottle Order #: 787636
COC #: C#787636-01-01
Project Manager: Ema Gitej

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
☐ Table 1 ☐ Res/Park ☐ Medium/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ For RSC
☐ Table ___

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ Reg 558 ☐ Storm Sewer Bylaw
☐ MISA Municipality ___
☐ PWQO ☐ Reg 406 Table ___
☐ Other ___

Special Instructions
Refer to Reg assoc. w. Quote C03309

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): Metals by ICPMS & Hg	Chromium VI	~~Mercury~~	Particle Size Distribution with Graph	Moisture	# of Bottles	Comments
1	~~L1-CW-20-1~~	L1-CW-20-1	22/09/2020	12:38pm	Tissue		X	X			X	1	
2		L2-SA-20-1	22/09/2020	13:29	Tissue		X	X			X	1	
3		L2-LT-20-1	22/09/2020	14:12	Tissue		X	X			X	1	
4		L3-WK-20-01	23/09/2020	10:38	Tissue		X	X			X	1	
5		L3-WK-20-02	23/09/2020	11:46	Tissue		X	X			X	1	
6		L4-LT-20-01	24/09/2020	10:53	Tissue		X	X			X	1	
7							~~X~~	~~X~~		X		~~2~~	
8							~~X~~	~~X~~		X		~~2~~	
9							~~X~~	~~X~~		X		~~2~~	
10							~~X~~	~~X~~		X		~~2~~	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Gwyneth Cyprys	2020/10/02	10:32	[illegible]	2020/10/02	1205	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 0 1 6 Ice
Custody Seal: Present ☐ Intact ☐ Yes ☐ No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your P.O. #: 661910
Your Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 855214-01-01

Attention: David Tarnocai

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2022/01/07
Report #: R6952481
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X3115
Received: 2021/11/11, 08:50

Sample Matrix: Tissue
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Mercury in Tissue by CVAA	4	N/A	2021/11/18	CAM SOP-0453	Health Canada Method
Metals in Tissue by ICPMS	4	N/A	2021/11/18	CAM SOP-00447	EPA 6020B m/200.3 m
Moisture	4	N/A	2021/11/16	CAM SOP-00715	AOAC\ADPI methods

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Your P.O. #: 661910
Your Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your C.O.C. #: 855214-01-01

Attention: David Tarnocai

SNC-Lavalin Inc
1145 Hunt Club Road
Suite 120
Ottawa, ON
CANADA K1V 0Y3

Report Date: 2022/01/07
Report #: R6952481
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X3115
Received: 2021/11/11, 08:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829
==========
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

RESULTS OF ANALYSES OF TISSUE

Bureau Veritas ID		RFE996	RFE997	RFE998		
Sampling Date		2021/11/06	2021/10/17	2021/11/06		
COC Number		855214-01-01	855214-01-01	855214-01-01		
	UNITS	BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM.	RUFFED GROUSE IN COMMUNITY	SNOWSHOE HARE IN COMMUNITY	RDL	QC Batch
Nutritional Parameters						
Moisture	g/100g	43.26	72.46	74.97	0.10	7703195

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		RFE999		
Sampling Date		2021/09/17		
COC Number		855214-01-01		
	UNITS	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER	RDL	QC Batch
Nutritional Parameters				
Moisture	g/100g	57.10	0.10	7703219

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Bureau Veritas ID		RFE996	RFE997			RFE997		
Sampling Date		2021/11/06	2021/10/17			2021/10/17		
COC Number		855214-01-01	855214-01-01			855214-01-01		
	UNITS	BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM.	RUFFED GROUSE IN COMMUNITY	RDL	QC Batch	RUFFED GROUSE IN COMMUNITY Lab-Dup	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	0.065	0.005	0.005	7703996			
Arsenic (As)	ug/g	<0.1	<0.1	0.1	7705090	<0.1	0.1	7705090
Antimony (Sb)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Barium (Ba)	ug/g	<0.3	<0.3	0.3	7705090	<0.3	0.3	7705090
Beryllium (Be)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Bismuth (Bi)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Boron (B)	ug/g	<0.5	<0.5	0.5	7705090	<0.5	0.5	7705090
Cadmium (Cd)	ug/g	<0.01	<0.01	0.01	7705090	<0.01	0.01	7705090
Calcium (Ca)	ug/g	<50	140	50	7705090	150	50	7705090
Cesium (Cs)	ug/g	<0.005	0.10	0.005	7705090	0.10	0.005	7705090
Chromium (Cr)	ug/g	<0.3	<0.3	0.3	7705090	<0.3	0.3	7705090
Cobalt (Co)	ug/g	0.008	<0.005	0.005	7705090	0.005	0.005	7705090
Copper (Cu)	ug/g	2.9	0.8	0.5	7705090	0.7	0.5	7705090
Iron (Fe)	ug/g	37	9	3	7705090	8	3	7705090
Lead (Pb)	ug/g	0.04	<0.03	0.03	7705090	<0.03	0.03	7705090
Magnesium (Mg)	ug/g	140	280	100	7705090	280	100	7705090
Manganese (Mn)	ug/g	<0.3	<0.3	0.3	7705090	<0.3	0.3	7705090
Molybdenum (Mo)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Nickel (Ni)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Phosphorus (P)	ug/g	1400	2300	500	7705090	2200	500	7705090
Potassium (K)	ug/g	2000	3000	100	7705090	3000	100	7705090
Selenium (Se)	ug/g	0.24	0.11	0.04	7705090	0.11	0.04	7705090
Silver (Ag)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Sodium (Na)	ug/g	460	860	50	7705090	850	50	7705090
Strontium (Sr)	ug/g	<0.5	<0.5	0.5	7705090	<0.5	0.5	7705090
Thallium (Tl)	ug/g	<0.003	<0.003	0.003	7705090	<0.003	0.003	7705090
Tin (Sn)	ug/g	<0.3	<0.3	0.3	7705090	<0.3	0.3	7705090
Titanium (Ti)	ug/g	0.8	1.1	0.5	7705090	1.1	0.5	7705090
Uranium (U)	ug/g	<0.005	<0.005	0.005	7705090	<0.005	0.005	7705090

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Bureau Veritas ID		RFE996	RFE997			RFE997		
Sampling Date		2021/11/06	2021/10/17			2021/10/17		
COC Number		855214-01-01	855214-01-01			855214-01-01		
	UNITS	**BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM.**	**RUFFED GROUSE IN COMMUNITY**	**RDL**	**QC Batch**	**RUFFED GROUSE IN COMMUNITY Lab-Dup**	**RDL**	**QC Batch**
Vanadium (V)	ug/g	<0.05	<0.05	0.05	7705090	<0.05	0.05	7705090
Zinc (Zn)	ug/g	8	8	2	7705090	8	2	7705090

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Bureau Veritas ID		RFE998	RFE999			RFE999		
Sampling Date		2021/11/06	2021/09/17			2021/09/17		
COC Number		855214-01-01	855214-01-01			855214-01-01		
	UNITS	SNOWSHOE HARE IN COMMUNITY	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER	RDL	QC Batch	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER Lab-Dup	RDL	QC Batch
Metals								
Mercury (Hg)	ug/g	<0.005	<0.005	0.005	7703996	<0.005	0.005	7703996
Arsenic (As)	ug/g	<0.1	1.4	0.1	7705090			
Antimony (Sb)	ug/g	<0.05	3.6	0.05	7705090			
Barium (Ba)	ug/g	<0.3	<0.3	0.3	7705090			
Beryllium (Be)	ug/g	<0.05	<0.05	0.05	7705090			
Bismuth (Bi)	ug/g	<0.05	<0.05	0.05	7705090			
Boron (B)	ug/g	<0.5	<0.5	0.5	7705090			
Cadmium (Cd)	ug/g	<0.01	<0.01	0.01	7705090			
Calcium (Ca)	ug/g	70	140	50	7705090			
Cesium (Cs)	ug/g	0.083	0.005	0.005	7705090			
Chromium (Cr)	ug/g	<0.3	<0.3	0.3	7705090			
Cobalt (Co)	ug/g	<0.005	<0.005	0.005	7705090			
Copper (Cu)	ug/g	1.9	1.5	0.5	7705090			
Iron (Fe)	ug/g	25	32	3	7705090			
Lead (Pb)	ug/g	<0.03	180	0.03	7705090			
Magnesium (Mg)	ug/g	260	190	100	7705090			
Manganese (Mn)	ug/g	0.9	0.4	0.3	7705090			
Molybdenum (Mo)	ug/g	<0.05	<0.05	0.05	7705090			
Nickel (Ni)	ug/g	<0.05	<0.05	0.05	7705090			
Phosphorus (P)	ug/g	2300	1900	500	7705090			
Potassium (K)	ug/g	3600	2600	100	7705090			
Selenium (Se)	ug/g	0.05	0.14	0.04	7705090			
Silver (Ag)	ug/g	<0.05	<0.05	0.05	7705090			
Sodium (Na)	ug/g	600	590	50	7705090			
Strontium (Sr)	ug/g	<0.5	<0.5	0.5	7705090			
Thallium (Tl)	ug/g	<0.003	<0.003	0.003	7705090			
Tin (Sn)	ug/g	<0.3	<0.3	0.3	7705090			
Titanium (Ti)	ug/g	1.0	1.0	0.5	7705090			
Uranium (U)	ug/g	0.006	<0.005	0.005	7705090			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Bureau Veritas ID		RFE998	RFE999			RFE999		
Sampling Date		2021/11/06	2021/09/17			2021/09/17		
COC Number		855214-01-01	855214-01-01			855214-01-01		
	UNITS	SNOWSHOE HARE IN COMMUNITY	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER	RDL	QC Batch	CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER Lab-Dup	RDL	QC Batch
Vanadium (V)	ug/g	<0.05	<0.05	0.05	7705090			
Zinc (Zn)	ug/g	17	19	2	7705090			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

TEST SUMMARY

Bureau Veritas ID: RFE996 **Collected:** 2021/11/06
Sample ID: BUFFLEHEAD WINISK RIVER 3KM SOUTH OF COMM. **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7703996	N/A	2021/11/18	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7705090	N/A	2021/11/18	Prempal Bhatti
Moisture		7703195	N/A	2021/11/16	Preena Gupta

Bureau Veritas ID: RFE997 **Collected:** 2021/10/17
Sample ID: RUFFED GROUSE IN COMMUNITY **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7703996	N/A	2021/11/18	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7705090	N/A	2021/11/18	Prempal Bhatti
Moisture		7703195	N/A	2021/11/16	Preena Gupta

Bureau Veritas ID: RFE997 Dup **Collected:** 2021/10/17
Sample ID: RUFFED GROUSE IN COMMUNITY **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Tissue by ICPMS	ICP1/MS	7705090	N/A	2021/11/18	Prempal Bhatti

Bureau Veritas ID: RFE998 **Collected:** 2021/11/06
Sample ID: SNOWSHOE HARE IN COMMUNITY **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7703996	N/A	2021/11/18	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7705090	N/A	2021/11/18	Prempal Bhatti
Moisture		7703195	N/A	2021/11/16	Preena Gupta

Bureau Veritas ID: RFE999 **Collected:** 2021/09/17
Sample ID: CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7703996	N/A	2021/11/18	Medhat Nasr
Metals in Tissue by ICPMS	ICP1/MS	7705090	N/A	2021/11/18	Prempal Bhatti
Moisture		7703219	N/A	2021/11/16	Preena Gupta

Bureau Veritas ID: RFE999 Dup **Collected:** 2021/09/17
Sample ID: CAN. GOOSE 14KM SOUTH OF THE COMMUNITY WINISK RIVER **Shipped:**
Matrix: Tissue **Received:** 2021/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury in Tissue by CVAA	CV/AA	7703996	N/A	2021/11/18	Medhat Nasr

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-0.3°C

Cr VI analysis not completed, method not available for tissue samples.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

QUALITY ASSURANCE REPORT

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7703195	Moisture	2021/11/16					<0.10	g/100g	0.40	20	97	N/A
7703219	Moisture	2021/11/16					<0.10	g/100g	2.0	20	101	N/A
7703996	Mercury (Hg)	2021/11/18	97	75 - 125			<0.005	ug/g	NC	35	81	70 - 130
7705090	Antimony (Sb)	2021/11/18	96	75 - 125	100	80 - 120	<0.05	ug/g	NC	30		
7705090	Arsenic (As)	2021/11/18	95	75 - 125	96	80 - 120	<0.1	ug/g	NC	30	97	70 - 130
7705090	Barium (Ba)	2021/11/18	96	75 - 125	98	80 - 120	<0.3	ug/g	NC	30		
7705090	Beryllium (Be)	2021/11/18	100	75 - 125	99	80 - 120	<0.05	ug/g	NC	30		
7705090	Bismuth (Bi)	2021/11/18	100	75 - 125	101	80 - 120	<0.05	ug/g	NC	30		
7705090	Boron (B)	2021/11/18	90	75 - 125	93	80 - 120	<0.5	ug/g	NC	30		
7705090	Cadmium (Cd)	2021/11/18	94	75 - 125	95	80 - 120	<0.01	ug/g	NC	30	89	70 - 130
7705090	Calcium (Ca)	2021/11/18	109	75 - 125	100	80 - 120	<50	ug/g	2.5	30		
7705090	Cesium (Cs)	2021/11/18	95	75 - 125	98	80 - 120	<0.005	ug/g	2.7	30		
7705090	Chromium (Cr)	2021/11/18	94	75 - 125	94	80 - 120	<0.3	ug/g	NC	30	76	60 - 140
7705090	Cobalt (Co)	2021/11/18	93	75 - 125	94	80 - 120	<0.005	ug/g	0.86	30	89	70 - 130
7705090	Copper (Cu)	2021/11/18	94	75 - 125	92	80 - 120	<0.5	ug/g	9.1	30	86	70 - 130
7705090	Iron (Fe)	2021/11/18	96	75 - 125	95	80 - 120	<3	ug/g	15	30	84	70 - 130
7705090	Lead (Pb)	2021/11/18	92	75 - 125	94	80 - 120	<0.03	ug/g	NC	30	80	70 - 130
7705090	Magnesium (Mg)	2021/11/18	103	75 - 125	95	80 - 120	<100	ug/g	0.23	30		
7705090	Manganese (Mn)	2021/11/18	97	75 - 125	98	80 - 120	<0.3	ug/g	NC	30	86	70 - 130
7705090	Molybdenum (Mo)	2021/11/18	94	75 - 125	94	80 - 120	<0.05	ug/g	NC	30	90	70 - 130
7705090	Nickel (Ni)	2021/11/18	96	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	85	60 - 140
7705090	Phosphorus (P)	2021/11/18	NC	75 - 125	120	80 - 120	<50	ug/g	3.9	30		
7705090	Potassium (K)	2021/11/18	NC	75 - 125	94	80 - 120	<100	ug/g	2.4	30		
7705090	Selenium (Se)	2021/11/18	100	75 - 125	100	80 - 120	<0.04	ug/g	0.70	30	91	70 - 130
7705090	Silver (Ag)	2021/11/18	93	75 - 125	95	80 - 120	<0.05	ug/g	NC	30		
7705090	Sodium (Na)	2021/11/18	NC	75 - 125	98	80 - 120	<50	ug/g	1.9	30		
7705090	Strontium (Sr)	2021/11/18	93	75 - 125	94	80 - 120	<0.5	ug/g	NC	30	85	70 - 130
7705090	Thallium (Tl)	2021/11/18	92	75 - 125	93	80 - 120	<0.003	ug/g	NC	30		
7705090	Tin (Sn)	2021/11/18	95	75 - 125	98	80 - 120	<0.3	ug/g	NC	30		
7705090	Titanium (Ti)	2021/11/18	97	75 - 125	95	80 - 120	<0.5	ug/g	1.5	30		

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7705090	Uranium (U)	2021/11/18	96	75 - 125	95	80 - 120	<0.005	ug/g	NC	30		
7705090	Vanadium (V)	2021/11/18	97	75 - 125	97	80 - 120	<0.05	ug/g	NC	30	87	70 - 130
7705090	Zinc (Zn)	2021/11/18	94	75 - 125	96	80 - 120	<2	ug/g	3.2	30	89	70 - 130

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Bureau Veritas Job #: C1X3115
Report Date: 2022/01/07

SNC-Lavalin Inc
Client Project #: 661910
Site Location: WEBEQUIE SUPPLY ROAD
Your P.O. #: 661910
Sampler Initials: AB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

<original signed by>

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Page 1 of 1

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#2033 SNC-Lavalin Inc	Company Name:	#18603 SNC-Lavalin Inc	Quotation #:	C15201	Bureau Veritas Job #:	Bottle Order #: 855214
Attention:	Accounts Payable	Attention:	David Tarnocai	P.O. #:			
Address:	455 René-Lévesque Blvd. West Montreal QC H2Z 1Z3	Address:	1145 Hunt Club Road Suite 120 Ottawa ON K1V 0Y3	Project:	WEBEQUIE SUPPLY ROAD 061910	COC #: C#855214-01-01	Project Manager: Ema Gitej
Tel:	(514) 393-1000 Fax: (514) 866-0795	Tel:	(613) 226-2456 Ext: 350 Fax:	Project Name:			
Email:	payables@snclavalin.com	Email:	david.tarnocai@snclavalin.com; ON_labdata@snclavali	Site #:			
				Sampled By:	ANGELA BROOKS		

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☐ Res/Park ☐ Medium/Fine ☐ Table 2 ☐ Ind/Comm ☐ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Reg 406 Table ___ ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Hexavalent Chromium in Soil by IC	Mercury in Vegetation by CVAA	Metals in Vegetation by ICPMS	Moisture	Grinding, Compositing & Homogenizing	Methyl Mercury	METALS-CVAA-ICP	Methyl Mercury	# of Bottles	Comments
1	BUFFLEHEAD	WINISK RIVER 3KM SOUTH OF COMM.	2021-11-06	AM	TISSUE					X			X	X	1	BUFFLEHEAD (DUCK)
2	RUFFED GROUSE	IN COMMUNITY	2021-10-17	PM	TISSUE					X			X	X	1	RUFFED GROUSE
3	SNOWSHOE HARE	IN COMMUNITY	2021-11-06	PM	TISSUE					X			X	X	1	SNOWSHOE HARE
4	CAN. GOOSE	14KM SOUTH OF THE COMMUNITY ON WINISK RIVER	2021-09-17	AM	TISSUE					X			X	X	1	CANADA GOOSE
5																
6																
7																
8																
9																
10																

11-Nov-21 08:50
Ema Gitej
C1X3115

Rec'd In Thunder Bay

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
ANGELA BROOKS	2021-11-10		Michelle Hutty MHutty	2021/11/11	08:50	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
	0.1-1.0	Intact		N/A

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

Bureau Veritas Canada (2019) Inc.

ATTACHMENT G

Attachment G – ProUCL Output Files

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.12023-04-17 11:16:51 AM
From File	Fish UCLM_c.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Antimony

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Antimony was not processed!

Arsenic

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Arsenic was not processed!

Barium

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	1	Number of Non-Detects	28
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT

The data set for variable Barium was not processed!

Beryllium

General Statistics

54			Total Number of Observations		29				Number of Distinct Observations			1
55			Number of Detects		0				Number of Non-Detects			29
56			Number of Distinct Detects		0				Number of Distinct Non-Detects			1
57												
58			Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!									
59			Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!									
60			The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).									
61												
62			The data set for variable Beryllium was not processed!									
63												
64												
65	Bismuth											
66												
67					General Statistics							
68			Total Number of Observations		29				Number of Distinct Observations			1
69			Number of Detects		0				Number of Non-Detects			29
70			Number of Distinct Detects		0				Number of Distinct Non-Detects			1
71												
72			Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!									
73			Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!									
74			The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).									
75												
76			The data set for variable Bismuth was not processed!									
77												
78												
79	Boron											
80												
81					General Statistics							
82			Total Number of Observations		29				Number of Distinct Observations			1
83			Number of Detects		0				Number of Non-Detects			29
84			Number of Distinct Detects		0				Number of Distinct Non-Detects			1
85												
86			Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!									
87			Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!									
88			The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).									
89												
90			The data set for variable Boron was not processed!									
91												
92												
93	Cadmium											
94												
95					General Statistics							
96			Total Number of Observations		29				Number of Distinct Observations			1
97			Number of Detects		0				Number of Non-Detects			29
98			Number of Distinct Detects		0				Number of Distinct Non-Detects			1
99												
100			Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!									
101			Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!									
102			The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).									
103												
104			The data set for variable Cadmium was not processed!									
105												
106												

Calcium

General Statistics

Total Number of Observations	29	Number of Distinct Observations	26
		Number of Missing Observations	0
Minimum	82	Mean	1347
Maximum	8700	Median	1000
SD	1797	Std. Error of Mean	333.8
Coefficient of Variation	1.335	Skewness	3.079

Normal GOF Test

Shapiro Wilk Test Statistic	0.63	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.926	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.262	Lilliefors GOF Test
5% Lilliefors Critical Value	0.161	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1914	95% Adjusted-CLT UCL (Chen-1995)	2099
		95% Modified-t UCL (Johnson-1978)	1946

Gamma GOF Test

A-D Test Statistic	0.567	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.778	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.124	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.909	k star (bias corrected MLE)	0.838
Theta hat (MLE)	1481	Theta star (bias corrected MLE)	1607
nu hat (MLE)	52.72	nu star (bias corrected)	48.6
MLE Mean (bias corrected)	1347	MLE Sd (bias corrected)	1471
		Approximate Chi Square Value (0.05)	33.59
Adjusted Level of Significance	0.0407	Adjusted Chi Square Value	32.85

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	1948	95% Adjusted Gamma UCL (use when n<50)	1992

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.948	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.926	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.14	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.161	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.407	Mean of logged Data	6.563
Maximum of Logged Data	9.071	SD of logged Data	1.22

Assuming Lognormal Distribution

160				95% H-UCL	2812			90% Chebyshev (MVUE) UCL	2593		
161				95% Chebyshev (MVUE) UCL	3120			97.5% Chebyshev (MVUE) UCL	3852		
162				99% Chebyshev (MVUE) UCL	5289						
163											
164				Nonparametric Distribution Free UCL Statistics							
165				Data appear to follow a Discernible Distribution at 5% Significance Level							
166											
167				Nonparametric Distribution Free UCLs							
168				95% CLT UCL	1896			95% Jackknife UCL	1914		
169				95% Standard Bootstrap UCL	1892			95% Bootstrap-t UCL	2634		
170				95% Hall's Bootstrap UCL	4801			95% Percentile Bootstrap UCL	1923		
171				95% BCA Bootstrap UCL	2114						
172				90% Chebyshev(Mean, Sd) UCL	2348			95% Chebyshev(Mean, Sd) UCL	2801		
173				97.5% Chebyshev(Mean, Sd) UCL	3431			99% Chebyshev(Mean, Sd) UCL	4668		
174											
175				Suggested UCL to Use							
176				95% Adjusted Gamma UCL	1992						
177											
178	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
179	Recommendations are based upon data size, data distribution, and skewness.										
180	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
181	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
182											
183	Cesium										
184											
185				General Statistics							
186				Total Number of Observations	29			Number of Distinct Observations	22		
187				Number of Detects	27			Number of Non-Detects	2		
188				Number of Distinct Detects	22			Number of Distinct Non-Detects	1		
189				Minimum Detect	0.005			Minimum Non-Detect	0.005		
190				Maximum Detect	0.057			Maximum Non-Detect	0.005		
191				Variance Detects	1.6015E-4			Percent Non-Detects	6.897%		
192				Mean Detects	0.0277			SD Detects	0.0127		
193				Median Detects	0.025			CV Detects	0.457		
194				Skewness Detects	0.747			Kurtosis Detects	0.163		
195				Mean of Logged Detects	-3.698			SD of Logged Detects	0.508		
196											
197				Normal GOF Test on Detects Only							
198				Shapiro Wilk Test Statistic	0.939			Shapiro Wilk GOF Test			
199				5% Shapiro Wilk Critical Value	0.923			Detected Data appear Normal at 5% Significance Level			
200				Lilliefors Test Statistic	0.145			Lilliefors GOF Test			
201				5% Lilliefors Critical Value	0.167			Detected Data appear Normal at 5% Significance Level			
202				Detected Data appear Normal at 5% Significance Level							
203											
204				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
205				KM Mean	0.0261			KM Standard Error of Mean	0.00251		
206				KM SD	0.0133			95% KM (BCA) UCL	0.0304		
207				95% KM (t) UCL	0.0304			95% KM (Percentile Bootstrap) UCL	0.0302		
208				95% KM (z) UCL	0.0302			95% KM Bootstrap t UCL	0.0307		
209				90% KM Chebyshev UCL	0.0336			95% KM Chebyshev UCL	0.0371		
210				97.5% KM Chebyshev UCL	0.0418			99% KM Chebyshev UCL	0.0511		
211											
212				Gamma GOF Tests on Detected Observations Only							

213				A-D Test Statistic	0.283	Anderson-Darling GOF Test					
214				5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level					
215				K-S Test Statistic	0.0851	Kolmogorov-Smirnov GOF					
216				5% K-S Critical Value	0.169	Detected data appear Gamma Distributed at 5% Significance Level					
217				Detected data appear Gamma Distributed at 5% Significance Level							
218											
219				Gamma Statistics on Detected Data Only							
220				k hat (MLE)	4.697			k star (bias corrected MLE)	4.2		
221				Theta hat (MLE)	0.00589			Theta star (bias corrected MLE)	0.00659		
222				nu hat (MLE)	253.6			nu star (bias corrected)	226.8		
223				Mean (detects)	0.0277						
224											
225				Gamma ROS Statistics using Imputed Non-Detects							
226				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
227				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
228				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
229				This is especially true when the sample size is small.							
230				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
231				Minimum	0.005			Mean	0.0264		
232				Maximum	0.057			Median	0.024		
233				SD	0.013			CV	0.492		
234				k hat (MLE)	4.073			k star (bias corrected MLE)	3.675		
235				Theta hat (MLE)	0.00649			Theta star (bias corrected MLE)	0.0072		
236				nu hat (MLE)	236.2			nu star (bias corrected)	213.1		
237				Adjusted Level of Significance (β)	0.0407						
238				Approximate Chi Square Value (213.13, α)	180.3			Adjusted Chi Square Value (213.13, β)	178.5		
239				95% Gamma Approximate UCL (use when n>=50)	0.0313			95% Gamma Adjusted UCL (use when n<50)	0.0316		
240											
241				Estimates of Gamma Parameters using KM Estimates							
242				Mean (KM)	0.0261			SD (KM)	0.0133		
243				Variance (KM)	1.7658E-4			SE of Mean (KM)	0.00251		
244				k hat (KM)	3.859			k star (KM)	3.483		
245				nu hat (KM)	223.8			nu star (KM)	202		
246				theta hat (KM)	0.00676			theta star (KM)	0.0075		
247				80% gamma percentile (KM)	0.0366			90% gamma percentile (KM)	0.0449		
248				95% gamma percentile (KM)	0.0525			99% gamma percentile (KM)	0.069		
249											
250				Gamma Kaplan-Meier (KM) Statistics							
251				Approximate Chi Square Value (202.00, α)	170.1			Adjusted Chi Square Value (202.00, β)	168.4		
252				95% Gamma Approximate KM-UCL (use when n>=50)	0.031			95% Gamma Adjusted KM-UCL (use when n<50)	0.0313		
253											
254				Lognormal GOF Test on Detected Observations Only							
255				Shapiro Wilk Test Statistic	0.936	Shapiro Wilk GOF Test					
256				5% Shapiro Wilk Critical Value	0.923	Detected Data appear Lognormal at 5% Significance Level					
257				Lilliefors Test Statistic	0.111	Lilliefors GOF Test					
258				5% Lilliefors Critical Value	0.167	Detected Data appear Lognormal at 5% Significance Level					
259				Detected Data appear Lognormal at 5% Significance Level							
260											
261				Lognormal ROS Statistics Using Imputed Non-Detects							
262				Mean in Original Scale	0.0263			Mean in Log Scale	-3.777		
263				SD in Original Scale	0.0132			SD in Log Scale	0.573		
264				95% t UCL (assumes normality of ROS data)	0.0305			95% Percentile Bootstrap UCL	0.0304		
265				95% BCA Bootstrap UCL	0.0304			95% Bootstrap t UCL	0.0309		

266				95% H-UCL (Log ROS)	0.0335						
267											
268				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
269				KM Mean (logged)	-3.808				KM Geo Mean	0.0222	
270				KM SD (logged)	0.629				95% Critical H Value (KM-Log)	2.06	
271			KM Standard Error of Mean (logged)		0.119				95% H-UCL (KM -Log)	0.0346	
272				KM SD (logged)	0.629				95% Critical H Value (KM-Log)	2.06	
273			KM Standard Error of Mean (logged)		0.119						
274											
275					DL/2 Statistics						
276			DL/2 Normal						DL/2 Log-Transformed		
277				Mean in Original Scale	0.0259				Mean in Log Scale	-3.856	
278				SD in Original Scale	0.0138				SD in Log Scale	0.768	
279				95% t UCL (Assumes normality)	0.0303				95% H-Stat UCL	0.0391	
280				DL/2 is not a recommended method, provided for comparisons and historical reasons							
281											
282					Nonparametric Distribution Free UCL Statistics						
283					Detected Data appear Normal Distributed at 5% Significance Level						
284											
285					Suggested UCL to Use						
286					95% KM (t) UCL	0.0304					
287											
288					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
289					Recommendations are based upon data size, data distribution, and skewness.						
290					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
291					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
292											
293	Chromium										
294											
295					General Statistics						
296				Total Number of Observations	29				Number of Distinct Observations	1	
297				Number of Detects	0				Number of Non-Detects	29	
298				Number of Distinct Detects	0				Number of Distinct Non-Detects	1	
299											
300					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!						
301					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!						
302					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).						
303											
304					The data set for variable Chromium was not processed!						
305											
306											
307	Chromium VI										
308											
309					General Statistics						
310				Total Number of Observations	29				Number of Distinct Observations	1	
311				Number of Detects	0				Number of Non-Detects	29	
312				Number of Distinct Detects	0				Number of Distinct Non-Detects	1	
313											
314					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!						
315					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!						
316					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).						
317											
318					The data set for variable Chromium VI was not processed!						

Cobalt

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Cobalt was not processed!

Copper

General Statistics

Total Number of Observations	29	Number of Distinct Observations	2
Number of Detects	2	Number of Non-Detects	27
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT

The data set for variable Copper was not processed!

Iron

General Statistics

Total Number of Observations	29	Number of Distinct Observations	5
Number of Detects	13	Number of Non-Detects	16
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	3	Minimum Non-Detect	3
Maximum Detect	7	Maximum Non-Detect	3
Variance Detects	1.423	Percent Non-Detects	55.17%
Mean Detects	4.615	SD Detects	1.193
Median Detects	4	CV Detects	0.258
Skewness Detects	0.548	Kurtosis Detects	-0.245
Mean of Logged Detects	1.499	SD of Logged Detects	0.257

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.235	Lilliefors GOF Test
5% Lilliefors Critical Value	0.234	Detected Data Not Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.724	KM Standard Error of Mean	0.215
KM SD	1.111	95% KM (BCA) UCL	4.069

372				95% KM (t) UCL	4.089			95% KM (Percentile Bootstrap) UCL			4.069
373				95% KM (z) UCL	4.077			95% KM Bootstrap t UCL			4.174
374				90% KM Chebyshev UCL	4.368			95% KM Chebyshev UCL			4.66
375				97.5% KM Chebyshev UCL	5.065			99% KM Chebyshev UCL			5.861
376											
377				Gamma GOF Tests on Detected Observations Only							
378				A-D Test Statistic	0.512	Anderson-Darling GOF Test					
379				5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level					
380				K-S Test Statistic	0.225	Kolmogorov-Smirnov GOF					
381				5% K-S Critical Value	0.236	Detected data appear Gamma Distributed at 5% Significance Level					
382				Detected data appear Gamma Distributed at 5% Significance Level							
383											
384				Gamma Statistics on Detected Data Only							
385				k hat (MLE)	16.59			k star (bias corrected MLE)	12.81		
386				Theta hat (MLE)	0.278			Theta star (bias corrected MLE)	0.36		
387				nu hat (MLE)	431.4			nu star (bias corrected)	333.2		
388				Mean (detects)	4.615						
389											
390				Gamma ROS Statistics using Imputed Non-Detects							
391				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
392				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
393				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
394				This is especially true when the sample size is small.							
395				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
396				Minimum	0.01			Mean	2.927		
397				Maximum	7			Median	2.708		
398				SD	1.858			CV	0.635		
399				k hat (MLE)	1.36			k star (bias corrected MLE)	1.243		
400				Theta hat (MLE)	2.152			Theta star (bias corrected MLE)	2.356		
401				nu hat (MLE)	78.9			nu star (bias corrected)	72.07		
402				Adjusted Level of Significance (β)	0.0407						
403				Approximate Chi Square Value (72.07, α)	53.52			Adjusted Chi Square Value (72.07, β)	52.57		
404				95% Gamma Approximate UCL (use when n>=50)	3.941			95% Gamma Adjusted UCL (use when n<50)	4.013		
405											
406				Estimates of Gamma Parameters using KM Estimates							
407				Mean (KM)	3.724			SD (KM)	1.111		
408				Variance (KM)	1.234			SE of Mean (KM)	0.215		
409				k hat (KM)	11.24			k star (KM)	10.1		
410				nu hat (KM)	651.7			nu star (KM)	585.7		
411				theta hat (KM)	0.331			theta star (KM)	0.369		
412				80% gamma percentile (KM)	4.658			90% gamma percentile (KM)	5.283		
413				95% gamma percentile (KM)	5.838			99% gamma percentile (KM)	6.977		
414											
415				Gamma Kaplan-Meier (KM) Statistics							
416				Approximate Chi Square Value (585.66, α)	530.5			Adjusted Chi Square Value (585.66, β)	527.4		
417				95% Gamma Approximate KM-UCL (use when n>=50)	4.111			95% Gamma Adjusted KM-UCL (use when n<50)	4.136		
418											
419				Lognormal GOF Test on Detected Observations Only							
420				Shapiro Wilk Test Statistic	0.927	Shapiro Wilk GOF Test					
421				5% Shapiro Wilk Critical Value	0.866	Detected Data appear Lognormal at 5% Significance Level					
422				Lilliefors Test Statistic	0.208	Lilliefors GOF Test					
423				5% Lilliefors Critical Value	0.234	Detected Data appear Lognormal at 5% Significance Level					
424				Detected Data appear Lognormal at 5% Significance Level							

425											
426					Lognormal ROS Statistics Using Imputed Non-Detects						
427				Mean in Original Scale	3.27			Mean in Log Scale	1.083		
428				SD in Original Scale	1.515			SD in Log Scale	0.462		
429			95% t UCL (assumes normality of ROS data)		3.749			95% Percentile Bootstrap UCL	3.715		
430				95% BCA Bootstrap UCL	3.734			95% Bootstrap t UCL	3.819		
431				95% H-UCL (Log ROS)	3.885						
432											
433					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
434				KM Mean (logged)	1.278			KM Geo Mean	3.59		
435				KM SD (logged)	0.259			95% Critical H Value (KM-Log)	1.782		
436			KM Standard Error of Mean (logged)		0.05			95% H-UCL (KM -Log)	4.05		
437				KM SD (logged)	0.259			95% Critical H Value (KM-Log)	1.782		
438			KM Standard Error of Mean (logged)		0.05						
439											
440					DL/2 Statistics						
441				DL/2 Normal				DL/2 Log-Transformed			
442				Mean in Original Scale	2.897			Mean in Log Scale	0.896		
443				SD in Original Scale	1.76			SD in Log Scale	0.578		
444				95% t UCL (Assumes normality)	3.452			95% H-Stat UCL	3.607		
445					DL/2 is not a recommended method, provided for comparisons and historical reasons						
446											
447					Nonparametric Distribution Free UCL Statistics						
448					Detected Data appear Approximate Normal Distributed at 5% Significance Level						
449											
450					Suggested UCL to Use						
451				95% KM (t) UCL	4.089						
452											
453					When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test						
454					When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL						
455											
456					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
457					Recommendations are based upon data size, data distribution, and skewness.						
458					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
459					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
460											
461	Lead										
462											
463					General Statistics						
464				Total Number of Observations	29			Number of Distinct Observations	1		
465				Number of Detects	0			Number of Non-Detects	29		
466				Number of Distinct Detects	0			Number of Distinct Non-Detects	1		
467											
468					Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!						
469					Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!						
470					The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).						
471											
472					The data set for variable Lead was not processed!						
473											
474											
475											
476	Magnesium										
477											

478					General Statistics						
479				Total Number of Observations	29			Number of Distinct Observations	12		
480								Number of Missing Observations	0		
481				Minimum	210			Mean	267.6		
482				Maximum	320			Median	270		
483				SD	26.81			Std. Error of Mean	4.979		
484				Coefficient of Variation	0.1			Skewness	-0.213		
485											
486					Normal GOF Test						
487				Shapiro Wilk Test Statistic	0.978			Shapiro Wilk GOF Test			
488				5% Shapiro Wilk Critical Value	0.926			Data appear Normal at 5% Significance Level			
489				Lilliefors Test Statistic	0.122			Lilliefors GOF Test			
490				5% Lilliefors Critical Value	0.161			Data appear Normal at 5% Significance Level			
491					Data appear Normal at 5% Significance Level						
492											
493					Assuming Normal Distribution						
494				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
495				95% Student's-t UCL	276.1			95% Adjusted-CLT UCL (Chen-1995)	275.6		
496								95% Modified-t UCL (Johnson-1978)	276		
497											
498					Gamma GOF Test						
499				A-D Test Statistic	0.347			Anderson-Darling Gamma GOF Test			
500				5% A-D Critical Value	0.742			Detected data appear Gamma Distributed at 5% Significance Level			
501				K-S Test Statistic	0.135			Kolmogorov-Smirnov Gamma GOF Test			
502				5% K-S Critical Value	0.162			Detected data appear Gamma Distributed at 5% Significance Level			
503					Detected data appear Gamma Distributed at 5% Significance Level						
504											
505					Gamma Statistics						
506				k hat (MLE)	100.7			k star (bias corrected MLE)	90.26		
507				Theta hat (MLE)	2.659			Theta star (bias corrected MLE)	2.965		
508				nu hat (MLE)	5838			nu star (bias corrected)	5235		
509				MLE Mean (bias corrected)	267.6			MLE Sd (bias corrected)	28.16		
510								Approximate Chi Square Value (0.05)	5068		
511				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value	5058		
512											
513					Assuming Gamma Distribution						
514				95% Approximate Gamma UCL (use when n>=50))	276.4			95% Adjusted Gamma UCL (use when n<50)	276.9		
515											
516					Lognormal GOF Test						
517				Shapiro Wilk Test Statistic	0.968			Shapiro Wilk Lognormal GOF Test			
518				5% Shapiro Wilk Critical Value	0.926			Data appear Lognormal at 5% Significance Level			
519				Lilliefors Test Statistic	0.14			Lilliefors Lognormal GOF Test			
520				5% Lilliefors Critical Value	0.161			Data appear Lognormal at 5% Significance Level			
521					Data appear Lognormal at 5% Significance Level						
522											
523					Lognormal Statistics						
524				Minimum of Logged Data	5.347			Mean of logged Data	5.584		
525				Maximum of Logged Data	5.768			SD of logged Data	0.102		
526											
527					Assuming Lognormal Distribution						
528				95% H-UCL	276.6			90% Chebyshev (MVUE) UCL	282.9		
529				95% Chebyshev (MVUE) UCL	289.8			97.5% Chebyshev (MVUE) UCL	299.4		
530				99% Chebyshev (MVUE) UCL	318.3						

	A	B	C	D	E	F	G	H	I	J	K	L
531												
532						Nonparametric Distribution Free UCL Statistics							
533						Data appear to follow a Discernible Distribution at 5% Significance Level						
534												
535						Nonparametric Distribution Free UCLs						
536					95% CLT UCL	275.8			95% Jackknife UCL	276.1		
537					95% Standard Bootstrap UCL	275.6			95% Bootstrap-t UCL	275.9		
538					95% Hall's Bootstrap UCL	275.7			95% Percentile Bootstrap UCL	275.5		
539					95% BCA Bootstrap UCL	274.8						
540					90% Chebyshev(Mean, Sd) UCL	282.5			95% Chebyshev(Mean, Sd) UCL	289.3		
541					97.5% Chebyshev(Mean, Sd) UCL	298.7			99% Chebyshev(Mean, Sd) UCL	317.1		
542												
543						Suggested UCL to Use						
544					95% Student's-t UCL	276.1						
545												
546						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
547						Recommendations are based upon data size, data distribution, and skewness.						
548						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
549						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
550												
551						Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be						
552						reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.						
553												
554	Manganese											
555												
556						General Statistics						
557					Total Number of Observations	29			Number of Distinct Observations	9		
558					Number of Detects	11			Number of Non-Detects	18		
559					Number of Distinct Detects	8			Number of Distinct Non-Detects	1		
560					Minimum Detect	0.4			Minimum Non-Detect	0.3		
561					Maximum Detect	1.6			Maximum Non-Detect	0.3		
562					Variance Detects	0.141			Percent Non-Detects	62.07%		
563					Mean Detects	0.745			SD Detects	0.375		
564					Median Detects	0.7			CV Detects	0.503		
565					Skewness Detects	1.343			Kurtosis Detects	1.604		
566					Mean of Logged Detects	-0.395			SD of Logged Detects	0.46		
567												
568						Normal GOF Test on Detects Only						
569					Shapiro Wilk Test Statistic	0.86			Shapiro Wilk GOF Test			
570					5% Shapiro Wilk Critical Value	0.85			Detected Data appear Normal at 5% Significance Level			
571					Lilliefors Test Statistic	0.185			Lilliefors GOF Test			
572					5% Lilliefors Critical Value	0.251			Detected Data appear Normal at 5% Significance Level			
573						Detected Data appear Normal at 5% Significance Level						
574												
575						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
576					KM Mean	0.469			KM Standard Error of Mean	0.0601		
577					KM SD	0.309			95% KM (BCA) UCL	0.579		
578					95% KM (t) UCL	0.571			95% KM (Percentile Bootstrap) UCL	0.572		
579					95% KM (z) UCL	0.568			95% KM Bootstrap t UCL	0.612		
580					90% KM Chebyshev UCL	0.649			95% KM Chebyshev UCL	0.731		
581					97.5% KM Chebyshev UCL	0.844			99% KM Chebyshev UCL	1.067		
582												
583						Gamma GOF Tests on Detected Observations Only						

584				A-D Test Statistic	0.368	Anderson-Darling GOF Test					
585				5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level					
586				K-S Test Statistic	0.142	Kolmogorov-Smirnov GOF					
587				5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level					
588				Detected data appear Gamma Distributed at 5% Significance Level							
589											
590				Gamma Statistics on Detected Data Only							
591				k hat (MLE)	5.111			k star (bias corrected MLE)	3.778		
592				Theta hat (MLE)	0.146			Theta star (bias corrected MLE)	0.197		
593				nu hat (MLE)	112.4			nu star (bias corrected)	83.11		
594				Mean (detects)	0.745						
595											
596				Gamma ROS Statistics using Imputed Non-Detects							
597				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
598				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
599				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
600				This is especially true when the sample size is small.							
601				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
602				Minimum	0.01			Mean	0.306		
603				Maximum	1.6			Median	0.0553		
604				SD	0.418			CV	1.369		
605				k hat (MLE)	0.437			k star (bias corrected MLE)	0.415		
606				Theta hat (MLE)	0.699			Theta star (bias corrected MLE)	0.736		
607				nu hat (MLE)	25.36			nu star (bias corrected)	24.07		
608				Adjusted Level of Significance (β)	0.0407						
609				Approximate Chi Square Value (24.07, α)	13.9			Adjusted Chi Square Value (24.07, β)	13.44		
610				95% Gamma Approximate UCL (use when n>=50)	0.529			95% Gamma Adjusted UCL (use when n<50)	0.547		
611											
612				Estimates of Gamma Parameters using KM Estimates							
613				Mean (KM)	0.469			SD (KM)	0.309		
614				Variance (KM)	0.0952			SE of Mean (KM)	0.0601		
615				k hat (KM)	2.309			k star (KM)	2.093		
616				nu hat (KM)	133.9			nu star (KM)	121.4		
617				theta hat (KM)	0.203			theta star (KM)	0.224		
618				80% gamma percentile (KM)	0.698			90% gamma percentile (KM)	0.902		
619				95% gamma percentile (KM)	1.097			99% gamma percentile (KM)	1.526		
620											
621				Gamma Kaplan-Meier (KM) Statistics							
622				Approximate Chi Square Value (121.41, α)	96.96			Adjusted Chi Square Value (121.41, β)	95.66		
623				95% Gamma Approximate KM-UCL (use when n>=50)	0.587			95% Gamma Adjusted KM-UCL (use when n<50)	0.595		
624											
625				Lognormal GOF Test on Detected Observations Only							
626				Shapiro Wilk Test Statistic	0.929	Shapiro Wilk GOF Test					
627				5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level					
628				Lilliefors Test Statistic	0.144	Lilliefors GOF Test					
629				5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level					
630				Detected Data appear Lognormal at 5% Significance Level							
631											
632				Lognormal ROS Statistics Using Imputed Non-Detects							
633				Mean in Original Scale	0.388			Mean in Log Scale	-1.343		
634				SD in Original Scale	0.368			SD in Log Scale	0.923		
635				95% t UCL (assumes normality of ROS data)	0.504			95% Percentile Bootstrap UCL	0.508		
636				95% BCA Bootstrap UCL	0.53			95% Bootstrap t UCL	0.55		

637				95% H-UCL (Log ROS)	0.604						
638											
639				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
640				KM Mean (logged)	-0.897			KM Geo Mean	0.408		
641				KM SD (logged)	0.477			95% Critical H Value (KM-Log)	1.928		
642			KM Standard Error of Mean (logged)		0.0928			95% H-UCL (KM -Log)	0.543		
643				KM SD (logged)	0.477			95% Critical H Value (KM-Log)	1.928		
644			KM Standard Error of Mean (logged)		0.0928						
645											
646					DL/2 Statistics						
647			DL/2 Normal					DL/2 Log-Transformed			
648				Mean in Original Scale	0.376			Mean in Log Scale	-1.327		
649				SD in Original Scale	0.37			SD in Log Scale	0.791		
650				95% t UCL (Assumes normality)	0.493			95% H-Stat UCL	0.506		
651				DL/2 is not a recommended method, provided for comparisons and historical reasons							
652											
653					Nonparametric Distribution Free UCL Statistics						
654					Detected Data appear Normal Distributed at 5% Significance Level						
655											
656					Suggested UCL to Use						
657					95% KM (t) UCL	0.571					
658											
659					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
660					Recommendations are based upon data size, data distribution, and skewness.						
661					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
662					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
663											
664											
665	Mercury										
666											
667					General Statistics						
668				Total Number of Observations	29			Number of Distinct Observations	27		
669								Number of Missing Observations	0		
670				Minimum	0.012			Mean	0.116		
671				Maximum	0.34			Median	0.078		
672				SD	0.0918			Std. Error of Mean	0.0171		
673				Coefficient of Variation	0.789			Skewness	1.021		
674											
675					Normal GOF Test						
676				Shapiro Wilk Test Statistic	0.849			Shapiro Wilk GOF Test			
677				5% Shapiro Wilk Critical Value	0.926			Data Not Normal at 5% Significance Level			
678				Lilliefors Test Statistic	0.277			Lilliefors GOF Test			
679				5% Lilliefors Critical Value	0.161			Data Not Normal at 5% Significance Level			
680					Data Not Normal at 5% Significance Level						
681											
682					Assuming Normal Distribution						
683				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
684				95% Student's-t UCL	0.145			95% Adjusted-CLT UCL (Chen-1995)	0.148		
685								95% Modified-t UCL (Johnson-1978)	0.146		
686											
687					Gamma GOF Test						
688				A-D Test Statistic	0.774			Anderson-Darling Gamma GOF Test			
689				5% A-D Critical Value	0.76			Data Not Gamma Distributed at 5% Significance Level			

690				K-S Test Statistic	0.192	Kolmogorov-Smirnov Gamma GOF Test						
691				5% K-S Critical Value	0.165	Data Not Gamma Distributed at 5% Significance Level						
692	Data Not Gamma Distributed at 5% Significance Level											
693												
694	Gamma Statistics											
695				k hat (MLE)	1.747			k star (bias corrected MLE)	1.589			
696				Theta hat (MLE)	0.0666			Theta star (bias corrected MLE)	0.0732			
697				nu hat (MLE)	101.3			nu star (bias corrected)	92.18			
698				MLE Mean (bias corrected)	0.116			MLE Sd (bias corrected)	0.0923			
699								Approximate Chi Square Value (0.05)	71.04			
700				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value	69.93			
701												
702	Assuming Gamma Distribution											
703			95% Approximate Gamma UCL (use when n>=50))		0.151			95% Adjusted Gamma UCL (use when n<50)	0.153			
704												
705	Lognormal GOF Test											
706				Shapiro Wilk Test Statistic	0.957	Shapiro Wilk Lognormal GOF Test						
707				5% Shapiro Wilk Critical Value	0.926	Data appear Lognormal at 5% Significance Level						
708				Lilliefors Test Statistic	0.14	Lilliefors Lognormal GOF Test						
709				5% Lilliefors Critical Value	0.161	Data appear Lognormal at 5% Significance Level						
710	Data appear Lognormal at 5% Significance Level											
711												
712	Lognormal Statistics											
713				Minimum of Logged Data	-4.423			Mean of logged Data	-2.463			
714				Maximum of Logged Data	-1.079			SD of logged Data	0.837			
715												
716	Assuming Lognormal Distribution											
717				95% H-UCL	0.173			90% Chebyshev (MVUE) UCL	0.181			
718				95% Chebyshev (MVUE) UCL	0.208			97.5% Chebyshev (MVUE) UCL	0.247			
719				99% Chebyshev (MVUE) UCL	0.323							
720												
721	Nonparametric Distribution Free UCL Statistics											
722	Data appear to follow a Discernible Distribution at 5% Significance Level											
723												
724	Nonparametric Distribution Free UCLs											
725				95% CLT UCL	0.144			95% Jackknife UCL	0.145			
726				95% Standard Bootstrap UCL	0.144			95% Bootstrap-t UCL	0.15			
727				95% Hall's Bootstrap UCL	0.147			95% Percentile Bootstrap UCL	0.147			
728				95% BCA Bootstrap UCL	0.15							
729				90% Chebyshev(Mean, Sd) UCL	0.168			95% Chebyshev(Mean, Sd) UCL	0.191			
730				97.5% Chebyshev(Mean, Sd) UCL	0.223			99% Chebyshev(Mean, Sd) UCL	0.286			
731												
732	Suggested UCL to Use											
733				95% H-UCL	0.173							
734												
735	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
736	Recommendations are based upon data size, data distribution, and skewness.											
737	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
738	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
739												
740	ProUCL computes and outputs H-statistic based UCLs for historical reasons only.											
741	H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.											
742	It is therefore recommended to avoid the use of H-statistic based 95% UCLs.											

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Molybdenum

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Molybdenum was not processed!

Nickel

General Statistics

Total Number of Observations	29	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	27
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	0.06	Minimum Non-Detect	0.05
Maximum Detect	0.1	Maximum Non-Detect	0.05
Variance Detects	8.0000E-4	Percent Non-Detects	93.1%
Mean Detects	0.08	SD Detects	0.0283
Median Detects	0.08	CV Detects	0.354
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-2.558	SD of Logged Detects	0.361

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0521	KM Standard Error of Mean	0.00243
KM SD	0.00924	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0562	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.0561	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0593	95% KM Chebyshev UCL	0.0626
97.5% KM Chebyshev UCL	0.0672	99% KM Chebyshev UCL	0.0762

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	15.66	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00511	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	62.64	nu star (bias corrected)	N/A
Mean (detects)	0.08		

796											
797					Estimates of Gamma Parameters using KM Estimates						
798					Mean (KM)	0.0521			SD (KM)	0.00924	
799					Variance (KM)	8.5375E-5			SE of Mean (KM)	0.00243	
800					k hat (KM)	31.76			k star (KM)	28.49	
801					nu hat (KM)	1842			nu star (KM)	1653	
802					theta hat (KM)	0.00164			theta star (KM)	0.00183	
803					80% gamma percentile (KM)	0.0601			90% gamma percentile (KM)	0.0649	
804					95% gamma percentile (KM)	0.0691			99% gamma percentile (KM)	0.0774	
805											
806					Gamma Kaplan-Meier (KM) Statistics						
807									Adjusted Level of Significance (β)	0.0407	
808					Approximate Chi Square Value (N/A, α)	1559			Adjusted Chi Square Value (N/A, β)	1554	
809					95% Gamma Approximate KM-UCL (use when n>=50)	0.0552			95% Gamma Adjusted KM-UCL (use when n<50)	0.0554	
810											
811					Lognormal GOF Test on Detected Observations Only						
812					Not Enough Data to Perform GOF Test						
813											
814					Lognormal ROS Statistics Using Imputed Non-Detects						
815					Mean in Original Scale	0.0114			Mean in Log Scale	-5.573	
816					SD in Original Scale	0.021			SD in Log Scale	1.542	
817					95% t UCL (assumes normality of ROS data)	0.018			95% Percentile Bootstrap UCL	0.0185	
818					95% BCA Bootstrap UCL	0.0204			95% Bootstrap t UCL	0.0279	
819					95% H-UCL (Log ROS)	0.0318					
820											
821					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
822					KM Mean (logged)	-2.966			KM Geo Mean	0.0515	
823					KM SD (logged)	0.13			95% Critical H Value (KM-Log)	1.72	
824					KM Standard Error of Mean (logged)	0.034			95% H-UCL (KM -Log)	0.0542	
825					KM SD (logged)	0.13			95% Critical H Value (KM-Log)	1.72	
826					KM Standard Error of Mean (logged)	0.034					
827											
828					DL/2 Statistics						
829					DL/2 Normal				DL/2 Log-Transformed		
830					Mean in Original Scale	0.0288			Mean in Log Scale	-3.611	
831					SD in Original Scale	0.0152			SD in Log Scale	0.3	
832					95% t UCL (Assumes normality)	0.0336			95% H-Stat UCL	0.0313	
833					DL/2 is not a recommended method, provided for comparisons and historical reasons						
834											
835					Nonparametric Distribution Free UCL Statistics						
836					Data do not follow a Discernible Distribution at 5% Significance Level						
837											
838					Suggested UCL to Use						
839					95% KM (t) UCL	0.0562			KM H-UCL	0.0542	
840					95% KM (BCA) UCL	N/A					
841					Warning: One or more Recommended UCL(s) not available!						
842											
843	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
844	Recommendations are based upon data size, data distribution, and skewness.										
845	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
846	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
847											
848											

849	Phosphorous										
850											
851					General Statistics						
852				Total Number of Observations	29				Number of Distinct Observations	15	
853									Number of Missing Observations	0	
854				Minimum	1900				Mean	2524	
855				Maximum	6000				Median	2200	
856				SD	873.7				Std. Error of Mean	162.2	
857				Coefficient of Variation	0.346				Skewness	2.928	
858											
859					Normal GOF Test						
860				Shapiro Wilk Test Statistic	0.646			Shapiro Wilk GOF Test			
861				5% Shapiro Wilk Critical Value	0.926			Data Not Normal at 5% Significance Level			
862				Lilliefors Test Statistic	0.237			Lilliefors GOF Test			
863				5% Lilliefors Critical Value	0.161			Data Not Normal at 5% Significance Level			
864					Data Not Normal at 5% Significance Level						
865											
866					Assuming Normal Distribution						
867				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
868				95% Student's-t UCL	2800			95% Adjusted-CLT UCL (Chen-1995)	2885		
869								95% Modified-t UCL (Johnson-1978)	2815		
870											
871					Gamma GOF Test						
872				A-D Test Statistic	2.237			Anderson-Darling Gamma GOF Test			
873				5% A-D Critical Value	0.745			Data Not Gamma Distributed at 5% Significance Level			
874				K-S Test Statistic	0.201			Kolmogorov-Smirnov Gamma GOF Test			
875				5% K-S Critical Value	0.162			Data Not Gamma Distributed at 5% Significance Level			
876					Data Not Gamma Distributed at 5% Significance Level						
877											
878					Gamma Statistics						
879				k hat (MLE)	12.8			k star (bias corrected MLE)	11.5		
880				Theta hat (MLE)	197.2			Theta star (bias corrected MLE)	219.5		
881				nu hat (MLE)	742.5			nu star (bias corrected)	667		
882				MLE Mean (bias corrected)	2524			MLE Sd (bias corrected)	744.3		
883								Approximate Chi Square Value (0.05)	608.1		
884				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value	604.8		
885											
886					Assuming Gamma Distribution						
887				95% Approximate Gamma UCL (use when n>=50))	2769			95% Adjusted Gamma UCL (use when n<50)	2784		
888											
889					Lognormal GOF Test						
890				Shapiro Wilk Test Statistic	0.786			Shapiro Wilk Lognormal GOF Test			
891				5% Shapiro Wilk Critical Value	0.926			Data Not Lognormal at 5% Significance Level			
892				Lilliefors Test Statistic	0.179			Lilliefors Lognormal GOF Test			
893				5% Lilliefors Critical Value	0.161			Data Not Lognormal at 5% Significance Level			
894					Data Not Lognormal at 5% Significance Level						
895											
896					Lognormal Statistics						
897				Minimum of Logged Data	7.55				Mean of logged Data	7.794	
898				Maximum of Logged Data	8.7				SD of logged Data	0.262	
899											
900					Assuming Lognormal Distribution						
901				95% H-UCL	2743			90% Chebyshev (MVUE) UCL	2879		

902			95% Chebyshev (MVUE) UCL	3047			97.5% Chebyshev (MVUE) UCL	3281			
903			99% Chebyshev (MVUE) UCL	3739							
904											
905					Nonparametric Distribution Free UCL Statistics						
906					Data do not follow a Discernible Distribution (0.05)						
907											
908					Nonparametric Distribution Free UCLs						
909			95% CLT UCL	2791			95% Jackknife UCL	2800			
910			95% Standard Bootstrap UCL	2786			95% Bootstrap-t UCL	3107			
911			95% Hall's Bootstrap UCL	4214			95% Percentile Bootstrap UCL	2803			
912			95% BCA Bootstrap UCL	2938							
913			90% Chebyshev(Mean, Sd) UCL	3011			95% Chebyshev(Mean, Sd) UCL	3231			
914			97.5% Chebyshev(Mean, Sd) UCL	3537			99% Chebyshev(Mean, Sd) UCL	4138			
915											
916					Suggested UCL to Use						
917			95% Student's-t UCL	2800			or 95% Modified-t UCL	2815			
918											
919	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
920	Recommendations are based upon data size, data distribution, and skewness.										
921	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
922	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
923											
924											
925	Potassium										
926											
927					General Statistics						
928			Total Number of Observations	29			Number of Distinct Observations	13			
929							Number of Missing Observations	0			
930			Minimum	1700			Mean	3517			
931			Maximum	4100			Median	3700			
932			SD	504.3			Std. Error of Mean	93.65			
933			Coefficient of Variation	0.143			Skewness	-2.074			
934											
935					Normal GOF Test						
936			Shapiro Wilk Test Statistic	0.804			Shapiro Wilk GOF Test				
937			5% Shapiro Wilk Critical Value	0.926			Data Not Normal at 5% Significance Level				
938			Lilliefors Test Statistic	0.201			Lilliefors GOF Test				
939			5% Lilliefors Critical Value	0.161			Data Not Normal at 5% Significance Level				
940					Data Not Normal at 5% Significance Level						
941											
942					Assuming Normal Distribution						
943			95% Normal UCL				95% UCLs (Adjusted for Skewness)				
944			95% Student's-t UCL	3677			95% Adjusted-CLT UCL (Chen-1995)	3633			
945							95% Modified-t UCL (Johnson-1978)	3671			
946											
947					Gamma GOF Test						
948			A-D Test Statistic	2.336			Anderson-Darling Gamma GOF Test				
949			5% A-D Critical Value	0.744			Data Not Gamma Distributed at 5% Significance Level				
950			K-S Test Statistic	0.231			Kolmogorov-Smirnov Gamma GOF Test				
951			5% K-S Critical Value	0.162			Data Not Gamma Distributed at 5% Significance Level				
952					Data Not Gamma Distributed at 5% Significance Level						
953											
954					Gamma Statistics						

955				k hat (MLE)	38.76			k star (bias corrected MLE)	34.78			
956				Theta hat (MLE)	90.73			Theta star (bias corrected MLE)	101.1			
957				nu hat (MLE)	2248			nu star (bias corrected)	2017			
958				MLE Mean (bias corrected)	3517			MLE Sd (bias corrected)	596.4			
959								Approximate Chi Square Value (0.05)	1914			
960				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value	1908			
961												
962					Assuming Gamma Distribution							
963				95% Approximate Gamma UCL (use when n>=50))	3707			95% Adjusted Gamma UCL (use when n<50)	3719			
964												
965					Lognormal GOF Test							
966				Shapiro Wilk Test Statistic	0.703			Shapiro Wilk Lognormal GOF Test				
967				5% Shapiro Wilk Critical Value	0.926			Data Not Lognormal at 5% Significance Level				
968				Lilliefors Test Statistic	0.249			Lilliefors Lognormal GOF Test				
969				5% Lilliefors Critical Value	0.161			Data Not Lognormal at 5% Significance Level				
970					Data Not Lognormal at 5% Significance Level							
971												
972					Lognormal Statistics							
973				Minimum of Logged Data	7.438			Mean of logged Data	8.152			
974				Maximum of Logged Data	8.319			SD of logged Data	0.176			
975												
976					Assuming Lognormal Distribution							
977				95% H-UCL	3736			90% Chebyshev (MVUE) UCL	3872			
978				95% Chebyshev (MVUE) UCL	4029			97.5% Chebyshev (MVUE) UCL	4248			
979				99% Chebyshev (MVUE) UCL	4677							
980												
981					Nonparametric Distribution Free UCL Statistics							
982					Data do not follow a Discernible Distribution (0.05)							
983												
984					Nonparametric Distribution Free UCLs							
985				95% CLT UCL	3671			95% Jackknife UCL	3677			
986				95% Standard Bootstrap UCL	3669			95% Bootstrap-t UCL	3643			
987				95% Hall's Bootstrap UCL	3639			95% Percentile Bootstrap UCL	3659			
988				95% BCA Bootstrap UCL	3638							
989				90% Chebyshev(Mean, Sd) UCL	3798			95% Chebyshev(Mean, Sd) UCL	3925			
990				97.5% Chebyshev(Mean, Sd) UCL	4102			99% Chebyshev(Mean, Sd) UCL	4449			
991												
992					Suggested UCL to Use							
993				95% Student's-t UCL	3677			or 95% Modified-t UCL	3671			
994												
995					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
996					Recommendations are based upon data size, data distribution, and skewness.							
997					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
998					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
999												
1000					Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be							
1001					reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.							
1002												
1003												
1004	Selenium											
1005												
1006					General Statistics							
1007				Total Number of Observations	29			Number of Distinct Observations	6			

1008									Number of Missing Observations		0	
1009					Minimum	0.12				Mean	0.146	
1010					Maximum	0.17				Median	0.15	
1011					SD	0.0166				Std. Error of Mean	0.00308	
1012					Coefficient of Variation	0.114				Skewness	-0.374	
1013												
1014						Normal GOF Test						
1015					Shapiro Wilk Test Statistic	0.883			Shapiro Wilk GOF Test			
1016					5% Shapiro Wilk Critical Value	0.926			Data Not Normal at 5% Significance Level			
1017					Lilliefors Test Statistic	0.227			Lilliefors GOF Test			
1018					5% Lilliefors Critical Value	0.161			Data Not Normal at 5% Significance Level			
1019						Data Not Normal at 5% Significance Level						
1020												
1021						Assuming Normal Distribution						
1022			95% Normal UCL						95% UCLs (Adjusted for Skewness)			
1023					95% Student's-t UCL	0.151			95% Adjusted-CLT UCL (Chen-1995)		0.15	
1024									95% Modified-t UCL (Johnson-1978)		0.151	
1025												
1026						Gamma GOF Test						
1027					A-D Test Statistic	1.392			Anderson-Darling Gamma GOF Test			
1028					5% A-D Critical Value	0.743			Data Not Gamma Distributed at 5% Significance Level			
1029					K-S Test Statistic	0.241			Kolmogorov-Smirnov Gamma GOF Test			
1030					5% K-S Critical Value	0.162			Data Not Gamma Distributed at 5% Significance Level			
1031						Data Not Gamma Distributed at 5% Significance Level						
1032												
1033						Gamma Statistics						
1034					k hat (MLE)	76.71				k star (bias corrected MLE)	68.8	
1035					Theta hat (MLE)	0.0019				Theta star (bias corrected MLE)	0.00212	
1036					nu hat (MLE)	4449				nu star (bias corrected)	3990	
1037					MLE Mean (bias corrected)	0.146				MLE Sd (bias corrected)	0.0175	
1038										Approximate Chi Square Value (0.05)	3844	
1039					Adjusted Level of Significance	0.0407				Adjusted Chi Square Value	3836	
1040												
1041						Assuming Gamma Distribution						
1042			95% Approximate Gamma UCL (use when n>=50))			0.151			95% Adjusted Gamma UCL (use when n<50)		0.151	
1043												
1044						Lognormal GOF Test						
1045					Shapiro Wilk Test Statistic	0.868			Shapiro Wilk Lognormal GOF Test			
1046					5% Shapiro Wilk Critical Value	0.926			Data Not Lognormal at 5% Significance Level			
1047					Lilliefors Test Statistic	0.244			Lilliefors Lognormal GOF Test			
1048					5% Lilliefors Critical Value	0.161			Data Not Lognormal at 5% Significance Level			
1049						Data Not Lognormal at 5% Significance Level						
1050												
1051						Lognormal Statistics						
1052					Minimum of Logged Data	-2.12				Mean of logged Data	-1.934	
1053					Maximum of Logged Data	-1.772				SD of logged Data	0.117	
1054												
1055						Assuming Lognormal Distribution						
1056					95% H-UCL	0.151				90% Chebyshev (MVUE) UCL	0.155	
1057					95% Chebyshev (MVUE) UCL	0.159				97.5% Chebyshev (MVUE) UCL	0.165	
1058					99% Chebyshev (MVUE) UCL	0.177						
1059												
1060						Nonparametric Distribution Free UCL Statistics						

1061				Data do not follow a Discernible Distribution (0.05)							
1062											
1063				Nonparametric Distribution Free UCLs							
1064			95% CLT UCL	0.151				95% Jackknife UCL	0.151		
1065			95% Standard Bootstrap UCL	0.151				95% Bootstrap-t UCL	0.15		
1066			95% Hall's Bootstrap UCL	0.15				95% Percentile Bootstrap UCL	0.15		
1067			95% BCA Bootstrap UCL	0.15							
1068			90% Chebyshev(Mean, Sd) UCL	0.155				95% Chebyshev(Mean, Sd) UCL	0.159		
1069			97.5% Chebyshev(Mean, Sd) UCL	0.165				99% Chebyshev(Mean, Sd) UCL	0.176		
1070											
1071				Suggested UCL to Use							
1072			95% Student's-t UCL	0.151				or 95% Modified-t UCL	0.151		
1073											
1074				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1075				Recommendations are based upon data size, data distribution, and skewness.							
1076				These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
1077				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1078											
1079				Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be							
1080				reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.							
1081											
1082	Silver										
1083											
1084				General Statistics							
1085			Total Number of Observations	29				Number of Distinct Observations	1		
1086			Number of Detects	0				Number of Non-Detects	29		
1087			Number of Distinct Detects	0				Number of Distinct Non-Detects	1		
1088											
1089				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!							
1090				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!							
1091				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).							
1092											
1093				The data set for variable Silver was not processed!							
1094											
1095											
1096											
1097	Sodium										
1098											
1099				General Statistics							
1100			Total Number of Observations	29				Number of Distinct Observations	16		
1101								Number of Missing Observations	0		
1102			Minimum	280				Mean	499.7		
1103			Maximum	590				Median	500		
1104			SD	72.28				Std. Error of Mean	13.42		
1105			Coefficient of Variation	0.145				Skewness	-0.962		
1106											
1107				Normal GOF Test							
1108			Shapiro Wilk Test Statistic	0.922				Shapiro Wilk GOF Test			
1109			5% Shapiro Wilk Critical Value	0.926				Data Not Normal at 5% Significance Level			
1110			Lilliefors Test Statistic	0.111				Lilliefors GOF Test			
1111			5% Lilliefors Critical Value	0.161				Data appear Normal at 5% Significance Level			
1112				Data appear Approximate Normal at 5% Significance Level							
1113											

1114	Assuming Normal Distribution										
1115			95% Normal UCL				95% UCLs (Adjusted for Skewness)				
1116				95% Student's-t UCL	522.5			95% Adjusted-CLT UCL (Chen-1995)		519.2	
1117								95% Modified-t UCL (Johnson-1978)		522.1	
1118											
1119	Gamma GOF Test										
1120				A-D Test Statistic	0.695		Anderson-Darling Gamma GOF Test				
1121				5% A-D Critical Value	0.744		Detected data appear Gamma Distributed at 5% Significance Level				
1122				K-S Test Statistic	0.12		Kolmogorov-Smirnov Gamma GOF Test				
1123				5% K-S Critical Value	0.162		Detected data appear Gamma Distributed at 5% Significance Level				
1124				Detected data appear Gamma Distributed at 5% Significance Level							
1125											
1126	Gamma Statistics										
1127				k hat (MLE)	43.37			k star (bias corrected MLE)		38.91	
1128				Theta hat (MLE)	11.52			Theta star (bias corrected MLE)		12.84	
1129				nu hat (MLE)	2515			nu star (bias corrected)		2257	
1130				MLE Mean (bias corrected)	499.7			MLE Sd (bias corrected)		80.11	
1131								Approximate Chi Square Value (0.05)		2147	
1132				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value		2141	
1133											
1134	Assuming Gamma Distribution										
1135			95% Approximate Gamma UCL (use when n>=50))		525.1			95% Adjusted Gamma UCL (use when n<50)		526.7	
1136											
1137	Lognormal GOF Test										
1138				Shapiro Wilk Test Statistic	0.865		Shapiro Wilk Lognormal GOF Test				
1139				5% Shapiro Wilk Critical Value	0.926		Data Not Lognormal at 5% Significance Level				
1140				Lilliefors Test Statistic	0.135		Lilliefors Lognormal GOF Test				
1141				5% Lilliefors Critical Value	0.161		Data appear Lognormal at 5% Significance Level				
1142				Data appear Approximate Lognormal at 5% Significance Level							
1143											
1144	Lognormal Statistics										
1145				Minimum of Logged Data	5.635			Mean of logged Data		6.202	
1146				Maximum of Logged Data	6.38			SD of logged Data		0.161	
1147											
1148	Assuming Lognormal Distribution										
1149				95% H-UCL	527.4			90% Chebyshev (MVUE) UCL		545.2	
1150				95% Chebyshev (MVUE) UCL	565.6			97.5% Chebyshev (MVUE) UCL		593.9	
1151				99% Chebyshev (MVUE) UCL	649.6						
1152											
1153	Nonparametric Distribution Free UCL Statistics										
1154				Data appear to follow a Discernible Distribution at 5% Significance Level							
1155											
1156	Nonparametric Distribution Free UCLs										
1157				95% CLT UCL	521.7			95% Jackknife UCL		522.5	
1158				95% Standard Bootstrap UCL	521.8			95% Bootstrap-t UCL		520.6	
1159				95% Hall's Bootstrap UCL	520.5			95% Percentile Bootstrap UCL		521	
1160				95% BCA Bootstrap UCL	518.3						
1161				90% Chebyshev(Mean, Sd) UCL	539.9			95% Chebyshev(Mean, Sd) UCL		558.2	
1162				97.5% Chebyshev(Mean, Sd) UCL	583.5			99% Chebyshev(Mean, Sd) UCL		633.2	
1163											
1164	Suggested UCL to Use										
1165				95% Student's-t UCL	522.5						
1166											

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positvely skewed data sets.

Strontium

General Statistics

Total Number of Observations	29	Number of Distinct Observations	3
Number of Detects	3	Number of Non-Detects	26
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	0.5	Minimum Non-Detect	0.5
Maximum Detect	3.1	Maximum Non-Detect	0.5
Variance Detects	1.743	Percent Non-Detects	89.66%
Mean Detects	1.933	SD Detects	1.32
Median Detects	2.2	CV Detects	0.683
Skewness Detects	-0.872	Kurtosis Detects	N/A
Mean of Logged Detects	0.409	SD of Logged Detects	0.97

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.969	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.648	KM Standard Error of Mean	0.127
KM SD	0.557	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.864	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.857	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.029	95% KM Chebyshev UCL	1.201
97.5% KM Chebyshev UCL	1.44	99% KM Chebyshev UCL	1.91

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	2.149	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.9	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	12.89	nu star (bias corrected)	N/A
Mean (detects)	1.933		

1220	Gamma ROS Statistics using Imputed Non-Detects										
1221	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
1222	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)										
1223	For such situations, GROS method may yield incorrect values of UCLs and BTVs										
1224	This is especially true when the sample size is small.										
1225	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
1226				Minimum	0.01			Mean	0.209		
1227				Maximum	3.1			Median	0.01		
1228				SD	0.693			CV	3.315		
1229				k hat (MLE)	0.277			k star (bias corrected MLE)	0.271		
1230				Theta hat (MLE)	0.754			Theta star (bias corrected MLE)	0.77		
1231				nu hat (MLE)	16.07			nu star (bias corrected)	15.74		
1232				Adjusted Level of Significance (β)	0.0407						
1233				Approximate Chi Square Value (15.74, α)	7.781			Adjusted Chi Square Value (15.74, β)	7.447		
1234				95% Gamma Approximate UCL (use when n>=50)	0.423			95% Gamma Adjusted UCL (use when n<50)	N/A		
1235											
1236	Estimates of Gamma Parameters using KM Estimates										
1237				Mean (KM)	0.648			SD (KM)	0.557		
1238				Variance (KM)	0.311			SE of Mean (KM)	0.127		
1239				k hat (KM)	1.352			k star (KM)	1.235		
1240				nu hat (KM)	78.43			nu star (KM)	71.65		
1241				theta hat (KM)	0.479			theta star (KM)	0.525		
1242				80% gamma percentile (KM)	1.024			90% gamma percentile (KM)	1.417		
1243				95% gamma percentile (KM)	1.804			99% gamma percentile (KM)	2.689		
1244											
1245	Gamma Kaplan-Meier (KM) Statistics										
1246				Approximate Chi Square Value (71.65, α)	53.16			Adjusted Chi Square Value (71.65, β)	52.21		
1247				95% Gamma Approximate KM-UCL (use when n>=50)	0.874			95% Gamma Adjusted KM-UCL (use when n<50)	0.89		
1248											
1249	Lognormal GOF Test on Detected Observations Only										
1250				Shapiro Wilk Test Statistic	0.885			Shapiro Wilk GOF Test			
1251				5% Shapiro Wilk Critical Value	0.767			Detected Data appear Lognormal at 5% Significance Level			
1252				Lilliefors Test Statistic	0.319			Lilliefors GOF Test			
1253				5% Lilliefors Critical Value	0.425			Detected Data appear Lognormal at 5% Significance Level			
1254	Detected Data appear Lognormal at 5% Significance Level										
1255											
1256	Lognormal ROS Statistics Using Imputed Non-Detects										
1257				Mean in Original Scale	0.225			Mean in Log Scale	-5.029		
1258				SD in Original Scale	0.69			SD in Log Scale	3.077		
1259				95% t UCL (assumes normality of ROS data)	0.443			95% Percentile Bootstrap UCL	0.439		
1260				95% BCA Bootstrap UCL	0.553			95% Bootstrap t UCL	1.586		
1261				95% H-UCL (Log ROS)	20.19						
1262											
1263	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution										
1264				KM Mean (logged)	-0.579			KM Geo Mean	0.56		
1265				KM SD (logged)	0.421			95% Critical H Value (KM-Log)	1.886		
1266				KM Standard Error of Mean (logged)	0.0958			95% H-UCL (KM -Log)	0.712		
1267				KM SD (logged)	0.421			95% Critical H Value (KM-Log)	1.886		
1268				KM Standard Error of Mean (logged)	0.0958						
1269											
1270	DL/2 Statistics										
1271	DL/2 Normal							DL/2 Log-Transformed			
1272				Mean in Original Scale	0.424			Mean in Log Scale	-1.201		

1273			SD in Original Scale	0.63				SD in Log Scale	0.614		
1274			95% t UCL (Assumes normality)	0.623				95% H-Stat UCL	0.461		
1275	DL/2 is not a recommended method, provided for comparisons and historical reasons										
1276											
1277	Nonparametric Distribution Free UCL Statistics										
1278	Detected Data appear Normal Distributed at 5% Significance Level										
1279											
1280	Suggested UCL to Use										
1281			95% KM (t) UCL	0.864							
1282											
1283	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
1284	Recommendations are based upon data size, data distribution, and skewness.										
1285	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
1286	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
1287											
1288	Thallium										
1289											
1290	General Statistics										
1291			Total Number of Observations	29				Number of Distinct Observations	3		
1292			Number of Detects	11				Number of Non-Detects	18		
1293			Number of Distinct Detects	3				Number of Distinct Non-Detects	1		
1294			Minimum Detect	0.003				Minimum Non-Detect	0.003		
1295			Maximum Detect	0.005				Maximum Non-Detect	0.003		
1296			Variance Detects	6.0000E-7				Percent Non-Detects	62.07%		
1297			Mean Detects	0.004				SD Detects	7.7460E-4		
1298			Median Detects	0.004				CV Detects	0.194		
1299			Skewness Detects	-4.24E-15				Kurtosis Detects	-1.111		
1300			Mean of Logged Detects	-5.539				SD of Logged Detects	0.199		
1301											
1302	Normal GOF Test on Detects Only										
1303			Shapiro Wilk Test Statistic	0.833			Shapiro Wilk GOF Test				
1304			5% Shapiro Wilk Critical Value	0.85			Detected Data Not Normal at 5% Significance Level				
1305			Lilliefors Test Statistic	0.227			Lilliefors GOF Test				
1306			5% Lilliefors Critical Value	0.251			Detected Data appear Normal at 5% Significance Level				
1307	Detected Data appear Approximate Normal at 5% Significance Level										
1308											
1309	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs										
1310			KM Mean	0.00338				KM Standard Error of Mean	1.2953E-4		
1311			KM SD	6.6508E-4				95% KM (BCA) UCL	N/A		
1312			95% KM (t) UCL	0.0036				95% KM (Percentile Bootstrap) UCL	N/A		
1313			95% KM (z) UCL	0.00359				95% KM Bootstrap t UCL	N/A		
1314			90% KM Chebyshev UCL	0.00377				95% KM Chebyshev UCL	0.00394		
1315			97.5% KM Chebyshev UCL	0.00419				99% KM Chebyshev UCL	0.00467		
1316											
1317	Gamma GOF Tests on Detected Observations Only										
1318			A-D Test Statistic	0.88			Anderson-Darling GOF Test				
1319			5% A-D Critical Value	0.729			Detected Data Not Gamma Distributed at 5% Significance Level				
1320			K-S Test Statistic	0.252			Kolmogorov-Smirnov GOF				
1321			5% K-S Critical Value	0.255			Detected data appear Gamma Distributed at 5% Significance Level				
1322	Detected data follow Appr. Gamma Distribution at 5% Significance Level										
1323											
1324	Gamma Statistics on Detected Data Only										
1325			k hat (MLE)	28.57				k star (bias corrected MLE)	20.84		

1326				Theta hat (MLE)	1.3999E-4			Theta star (bias corrected MLE)	1.9193E-4		
1327				nu hat (MLE)	628.6			nu star (bias corrected)	458.5		
1328				Mean (detects)	0.004						
1329											
1330				Gamma ROS Statistics using Imputed Non-Detects							
1331				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
1332				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
1333				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
1334				This is especially true when the sample size is small.							
1335				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
1336				Minimum	0.003			Mean	0.00772		
1337				Maximum	0.01			Median	0.01		
1338				SD	0.003			CV	0.388		
1339				k hat (MLE)	5.369			k star (bias corrected MLE)	4.837		
1340				Theta hat (MLE)	0.00144			Theta star (bias corrected MLE)	0.0016		
1341				nu hat (MLE)	311.4			nu star (bias corrected)	280.5		
1342				Adjusted Level of Significance (β)	0.0407						
1343				Approximate Chi Square Value (280.54, α)	242.8			Adjusted Chi Square Value (280.54, β)	240.7		
1344				95% Gamma Approximate UCL (use when n>=50)	0.00893			95% Gamma Adjusted UCL (use when n<50)	0.009		
1345											
1346				Estimates of Gamma Parameters using KM Estimates							
1347				Mean (KM)	0.00338			SD (KM)	6.6508E-4		
1348				Variance (KM)	4.4233E-7			SE of Mean (KM)	1.2953E-4		
1349				k hat (KM)	25.82			k star (KM)	23.17		
1350				nu hat (KM)	1497			nu star (KM)	1344		
1351				theta hat (KM)	1.3089E-4			theta star (KM)	1.4585E-4		
1352				80% gamma percentile (KM)	0.00395			90% gamma percentile (KM)	0.0043		
1353				95% gamma percentile (KM)	0.00461			99% gamma percentile (KM)	0.00522		
1354											
1355				Gamma Kaplan-Meier (KM) Statistics							
1356				Approximate Chi Square Value (N/A, α)	1260			Adjusted Chi Square Value (N/A, β)	1255		
1357				95% Gamma Approximate KM-UCL (use when n>=50)	0.0036			95% Gamma Adjusted KM-UCL (use when n<50)	0.00362		
1358											
1359				Lognormal GOF Test on Detected Observations Only							
1360				Shapiro Wilk Test Statistic	0.827			Shapiro Wilk GOF Test			
1361				5% Shapiro Wilk Critical Value	0.85			Detected Data Not Lognormal at 5% Significance Level			
1362				Lilliefors Test Statistic	0.263			Lilliefors GOF Test			
1363				5% Lilliefors Critical Value	0.251			Detected Data Not Lognormal at 5% Significance Level			
1364				Detected Data Not Lognormal at 5% Significance Level							
1365											
1366				Lognormal ROS Statistics Using Imputed Non-Detects							
1367				Mean in Original Scale	0.00289			Mean in Log Scale	-5.91		
1368				SD in Original Scale	0.00106			SD in Log Scale	0.364		
1369				95% t UCL (assumes normality of ROS data)	0.00323			95% Percentile Bootstrap UCL	0.0032		
1370				95% BCA Bootstrap UCL	0.00323			95% Bootstrap t UCL	0.00327		
1371				95% H-UCL (Log ROS)	0.00329						
1372											
1373				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1374				KM Mean (logged)	-5.707			KM Geo Mean	0.00332		
1375				KM SD (logged)	0.175			95% Critical H Value (KM-Log)	1.74		
1376				KM Standard Error of Mean (logged)	0.0342			95% H-UCL (KM -Log)	0.00358		
1377				KM SD (logged)	0.175			95% Critical H Value (KM-Log)	1.74		
1378				KM Standard Error of Mean (logged)	0.0342						

1379											
1380					DL/2 Statistics						
1381			DL/2 Normal				DL/2 Log-Transformed				
1382				Mean in Original Scale	0.00245				Mean in Log Scale	-6.137	
1383				SD in Original Scale	0.00132				SD in Log Scale	0.49	
1384				95% t UCL (Assumes normality)	0.00286				95% H-Stat UCL	0.00292	
1385			DL/2 is not a recommended method, provided for comparisons and historical reasons								
1386											
1387					Nonparametric Distribution Free UCL Statistics						
1388			Detected Data appear Approximate Normal Distributed at 5% Significance Level								
1389											
1390					Suggested UCL to Use						
1391				95% KM (t) UCL	0.0036						
1392											
1393		When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test									
1394	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL										
1395											
1396	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
1397	Recommendations are based upon data size, data distribution, and skewness.										
1398	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).										
1399	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
1400											
1401	Tin										
1402											
1403					General Statistics						
1404				Total Number of Observations	29				Number of Distinct Observations	1	
1405				Number of Detects	0				Number of Non-Detects	29	
1406				Number of Distinct Detects	0				Number of Distinct Non-Detects	1	
1407											
1408	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
1409	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
1410	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
1411											
1412					The data set for variable Tin was not processed!						
1413											
1414											
1415											
1416	Titanium										
1417											
1418					General Statistics						
1419				Total Number of Observations	29				Number of Distinct Observations	9	
1420									Number of Missing Observations	0	
1421				Minimum	1				Mean	1.314	
1422				Maximum	3				Median	1.2	
1423				SD	0.434				Std. Error of Mean	0.0806	
1424				Coefficient of Variation	0.33				Skewness	2.785	
1425											
1426					Normal GOF Test						
1427				Shapiro Wilk Test Statistic	0.66			Shapiro Wilk GOF Test			
1428				5% Shapiro Wilk Critical Value	0.926			Data Not Normal at 5% Significance Level			
1429				Lilliefors Test Statistic	0.283			Lilliefors GOF Test			
1430				5% Lilliefors Critical Value	0.161			Data Not Normal at 5% Significance Level			
1431					Data Not Normal at 5% Significance Level						

1432											
1433					Assuming Normal Distribution						
1434				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
1435					95% Student's-t UCL	1.451			95% Adjusted-CLT UCL (Chen-1995)	1.491	
1436									95% Modified-t UCL (Johnson-1978)	1.458	
1437											
1438					Gamma GOF Test						
1439					A-D Test Statistic	2.191		Anderson-Darling Gamma GOF Test			
1440					5% A-D Critical Value	0.745		Data Not Gamma Distributed at 5% Significance Level			
1441					K-S Test Statistic	0.234		Kolmogorov-Smirnov Gamma GOF Test			
1442					5% K-S Critical Value	0.162		Data Not Gamma Distributed at 5% Significance Level			
1443					Data Not Gamma Distributed at 5% Significance Level						
1444											
1445					Gamma Statistics						
1446					k hat (MLE)	13.63			k star (bias corrected MLE)	12.24	
1447					Theta hat (MLE)	0.0964			Theta star (bias corrected MLE)	0.107	
1448					nu hat (MLE)	790.6			nu star (bias corrected)	710.1	
1449					MLE Mean (bias corrected)	1.314			MLE Sd (bias corrected)	0.375	
1450									Approximate Chi Square Value (0.05)	649.3	
1451					Adjusted Level of Significance	0.0407			Adjusted Chi Square Value	645.8	
1452											
1453					Assuming Gamma Distribution						
1454				95% Approximate Gamma UCL (use when n>=50))		1.437		95% Adjusted Gamma UCL (use when n<50)		1.445	
1455											
1456						Lognormal GOF Test					
1457					Shapiro Wilk Test Statistic	0.789		Shapiro Wilk Lognormal GOF Test			
1458					5% Shapiro Wilk Critical Value	0.926		Data Not Lognormal at 5% Significance Level			
1459					Lilliefors Test Statistic	0.209		Lilliefors Lognormal GOF Test			
1460					5% Lilliefors Critical Value	0.161		Data Not Lognormal at 5% Significance Level			
1461					Data Not Lognormal at 5% Significance Level						
1462											
1463					Lognormal Statistics						
1464					Minimum of Logged Data	0			Mean of logged Data	0.236	
1465					Maximum of Logged Data	1.099			SD of logged Data	0.256	
1466											
1467					Assuming Lognormal Distribution						
1468					95% H-UCL	1.426			90% Chebyshev (MVUE) UCL	1.495	
1469					95% Chebyshev (MVUE) UCL	1.581			97.5% Chebyshev (MVUE) UCL	1.699	
1470					99% Chebyshev (MVUE) UCL	1.932					
1471											
1472					Nonparametric Distribution Free UCL Statistics						
1473					Data do not follow a Discernible Distribution (0.05)						
1474											
1475					Nonparametric Distribution Free UCLs						
1476					95% CLT UCL	1.446			95% Jackknife UCL	1.451	
1477					95% Standard Bootstrap UCL	1.444			95% Bootstrap-t UCL	1.58	
1478					95% Hall's Bootstrap UCL	2.125			95% Percentile Bootstrap UCL	1.462	
1479					95% BCA Bootstrap UCL	1.49					
1480					90% Chebyshev(Mean, Sd) UCL	1.556			95% Chebyshev(Mean, Sd) UCL	1.665	
1481					97.5% Chebyshev(Mean, Sd) UCL	1.817			99% Chebyshev(Mean, Sd) UCL	2.116	
1482											
1483					Suggested UCL to Use						
1484					95% Student's-t UCL	1.451			or 95% Modified-t UCL	1.458	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Uranium

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Uranium was not processed!

Vanadium

General Statistics

Total Number of Observations	29	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	29
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Vanadium was not processed!

Zinc

General Statistics

Total Number of Observations	29	Number of Distinct Observations	12
		Number of Missing Observations	0
Minimum	4	Mean	8.138
Maximum	22	Median	6
SD	4.381	Std. Error of Mean	0.814
Coefficient of Variation	0.538	Skewness	1.939

Normal GOF Test

Shapiro Wilk Test Statistic	0.762	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.161	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

1538			95% Normal UCL				95% UCLs (Adjusted for Skewness)				
1539				95% Student's-t UCL	9.522			95% Adjusted-CLT UCL (Chen-1995)		9.789	
1540								95% Modified-t UCL (Johnson-1978)		9.571	
1541											
1542					Gamma GOF Test						
1543				A-D Test Statistic	1.461		Anderson-Darling Gamma GOF Test				
1544				5% A-D Critical Value	0.748		Data Not Gamma Distributed at 5% Significance Level				
1545				K-S Test Statistic	0.206		Kolmogorov-Smirnov Gamma GOF Test				
1546				5% K-S Critical Value	0.163		Data Not Gamma Distributed at 5% Significance Level				
1547				Data Not Gamma Distributed at 5% Significance Level							
1548											
1549					Gamma Statistics						
1550				k hat (MLE)	4.945			k star (bias corrected MLE)		4.457	
1551				Theta hat (MLE)	1.646			Theta star (bias corrected MLE)		1.826	
1552				nu hat (MLE)	286.8			nu star (bias corrected)		258.5	
1553				MLE Mean (bias corrected)	8.138			MLE Sd (bias corrected)		3.855	
1554								Approximate Chi Square Value (0.05)		222.3	
1555				Adjusted Level of Significance	0.0407			Adjusted Chi Square Value		220.3	
1556											
1557					Assuming Gamma Distribution						
1558			95% Approximate Gamma UCL (use when n>=50))		9.464			95% Adjusted Gamma UCL (use when n<50)		9.55	
1559											
1560					Lognormal GOF Test						
1561				Shapiro Wilk Test Statistic	0.888		Shapiro Wilk Lognormal GOF Test				
1562				5% Shapiro Wilk Critical Value	0.926		Data Not Lognormal at 5% Significance Level				
1563				Lilliefors Test Statistic	0.194		Lilliefors Lognormal GOF Test				
1564				5% Lilliefors Critical Value	0.161		Data Not Lognormal at 5% Significance Level				
1565				Data Not Lognormal at 5% Significance Level							
1566											
1567					Lognormal Statistics						
1568				Minimum of Logged Data	1.386			Mean of logged Data		1.992	
1569				Maximum of Logged Data	3.091			SD of logged Data		0.437	
1570											
1571					Assuming Lognormal Distribution						
1572				95% H-UCL	9.435			90% Chebyshev (MVUE) UCL		10.06	
1573				95% Chebyshev (MVUE) UCL	10.98			97.5% Chebyshev (MVUE) UCL		12.25	
1574				99% Chebyshev (MVUE) UCL	14.75						
1575											
1576					Nonparametric Distribution Free UCL Statistics						
1577					Data do not follow a Discernible Distribution (0.05)						
1578											
1579					Nonparametric Distribution Free UCLs						
1580				95% CLT UCL	9.476			95% Jackknife UCL		9.522	
1581				95% Standard Bootstrap UCL	9.413			95% Bootstrap-t UCL		10.13	
1582				95% Hall's Bootstrap UCL	10.58			95% Percentile Bootstrap UCL		9.552	
1583				95% BCA Bootstrap UCL	9.862						
1584				90% Chebyshev(Mean, Sd) UCL	10.58			95% Chebyshev(Mean, Sd) UCL		11.68	
1585				97.5% Chebyshev(Mean, Sd) UCL	13.22			99% Chebyshev(Mean, Sd) UCL		16.23	
1586											
1587					Suggested UCL to Use						
1588				95% Student's-t UCL	9.522			or 95% Modified-t UCL		9.571	
1589											
1590	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										

	A	B	C	D	E	F	G	H	I	J	K	L
1591	Recommendations are based upon data size, data distribution, and skewness.											
1592	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
1593	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1594												

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.2 2024-06-20 1:21:38 PM
From File	Pooled fish.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Antimony

General Statistics

Total Number of Observations	37	Number of Distinct Observations	4
Number of Detects	2	Number of Non-Detects	35
Number of Distinct Detects	2	Number of Distinct Non-Detects	2
Minimum Detect	0.0118	Minimum Non-Detect	0.002
Maximum Detect	0.0222	Maximum Non-Detect	0.05
Variance Detects	5.4080E-5	Percent Non-Detects	94.59%
Mean Detects	0.017	SD Detects	0.00735
Median Detects	0.017	CV Detects	0.433
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-4.124	SD of Logged Detects	0.447

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.00575	KM Standard Error of Mean	0.0035
90KM SD	0.007	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0117	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.0115	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0162	95% KM Chebyshev UCL	0.021
97.5% KM Chebyshev UCL	0.0276	99% KM Chebyshev UCL	0.0406

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	10.34	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.00164	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	41.37	nu star (bias corrected)	N/A
Mean (detects)	0.017		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.00575	SD (KM)	0.007
Variance (KM)	4.8948E-5	SE of Mean (KM)	0.0035
k hat (KM)	0.675	k star (KM)	0.639
nu hat (KM)	49.98	nu star (KM)	47.27
theta hat (KM)	0.00851	theta star (KM)	0.009

54				80% gamma percentile (KM)	0.00947				90% gamma percentile (KM)			0.0147
55				95% gamma percentile (KM)	0.0202				99% gamma percentile (KM)			0.0334
56												
57					Gamma Kaplan-Meier (KM) Statistics							
58									Adjusted Level of Significance (β)			0.0431
59			Approximate Chi Square Value (47.27, α)		32.49				Adjusted Chi Square Value (47.27, β)			31.96
60			95% KM Approximate Gamma UCL		0.00837				95% KM Adjusted Gamma UCL			0.0085
61												
62					Lognormal GOF Test on Detected Observations Only							
63					Not Enough Data to Perform GOF Test							
64												
65					Lognormal ROS Statistics Using Imputed Non-Detects							
66				Mean in Original Scale	0.00626				Mean in Log Scale			-5.906
67				SD in Original Scale	0.00905				SD in Log Scale			1.362
68			95% t UCL (assumes normality of ROS data)		0.00878				95% Percentile Bootstrap UCL			0.00888
69				95% BCA Bootstrap UCL	0.00934				95% Bootstrap t UCL			0.0103
70				95% H-UCL (Log ROS)	0.0131							
71												
72					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
73				KM Mean (logged)	-5.692				KM Geo Mean			0.00337
74				KM SD (logged)	0.919				95% Critical H Value (KM-Log)			2.299
75			KM Standard Error of Mean (logged)		0.46				95% H-UCL (KM -Log)			0.00732
76				KM SD (logged)	0.919				95% Critical H Value (KM-Log)			2.299
77			KM Standard Error of Mean (logged)		0.46							
78					Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
79												
80					DL/2 Statistics							
81				DL/2 Normal					DL/2 Log-Transformed			
82				Mean in Original Scale	0.0207				Mean in Log Scale			-4.234
83				SD in Original Scale	0.00905				SD in Log Scale			1.199
84				95% t UCL (Assumes normality)	0.0232				95% H-Stat UCL			0.0502
85					DL/2 is not a recommended method, provided for comparisons and historical reasons							
86												
87					Nonparametric Distribution Free UCL Statistics							
88					Data do not follow a Discernible Distribution							
89												
90					Suggested UCL to Use							
91				95% KM (t) UCL	0.0117							
92												
93					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
94					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
95					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
96												
97	Arsenic											
98												
99					General Statistics							
100				Total Number of Observations	37				Number of Distinct Observations			9
101				Number of Detects	8				Number of Non-Detects			29
102				Number of Distinct Detects	8				Number of Distinct Non-Detects			1
103				Minimum Detect	0.0218				Minimum Non-Detect			0.1
104				Maximum Detect	0.243				Maximum Non-Detect			0.1
105				Variance Detects	0.00765				Percent Non-Detects			78.38%
106				Mean Detects	0.0927				SD Detects			0.0875

107				Median Detects	0.0552				CV Detects	0.943	
108				Skewness Detects	0.98				Kurtosis Detects	-0.612	
109				Mean of Logged Detects	-2.81				SD of Logged Detects	1.013	
110											
111				Normal GOF Test on Detects Only							
112				Shapiro Wilk Test Statistic	0.821	Shapiro Wilk GOF Test					
113				1% Shapiro Wilk Critical Value	0.749	Detected Data appear Normal at 1% Significance Level					
114				Lilliefors Test Statistic	0.241	Lilliefors GOF Test					
115				1% Lilliefors Critical Value	0.333	Detected Data appear Normal at 1% Significance Level					
116				Detected Data appear Normal at 1% Significance Level							
117				Note GOF tests may be unreliable for small sample sizes							
118											
119				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
120				KM Mean	0.0478				KM Standard Error of Mean	0.0118	
121				90KM SD	0.0482				95% KM (BCA) UCL	0.0689	
122				95% KM (t) UCL	0.0676				95% KM (Percentile Bootstrap) UCL	0.069	
123				95% KM (z) UCL	0.0671				95% KM Bootstrap t UCL	0.0815	
124				90% KM Chebyshev UCL	0.083				95% KM Chebyshev UCL	0.099	
125				97.5% KM Chebyshev UCL	0.121				99% KM Chebyshev UCL	0.165	
126											
127				Gamma GOF Tests on Detected Observations Only							
128				A-D Test Statistic	0.535	Anderson-Darling GOF Test					
129				5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level					
130				K-S Test Statistic	0.23	Kolmogorov-Smirnov GOF					
131				5% K-S Critical Value	0.3	Detected data appear Gamma Distributed at 5% Significance Level					
132				Detected data appear Gamma Distributed at 5% Significance Level							
133				Note GOF tests may be unreliable for small sample sizes							
134											
135				Gamma Statistics on Detected Data Only							
136				k hat (MLE)	1.3				k star (bias corrected MLE)	0.896	
137				Theta hat (MLE)	0.0713				Theta star (bias corrected MLE)	0.104	
138				nu hat (MLE)	20.79				nu star (bias corrected)	14.33	
139				Mean (detects)	0.0927						
140											
141				Gamma ROS Statistics using Imputed Non-Detects							
142				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
143				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
144				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
145				This is especially true when the sample size is small.							
146				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
147				Minimum	0.01				Mean	0.0525	
148				Maximum	0.243				Median	0.034	
149				SD	0.0536				CV	1.02	
150				k hat (MLE)	1.273				k star (bias corrected MLE)	1.187	
151				Theta hat (MLE)	0.0413				Theta star (bias corrected MLE)	0.0442	
152				nu hat (MLE)	94.17				nu star (bias corrected)	87.87	
153				Adjusted Level of Significance (β)	0.0431						
154				Approximate Chi Square Value (87.87, α)	67.26				Adjusted Chi Square Value (87.87, β)	66.47	
155				95% Gamma Approximate UCL	0.0686				95% Gamma Adjusted UCL	0.0694	
156											
157				Estimates of Gamma Parameters using KM Estimates							
158				Mean (KM)	0.0478				SD (KM)	0.0482	
159				Variance (KM)	0.00232				SE of Mean (KM)	0.0118	

160					k hat (KM)	0.983				k star (KM)	0.921	
161					nu hat (KM)	72.71				nu star (KM)	68.15	
162					theta hat (KM)	0.0486				theta star (KM)	0.0519	
163				80% gamma percentile (KM)		0.0774			90% gamma percentile (KM)		0.112	
164				95% gamma percentile (KM)		0.147			99% gamma percentile (KM)		0.229	
165												
166						Gamma Kaplan-Meier (KM) Statistics							
167			Approximate Chi Square Value (68.15, α)			50.15			Adjusted Chi Square Value (68.15, β)		49.48	
168			95% KM Approximate Gamma UCL			0.0649			95% KM Adjusted Gamma UCL		0.0658	
169												
170						Lognormal GOF Test on Detected Observations Only							
171				Shapiro Wilk Test Statistic		0.863			Shapiro Wilk GOF Test			
172				10% Shapiro Wilk Critical Value		0.851			Detected Data appear Lognormal at 10% Significance Level			
173				Lilliefors Test Statistic		0.208			Lilliefors GOF Test			
174				10% Lilliefors Critical Value		0.265			Detected Data appear Lognormal at 10% Significance Level			
175						Detected Data appear Lognormal at 10% Significance Level						
176						Note GOF tests may be unreliable for small sample sizes						
177												
178						Lognormal ROS Statistics Using Imputed Non-Detects						
179					Mean in Original Scale	0.0509				Mean in Log Scale	-3.317	
180					SD in Original Scale	0.05				SD in Log Scale	0.814	
181			95% t UCL (assumes normality of ROS data)			0.0648			95% Percentile Bootstrap UCL		0.0645	
182				95% BCA Bootstrap UCL		0.067			95% Bootstrap t UCL		0.0733	
183				95% H-UCL (Log ROS)		0.0679						
184												
185						Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
186					KM Mean (logged)	-3.327				KM Geo Mean	0.0359	
187					KM SD (logged)	0.666			95% Critical H Value (KM-Log)		2.048	
188			KM Standard Error of Mean (logged)			0.225			95% H-UCL (KM -Log)		0.0563	
189					KM SD (logged)	0.666			95% Critical H Value (KM-Log)		2.048	
190			KM Standard Error of Mean (logged)			0.225						
191						Note: KM UCLs may be biased low with this dataset. Other substitution method recommended						
192												
193						DL/2 Statistics						
194				DL/2 Normal					DL/2 Log-Transformed			
195					Mean in Original Scale	0.0592				Mean in Log Scale	-2.956	
196					SD in Original Scale	0.0425				SD in Log Scale	0.453	
197				95% t UCL (Assumes normality)		0.071				95% H-Stat UCL	0.0665	
198						DL/2 is not a recommended method, provided for comparisons and historical reasons						
199												
200						Nonparametric Distribution Free UCL Statistics						
201						Detected Data appear Normal Distributed at 1% Significance Level						
202												
203						Suggested UCL to Use						
204					95% KM (t) UCL	0.0676						
205												
206						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
207						Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
208						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
209												
210	Barium											
211												
212						General Statistics						

213				Total Number of Observations	37				Number of Distinct Observations			9
214				Number of Detects	9				Number of Non-Detects			28
215				Number of Distinct Detects	9				Number of Distinct Non-Detects			1
216				Minimum Detect	0.015				Minimum Non-Detect			0.3
217				Maximum Detect	0.3				Maximum Non-Detect			0.3
218				Variance Detects	0.016				Percent Non-Detects			75.68%
219				Mean Detects	0.143				SD Detects			0.126
220				Median Detects	0.065				CV Detects			0.883
221				Skewness Detects	0.253				Kurtosis Detects			-2.362
222				Mean of Logged Detects	-2.489				SD of Logged Detects			1.233
223												
224					Normal GOF Test on Detects Only							
225				Shapiro Wilk Test Statistic	0.792			Shapiro Wilk GOF Test				
226				1% Shapiro Wilk Critical Value	0.764			Detected Data appear Normal at 1% Significance Level				
227				Lilliefors Test Statistic	0.287			Lilliefors GOF Test				
228				1% Lilliefors Critical Value	0.316			Detected Data appear Normal at 1% Significance Level				
229					Detected Data appear Normal at 1% Significance Level							
230					Note GOF tests may be unreliable for small sample sizes							
231												
232					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
233				KM Mean	0.128				KM Standard Error of Mean			0.0412
234				90KM SD	0.114				95% KM (BCA) UCL			0.195
235				95% KM (t) UCL	0.198				95% KM (Percentile Bootstrap) UCL			0.194
236				95% KM (z) UCL	0.196				95% KM Bootstrap t UCL			0.243
237				90% KM Chebyshev UCL	0.252				95% KM Chebyshev UCL			0.308
238				97.5% KM Chebyshev UCL	0.385				99% KM Chebyshev UCL			0.538
239												
240					Gamma GOF Tests on Detected Observations Only							
241				A-D Test Statistic	0.687			Anderson-Darling GOF Test				
242				5% A-D Critical Value	0.743			Detected data appear Gamma Distributed at 5% Significance Level				
243				K-S Test Statistic	0.272			Kolmogorov-Smirnov GOF				
244				5% K-S Critical Value	0.287			Detected data appear Gamma Distributed at 5% Significance Level				
245					Detected data appear Gamma Distributed at 5% Significance Level							
246					Note GOF tests may be unreliable for small sample sizes							
247												
248					Gamma Statistics on Detected Data Only							
249				k hat (MLE)	1.052				k star (bias corrected MLE)			0.776
250				Theta hat (MLE)	0.136				Theta star (bias corrected MLE)			0.185
251				nu hat (MLE)	18.94				nu star (bias corrected)			13.96
252				Mean (detects)	0.143							
253												
254					Gamma ROS Statistics using Imputed Non-Detects							
255					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
256					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
257					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
258					This is especially true when the sample size is small.							
259					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
260				Minimum	0.015				Mean			0.124
261				Maximum	0.3				Median			0.0996
262				SD	0.0782				CV			0.632
263				k hat (MLE)	2.469				k star (bias corrected MLE)			2.287
264				Theta hat (MLE)	0.0501				Theta star (bias corrected MLE)			0.0541
265				nu hat (MLE)	182.7				nu star (bias corrected)			169.2

266				Adjusted Level of Significance (β)		0.0431						
267				Approximate Chi Square Value (169.21, α)		140.1				Adjusted Chi Square Value (169.21, β)		139
268				95% Gamma Approximate UCL		0.149				95% Gamma Adjusted UCL		0.151
269												
270					Estimates of Gamma Parameters using KM Estimates							
271					Mean (KM)	0.128				SD (KM)		0.114
272					Variance (KM)	0.013				SE of Mean (KM)		0.0412
273					k hat (KM)	1.267				k star (KM)		1.182
274					nu hat (KM)	93.74				nu star (KM)		87.47
275					theta hat (KM)	0.101				theta star (KM)		0.109
276					80% gamma percentile (KM)	0.204				90% gamma percentile (KM)		0.284
277					95% gamma percentile (KM)	0.363				99% gamma percentile (KM)		0.544
278												
279					Gamma Kaplan-Meier (KM) Statistics							
280				Approximate Chi Square Value (87.47, α)		66.91				Adjusted Chi Square Value (87.47, β)		66.13
281				95% KM Approximate Gamma UCL		0.168				95% KM Adjusted Gamma UCL		0.17
282												
283					Lognormal GOF Test on Detected Observations Only							
284				Shapiro Wilk Test Statistic		0.854				Shapiro Wilk GOF Test		
285				10% Shapiro Wilk Critical Value		0.859				Detected Data Not Lognormal at 10% Significance Level		
286				Lilliefors Test Statistic		0.259				Lilliefors GOF Test		
287				10% Lilliefors Critical Value		0.252				Detected Data Not Lognormal at 10% Significance Level		
288					Detected Data Not Lognormal at 10% Significance Level							
289												
290					Lognormal ROS Statistics Using Imputed Non-Detects							
291					Mean in Original Scale	0.104				Mean in Log Scale		-2.695
292					SD in Original Scale	0.0956				SD in Log Scale		0.991
293				95% t UCL (assumes normality of ROS data)		0.131				95% Percentile Bootstrap UCL		0.131
294				95% BCA Bootstrap UCL		0.132				95% Bootstrap t UCL		0.136
295				95% H-UCL (Log ROS)		0.164						
296												
297					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
298					KM Mean (logged)	-2.61				KM Geo Mean		0.0735
299					KM SD (logged)	1.144				95% Critical H Value (KM-Log)		2.558
300				KM Standard Error of Mean (logged)		0.416				95% H-UCL (KM -Log)		0.23
301					KM SD (logged)	1.144				95% Critical H Value (KM-Log)		2.558
302				KM Standard Error of Mean (logged)		0.416						
303												
304					DL/2 Statistics							
305				DL/2 Normal						DL/2 Log-Transformed		
306					Mean in Original Scale	0.148				Mean in Log Scale		-2.041
307					SD in Original Scale	0.0597				SD in Log Scale		0.636
308				95% t UCL (Assumes normality)		0.165				95% H-Stat UCL		0.197
309					DL/2 is not a recommended method, provided for comparisons and historical reasons							
310												
311					Nonparametric Distribution Free UCL Statistics							
312					Detected Data appear Normal Distributed at 1% Significance Level							
313												
314					Suggested UCL to Use							
315					95% KM (t) UCL	0.198						
316												
317	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
318	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											

	A	B	C	D	E	F	G	H	I	J	K	L
319	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
320												
321	Beryllium											
322												
323						General Statistics						
324					Total Number of Observations	37			Number of Distinct Observations			2
325					Number of Detects	0			Number of Non-Detects			37
326					Number of Distinct Detects	0			Number of Distinct Non-Detects			2
327												
328	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
329	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
330	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
331												
332	The data set for variable Beryllium was not processed!											
333												
334												
335	Bismuth											
336												
337						General Statistics						
338					Total Number of Observations	37			Number of Distinct Observations			3
339					Number of Detects	1			Number of Non-Detects			36
340					Number of Distinct Detects	1			Number of Distinct Non-Detects			2
341												
342	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
343	s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT											
344												
345	The data set for variable Bismuth was not processed!											
346												
347												
348	Boron											
349												
350						General Statistics						
351					Total Number of Observations	37			Number of Distinct Observations			2
352					Number of Detects	0			Number of Non-Detects			37
353					Number of Distinct Detects	0			Number of Distinct Non-Detects			2
354												
355	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
356	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
357	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
358												
359	The data set for variable Boron was not processed!											
360												
361												
362	Cadmium											
363												
364						General Statistics						
365					Total Number of Observations	37			Number of Distinct Observations			5
366					Number of Detects	4			Number of Non-Detects			33
367					Number of Distinct Detects	3			Number of Distinct Non-Detects			2
368					Minimum Detect	0.0021			Minimum Non-Detect			0.002
369					Maximum Detect	0.0039			Maximum Non-Detect			0.01
370					Variance Detects	7.8250E-7			Percent Non-Detects			89.19%
371					Mean Detects	0.00343			SD Detects			8.8459E-4

372				Median Detects	0.00385					CV Detects	0.258	
373				Skewness Detects	-1.983					Kurtosis Detects	3.941	
374				Mean of Logged Detects	-5.708					SD of Logged Detects	0.305	
375												
376				Normal GOF Test on Detects Only								
377				Shapiro Wilk Test Statistic	0.67	Shapiro Wilk GOF Test						
378				1% Shapiro Wilk Critical Value	0.687	Detected Data Not Normal at 1% Significance Level						
379				Lilliefors Test Statistic	0.414	Lilliefors GOF Test						
380				1% Lilliefors Critical Value	0.413	Detected Data Not Normal at 1% Significance Level						
381				Detected Data Not Normal at 1% Significance Level								
382												
383				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs								
384				KM Mean	0.00271	KM Standard Error of Mean	3.6540E-4					
385				90KM SD	8.9504E-4	95% KM (BCA) UCL	N/A					
386				95% KM (t) UCL	0.00333	95% KM (Percentile Bootstrap) UCL	N/A					
387				95% KM (z) UCL	0.00331	95% KM Bootstrap t UCL	N/A					
388				90% KM Chebyshev UCL	0.00381	95% KM Chebyshev UCL	0.00431					
389				97.5% KM Chebyshev UCL	0.00499	99% KM Chebyshev UCL	0.00635					
390												
391				Gamma GOF Tests on Detected Observations Only								
392				A-D Test Statistic	0.875	Anderson-Darling GOF Test						
393				5% A-D Critical Value	0.657	Detected Data Not Gamma Distributed at 5% Significance Level						
394				K-S Test Statistic	0.444	Kolmogorov-Smirnov GOF						
395				5% K-S Critical Value	0.395	Detected Data Not Gamma Distributed at 5% Significance Level						
396				Detected Data Not Gamma Distributed at 5% Significance Level								
397												
398				Gamma Statistics on Detected Data Only								
399				k hat (MLE)	16.1	k star (bias corrected MLE)	4.191					
400				Theta hat (MLE)	2.1274E-4	Theta star (bias corrected MLE)	8.1713E-4					
401				nu hat (MLE)	128.8	nu star (bias corrected)	33.53					
402				Mean (detects)	0.00343							
403												
404				Gamma ROS Statistics using Imputed Non-Detects								
405				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
406				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)								
407				For such situations, GROS method may yield incorrect values of UCLs and BTVs								
408				This is especially true when the sample size is small.								
409				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
410				Minimum	0.0021	Mean	0.00929					
411				Maximum	0.01	Median	0.01					
412				SD	0.00209	CV	0.225					
413				k hat (MLE)	11.15	k star (bias corrected MLE)	10.27					
414				Theta hat (MLE)	8.3278E-4	Theta star (bias corrected MLE)	9.0467E-4					
415				nu hat (MLE)	825.4	nu star (bias corrected)	759.8					
416				Adjusted Level of Significance (β)	0.0431							
417				Approximate Chi Square Value (759.83, α)	696.9	Adjusted Chi Square Value (759.83, β)	694.3					
418				95% Gamma Approximate UCL	0.0101	95% Gamma Adjusted UCL	N/A					
419												
420				Estimates of Gamma Parameters using KM Estimates								
421				Mean (KM)	0.00271	SD (KM)	8.9504E-4					
422				Variance (KM)	8.0109E-7	SE of Mean (KM)	3.6540E-4					
423				k hat (KM)	9.185	k star (KM)	8.458					
424				nu hat (KM)	679.7	nu star (KM)	625.9					

425				theta hat (KM)	2.9533E-4				theta star (KM)	3.2071E-4		
426				80% gamma percentile (KM)	0.00345				90% gamma percentile (KM)	0.00396		
427				95% gamma percentile (KM)	0.00441				99% gamma percentile (KM)	0.00534		
428												
429					Gamma Kaplan-Meier (KM) Statistics							
430				Approximate Chi Square Value (625.88, α)	568.8				Adjusted Chi Square Value (625.88, β)	566.5		
431				95% KM Approximate Gamma UCL	0.00298				95% KM Adjusted Gamma UCL	0.003		
432												
433					Lognormal GOF Test on Detected Observations Only							
434				Shapiro Wilk Test Statistic	0.66				Shapiro Wilk GOF Test			
435				10% Shapiro Wilk Critical Value	0.792				Detected Data Not Lognormal at 10% Significance Level			
436				Lilliefors Test Statistic	0.421				Lilliefors GOF Test			
437				10% Lilliefors Critical Value	0.346				Detected Data Not Lognormal at 10% Significance Level			
438					Detected Data Not Lognormal at 10% Significance Level							
439												
440					Lognormal ROS Statistics Using Imputed Non-Detects							
441				Mean in Original Scale	0.00254				Mean in Log Scale	-6.076		
442				SD in Original Scale	0.00117				SD in Log Scale	0.458		
443				95% t UCL (assumes normality of ROS data)	0.00287				95% Percentile Bootstrap UCL	0.00286		
444				95% BCA Bootstrap UCL	0.00288				95% Bootstrap t UCL	0.00292		
445				95% H-UCL (Log ROS)	0.00295							
446												
447					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
448				KM Mean (logged)	-5.961				KM Geo Mean	0.00258		
449				KM SD (logged)	0.315				95% Critical H Value (KM-Log)	1.793		
450				KM Standard Error of Mean (logged)	0.129				95% H-UCL (KM -Log)	0.00297		
451				KM SD (logged)	0.315				95% Critical H Value (KM-Log)	1.793		
452				KM Standard Error of Mean (logged)	0.129							
453					Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
454												
455					DL/2 Statistics							
456				DL/2 Normal					DL/2 Log-Transformed			
457				Mean in Original Scale	0.0044				Mean in Log Scale	-5.517		
458				SD in Original Scale	0.00132				SD in Log Scale	0.515		
459				95% t UCL (Assumes normality)	0.00476				95% H-Stat UCL	0.00541		
460					DL/2 is not a recommended method, provided for comparisons and historical reasons							
461												
462					Nonparametric Distribution Free UCL Statistics							
463					Data do not follow a Discernible Distribution							
464												
465					Suggested UCL to Use							
466				95% KM (t) UCL	0.00333							
467												
468					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
469					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
470					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
471												
472												
473	Calcium											
474												
475					General Statistics							
476				Total Number of Observations	37				Number of Distinct Observations	34		
477									Number of Missing Observations	0		

478					Minimum	82				Mean	1221
479					Maximum	8700				Median	1000
480					SD	1622				Std. Error of Mean	266.6
481				Coefficient of Variation		1.328				Skewness	3.419
482											
483						Normal GOF Test					
484					Shapiro Wilk Test Statistic	0.61			Shapiro Wilk GOF Test		
485					1% Shapiro Wilk Critical Value	0.814			Data Not Normal at 1% Significance Level		
486					Lilliefors Test Statistic	0.252			Lilliefors GOF Test		
487					1% Lilliefors Critical Value	0.168			Data Not Normal at 1% Significance Level		
488						Data Not Normal at 1% Significance Level					
489											
490						Assuming Normal Distribution					
491				95% Normal UCL					95% UCLs (Adjusted for Skewness)		
492					95% Student's-t UCL	1671			95% Adjusted-CLT UCL (Chen-1995)		1820
493									95% Modified-t UCL (Johnson-1978)		1696
494											
495						Gamma GOF Test					
496					A-D Test Statistic	0.757			Anderson-Darling Gamma GOF Test		
497					5% A-D Critical Value	0.778			Detected data appear Gamma Distributed at 5% Significance Level		
498					K-S Test Statistic	0.121			Kolmogorov-Smirnov Gamma GOF Test		
499					5% K-S Critical Value	0.149			Detected data appear Gamma Distributed at 5% Significance Level		
500						Detected data appear Gamma Distributed at 5% Significance Level					
501											
502						Gamma Statistics					
503					k hat (MLE)	0.984				k star (bias corrected MLE)	0.922
504					Theta hat (MLE)	1242				Theta star (bias corrected MLE)	1325
505					nu hat (MLE)	72.79				nu star (bias corrected)	68.22
506					MLE Mean (bias corrected)	1221				MLE Sd (bias corrected)	1272
507										Approximate Chi Square Value (0.05)	50.21
508					Adjusted Level of Significance	0.0431				Adjusted Chi Square Value	49.54
509											
510						Assuming Gamma Distribution					
511					95% Approximate Gamma UCL	1659				95% Adjusted Gamma UCL	1682
512											
513						Lognormal GOF Test					
514					Shapiro Wilk Test Statistic	0.952			Shapiro Wilk Lognormal GOF Test		
515					10% Shapiro Wilk Critical Value	0.946			Data appear Lognormal at 10% Significance Level		
516					Lilliefors Test Statistic	0.15			Lilliefors Lognormal GOF Test		
517					10% Lilliefors Critical Value	0.132			Data Not Lognormal at 10% Significance Level		
518						Data appear Approximate Lognormal at 10% Significance Level					
519											
520						Lognormal Statistics					
521					Minimum of Logged Data	4.407				Mean of logged Data	6.52
522					Maximum of Logged Data	9.071				SD of logged Data	1.14
523											
524						Assuming Lognormal Distribution					
525					95% H-UCL	2109				90% Chebyshev (MVUE) UCL	2114
526					95% Chebyshev (MVUE) UCL	2500				97.5% Chebyshev (MVUE) UCL	3035
527					99% Chebyshev (MVUE) UCL	4086					
528											
529						Nonparametric Distribution Free UCL Statistics					
530						Data appear to follow a Discernible Distribution					

531											
532					Nonparametric Distribution Free UCLs						
533				95% CLT UCL	1660			95% BCA Bootstrap UCL	1838		
534				95% Standard Bootstrap UCL	1645			95% Bootstrap-t UCL	2129		
535				95% Hall's Bootstrap UCL	3943			95% Percentile Bootstrap UCL	1682		
536				90% Chebyshev(Mean, Sd) UCL	2021			95% Chebyshev(Mean, Sd) UCL	2384		
537				97.5% Chebyshev(Mean, Sd) UCL	2886			99% Chebyshev(Mean, Sd) UCL	3874		
538											
539					Suggested UCL to Use						
540				95% Adjusted Gamma UCL	1682						
541											
542					The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.						
543					Please verify the data were collected from random locations.						
544					If the data were collected using judgmental or other non-random methods,						
545					then contact a statistician to correctly calculate UCLs.						
546											
547					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
548					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
549					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
550											
551	Cesium										
552											
553					General Statistics						
554				Total Number of Observations	37			Number of Distinct Observations	30		
555				Number of Detects	35			Number of Non-Detects	2		
556				Number of Distinct Detects	30			Number of Distinct Non-Detects	1		
557				Minimum Detect	0.0034			Minimum Non-Detect	0.005		
558				Maximum Detect	0.057			Maximum Non-Detect	0.005		
559				Variance Detects	1.6586E-4			Percent Non-Detects	5.405%		
560				Mean Detects	0.0253			SD Detects	0.0129		
561				Median Detects	0.023			CV Detects	0.51		
562				Skewness Detects	0.665			Kurtosis Detects	0.292		
563				Mean of Logged Detects	-3.834			SD of Logged Detects	0.626		
564											
565					Normal GOF Test on Detects Only						
566				Shapiro Wilk Test Statistic	0.951			Shapiro Wilk GOF Test			
567				1% Shapiro Wilk Critical Value	0.91			Detected Data appear Normal at 1% Significance Level			
568				Lilliefors Test Statistic	0.106			Lilliefors GOF Test			
569				1% Lilliefors Critical Value	0.172			Detected Data appear Normal at 1% Significance Level			
570					Detected Data appear Normal at 1% Significance Level						
571											
572					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
573				KM Mean	0.0241			KM Standard Error of Mean	0.00222		
574				90KM SD	0.0133			95% KM (BCA) UCL	0.0279		
575				95% KM (t) UCL	0.0278			95% KM (Percentile Bootstrap) UCL	0.0278		
576				95% KM (z) UCL	0.0277			95% KM Bootstrap t UCL	0.0279		
577				90% KM Chebyshev UCL	0.0307			95% KM Chebyshev UCL	0.0337		
578				97.5% KM Chebyshev UCL	0.0379			99% KM Chebyshev UCL	0.0461		
579											
580					Gamma GOF Tests on Detected Observations Only						
581				A-D Test Statistic	0.411			Anderson-Darling GOF Test			
582				5% A-D Critical Value	0.753			Detected data appear Gamma Distributed at 5% Significance Level			
583				K-S Test Statistic	0.0986			Kolmogorov-Smirnov GOF			

584				5% K-S Critical Value	0.15	Detected data appear Gamma Distributed at 5% Significance Level						
585	Detected data appear Gamma Distributed at 5% Significance Level											
586												
587	Gamma Statistics on Detected Data Only											
588				k hat (MLE)	3.371				k star (bias corrected MLE)	3.101		
589				Theta hat (MLE)	0.00749				Theta star (bias corrected MLE)	0.00814		
590				nu hat (MLE)	236				nu star (bias corrected)	217.1		
591				Mean (detects)	0.0253							
592												
593	Gamma ROS Statistics using Imputed Non-Detects											
594	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
595	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
596	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
597	This is especially true when the sample size is small.											
598	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
599				Minimum	0.0034				Mean	0.0244		
600				Maximum	0.057				Median	0.023		
601				SD	0.013				CV	0.532		
602				k hat (MLE)	3.204				k star (bias corrected MLE)	2.963		
603				Theta hat (MLE)	0.00762				Theta star (bias corrected MLE)	0.00825		
604				nu hat (MLE)	237.1				nu star (bias corrected)	219.2		
605				Adjusted Level of Significance (β)	0.0431							
606				Approximate Chi Square Value (219.24, α)	186				Adjusted Chi Square Value (219.24, β)	184.6		
607				95% Gamma Approximate UCL	0.0288				95% Gamma Adjusted UCL	0.029		
608												
609	Estimates of Gamma Parameters using KM Estimates											
610				Mean (KM)	0.0241				SD (KM)	0.0133		
611				Variance (KM)	1.7684E-4				SE of Mean (KM)	0.00222		
612				k hat (KM)	3.278				k star (KM)	3.03		
613				nu hat (KM)	242.6				nu star (KM)	224.2		
614				theta hat (KM)	0.00735				theta star (KM)	0.00795		
615				80% gamma percentile (KM)	0.0343				90% gamma percentile (KM)	0.0426		
616				95% gamma percentile (KM)	0.0504				99% gamma percentile (KM)	0.0672		
617												
618	Gamma Kaplan-Meier (KM) Statistics											
619				Approximate Chi Square Value (224.22, α)	190.6				Adjusted Chi Square Value (224.22, β)	189.2		
620				95% KM Approximate Gamma UCL	0.0283				95% KM Adjusted Gamma UCL	0.0285		
621												
622	Lognormal GOF Test on Detected Observations Only											
623				Shapiro Wilk Test Statistic	0.908				Shapiro Wilk GOF Test			
624				10% Shapiro Wilk Critical Value	0.944				Detected Data Not Lognormal at 10% Significance Level			
625				Lilliefors Test Statistic	0.13				Lilliefors GOF Test			
626				10% Lilliefors Critical Value	0.136				Detected Data appear Lognormal at 10% Significance Level			
627	Detected Data appear Approximate Lognormal at 10% Significance Level											
628												
629	Lognormal ROS Statistics Using Imputed Non-Detects											
630				Mean in Original Scale	0.0242				Mean in Log Scale	-3.903		
631				SD in Original Scale	0.0133				SD in Log Scale	0.676		
632				95% t UCL (assumes normality of ROS data)	0.0279				95% Percentile Bootstrap UCL	0.0278		
633				95% BCA Bootstrap UCL	0.0277				95% Bootstrap t UCL	0.0284		
634				95% H-UCL (Log ROS)	0.032							
635												
636	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											

637				KM Mean (logged)	-3.934					KM Geo Mean		0.0196
638				KM SD (logged)	0.732					95% Critical H Value (KM-Log)		2.109
639				KM Standard Error of Mean (logged)	0.122					95% H-UCL (KM -Log)		0.0331
640				KM SD (logged)	0.732					95% Critical H Value (KM-Log)		2.109
641				KM Standard Error of Mean (logged)	0.122							
642												
643					DL/2 Statistics							
644				DL/2 Normal						DL/2 Log-Transformed		
645				Mean in Original Scale	0.024					Mean in Log Scale		-3.951
646				SD in Original Scale	0.0136					SD in Log Scale		0.784
647				95% t UCL (Assumes normality)	0.0278					95% H-Stat UCL		0.0347
648				DL/2 is not a recommended method, provided for comparisons and historical reasons								
649												
650					Nonparametric Distribution Free UCL Statistics							
651					Detected Data appear Normal Distributed at 1% Significance Level							
652												
653					Suggested UCL to Use							
654				95% KM (t) UCL	0.0278							
655												
656					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
657					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
658					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
659												
660	Chromium											
661												
662					General Statistics							
663				Total Number of Observations	37					Number of Distinct Observations		9
664				Number of Detects	8					Number of Non-Detects		29
665				Number of Distinct Detects	8					Number of Distinct Non-Detects		1
666				Minimum Detect	0.047					Minimum Non-Detect		0.3
667				Maximum Detect	0.225					Maximum Non-Detect		0.3
668				Variance Detects	0.00388					Percent Non-Detects		78.38%
669				Mean Detects	0.112					SD Detects		0.0623
670				Median Detects	0.0845					CV Detects		0.558
671				Skewness Detects	0.986					Kurtosis Detects		-0.155
672				Mean of Logged Detects	-2.322					SD of Logged Detects		0.537
673												
674					Normal GOF Test on Detects Only							
675				Shapiro Wilk Test Statistic	0.888					Shapiro Wilk GOF Test		
676				1% Shapiro Wilk Critical Value	0.749					Detected Data appear Normal at 1% Significance Level		
677				Lilliefors Test Statistic	0.261					Lilliefors GOF Test		
678				1% Lilliefors Critical Value	0.333					Detected Data appear Normal at 1% Significance Level		
679					Detected Data appear Normal at 1% Significance Level							
680					Note GOF tests may be unreliable for small sample sizes							
681												
682					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
683				KM Mean	0.112					KM Standard Error of Mean		0.022
684				90KM SD	0.0583					95% KM (BCA) UCL		0.147
685				95% KM (t) UCL	0.149					95% KM (Percentile Bootstrap) UCL		0.149
686				95% KM (z) UCL	0.148					95% KM Bootstrap t UCL		0.181
687				90% KM Chebyshev UCL	0.178					95% KM Chebyshev UCL		0.208
688				97.5% KM Chebyshev UCL	0.249					99% KM Chebyshev UCL		0.331
689												

	A	B	C	D	E	F	G	H	I	J	K	L
690	Gamma GOF Tests on Detected Observations Only											
691				A-D Test Statistic		0.332	Anderson-Darling GOF Test					
692				5% A-D Critical Value		0.719	Detected data appear Gamma Distributed at 5% Significance Level					
693				K-S Test Statistic		0.223	Kolmogorov-Smirnov GOF					
694				5% K-S Critical Value		0.295	Detected data appear Gamma Distributed at 5% Significance Level					
695	Detected data appear Gamma Distributed at 5% Significance Level											
696	Note GOF tests may be unreliable for small sample sizes											
697												
698	Gamma Statistics on Detected Data Only											
699				k hat (MLE)		4.035			k star (bias corrected MLE)			2.605
700				Theta hat (MLE)		0.0277			Theta star (bias corrected MLE)			0.0428
701				nu hat (MLE)		64.56			nu star (bias corrected)			41.68
702				Mean (detects)		0.112						
703												
704	Gamma ROS Statistics using Imputed Non-Detects											
705	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
706	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
707	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
708	This is especially true when the sample size is small.											
709	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
710					Minimum	0.01				Mean		0.114
711					Maximum	0.286				Median		0.0982
712					SD	0.0674				CV		0.591
713					k hat (MLE)	2.556				k star (bias corrected MLE)		2.366
714					Theta hat (MLE)	0.0446				Theta star (bias corrected MLE)		0.0482
715					nu hat (MLE)	189.1				nu star (bias corrected)		175.1
716					Adjusted Level of Significance (β)	0.0431						
717					Approximate Chi Square Value (175.11, α)	145.5				Adjusted Chi Square Value (175.11, β)		144.3
718					95% Gamma Approximate UCL	0.137				95% Gamma Adjusted UCL		0.138
719												
720	Estimates of Gamma Parameters using KM Estimates											
721					Mean (KM)	0.112				SD (KM)		0.0583
722					Variance (KM)	0.0034				SE of Mean (KM)		0.022
723					k hat (KM)	3.67				k star (KM)		3.39
724					nu hat (KM)	271.6				nu star (KM)		250.9
725					theta hat (KM)	0.0304				theta star (KM)		0.0329
726					80% gamma percentile (KM)	0.157				90% gamma percentile (KM)		0.193
727					95% gamma percentile (KM)	0.226				99% gamma percentile (KM)		0.298
728												
729	Gamma Kaplan-Meier (KM) Statistics											
730					Approximate Chi Square Value (250.87, α)	215.2				Adjusted Chi Square Value (250.87, β)		213.8
731					95% KM Approximate Gamma UCL	0.13				95% KM Adjusted Gamma UCL		0.131
732												
733	Lognormal GOF Test on Detected Observations Only											
734				Shapiro Wilk Test Statistic		0.955	Shapiro Wilk GOF Test					
735				10% Shapiro Wilk Critical Value		0.851	Detected Data appear Lognormal at 10% Significance Level					
736				Lilliefors Test Statistic		0.189	Lilliefors GOF Test					
737				10% Lilliefors Critical Value		0.265	Detected Data appear Lognormal at 10% Significance Level					
738	Detected Data appear Lognormal at 10% Significance Level											
739	Note GOF tests may be unreliable for small sample sizes											
740												
741	Lognormal ROS Statistics Using Imputed Non-Detects											
742				Mean in Original Scale		0.115			Mean in Log Scale			-2.322

743				SD in Original Scale	0.0686				SD in Log Scale		0.579	
744			95% t UCL (assumes normality of ROS data)		0.134				95% Percentile Bootstrap UCL		0.134	
745				95% BCA Bootstrap UCL	0.136				95% Bootstrap t UCL		0.138	
746				95% H-UCL (Log ROS)	0.14							
747												
748				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								
749				KM Mean (logged)	-2.322				KM Geo Mean		0.0981	
750				KM SD (logged)	0.503				95% Critical H Value (KM-Log)		1.915	
751			KM Standard Error of Mean (logged)		0.19				95% H-UCL (KM -Log)		0.131	
752				KM SD (logged)	0.503				95% Critical H Value (KM-Log)		1.915	
753			KM Standard Error of Mean (logged)		0.19							
754				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended								
755												
756				DL/2 Statistics								
757			DL/2 Normal						DL/2 Log-Transformed			
758				Mean in Original Scale	0.142				Mean in Log Scale		-1.989	
759				SD in Original Scale	0.0318				SD in Log Scale		0.296	
760			95% t UCL (Assumes normality)		0.151				95% H-Stat UCL		0.156	
761				DL/2 is not a recommended method, provided for comparisons and historical reasons								
762												
763				Nonparametric Distribution Free UCL Statistics								
764				Detected Data appear Normal Distributed at 1% Significance Level								
765												
766				Suggested UCL to Use								
767				95% KM (t) UCL	0.149							
768												
769				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
770				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
771				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
772												
773	Chromium VI											
774												
775				General Statistics								
776				Total Number of Observations	29				Number of Distinct Observations		1	
777				Number of Detects	0				Number of Non-Detects		29	
778				Number of Distinct Detects	0				Number of Distinct Non-Detects		1	
779												
780				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!								
781				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!								
782				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).								
783												
784				The data set for variable Chromium VI was not processed!								
785												
786												
787	Cobalt											
788												
789				General Statistics								
790				Total Number of Observations	37				Number of Distinct Observations		6	
791				Number of Detects	4				Number of Non-Detects		33	
792				Number of Distinct Detects	4				Number of Distinct Non-Detects		2	
793				Minimum Detect	0.0056				Minimum Non-Detect		0.004	
794				Maximum Detect	0.0127				Maximum Non-Detect		0.005	
795				Variance Detects	1.1207E-5				Percent Non-Detects		89.19%	

796				Mean Detects	0.0077					SD Detects	0.00335	
797				Median Detects	0.00625					CV Detects	0.435	
798				Skewness Detects	1.948					Kurtosis Detects	3.841	
799				Mean of Logged Detects	-4.925					SD of Logged Detects	0.376	
800												
801				Normal GOF Test on Detects Only								
802				Shapiro Wilk Test Statistic	0.713		Shapiro Wilk GOF Test					
803				1% Shapiro Wilk Critical Value	0.687		Detected Data appear Normal at 1% Significance Level					
804				Lilliefors Test Statistic	0.412		Lilliefors GOF Test					
805				1% Lilliefors Critical Value	0.413		Detected Data appear Normal at 1% Significance Level					
806				Detected Data appear Normal at 1% Significance Level								
807				Note GOF tests may be unreliable for small sample sizes								
808												
809				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs								
810				KM Mean	0.0044		KM Standard Error of Mean	2.8339E-4				
811				90KM SD	0.00149		95% KM (BCA) UCL	N/A				
812				95% KM (t) UCL	0.00488		95% KM (Percentile Bootstrap) UCL	N/A				
813				95% KM (z) UCL	0.00487		95% KM Bootstrap t UCL	N/A				
814				90% KM Chebyshev UCL	0.00525		95% KM Chebyshev UCL	0.00564				
815				97.5% KM Chebyshev UCL	0.00617		99% KM Chebyshev UCL	0.00722				
816												
817				Gamma GOF Tests on Detected Observations Only								
818				A-D Test Statistic	0.721		Anderson-Darling GOF Test					
819				5% A-D Critical Value	0.658		Detected Data Not Gamma Distributed at 5% Significance Level					
820				K-S Test Statistic	0.426		Kolmogorov-Smirnov GOF					
821				5% K-S Critical Value	0.395		Detected Data Not Gamma Distributed at 5% Significance Level					
822				Detected Data Not Gamma Distributed at 5% Significance Level								
823												
824				Gamma Statistics on Detected Data Only								
825				k hat (MLE)	8.659		k star (bias corrected MLE)	2.331				
826				Theta hat (MLE)	8.8925E-4		Theta star (bias corrected MLE)	0.0033				
827				nu hat (MLE)	69.27		nu star (bias corrected)	18.65				
828				Mean (detects)	0.0077							
829												
830				Gamma ROS Statistics using Imputed Non-Detects								
831				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
832				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)								
833				For such situations, GROS method may yield incorrect values of UCLs and BTVs								
834				This is especially true when the sample size is small.								
835				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
836				Minimum	0.0056		Mean	0.00975				
837				Maximum	0.0127		Median	0.01				
838				SD	0.00121		CV	0.124				
839				k hat (MLE)	53.14		k star (bias corrected MLE)	48.85				
840				Theta hat (MLE)	1.8351E-4		Theta star (bias corrected MLE)	1.9963E-4				
841				nu hat (MLE)	3932		nu star (bias corrected)	3615				
842				Adjusted Level of Significance (β)	0.0431							
843				Approximate Chi Square Value (N/A, α)	3476		Adjusted Chi Square Value (N/A, β)	3470				
844				95% Gamma Approximate UCL	0.0101		95% Gamma Adjusted UCL	N/A				
845												
846				Estimates of Gamma Parameters using KM Estimates								
847				Mean (KM)	0.0044		SD (KM)	0.00149				
848				Variance (KM)	2.2286E-6		SE of Mean (KM)	2.8339E-4				

849					k hat (KM)	8.687				k star (KM)	8.001	
850					nu hat (KM)	642.8				nu star (KM)	592	
851					theta hat (KM)	5.0651E-4				theta star (KM)	5.4996E-4	
852				80% gamma percentile (KM)		0.00563			90% gamma percentile (KM)		0.00647	
853				95% gamma percentile (KM)		0.00723			99% gamma percentile (KM)		0.0088	
854												
855						Gamma Kaplan-Meier (KM) Statistics							
856			Approximate Chi Square Value (592.04, α)			536.6			Adjusted Chi Square Value (592.04, β)		534.3	
857			95% KM Approximate Gamma UCL			0.00485			95% KM Adjusted Gamma UCL		0.00488	
858												
859						Lognormal GOF Test on Detected Observations Only							
860				Shapiro Wilk Test Statistic		0.752			Shapiro Wilk GOF Test			
861				10% Shapiro Wilk Critical Value		0.792			Detected Data Not Lognormal at 10% Significance Level			
862				Lilliefors Test Statistic		0.397			Lilliefors GOF Test			
863				10% Lilliefors Critical Value		0.346			Detected Data Not Lognormal at 10% Significance Level			
864						Detected Data Not Lognormal at 10% Significance Level						
865												
866						Lognormal ROS Statistics Using Imputed Non-Detects						
867					Mean in Original Scale	0.00183				Mean in Log Scale	-6.917	
868					SD in Original Scale	0.00244				SD in Log Scale	1.12	
869			95% t UCL (assumes normality of ROS data)			0.0025			95% Percentile Bootstrap UCL		0.00254	
870				95% BCA Bootstrap UCL		0.00265			95% Bootstrap t UCL		0.00295	
871				95% H-UCL (Log ROS)		0.00297						
872												
873						Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
874					KM Mean (logged)	-5.457				KM Geo Mean	0.00427	
875					KM SD (logged)	0.214				95% Critical H Value (KM-Log)	1.742	
876				KM Standard Error of Mean (logged)		0.0406				95% H-UCL (KM -Log)	0.00464	
877					KM SD (logged)	0.214				95% Critical H Value (KM-Log)	1.742	
878				KM Standard Error of Mean (logged)		0.0406						
879												
880						DL/2 Statistics						
881				DL/2 Normal					DL/2 Log-Transformed			
882					Mean in Original Scale	0.00301				Mean in Log Scale	-5.9	
883					SD in Original Scale	0.00192				SD in Log Scale	0.368	
884				95% t UCL (Assumes normality)		0.00354				95% H-Stat UCL	0.00328	
885						DL/2 is not a recommended method, provided for comparisons and historical reasons						
886												
887						Nonparametric Distribution Free UCL Statistics						
888						Detected Data appear Normal Distributed at 1% Significance Level						
889												
890						Suggested UCL to Use						
891					95% KM (t) UCL	0.00488						
892												
893						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
894						Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
895						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
896												
897	Copper											
898												
899						General Statistics						
900				Total Number of Observations		37				Number of Distinct Observations	10	
901					Number of Detects	10				Number of Non-Detects	27	

902				Number of Distinct Detects	9				Number of Distinct Non-Detects	1		
903				Minimum Detect	0.222				Minimum Non-Detect	0.5		
904				Maximum Detect	1.18				Maximum Non-Detect	0.5		
905				Variance Detects	0.0999				Percent Non-Detects	72.97%		
906				Mean Detects	0.569				SD Detects	0.316		
907				Median Detects	0.565				CV Detects	0.556		
908				Skewness Detects	0.935				Kurtosis Detects	0.26		
909				Mean of Logged Detects	-0.704				SD of Logged Detects	0.563		
910												
911					Normal GOF Test on Detects Only							
912				Shapiro Wilk Test Statistic	0.886			Shapiro Wilk GOF Test				
913				1% Shapiro Wilk Critical Value	0.781			Detected Data appear Normal at 1% Significance Level				
914				Lilliefors Test Statistic	0.261			Lilliefors GOF Test				
915				1% Lilliefors Critical Value	0.304			Detected Data appear Normal at 1% Significance Level				
916					Detected Data appear Normal at 1% Significance Level							
917												
918					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
919				KM Mean	0.367			KM Standard Error of Mean	0.0471			
920				90KM SD	0.208			95% KM (BCA) UCL	0.465			
921				95% KM (t) UCL	0.446			95% KM (Percentile Bootstrap) UCL	0.457			
922				95% KM (z) UCL	0.444			95% KM Bootstrap t UCL	0.487			
923				90% KM Chebyshev UCL	0.508			95% KM Chebyshev UCL	0.572			
924				97.5% KM Chebyshev UCL	0.661			99% KM Chebyshev UCL	0.835			
925												
926					Gamma GOF Tests on Detected Observations Only							
927				A-D Test Statistic	0.357			Anderson-Darling GOF Test				
928				5% A-D Critical Value	0.73			Detected data appear Gamma Distributed at 5% Significance Level				
929				K-S Test Statistic	0.191			Kolmogorov-Smirnov GOF				
930				5% K-S Critical Value	0.268			Detected data appear Gamma Distributed at 5% Significance Level				
931					Detected data appear Gamma Distributed at 5% Significance Level							
932												
933					Gamma Statistics on Detected Data Only							
934				k hat (MLE)	3.752			k star (bias corrected MLE)	2.693			
935				Theta hat (MLE)	0.152			Theta star (bias corrected MLE)	0.211			
936				nu hat (MLE)	75.04			nu star (bias corrected)	53.86			
937				Mean (detects)	0.569							
938												
939					Gamma ROS Statistics using Imputed Non-Detects							
940					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
941					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
942					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
943					This is especially true when the sample size is small.							
944					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
945				Minimum	0.01			Mean	0.348			
946				Maximum	1.18			Median	0.306			
947				SD	0.248			CV	0.713			
948				k hat (MLE)	1.729			k star (bias corrected MLE)	1.607			
949				Theta hat (MLE)	0.201			Theta star (bias corrected MLE)	0.216			
950				nu hat (MLE)	127.9			nu star (bias corrected)	118.9			
951				Adjusted Level of Significance (β)	0.0431							
952				Approximate Chi Square Value (118.91, α)	94.73			Adjusted Chi Square Value (118.91, β)	93.79			
953				95% Gamma Approximate UCL	0.436			95% Gamma Adjusted UCL	0.441			
954												

955	Estimates of Gamma Parameters using KM Estimates											
956				Mean (KM)	0.367				SD (KM)	0.208		
957				Variance (KM)	0.0434				SE of Mean (KM)	0.0471		
958				k hat (KM)	3.1				k star (KM)	2.867		
959				nu hat (KM)	229.4				nu star (KM)	212.1		
960				theta hat (KM)	0.118				theta star (KM)	0.128		
961				80% gamma percentile (KM)	0.526				90% gamma percentile (KM)	0.657		
962				95% gamma percentile (KM)	0.78				99% gamma percentile (KM)	1.046		
963												
964	Gamma Kaplan-Meier (KM) Statistics											
965			Approximate Chi Square Value (212.13, α)		179.4				Adjusted Chi Square Value (212.13, β)	178.1		
966			95% KM Approximate Gamma UCL		0.433				95% KM Adjusted Gamma UCL	0.437		
967												
968	Lognormal GOF Test on Detected Observations Only											
969			Shapiro Wilk Test Statistic		0.935			Shapiro Wilk GOF Test				
970			10% Shapiro Wilk Critical Value		0.869			Detected Data appear Lognormal at 10% Significance Level				
971			Lilliefors Test Statistic		0.192			Lilliefors GOF Test				
972			10% Lilliefors Critical Value		0.241			Detected Data appear Lognormal at 10% Significance Level				
973	Detected Data appear Lognormal at 10% Significance Level											
974												
975	Lognormal ROS Statistics Using Imputed Non-Detects											
976				Mean in Original Scale	0.37				Mean in Log Scale	-1.134		
977				SD in Original Scale	0.222				SD in Log Scale	0.522		
978			95% t UCL (assumes normality of ROS data)		0.431				95% Percentile Bootstrap UCL	0.431		
979				95% BCA Bootstrap UCL	0.439				95% Bootstrap t UCL	0.459		
980				95% H-UCL (Log ROS)	0.436							
981												
982	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
983				KM Mean (logged)	-1.111				KM Geo Mean	0.329		
984				KM SD (logged)	0.426				95% Critical H Value (KM-Log)	1.86		
985			KM Standard Error of Mean (logged)		0.124				95% H-UCL (KM -Log)	0.411		
986				KM SD (logged)	0.426				95% Critical H Value (KM-Log)	1.86		
987			KM Standard Error of Mean (logged)		0.124							
988												
989	DL/2 Statistics											
990			DL/2 Normal					DL/2 Log-Transformed				
991				Mean in Original Scale	0.336				Mean in Log Scale	-1.202		
992				SD in Original Scale	0.213				SD in Log Scale	0.417		
993				95% t UCL (Assumes normality)	0.395				95% H-Stat UCL	0.373		
994	DL/2 is not a recommended method, provided for comparisons and historical reasons											
995												
996	Nonparametric Distribution Free UCL Statistics											
997	Detected Data appear Normal Distributed at 1% Significance Level											
998												
999	Suggested UCL to Use											
1000				95% KM (t) UCL	0.446							
1001												
1002	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1003	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
1004	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1005												
1006	Iron											
1007												

General Statistics

Total Number of Observations	37	Number of Distinct Observations	13
Number of Detects	21	Number of Non-Detects	16
Number of Distinct Detects	13	Number of Distinct Non-Detects	1
Minimum Detect	2.12	Minimum Non-Detect	3
Maximum Detect	28.8	Maximum Non-Detect	3
Variance Detects	35.59	Percent Non-Detects	43.24%
Mean Detects	6.46	SD Detects	5.966
Median Detects	4.16	CV Detects	0.923
Skewness Detects	3.023	Kurtosis Detects	10.19
Mean of Logged Detects	1.64	SD of Logged Detects	0.613

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.609	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.873	Detected Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.304	Lilliefors GOF Test
1% Lilliefors Critical Value	0.219	Detected Data Not Normal at 1% Significance Level

Detected Data Not Normal at 1% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.618	KM Standard Error of Mean	0.82
90KM SD	4.868	95% KM (BCA) UCL	6.367
95% KM (t) UCL	6.003	95% KM (Percentile Bootstrap) UCL	6.099
95% KM (z) UCL	5.968	95% KM Bootstrap t UCL	7.552
90% KM Chebyshev UCL	7.079	95% KM Chebyshev UCL	8.194
97.5% KM Chebyshev UCL	9.742	99% KM Chebyshev UCL	12.78

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.505	Anderson-Darling GOF Test
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.228	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.191	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.366	k star (bias corrected MLE)	2.06
Theta hat (MLE)	2.731	Theta star (bias corrected MLE)	3.137
nu hat (MLE)	99.37	nu star (bias corrected)	86.51
Mean (detects)	6.46		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.744
Maximum	28.8	Median	3
SD	5.457	CV	1.458
k hat (MLE)	0.345	k star (bias corrected MLE)	0.335
Theta hat (MLE)	10.86	Theta star (bias corrected MLE)	11.19
nu hat (MLE)	25.5	nu star (bias corrected)	24.77
Adjusted Level of Significance (β)	0.0431		

1061			Approximate Chi Square Value (24.77, α)		14.44			Adjusted Chi Square Value (24.77, β)			14.09
1062			95% Gamma Approximate UCL		6.425			95% Gamma Adjusted UCL			6.581
1063											
1064					Estimates of Gamma Parameters using KM Estimates						
1065				Mean (KM)	4.618				SD (KM)		4.868
1066				Variance (KM)	23.7				SE of Mean (KM)		0.82
1067				k hat (KM)	0.9				k star (KM)		0.845
1068				nu hat (KM)	66.6				nu star (KM)		62.54
1069				theta hat (KM)	5.131				theta star (KM)		5.465
1070			80% gamma percentile (KM)		7.523			90% gamma percentile (KM)			11.08
1071			95% gamma percentile (KM)		14.69			99% gamma percentile (KM)			23.17
1072											
1073					Gamma Kaplan-Meier (KM) Statistics						
1074			Approximate Chi Square Value (62.54, α)		45.35			Adjusted Chi Square Value (62.54, β)			44.71
1075			95% KM Approximate Gamma UCL		6.369			95% KM Adjusted Gamma UCL			6.459
1076											
1077					Lognormal GOF Test on Detected Observations Only						
1078				Shapiro Wilk Test Statistic	0.89			Shapiro Wilk GOF Test			
1079			10% Shapiro Wilk Critical Value		0.923			Detected Data Not Lognormal at 10% Significance Level			
1080				Lilliefors Test Statistic	0.186			Lilliefors GOF Test			
1081			10% Lilliefors Critical Value		0.173			Detected Data Not Lognormal at 10% Significance Level			
1082					Detected Data Not Lognormal at 10% Significance Level						
1083											
1084					Lognormal ROS Statistics Using Imputed Non-Detects						
1085				Mean in Original Scale	4.416				Mean in Log Scale		1.133
1086				SD in Original Scale	5.06				SD in Log Scale		0.798
1087			95% t UCL (assumes normality of ROS data)		5.82			95% Percentile Bootstrap UCL			5.864
1088			95% BCA Bootstrap UCL		6.311			95% Bootstrap t UCL			7.229
1089			95% H-UCL (Log ROS)		5.697						
1090											
1091					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
1092				KM Mean (logged)	1.271				KM Geo Mean		3.566
1093				KM SD (logged)	0.618				95% Critical H Value (KM-Log)		2.006
1094			KM Standard Error of Mean (logged)		0.105				95% H-UCL (KM -Log)		5.306
1095				KM SD (logged)	0.618				95% Critical H Value (KM-Log)		2.006
1096			KM Standard Error of Mean (logged)		0.105						
1097											
1098					DL/2 Statistics						
1099			DL/2 Normal					DL/2 Log-Transformed			
1100				Mean in Original Scale	4.315				Mean in Log Scale		1.106
1101				SD in Original Scale	5.097				SD in Log Scale		0.77
1102			95% t UCL (Assumes normality)		5.73				95% H-Stat UCL		5.355
1103					DL/2 is not a recommended method, provided for comparisons and historical reasons						
1104											
1105					Nonparametric Distribution Free UCL Statistics						
1106					Data do not follow a Discernible Distribution						
1107											
1108					Suggested UCL to Use						
1109				95% KM (t) UCL	6.003						
1110											
1111					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
1112					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
1113					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						

Lead

General Statistics

Total Number of Observations	37	Number of Distinct Observations	8
Number of Detects	6	Number of Non-Detects	31
Number of Distinct Detects	6	Number of Distinct Non-Detects	2
Minimum Detect	0.0042	Minimum Non-Detect	0.004
Maximum Detect	0.0666	Maximum Non-Detect	0.03
Variance Detects	5.8063E-4	Percent Non-Detects	83.78%
Mean Detects	0.0179	SD Detects	0.0241
Median Detects	0.0096	CV Detects	1.345
Skewness Detects	2.338	Kurtosis Detects	5.578
Mean of Logged Detects	-4.54	SD of Logged Detects	1.008

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.627	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.713	Detected Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.413	Lilliefors GOF Test
1% Lilliefors Critical Value	0.373	Detected Data Not Normal at 1% Significance Level

Detected Data Not Normal at 1% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0086	KM Standard Error of Mean	0.00223
90KM SD	0.0103	95% KM (BCA) UCL	0.0127
95% KM (t) UCL	0.0124	95% KM (Percentile Bootstrap) UCL	0.0125
95% KM (z) UCL	0.0123	95% KM Bootstrap t UCL	0.0144
90% KM Chebyshev UCL	0.0153	95% KM Chebyshev UCL	0.0183
97.5% KM Chebyshev UCL	0.0225	99% KM Chebyshev UCL	0.0308

Note: KM UCLs may be biased low with this dataset. Other substitution method recommended

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.696	Anderson-Darling GOF Test
5% A-D Critical Value	0.714	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.327	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.34	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Note GOF tests may be unreliable for small sample sizes

Gamma Statistics on Detected Data Only

k hat (MLE)	1.102	k star (bias corrected MLE)	0.662
Theta hat (MLE)	0.0163	Theta star (bias corrected MLE)	0.0271
nu hat (MLE)	13.23	nu star (bias corrected)	7.948
Mean (detects)	0.0179		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0042	Mean	0.0139
Maximum	0.0666	Median	0.01

				SD	0.0111					CV	0.8
				k hat (MLE)	3.24					k star (bias corrected MLE)	2.995
				Theta hat (MLE)	0.00428					Theta star (bias corrected MLE)	0.00463
				nu hat (MLE)	239.8					nu star (bias corrected)	221.6
				Adjusted Level of Significance (β)	0.0431						
				Approximate Chi Square Value (221.65, α)	188.2					Adjusted Chi Square Value (221.65, β)	186.9
				95% Gamma Approximate UCL	0.0163					95% Gamma Adjusted UCL	0.0165
				Estimates of Gamma Parameters using KM Estimates							
				Mean (KM)	0.0086					SD (KM)	0.0103
				Variance (KM)	1.0514E-4					SE of Mean (KM)	0.00223
				k hat (KM)	0.703					k star (KM)	0.664
				nu hat (KM)	52.02					nu star (KM)	49.13
				theta hat (KM)	0.0122					theta star (KM)	0.0129
				80% gamma percentile (KM)	0.0142					90% gamma percentile (KM)	0.0218
				95% gamma percentile (KM)	0.0298					99% gamma percentile (KM)	0.049
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (49.13, α)	34.04					Adjusted Chi Square Value (49.13, β)	33.5
				95% KM Approximate Gamma UCL	0.0124					95% KM Adjusted Gamma UCL	0.0126
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.863					Shapiro Wilk GOF Test	
				10% Shapiro Wilk Critical Value	0.826					Detected Data appear Lognormal at 10% Significance Level	
				Lilliefors Test Statistic	0.253					Lilliefors GOF Test	
				10% Lilliefors Critical Value	0.298					Detected Data appear Lognormal at 10% Significance Level	
				Detected Data appear Lognormal at 10% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.00868					Mean in Log Scale	-5.277
				SD in Original Scale	0.0117					SD in Log Scale	1.029
				95% t UCL (assumes normality of ROS data)	0.0119					95% Percentile Bootstrap UCL	0.012
				95% BCA Bootstrap UCL	0.0131					95% Bootstrap t UCL	0.015
				95% H-UCL (Log ROS)	0.0131						
				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
				KM Mean (logged)	-5.018					KM Geo Mean	0.00662
				KM SD (logged)	0.609					95% Critical H Value (KM-Log)	1.999
				KM Standard Error of Mean (logged)	0.205					95% H-UCL (KM -Log)	0.00976
				KM SD (logged)	0.609					95% Critical H Value (KM-Log)	1.999
				KM Standard Error of Mean (logged)	0.205						
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				DL/2 Statistics							
				DL/2 Normal						DL/2 Log-Transformed	
				Mean in Original Scale	0.0148					Mean in Log Scale	-4.364
				SD in Original Scale	0.00956					SD in Log Scale	0.599
				95% t UCL (Assumes normality)	0.0174					95% H-Stat UCL	0.0186
				DL/2 is not a recommended method, provided for comparisons and historical reasons							
				Nonparametric Distribution Free UCL Statistics							

				Detected Data appear Gamma Distributed at 5% Significance Level							
				Suggested UCL to Use							
			95% KM Adjusted Gamma UCL	0.0126							
			The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.								
			Please verify the data were collected from random locations.								
			If the data were collected using judgmental or other non-random methods,								
			then contact a statistician to correctly calculate UCLs.								
			Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
			Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
			However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
Magnesium											
				General Statistics							
			Total Number of Observations	37				Number of Distinct Observations	20		
								Number of Missing Observations	0		
			Minimum	185				Mean	288.8		
			Maximum	731				Median	270		
			SD	89.58				Std. Error of Mean	14.73		
			Coefficient of Variation	0.31				Skewness	3.724		
				Normal GOF Test							
			Shapiro Wilk Test Statistic	0.607				Shapiro Wilk GOF Test			
			1% Shapiro Wilk Critical Value	0.814				Data Not Normal at 1% Significance Level			
			Lilliefors Test Statistic	0.294				Lilliefors GOF Test			
			1% Lilliefors Critical Value	0.168				Data Not Normal at 1% Significance Level			
				Data Not Normal at 1% Significance Level							
				Assuming Normal Distribution							
			95% Normal UCL					95% UCLs (Adjusted for Skewness)			
			95% Student's-t UCL	313.6				95% Adjusted-CLT UCL (Chen-1995)	322.6		
								95% Modified-t UCL (Johnson-1978)	315.1		
				Gamma GOF Test							
			A-D Test Statistic	3.155				Anderson-Darling Gamma GOF Test			
			5% A-D Critical Value	0.747				Data Not Gamma Distributed at 5% Significance Level			
			K-S Test Statistic	0.244				Kolmogorov-Smirnov Gamma GOF Test			
			5% K-S Critical Value	0.145				Data Not Gamma Distributed at 5% Significance Level			
				Data Not Gamma Distributed at 5% Significance Level							
				Gamma Statistics							
			k hat (MLE)	16.43				k star (bias corrected MLE)	15.11		
			Theta hat (MLE)	17.58				Theta star (bias corrected MLE)	19.11		
			nu hat (MLE)	1216				nu star (bias corrected)	1118		
			MLE Mean (bias corrected)	288.8				MLE Sd (bias corrected)	74.28		
								Approximate Chi Square Value (0.05)	1042		
			Adjusted Level of Significance	0.0431				Adjusted Chi Square Value	1039		
				Assuming Gamma Distribution							

95% Approximate Gamma UCL					310				95% Adjusted Gamma UCL			311
Lognormal GOF Test												
Shapiro Wilk Test Statistic					0.789		Shapiro Wilk Lognormal GOF Test					
10% Shapiro Wilk Critical Value					0.946		Data Not Lognormal at 10% Significance Level					
Lilliefors Test Statistic					0.22		Lilliefors Lognormal GOF Test					
10% Lilliefors Critical Value					0.132		Data Not Lognormal at 10% Significance Level					
Data Not Lognormal at 10% Significance Level												
Lognormal Statistics												
Minimum of Logged Data					5.22				Mean of logged Data			5.635
Maximum of Logged Data					6.594				SD of logged Data			0.23
Assuming Lognormal Distribution												
95% H-UCL					307.4				90% Chebyshev (MVUE) UCL			320.2
95% Chebyshev (MVUE) UCL					335.1				97.5% Chebyshev (MVUE) UCL			355.7
99% Chebyshev (MVUE) UCL					396.3							
Nonparametric Distribution Free UCL Statistics												
Data do not follow a Discernible Distribution												
Nonparametric Distribution Free UCLs												
95% CLT UCL					313				95% BCA Bootstrap UCL			323.6
95% Standard Bootstrap UCL					312.6				95% Bootstrap-t UCL			339.7
95% Hall's Bootstrap UCL					426				95% Percentile Bootstrap UCL			314.5
90% Chebyshev(Mean, Sd) UCL					333				95% Chebyshev(Mean, Sd) UCL			353
97.5% Chebyshev(Mean, Sd) UCL					380.7				99% Chebyshev(Mean, Sd) UCL			435.3
Suggested UCL to Use												
95% Student's-t UCL					313.6							
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.												
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
Manganese												
General Statistics												
Total Number of Observations					37				Number of Distinct Observations			17
Number of Detects					19				Number of Non-Detects			18
Number of Distinct Detects					16				Number of Distinct Non-Detects			1
Minimum Detect					0.108				Minimum Non-Detect			0.3
Maximum Detect					3.17				Maximum Non-Detect			0.3
Variance Detects					0.661				Percent Non-Detects			48.65%
Mean Detects					0.866				SD Detects			0.813
Median Detects					0.6				CV Detects			0.939
Skewness Detects					1.879				Kurtosis Detects			3.273
Mean of Logged Detects					-0.5				SD of Logged Detects			0.878
Normal GOF Test on Detects Only												
Shapiro Wilk Test Statistic					0.776		Shapiro Wilk GOF Test					
1% Shapiro Wilk Critical Value					0.863		Detected Data Not Normal at 1% Significance Level					
Lilliefors Test Statistic					0.22		Lilliefors GOF Test					

1326				1% Lilliefors Critical Value	0.229	Detected Data appear Normal at 1% Significance Level						
1327				Detected Data appear Approximate Normal at 1% Significance Level								
1328												
1329				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs								
1330				KM Mean	0.523	KM Standard Error of Mean	0.114					
1331				90KM SD	0.669	95% KM (BCA) UCL	0.722					
1332				95% KM (t) UCL	0.716	95% KM (Percentile Bootstrap) UCL	0.719					
1333				95% KM (z) UCL	0.711	95% KM Bootstrap t UCL	0.835					
1334				90% KM Chebyshev UCL	0.866	95% KM Chebyshev UCL	1.021					
1335				97.5% KM Chebyshev UCL	1.236	99% KM Chebyshev UCL	1.659					
1336												
1337				Gamma GOF Tests on Detected Observations Only								
1338				A-D Test Statistic	0.39	Anderson-Darling GOF Test						
1339				5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level						
1340				K-S Test Statistic	0.124	Kolmogorov-Smirnov GOF						
1341				5% K-S Critical Value	0.202	Detected data appear Gamma Distributed at 5% Significance Level						
1342				Detected data appear Gamma Distributed at 5% Significance Level								
1343												
1344				Gamma Statistics on Detected Data Only								
1345				k hat (MLE)	1.551	k star (bias corrected MLE)	1.341					
1346				Theta hat (MLE)	0.558	Theta star (bias corrected MLE)	0.646					
1347				nu hat (MLE)	58.93	nu star (bias corrected)	50.96					
1348				Mean (detects)	0.866							
1349												
1350				Gamma ROS Statistics using Imputed Non-Detects								
1351				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
1352				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)								
1353				For such situations, GROS method may yield incorrect values of UCLs and BTVs								
1354				This is especially true when the sample size is small.								
1355				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
1356				Minimum	0.01	Mean	0.464					
1357				Maximum	3.17	Median	0.17					
1358				SD	0.713	CV	1.536					
1359				k hat (MLE)	0.445	k star (bias corrected MLE)	0.427					
1360				Theta hat (MLE)	1.042	Theta star (bias corrected MLE)	1.086					
1361				nu hat (MLE)	32.93	nu star (bias corrected)	31.59					
1362				Adjusted Level of Significance (β)	0.0431							
1363				Approximate Chi Square Value (31.59, α)	19.75	Adjusted Chi Square Value (31.59, β)	19.34					
1364				95% Gamma Approximate UCL	0.742	95% Gamma Adjusted UCL	0.758					
1365												
1366				Estimates of Gamma Parameters using KM Estimates								
1367				Mean (KM)	0.523	SD (KM)	0.669					
1368				Variance (KM)	0.447	SE of Mean (KM)	0.114					
1369				k hat (KM)	0.613	k star (KM)	0.581					
1370				nu hat (KM)	45.34	nu star (KM)	43					
1371				theta hat (KM)	0.854	theta star (KM)	0.901					
1372				80% gamma percentile (KM)	0.863	90% gamma percentile (KM)	1.371					
1373				95% gamma percentile (KM)	1.905	99% gamma percentile (KM)	3.2					
1374												
1375				Gamma Kaplan-Meier (KM) Statistics								
1376				Approximate Chi Square Value (43.00, α)	28.96	Adjusted Chi Square Value (43.00, β)	28.46					
1377				95% KM Approximate Gamma UCL	0.777	95% KM Adjusted Gamma UCL	0.791					
1378												

1379					Lognormal GOF Test on Detected Observations Only							
1380				Shapiro Wilk Test Statistic	0.98		Shapiro Wilk GOF Test					
1381				10% Shapiro Wilk Critical Value	0.917		Detected Data appear Lognormal at 10% Significance Level					
1382				Lilliefors Test Statistic	0.115		Lilliefors GOF Test					
1383				10% Lilliefors Critical Value	0.18		Detected Data appear Lognormal at 10% Significance Level					
1384				Detected Data appear Lognormal at 10% Significance Level								
1385												
1386					Lognormal ROS Statistics Using Imputed Non-Detects							
1387				Mean in Original Scale	0.52				Mean in Log Scale	-1.25		
1388				SD in Original Scale	0.681				SD in Log Scale	1.098		
1389			95% t UCL (assumes normality of ROS data)		0.709				95% Percentile Bootstrap UCL	0.708		
1390				95% BCA Bootstrap UCL	0.752				95% Bootstrap t UCL	0.84		
1391				95% H-UCL (Log ROS)	0.828							
1392												
1393					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
1394				KM Mean (logged)	-1.169				KM Geo Mean	0.311		
1395				KM SD (logged)	0.947				95% Critical H Value (KM-Log)	2.329		
1396			KM Standard Error of Mean (logged)		0.188				95% H-UCL (KM -Log)	0.703		
1397				KM SD (logged)	0.947				95% Critical H Value (KM-Log)	2.329		
1398			KM Standard Error of Mean (logged)		0.188							
1399												
1400					DL/2 Statistics							
1401				DL/2 Normal					DL/2 Log-Transformed			
1402				Mean in Original Scale	0.518				Mean in Log Scale	-1.18		
1403				SD in Original Scale	0.68				SD in Log Scale	0.941		
1404				95% t UCL (Assumes normality)	0.706				95% H-Stat UCL	0.689		
1405				DL/2 is not a recommended method, provided for comparisons and historical reasons								
1406												
1407					Nonparametric Distribution Free UCL Statistics							
1408				Detected Data appear Approximate Normal Distributed at 1% Significance Level								
1409												
1410					Suggested UCL to Use							
1411				95% KM (t) UCL	0.716							
1412												
1413				When a data set follows an approximate distribution passing only one of the GOF tests,								
1414				it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL								
1415												
1416				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
1417				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
1418				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
1419												
1420	Mercury											
1421												
1422					General Statistics							
1423				Total Number of Observations	37				Number of Distinct Observations	34		
1424				Number of Detects	36				Number of Non-Detects	1		
1425				Number of Distinct Detects	33				Number of Distinct Non-Detects	1		
1426				Minimum Detect	0.0067				Minimum Non-Detect	0.001		
1427				Maximum Detect	0.34				Maximum Non-Detect	0.001		
1428				Variance Detects	0.00792				Percent Non-Detects	2.703%		
1429				Mean Detects	0.114				SD Detects	0.089		
1430				Median Detects	0.0785				CV Detects	0.778		
1431				Skewness Detects	0.901				Kurtosis Detects	-0.24		

			Mean of Logged Detects	-2.513					SD of Logged Detects	0.92	
				Normal GOF Test on Detects Only							
			Shapiro Wilk Test Statistic	0.879	Shapiro Wilk GOF Test						
			1% Shapiro Wilk Critical Value	0.912	Detected Data Not Normal at 1% Significance Level						
			Lilliefors Test Statistic	0.228	Lilliefors GOF Test						
			1% Lilliefors Critical Value	0.17	Detected Data Not Normal at 1% Significance Level						
				Detected Data Not Normal at 1% Significance Level							
				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
			KM Mean	0.111	KM Standard Error of Mean	0.0148					
			90KM SD	0.0885	95% KM (BCA) UCL	0.137					
			95% KM (t) UCL	0.136	95% KM (Percentile Bootstrap) UCL	0.137					
			95% KM (z) UCL	0.136	95% KM Bootstrap t UCL	0.139					
			90% KM Chebyshev UCL	0.156	95% KM Chebyshev UCL	0.176					
			97.5% KM Chebyshev UCL	0.204	99% KM Chebyshev UCL	0.258					
				Gamma GOF Tests on Detected Observations Only							
			A-D Test Statistic	0.554	Anderson-Darling GOF Test						
			5% A-D Critical Value	0.765	Detected data appear Gamma Distributed at 5% Significance Level						
			K-S Test Statistic	0.129	Kolmogorov-Smirnov GOF						
			5% K-S Critical Value	0.149	Detected data appear Gamma Distributed at 5% Significance Level						
				Detected data appear Gamma Distributed at 5% Significance Level							
				Gamma Statistics on Detected Data Only							
			k hat (MLE)	1.594	k star (bias corrected MLE)	1.48					
			Theta hat (MLE)	0.0718	Theta star (bias corrected MLE)	0.0773					
			nu hat (MLE)	114.8	nu star (bias corrected)	106.6					
			Mean (detects)	0.114							
				Gamma ROS Statistics using Imputed Non-Detects							
				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
				This is especially true when the sample size is small.							
				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
			Minimum	0.0067	Mean	0.112					
			Maximum	0.34	Median	0.078					
			SD	0.0894	CV	0.801					
			k hat (MLE)	1.471	k star (bias corrected MLE)	1.37					
			Theta hat (MLE)	0.0759	Theta star (bias corrected MLE)	0.0815					
			nu hat (MLE)	108.9	nu star (bias corrected)	101.4					
			Adjusted Level of Significance (β)	0.0431							
			Approximate Chi Square Value (101.37, α)	79.14	Adjusted Chi Square Value (101.37, β)	78.29					
			95% Gamma Approximate UCL	0.143	95% Gamma Adjusted UCL	0.145					
				Estimates of Gamma Parameters using KM Estimates							
			Mean (KM)	0.111	SD (KM)	0.0885					
			Variance (KM)	0.00783	SE of Mean (KM)	0.0148					
			k hat (KM)	1.583	k star (KM)	1.473					
			nu hat (KM)	117.2	nu star (KM)	109					
			theta hat (KM)	0.0703	theta star (KM)	0.0756					
			80% gamma percentile (KM)	0.173	90% gamma percentile (KM)	0.233					

95% gamma percentile (KM)					0.292				99% gamma percentile (KM)			0.425
Gamma Kaplan-Meier (KM) Statistics												
Approximate Chi Square Value (108.99, α)					85.89				Adjusted Chi Square Value (108.99, β)			85
95% KM Approximate Gamma UCL					0.141				95% KM Adjusted Gamma UCL			0.143
Lognormal GOF Test on Detected Observations Only												
Shapiro Wilk Test Statistic					0.952		Shapiro Wilk GOF Test					
10% Shapiro Wilk Critical Value					0.945		Detected Data appear Lognormal at 10% Significance Level					
Lilliefors Test Statistic					0.123		Lilliefors GOF Test					
10% Lilliefors Critical Value					0.134		Detected Data appear Lognormal at 10% Significance Level					
Detected Data appear Lognormal at 10% Significance Level												
Lognormal ROS Statistics Using Imputed Non-Detects												
Mean in Original Scale					0.112				Mean in Log Scale			-2.575
SD in Original Scale					0.0895				SD in Log Scale			0.982
95% t UCL (assumes normality of ROS data)					0.136				95% Percentile Bootstrap UCL			0.135
95% BCA Bootstrap UCL					0.136				95% Bootstrap t UCL			0.139
95% H-UCL (Log ROS)					0.182							
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
KM Mean (logged)					-2.632				KM Geo Mean			0.0719
KM SD (logged)					1.144				95% Critical H Value (KM-Log)			2.558
KM Standard Error of Mean (logged)					0.191				95% H-UCL (KM -Log)			0.225
KM SD (logged)					1.144				95% Critical H Value (KM-Log)			2.558
KM Standard Error of Mean (logged)					0.191							
DL/2 Statistics												
DL/2 Normal							DL/2 Log-Transformed					
Mean in Original Scale					0.111				Mean in Log Scale			-2.651
SD in Original Scale					0.0898				SD in Log Scale			1.234
95% t UCL (Assumes normality)					0.136				95% H-Stat UCL			0.262
DL/2 is not a recommended method, provided for comparisons and historical reasons												
Nonparametric Distribution Free UCL Statistics												
Detected Data appear Gamma Distributed at 5% Significance Level												
Suggested UCL to Use												
95% KM Adjusted Gamma UCL					0.143				95% GROS Adjusted Gamma UCL			0.145
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.												
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
Molybdenum												
General Statistics												
Total Number of Observations					37				Number of Distinct Observations			7
Number of Detects					5				Number of Non-Detects			32
Number of Distinct Detects					5				Number of Distinct Non-Detects			2
Minimum Detect					0.0052				Minimum Non-Detect			0.004
Maximum Detect					0.031				Maximum Non-Detect			0.05
Variance Detects					1.2437E-4				Percent Non-Detects			86.49%

				Mean Detects	0.0141				SD Detects	0.0112	
				Median Detects	0.0073				CV Detects	0.79	
				Skewness Detects	1.092				Kurtosis Detects	-0.441	
				Mean of Logged Detects	-4.504				SD of Logged Detects	0.77	
				Normal GOF Test on Detects Only							
				Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test					
				1% Shapiro Wilk Critical Value	0.686	Detected Data appear Normal at 1% Significance Level					
				Lilliefors Test Statistic	0.33	Lilliefors GOF Test					
				1% Lilliefors Critical Value	0.396	Detected Data appear Normal at 1% Significance Level					
				Detected Data appear Normal at 1% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
				KM Mean	0.0103	KM Standard Error of Mean	0.00367				
				90KM SD	0.00928	95% KM (BCA) UCL	0.0169				
				95% KM (t) UCL	0.0165	95% KM (Percentile Bootstrap) UCL	0.0167				
				95% KM (z) UCL	0.0164	95% KM Bootstrap t UCL	0.038				
				90% KM Chebyshev UCL	0.0213	95% KM Chebyshev UCL	0.0263				
				97.5% KM Chebyshev UCL	0.0332	99% KM Chebyshev UCL	0.0468				
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				Gamma GOF Tests on Detected Observations Only							
				A-D Test Statistic	0.492	Anderson-Darling GOF Test					
				5% A-D Critical Value	0.684	Detected data appear Gamma Distributed at 5% Significance Level					
				K-S Test Statistic	0.341	Kolmogorov-Smirnov GOF					
				5% K-S Critical Value	0.36	Detected data appear Gamma Distributed at 5% Significance Level					
				Detected data appear Gamma Distributed at 5% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Gamma Statistics on Detected Data Only							
				k hat (MLE)	2.2	k star (bias corrected MLE)	1.013				
				Theta hat (MLE)	0.00642	Theta star (bias corrected MLE)	0.0139				
				nu hat (MLE)	22	nu star (bias corrected)	10.13				
				Mean (detects)	0.0141						
				Gamma ROS Statistics using Imputed Non-Detects							
				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
				This is especially true when the sample size is small.							
				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
				Minimum	0.0052	Mean	0.0143				
				Maximum	0.0469	Median	0.01				
				SD	0.00913	CV	0.638				
				k hat (MLE)	3.834	k star (bias corrected MLE)	3.541				
				Theta hat (MLE)	0.00373	Theta star (bias corrected MLE)	0.00404				
				nu hat (MLE)	283.7	nu star (bias corrected)	262.1				
				Adjusted Level of Significance (β)	0.0431						
				Approximate Chi Square Value (262.05, α)	225.6	Adjusted Chi Square Value (262.05, β)	224.1				
				95% Gamma Approximate UCL	0.0166	95% Gamma Adjusted UCL	0.0167				
				Estimates of Gamma Parameters using KM Estimates							

				Mean (KM)	0.0103					SD (KM)	0.00928
				Variance (KM)	8.6187E-5					SE of Mean (KM)	0.00367
				k hat (KM)	1.237					k star (KM)	1.155
				nu hat (KM)	91.53					nu star (KM)	85.44
				theta hat (KM)	0.00835					theta star (KM)	0.00894
				80% gamma percentile (KM)	0.0164					90% gamma percentile (KM)	0.0229
				95% gamma percentile (KM)	0.0294					99% gamma percentile (KM)	0.0443
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (85.44, α)	65.14					Adjusted Chi Square Value (85.44, β)	64.37
				95% KM Approximate Gamma UCL	0.0135					95% KM Adjusted Gamma UCL	0.0137
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.876					Shapiro Wilk GOF Test	
				10% Shapiro Wilk Critical Value	0.806					Detected Data appear Lognormal at 10% Significance Level	
				Lilliefors Test Statistic	0.305					Lilliefors GOF Test	
				10% Lilliefors Critical Value	0.319					Detected Data appear Lognormal at 10% Significance Level	
				Detected Data appear Lognormal at 10% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.0107					Mean in Log Scale	-5.293
				SD in Original Scale	0.0145					SD in Log Scale	1.297
				95% t UCL (assumes normality of ROS data)	0.0147					95% Percentile Bootstrap UCL	0.0148
				95% BCA Bootstrap UCL	0.0155					95% Bootstrap t UCL	0.0169
				95% H-UCL (Log ROS)	0.0211						
				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
				KM Mean (logged)	-4.886					KM Geo Mean	0.00755
				KM SD (logged)	0.734					95% Critical H Value (KM-Log)	2.111
				KM Standard Error of Mean (logged)	0.29					95% H-UCL (KM -Log)	0.0128
				KM SD (logged)	0.734					95% Critical H Value (KM-Log)	2.111
				KM Standard Error of Mean (logged)	0.29						
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				DL/2 Statistics							
				DL/2 Normal						DL/2 Log-Transformed	
				Mean in Original Scale	0.0217					Mean in Log Scale	-4.004
				SD in Original Scale	0.00793					SD in Log Scale	0.767
				95% t UCL (Assumes normality)	0.0239					95% H-Stat UCL	0.0322
				DL/2 is not a recommended method, provided for comparisons and historical reasons							
				Nonparametric Distribution Free UCL Statistics							
				Detected Data appear Normal Distributed at 1% Significance Level							
				Suggested UCL to Use							
				95% KM (t) UCL	0.0165						
				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							

Nickel

General Statistics

Total Number of Observations	37	Number of Distinct Observations	9
Number of Detects	7	Number of Non-Detects	30
Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	0.015	Minimum Non-Detect	0.01
Maximum Detect	0.107	Maximum Non-Detect	0.05
Variance Detects	0.0015	Percent Non-Detects	81.08%
Mean Detects	0.0511	SD Detects	0.0387
Median Detects	0.032	CV Detects	0.757
Skewness Detects	0.745	Kurtosis Detects	-1.473
Mean of Logged Detects	-3.237	SD of Logged Detects	0.796

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.841	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.73	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.261	Lilliefors GOF Test
1% Lilliefors Critical Value	0.35	Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0231	KM Standard Error of Mean	0.00473
90KM SD	0.0219	95% KM (BCA) UCL	0.0313
95% KM (t) UCL	0.0311	95% KM (Percentile Bootstrap) UCL	0.0312
95% KM (z) UCL	0.0309	95% KM Bootstrap t UCL	0.0315
90% KM Chebyshev UCL	0.0373	95% KM Chebyshev UCL	0.0437
97.5% KM Chebyshev UCL	0.0526	99% KM Chebyshev UCL	0.0702

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.407	Anderson-Darling GOF Test
5% A-D Critical Value	0.715	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.219	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.315	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Note GOF tests may be unreliable for small sample sizes

Gamma Statistics on Detected Data Only

k hat (MLE)	2.045	k star (bias corrected MLE)	1.264
Theta hat (MLE)	0.025	Theta star (bias corrected MLE)	0.0405
nu hat (MLE)	28.63	nu star (bias corrected)	17.69
Mean (detects)	0.0511		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0239
Maximum	0.107	Median	0.01
SD	0.0238	CV	0.994

				k hat (MLE)	1.757			k star (bias corrected MLE)			1.632
				Theta hat (MLE)	0.0136			Theta star (bias corrected MLE)			0.0147
				nu hat (MLE)	130			nu star (bias corrected)			120.8
				Adjusted Level of Significance (β)	0.0431						
				Approximate Chi Square Value (120.80, α)	96.42			Adjusted Chi Square Value (120.80, β)			95.47
				95% Gamma Approximate UCL	0.03			95% Gamma Adjusted UCL			0.0303
				Estimates of Gamma Parameters using KM Estimates							
				Mean (KM)	0.0231			SD (KM)			0.0219
				Variance (KM)	4.7799E-4			SE of Mean (KM)			0.00473
				k hat (KM)	1.116			k star (KM)			1.044
				nu hat (KM)	82.61			nu star (KM)			77.25
				theta hat (KM)	0.0207			theta star (KM)			0.0221
				80% gamma percentile (KM)	0.037			90% gamma percentile (KM)			0.0526
				95% gamma percentile (KM)	0.0682			99% gamma percentile (KM)			0.104
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (77.25, α)	58			Adjusted Chi Square Value (77.25, β)			57.28
				95% KM Approximate Gamma UCL	0.0308			95% KM Adjusted Gamma UCL			0.0312
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.911			Shapiro Wilk GOF Test			
				10% Shapiro Wilk Critical Value	0.838			Detected Data appear Lognormal at 10% Significance Level			
				Lilliefors Test Statistic	0.173			Lilliefors GOF Test			
				10% Lilliefors Critical Value	0.28			Detected Data appear Lognormal at 10% Significance Level			
				Detected Data appear Lognormal at 10% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.0221			Mean in Log Scale			-4.236
				SD in Original Scale	0.0238			SD in Log Scale			0.93
				95% t UCL (assumes normality of ROS data)	0.0287			95% Percentile Bootstrap UCL			0.0285
				95% BCA Bootstrap UCL	0.0302			95% Bootstrap t UCL			0.0328
				95% H-UCL (Log ROS)	0.0319						
				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
				KM Mean (logged)	-4.022			KM Geo Mean			0.0179
				KM SD (logged)	0.637			95% Critical H Value (KM-Log)			2.023
				KM Standard Error of Mean (logged)	0.187			95% H-UCL (KM -Log)			0.0272
				KM SD (logged)	0.637			95% Critical H Value (KM-Log)			2.023
				KM Standard Error of Mean (logged)	0.187						
				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended							
				DL/2 Statistics							
				DL/2 Normal				DL/2 Log-Transformed			
				Mean in Original Scale	0.0283			Mean in Log Scale			-3.734
				SD in Original Scale	0.0201			SD in Log Scale			0.599
				95% t UCL (Assumes normality)	0.0339			95% H-Stat UCL			0.0349
				DL/2 is not a recommended method, provided for comparisons and historical reasons							
				Nonparametric Distribution Free UCL Statistics							
				Detected Data appear Normal Distributed at 1% Significance Level							

1750					Suggested UCL to Use						
1751				95% KM (t) UCL	0.0311						
1752											
1753	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
1754	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.										
1755	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
1756											
1757											
1758	Phosphorous										
1759											
1760					General Statistics						
1761			Total Number of Observations	37				Number of Distinct Observations	23		
1762								Number of Missing Observations	0		
1763			Minimum	1900				Mean	2654		
1764			Maximum	6330				Median	2300		
1765			SD	1048				Std. Error of Mean	172.2		
1766			Coefficient of Variation	0.395				Skewness	2.409		
1767											
1768					Normal GOF Test						
1769			Shapiro Wilk Test Statistic	0.682			Shapiro Wilk GOF Test				
1770			1% Shapiro Wilk Critical Value	0.814			Data Not Normal at 1% Significance Level				
1771			Lilliefors Test Statistic	0.236			Lilliefors GOF Test				
1772			1% Lilliefors Critical Value	0.168			Data Not Normal at 1% Significance Level				
1773					Data Not Normal at 1% Significance Level						
1774											
1775					Assuming Normal Distribution						
1776			95% Normal UCL				95% UCLs (Adjusted for Skewness)				
1777			95% Student's-t UCL	2944			95% Adjusted-CLT UCL (Chen-1995)		3010		
1778							95% Modified-t UCL (Johnson-1978)		2956		
1779											
1780					Gamma GOF Test						
1781			A-D Test Statistic	2.818			Anderson-Darling Gamma GOF Test				
1782			5% A-D Critical Value	0.748			Data Not Gamma Distributed at 5% Significance Level				
1783			K-S Test Statistic	0.205			Kolmogorov-Smirnov Gamma GOF Test				
1784			5% K-S Critical Value	0.145			Data Not Gamma Distributed at 5% Significance Level				
1785					Data Not Gamma Distributed at 5% Significance Level						
1786											
1787					Gamma Statistics						
1788			k hat (MLE)	9.536			k star (bias corrected MLE)		8.781		
1789			Theta hat (MLE)	278.3			Theta star (bias corrected MLE)		302.2		
1790			nu hat (MLE)	705.7			nu star (bias corrected)		649.8		
1791			MLE Mean (bias corrected)	2654			MLE Sd (bias corrected)		895.5		
1792							Approximate Chi Square Value (0.05)		591.6		
1793			Adjusted Level of Significance	0.0431			Adjusted Chi Square Value		589.2		
1794											
1795					Assuming Gamma Distribution						
1796			95% Approximate Gamma UCL	2914			95% Adjusted Gamma UCL		2926		
1797											
1798					Lognormal GOF Test						
1799			Shapiro Wilk Test Statistic	0.803			Shapiro Wilk Lognormal GOF Test				
1800			10% Shapiro Wilk Critical Value	0.946			Data Not Lognormal at 10% Significance Level				
1801			Lilliefors Test Statistic	0.184			Lilliefors Lognormal GOF Test				
1802			10% Lilliefors Critical Value	0.132			Data Not Lognormal at 10% Significance Level				

	A	B	C	D	E	F	G	H	I	J	K	L
1803					Data Not Lognormal at 10% Significance Level							
1804												
1805						Lognormal Statistics						
1806					Minimum of Logged Data	7.55				Mean of logged Data		7.83
1807					Maximum of Logged Data	8.753				SD of logged Data		0.305
1808												
1809						Assuming Lognormal Distribution						
1810					95% H-UCL	2886				90% Chebyshev (MVUE) UCL		3035
1811					95% Chebyshev (MVUE) UCL	3218				97.5% Chebyshev (MVUE) UCL		3472
1812					99% Chebyshev (MVUE) UCL	3970						
1813												
1814						Nonparametric Distribution Free UCL Statistics						
1815						Data do not follow a Discernible Distribution						
1816												
1817						Nonparametric Distribution Free UCLs						
1818					95% CLT UCL	2937				95% BCA Bootstrap UCL		3008
1819					95% Standard Bootstrap UCL	2930				95% Bootstrap-t UCL		3065
1820					95% Hall's Bootstrap UCL	3060				95% Percentile Bootstrap UCL		2972
1821					90% Chebyshev(Mean, Sd) UCL	3170				95% Chebyshev(Mean, Sd) UCL		3404
1822					97.5% Chebyshev(Mean, Sd) UCL	3729				99% Chebyshev(Mean, Sd) UCL		4367
1823												
1824						Suggested UCL to Use						
1825					95% Student's-t UCL	2944						
1826												
1827						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
1828						Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
1829						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
1830												
1831												
1832	Potassium											
1833												
1834						General Statistics						
1835					Total Number of Observations	37				Number of Distinct Observations		20
1836										Number of Missing Observations		0
1837					Minimum	1700				Mean		3879
1838					Maximum	13700				Median		3700
1839					SD	1824				Std. Error of Mean		299.9
1840					Coefficient of Variation	0.47				Skewness		4.639
1841												
1842						Normal GOF Test						
1843					Shapiro Wilk Test Statistic	0.474			Shapiro Wilk GOF Test			
1844					1% Shapiro Wilk Critical Value	0.814			Data Not Normal at 1% Significance Level			
1845					Lilliefors Test Statistic	0.371			Lilliefors GOF Test			
1846					1% Lilliefors Critical Value	0.168			Data Not Normal at 1% Significance Level			
1847						Data Not Normal at 1% Significance Level						
1848												
1849						Assuming Normal Distribution						
1850					95% Normal UCL				95% UCLs (Adjusted for Skewness)			
1851					95% Student's-t UCL	4385				95% Adjusted-CLT UCL (Chen-1995)		4617
1852										95% Modified-t UCL (Johnson-1978)		4424
1853												
1854						Gamma GOF Test						
1855					A-D Test Statistic	4.581			Anderson-Darling Gamma GOF Test			

1856				5% A-D Critical Value		0.749	Data Not Gamma Distributed at 5% Significance Level					
1857				K-S Test Statistic		0.309	Kolmogorov-Smirnov Gamma GOF Test					
1858				5% K-S Critical Value		0.145	Data Not Gamma Distributed at 5% Significance Level					
1859				Data Not Gamma Distributed at 5% Significance Level								
1860												
1861				Gamma Statistics								
1862				k hat (MLE)		8.965			k star (bias corrected MLE)		8.256	
1863				Theta hat (MLE)		432.7			Theta star (bias corrected MLE)		469.9	
1864				nu hat (MLE)		663.4			nu star (bias corrected)		611	
1865				MLE Mean (bias corrected)		3879			MLE Sd (bias corrected)		1350	
1866									Approximate Chi Square Value (0.05)		554.6	
1867				Adjusted Level of Significance		0.0431			Adjusted Chi Square Value		552.3	
1868												
1869				Assuming Gamma Distribution								
1870				95% Approximate Gamma UCL		4273			95% Adjusted Gamma UCL		4291	
1871												
1872				Lognormal GOF Test								
1873				Shapiro Wilk Test Statistic		0.724	Shapiro Wilk Lognormal GOF Test					
1874				10% Shapiro Wilk Critical Value		0.946	Data Not Lognormal at 10% Significance Level					
1875				Lilliefors Test Statistic		0.274	Lilliefors Lognormal GOF Test					
1876				10% Lilliefors Critical Value		0.132	Data Not Lognormal at 10% Significance Level					
1877				Data Not Lognormal at 10% Significance Level								
1878												
1879				Lognormal Statistics								
1880				Minimum of Logged Data		7.438			Mean of logged Data		8.207	
1881				Maximum of Logged Data		9.525			SD of logged Data		0.302	
1882												
1883				Assuming Lognormal Distribution								
1884				95% H-UCL		4197			90% Chebyshev (MVUE) UCL		4412	
1885				95% Chebyshev (MVUE) UCL		4675			97.5% Chebyshev (MVUE) UCL		5040	
1886				99% Chebyshev (MVUE) UCL		5757						
1887												
1888				Nonparametric Distribution Free UCL Statistics								
1889				Data do not follow a Discernible Distribution								
1890												
1891				Nonparametric Distribution Free UCLs								
1892				95% CLT UCL		4372			95% BCA Bootstrap UCL		4707	
1893				95% Standard Bootstrap UCL		4370			95% Bootstrap-t UCL		5330	
1894				95% Hall's Bootstrap UCL		6997			95% Percentile Bootstrap UCL		4430	
1895				90% Chebyshev(Mean, Sd) UCL		4779			95% Chebyshev(Mean, Sd) UCL		5186	
1896				97.5% Chebyshev(Mean, Sd) UCL		5752			99% Chebyshev(Mean, Sd) UCL		6863	
1897												
1898				Suggested UCL to Use								
1899				95% Student's-t UCL		4385						
1900												
1901	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
1902	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
1903	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
1904												
1905												
1906	Selenium											
1907												
1908	General Statistics											

Total Number of Observations					37			Number of Distinct Observations			14
								Number of Missing Observations			0
				Minimum	0.12					Mean	0.18
				Maximum	0.591					Median	0.15
				SD	0.103					Std. Error of Mean	0.0169
				Coefficient of Variation	0.573					Skewness	3.286
Normal GOF Test											
				Shapiro Wilk Test Statistic	0.519			Shapiro Wilk GOF Test			
				1% Shapiro Wilk Critical Value	0.814			Data Not Normal at 1% Significance Level			
				Lilliefors Test Statistic	0.348			Lilliefors GOF Test			
				1% Lilliefors Critical Value	0.168			Data Not Normal at 1% Significance Level			
Data Not Normal at 1% Significance Level											
Assuming Normal Distribution											
				95% Normal UCL				95% UCLs (Adjusted for Skewness)			
				95% Student's-t UCL	0.208			95% Adjusted-CLT UCL (Chen-1995)			0.217
								95% Modified-t UCL (Johnson-1978)			0.21
Gamma GOF Test											
				A-D Test Statistic	4.712			Anderson-Darling Gamma GOF Test			
				5% A-D Critical Value	0.75			Data Not Gamma Distributed at 5% Significance Level			
				K-S Test Statistic	0.309			Kolmogorov-Smirnov Gamma GOF Test			
				5% K-S Critical Value	0.145			Data Not Gamma Distributed at 5% Significance Level			
Data Not Gamma Distributed at 5% Significance Level											
Gamma Statistics											
				k hat (MLE)	5.925			k star (bias corrected MLE)			5.462
				Theta hat (MLE)	0.0303			Theta star (bias corrected MLE)			0.0329
				nu hat (MLE)	438.4			nu star (bias corrected)			404.2
				MLE Mean (bias corrected)	0.18			MLE Sd (bias corrected)			0.0769
								Approximate Chi Square Value (0.05)			358.6
				Adjusted Level of Significance	0.0431			Adjusted Chi Square Value			356.8
Assuming Gamma Distribution											
				95% Approximate Gamma UCL	0.203			95% Adjusted Gamma UCL			0.204
Lognormal GOF Test											
				Shapiro Wilk Test Statistic	0.698			Shapiro Wilk Lognormal GOF Test			
				10% Shapiro Wilk Critical Value	0.946			Data Not Lognormal at 10% Significance Level			
				Lilliefors Test Statistic	0.277			Lilliefors Lognormal GOF Test			
				10% Lilliefors Critical Value	0.132			Data Not Lognormal at 10% Significance Level			
Data Not Lognormal at 10% Significance Level											
Lognormal Statistics											
				Minimum of Logged Data	-2.12					Mean of logged Data	-1.803
				Maximum of Logged Data	-0.526					SD of logged Data	0.365
Assuming Lognormal Distribution											
				95% H-UCL	0.197			90% Chebyshev (MVUE) UCL			0.208
				95% Chebyshev (MVUE) UCL	0.223			97.5% Chebyshev (MVUE) UCL			0.243
				99% Chebyshev (MVUE) UCL	0.284						

1962				Nonparametric Distribution Free UCL Statistics							
1963				Data do not follow a Discernible Distribution							
1964											
1965				Nonparametric Distribution Free UCLs							
1966				95% CLT UCL	0.207			95% BCA Bootstrap UCL	0.217		
1967				95% Standard Bootstrap UCL	0.207			95% Bootstrap-t UCL	0.251		
1968				95% Hall's Bootstrap UCL	0.304			95% Percentile Bootstrap UCL	0.209		
1969				90% Chebyshev(Mean, Sd) UCL	0.23			95% Chebyshev(Mean, Sd) UCL	0.253		
1970				97.5% Chebyshev(Mean, Sd) UCL	0.285			99% Chebyshev(Mean, Sd) UCL	0.348		
1971											
1972				Suggested UCL to Use							
1973				95% Student's-t UCL	0.208						
1974											
1975				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
1976				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
1977				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
1978											
1979	Silver										
1980											
1981					General Statistics						
1982				Total Number of Observations	37			Number of Distinct Observations	6		
1983				Number of Detects	4			Number of Non-Detects	33		
1984				Number of Distinct Detects	4			Number of Distinct Non-Detects	2		
1985				Minimum Detect	0.0015			Minimum Non-Detect	0.001		
1986				Maximum Detect	0.0038			Maximum Non-Detect	0.05		
1987				Variance Detects	1.6167E-6			Percent Non-Detects	89.19%		
1988				Mean Detects	0.00265			SD Detects	0.00127		
1989				Median Detects	0.00265			CV Detects	0.48		
1990				Skewness Detects	2.683E-16			Kurtosis Detects	-5.938		
1991				Mean of Logged Detects	-6.028			SD of Logged Detects	0.511		
1992											
1993					Normal GOF Test on Detects Only						
1994				Shapiro Wilk Test Statistic	0.77			Shapiro Wilk GOF Test			
1995				1% Shapiro Wilk Critical Value	0.687			Detected Data appear Normal at 1% Significance Level			
1996				Lilliefors Test Statistic	0.296			Lilliefors GOF Test			
1997				1% Lilliefors Critical Value	0.413			Detected Data appear Normal at 1% Significance Level			
1998				Detected Data appear Normal at 1% Significance Level							
1999				Note GOF tests may be unreliable for small sample sizes							
2000											
2001				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
2002				KM Mean	0.00183			KM Standard Error of Mean	4.6312E-4		
2003				90KM SD	0.00113			95% KM (BCA) UCL	N/A		
2004				95% KM (t) UCL	0.00261			95% KM (Percentile Bootstrap) UCL	N/A		
2005				95% KM (z) UCL	0.00259			95% KM Bootstrap t UCL	N/A		
2006				90% KM Chebyshev UCL	0.00321			95% KM Chebyshev UCL	0.00384		
2007				97.5% KM Chebyshev UCL	0.00472			99% KM Chebyshev UCL	0.00643		
2008											
2009					Gamma GOF Tests on Detected Observations Only						
2010				A-D Test Statistic	0.633			Anderson-Darling GOF Test			
2011				5% A-D Critical Value	0.659			Detected data appear Gamma Distributed at 5% Significance Level			
2012				K-S Test Statistic	0.332			Kolmogorov-Smirnov GOF			
2013				5% K-S Critical Value	0.396			Detected data appear Gamma Distributed at 5% Significance Level			
2014				Detected data appear Gamma Distributed at 5% Significance Level							

					Note GOF tests may be unreliable for small sample sizes						
					Gamma Statistics on Detected Data Only						
					k hat (MLE)	5.432			k star (bias corrected MLE)	1.525	
					Theta hat (MLE)	4.8784E-4			Theta star (bias corrected MLE)	0.00174	
					nu hat (MLE)	43.46			nu star (bias corrected)	12.2	
					Mean (detects)	0.00265					
					Gamma ROS Statistics using Imputed Non-Detects						
					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs						
					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)						
					For such situations, GROS method may yield incorrect values of UCLs and BTVs						
					This is especially true when the sample size is small.						
					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates						
					Minimum	0.0015			Mean	0.00921	
					Maximum	0.01			Median	0.01	
					SD	0.00234			CV	0.254	
					k hat (MLE)	7.202			k star (bias corrected MLE)	6.636	
					Theta hat (MLE)	0.00128			Theta star (bias corrected MLE)	0.00139	
					nu hat (MLE)	532.9			nu star (bias corrected)	491.1	
					Adjusted Level of Significance (β)	0.0431					
					Approximate Chi Square Value (491.05, α)	440.7			Adjusted Chi Square Value (491.05, β)	438.6	
					95% Gamma Approximate UCL	0.0103			95% Gamma Adjusted UCL	N/A	
					Estimates of Gamma Parameters using KM Estimates						
					Mean (KM)	0.00183			SD (KM)	0.00113	
					Variance (KM)	1.2869E-6			SE of Mean (KM)	4.6312E-4	
					k hat (KM)	2.588			k star (KM)	2.396	
					nu hat (KM)	191.5			nu star (KM)	177.3	
					theta hat (KM)	7.0514E-4			theta star (KM)	7.6159E-4	
					80% gamma percentile (KM)	0.00267			90% gamma percentile (KM)	0.0034	
					95% gamma percentile (KM)	0.00409			99% gamma percentile (KM)	0.0056	
					Gamma Kaplan-Meier (KM) Statistics						
					Approximate Chi Square Value (177.33, α)	147.5			Adjusted Chi Square Value (177.33, β)	146.4	
					95% KM Approximate Gamma UCL	0.00219			95% KM Adjusted Gamma UCL	0.00221	
					Lognormal GOF Test on Detected Observations Only						
					Shapiro Wilk Test Statistic	0.775			Shapiro Wilk GOF Test		
					10% Shapiro Wilk Critical Value	0.792			Detected Data Not Lognormal at 10% Significance Level		
					Lilliefors Test Statistic	0.299			Lilliefors GOF Test		
					10% Lilliefors Critical Value	0.346			Detected Data appear Lognormal at 10% Significance Level		
					Detected Data appear Approximate Lognormal at 10% Significance Level						
					Note GOF tests may be unreliable for small sample sizes						
					Lognormal ROS Statistics Using Imputed Non-Detects						
					Mean in Original Scale	0.0017			Mean in Log Scale	-6.782	
					SD in Original Scale	0.00163			SD in Log Scale	0.933	
					95% t UCL (assumes normality of ROS data)	0.00215			95% Percentile Bootstrap UCL	0.00216	
					95% BCA Bootstrap UCL	0.00221			95% Bootstrap t UCL	0.0023	
					95% H-UCL (Log ROS)	0.00251					
					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						

2068				KM Mean (logged)	-6.468					KM Geo Mean		0.00155
2069				KM SD (logged)	0.54					95% Critical H Value (KM-Log)		1.943
2070				KM Standard Error of Mean (logged)	0.22					95% H-UCL (KM -Log)		0.00214
2071				KM SD (logged)	0.54					95% Critical H Value (KM-Log)		1.943
2072				KM Standard Error of Mean (logged)	0.22							
2073				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended								
2074												
2075				DL/2 Statistics								
2076				DL/2 Normal						DL/2 Log-Transformed		
2077				Mean in Original Scale	0.0199					Mean in Log Scale		-4.365
2078				SD in Original Scale	0.0098					SD in Log Scale		1.364
2079				95% t UCL (Assumes normality)	0.0227					95% H-Stat UCL		0.0615
2080				DL/2 is not a recommended method, provided for comparisons and historical reasons								
2081												
2082				Nonparametric Distribution Free UCL Statistics								
2083				Detected Data appear Normal Distributed at 1% Significance Level								
2084												
2085				Suggested UCL to Use								
2086				95% KM (t) UCL	0.00261							
2087												
2088				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
2089				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
2090				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
2091												
2092												
2093	Sodium											
2094												
2095				General Statistics								
2096				Total Number of Observations	37					Number of Distinct Observations		24
2097										Number of Missing Observations		0
2098				Minimum	275					Mean		551.6
2099				Maximum	1740					Median		500
2100				SD	242.4					Std. Error of Mean		39.85
2101				Coefficient of Variation	0.439					Skewness		3.606
2102												
2103				Normal GOF Test								
2104				Shapiro Wilk Test Statistic	0.631					Shapiro Wilk GOF Test		
2105				1% Shapiro Wilk Critical Value	0.814					Data Not Normal at 1% Significance Level		
2106				Lilliefors Test Statistic	0.329					Lilliefors GOF Test		
2107				1% Lilliefors Critical Value	0.168					Data Not Normal at 1% Significance Level		
2108				Data Not Normal at 1% Significance Level								
2109												
2110				Assuming Normal Distribution								
2111				95% Normal UCL						95% UCLs (Adjusted for Skewness)		
2112				95% Student's-t UCL	618.9					95% Adjusted-CLT UCL (Chen-1995)		642.4
2113										95% Modified-t UCL (Johnson-1978)		622.8
2114												
2115				Gamma GOF Test								
2116				A-D Test Statistic	2.43					Anderson-Darling Gamma GOF Test		
2117				5% A-D Critical Value	0.749					Data Not Gamma Distributed at 5% Significance Level		
2118				K-S Test Statistic	0.269					Kolmogorov-Smirnov Gamma GOF Test		
2119				5% K-S Critical Value	0.145					Data Not Gamma Distributed at 5% Significance Level		
2120				Data Not Gamma Distributed at 5% Significance Level								

					Gamma Statistics						
				k hat (MLE)	8.629			k star (bias corrected MLE)	7.947		
				Theta hat (MLE)	63.93			Theta star (bias corrected MLE)	69.41		
				nu hat (MLE)	638.5			nu star (bias corrected)	588.1		
				MLE Mean (bias corrected)	551.6			MLE Sd (bias corrected)	195.7		
								Approximate Chi Square Value (0.05)	532.8		
				Adjusted Level of Significance	0.0431			Adjusted Chi Square Value	530.6		
					Assuming Gamma Distribution						
				95% Approximate Gamma UCL	608.8			95% Adjusted Gamma UCL	611.4		
					Lognormal GOF Test						
				Shapiro Wilk Test Statistic	0.859			Shapiro Wilk Lognormal GOF Test			
				10% Shapiro Wilk Critical Value	0.946			Data Not Lognormal at 10% Significance Level			
				Lilliefors Test Statistic	0.238			Lilliefors Lognormal GOF Test			
				10% Lilliefors Critical Value	0.132			Data Not Lognormal at 10% Significance Level			
					Data Not Lognormal at 10% Significance Level						
					Lognormal Statistics						
				Minimum of Logged Data	5.617			Mean of logged Data	6.254		
				Maximum of Logged Data	7.462			SD of logged Data	0.32		
					Assuming Lognormal Distribution						
				95% H-UCL	602.2			90% Chebyshev (MVUE) UCL	634.4		
				95% Chebyshev (MVUE) UCL	674.2			97.5% Chebyshev (MVUE) UCL	729.5		
				99% Chebyshev (MVUE) UCL	838.1						
					Nonparametric Distribution Free UCL Statistics						
					Data do not follow a Discernible Distribution						
					Nonparametric Distribution Free UCLs						
				95% CLT UCL	617.1			95% BCA Bootstrap UCL	653.6		
				95% Standard Bootstrap UCL	617.3			95% Bootstrap-t UCL	679.9		
				95% Hall's Bootstrap UCL	942.2			95% Percentile Bootstrap UCL	621.1		
				90% Chebyshev(Mean, Sd) UCL	671.1			95% Chebyshev(Mean, Sd) UCL	725.3		
				97.5% Chebyshev(Mean, Sd) UCL	800.4			99% Chebyshev(Mean, Sd) UCL	948		
					Suggested UCL to Use						
				95% Student's-t UCL	618.9						
					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
					Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
Strontium											
					General Statistics						
				Total Number of Observations	37			Number of Distinct Observations	11		
				Number of Detects	11			Number of Non-Detects	26		
				Number of Distinct Detects	11			Number of Distinct Non-Detects	1		
				Minimum Detect	0.035			Minimum Non-Detect	0.5		
				Maximum Detect	3.1			Maximum Non-Detect	0.5		

2174				Variance Detects	1.01					Percent Non-Detects	70.27%	
2175				Mean Detects	0.686					SD Detects	1.005	
2176				Median Detects	0.384					CV Detects	1.465	
2177				Skewness Detects	1.982					Kurtosis Detects	3.001	
2178				Mean of Logged Detects	-1.275					SD of Logged Detects	1.455	
2179												
2180					Normal GOF Test on Detects Only							
2181				Shapiro Wilk Test Statistic	0.657			Shapiro Wilk GOF Test				
2182				1% Shapiro Wilk Critical Value	0.792			Detected Data Not Normal at 1% Significance Level				
2183				Lilliefors Test Statistic	0.392			Lilliefors GOF Test				
2184				1% Lilliefors Critical Value	0.291			Detected Data Not Normal at 1% Significance Level				
2185					Detected Data Not Normal at 1% Significance Level							
2186												
2187					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
2188				KM Mean	0.357			KM Standard Error of Mean	0.11			
2189				90KM SD	0.579			95% KM (BCA) UCL	0.534			
2190				95% KM (t) UCL	0.543			95% KM (Percentile Bootstrap) UCL	0.531			
2191				95% KM (z) UCL	0.538			95% KM Bootstrap t UCL	0.667			
2192				90% KM Chebyshev UCL	0.687			95% KM Chebyshev UCL	0.837			
2193				97.5% KM Chebyshev UCL	1.044			99% KM Chebyshev UCL	1.452			
2194												
2195					Gamma GOF Tests on Detected Observations Only							
2196				A-D Test Statistic	0.586			Anderson-Darling GOF Test				
2197				5% A-D Critical Value	0.768			Detected data appear Gamma Distributed at 5% Significance Level				
2198				K-S Test Statistic	0.25			Kolmogorov-Smirnov GOF				
2199				5% K-S Critical Value	0.266			Detected data appear Gamma Distributed at 5% Significance Level				
2200					Detected data appear Gamma Distributed at 5% Significance Level							
2201												
2202					Gamma Statistics on Detected Data Only							
2203				k hat (MLE)	0.676			k star (bias corrected MLE)	0.552			
2204				Theta hat (MLE)	1.015			Theta star (bias corrected MLE)	1.242			
2205				nu hat (MLE)	14.87			nu star (bias corrected)	12.15			
2206				Mean (detects)	0.686							
2207												
2208					Gamma ROS Statistics using Imputed Non-Detects							
2209					GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
2210					GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
2211					For such situations, GROS method may yield incorrect values of UCLs and BTVs							
2212					This is especially true when the sample size is small.							
2213					For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
2214				Minimum	0.01			Mean	0.389			
2215				Maximum	3.1			Median	0.165			
2216				SD	0.629			CV	1.616			
2217				k hat (MLE)	0.513			k star (bias corrected MLE)	0.489			
2218				Theta hat (MLE)	0.759			Theta star (bias corrected MLE)	0.795			
2219				nu hat (MLE)	37.95			nu star (bias corrected)	36.2			
2220				Adjusted Level of Significance (β)	0.0431							
2221				Approximate Chi Square Value (36.20, α)	23.43			Adjusted Chi Square Value (36.20, β)	22.98			
2222				95% Gamma Approximate UCL	0.601			95% Gamma Adjusted UCL	0.613			
2223												
2224					Estimates of Gamma Parameters using KM Estimates							
2225				Mean (KM)	0.357			SD (KM)	0.579			
2226				Variance (KM)	0.335			SE of Mean (KM)	0.11			

				k hat (KM)	0.381					k star (KM)	0.368
				nu hat (KM)	28.17					nu star (KM)	27.22
				theta hat (KM)	0.939					theta star (KM)	0.971
				80% gamma percentile (KM)	0.57					90% gamma percentile (KM)	1.024
				95% gamma percentile (KM)	1.528					99% gamma percentile (KM)	2.807
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (27.22, α)	16.32					Adjusted Chi Square Value (27.22, β)	15.95
				95% KM Approximate Gamma UCL	0.596					95% KM Adjusted Gamma UCL	0.61
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.938			Shapiro Wilk GOF Test			
				10% Shapiro Wilk Critical Value	0.876			Detected Data appear Lognormal at 10% Significance Level			
				Lilliefors Test Statistic	0.163			Lilliefors GOF Test			
				10% Lilliefors Critical Value	0.231			Detected Data appear Lognormal at 10% Significance Level			
				Detected Data appear Lognormal at 10% Significance Level							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.358					Mean in Log Scale	-1.76
				SD in Original Scale	0.597					SD in Log Scale	1.195
				95% t UCL (assumes normality of ROS data)	0.524					95% Percentile Bootstrap UCL	0.526
				95% BCA Bootstrap UCL	0.584					95% Bootstrap t UCL	0.831
				95% H-UCL (Log ROS)	0.592						
				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
				KM Mean (logged)	-1.719					KM Geo Mean	0.179
				KM SD (logged)	1.149					95% Critical H Value (KM-Log)	2.565
				KM Standard Error of Mean (logged)	0.351					95% H-UCL (KM -Log)	0.567
				KM SD (logged)	1.149					95% Critical H Value (KM-Log)	2.565
				KM Standard Error of Mean (logged)	0.351						
				DL/2 Statistics							
				DL/2 Normal				DL/2 Log-Transformed			
				Mean in Original Scale	0.38					Mean in Log Scale	-1.353
				SD in Original Scale	0.567					SD in Log Scale	0.768
				95% t UCL (Assumes normality)	0.537					95% H-Stat UCL	0.457
				DL/2 is not a recommended method, provided for comparisons and historical reasons							
				Nonparametric Distribution Free UCL Statistics							
				Detected Data appear Gamma Distributed at 5% Significance Level							
				Suggested UCL to Use							
				95% KM Adjusted Gamma UCL	0.61						
				The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.							
				Please verify the data were collected from random locations.							
				If the data were collected using judgmental or other non-random methods,							
				then contact a statistician to correctly calculate UCLs.							
				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.							
				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							

Thallium

General Statistics

Total Number of Observations	37	Number of Distinct Observations	11
Number of Detects	19	Number of Non-Detects	18
Number of Distinct Detects	11	Number of Distinct Non-Detects	1
Minimum Detect	5.2000E-4	Minimum Non-Detect	0.003
Maximum Detect	0.005	Maximum Non-Detect	0.003
Variance Detects	1.6284E-6	Percent Non-Detects	48.65%
Mean Detects	0.00325	SD Detects	0.00128
Median Detects	0.003	CV Detects	0.392
Skewness Detects	-0.421	Kurtosis Detects	-0.405
Mean of Logged Detects	-5.838	SD of Logged Detects	0.555

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.945	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.863	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.194	Lilliefors GOF Test
1% Lilliefors Critical Value	0.229	Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.00261	KM Standard Error of Mean	2.6227E-4
90KM SD	0.00122	95% KM (BCA) UCL	0.00303
95% KM (t) UCL	0.00305	95% KM (Percentile Bootstrap) UCL	0.00302
95% KM (z) UCL	0.00304	95% KM Bootstrap t UCL	0.00303
90% KM Chebyshev UCL	0.0034	95% KM Chebyshev UCL	0.00375
97.5% KM Chebyshev UCL	0.00425	99% KM Chebyshev UCL	0.00522

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.72	Anderson-Darling GOF Test
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.204	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.199	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.681	k star (bias corrected MLE)	3.977
Theta hat (MLE)	6.9527E-4	Theta star (bias corrected MLE)	8.1835E-4
nu hat (MLE)	177.9	nu star (bias corrected)	151.1
Mean (detects)	0.00325		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	5.2000E-4	Mean	0.00654
Maximum	0.01	Median	0.005
SD	0.00354	CV	0.541
k hat (MLE)	2.559	k star (bias corrected MLE)	2.369
Theta hat (MLE)	0.00255	Theta star (bias corrected MLE)	0.00276

2333				nu hat (MLE)	189.3				nu star (bias corrected)		175.3
2334				Adjusted Level of Significance (β)	0.0431						
2335				Approximate Chi Square Value (175.32, α)	145.7				Adjusted Chi Square Value (175.32, β)		144.5
2336				95% Gamma Approximate UCL	0.00787				95% Gamma Adjusted UCL		0.00793
2337											
2338					Estimates of Gamma Parameters using KM Estimates						
2339				Mean (KM)	0.00261				SD (KM)		0.00122
2340				Variance (KM)	1.4896E-6				SE of Mean (KM)		2.6227E-4
2341				k hat (KM)	4.572				k star (KM)		4.219
2342				nu hat (KM)	338.3				nu star (KM)		312.2
2343				theta hat (KM)	5.7082E-4				theta star (KM)		6.1853E-4
2344				80% gamma percentile (KM)	0.00358				90% gamma percentile (KM)		0.00431
2345				95% gamma percentile (KM)	0.00499				99% gamma percentile (KM)		0.00643
2346											
2347					Gamma Kaplan-Meier (KM) Statistics						
2348				Approximate Chi Square Value (312.20, α)	272.3				Adjusted Chi Square Value (312.20, β)		270.7
2349				95% KM Approximate Gamma UCL	0.00299				95% KM Adjusted Gamma UCL		0.00301
2350											
2351					Lognormal GOF Test on Detected Observations Only						
2352				Shapiro Wilk Test Statistic	0.818				Shapiro Wilk GOF Test		
2353				10% Shapiro Wilk Critical Value	0.917				Detected Data Not Lognormal at 10% Significance Level		
2354				Lilliefors Test Statistic	0.19				Lilliefors GOF Test		
2355				10% Lilliefors Critical Value	0.18				Detected Data Not Lognormal at 10% Significance Level		
2356					Detected Data Not Lognormal at 10% Significance Level						
2357											
2358					Lognormal ROS Statistics Using Imputed Non-Detects						
2359				Mean in Original Scale	0.00252				Mean in Log Scale		-6.117
2360				SD in Original Scale	0.00125				SD in Log Scale		0.545
2361				95% t UCL (assumes normality of ROS data)	0.00286				95% Percentile Bootstrap UCL		0.00285
2362				95% BCA Bootstrap UCL	0.00285				95% Bootstrap t UCL		0.00289
2363				95% H-UCL (Log ROS)	0.00305						
2364											
2365					Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
2366				KM Mean (logged)	-6.095				KM Geo Mean		0.00225
2367				KM SD (logged)	0.602				95% Critical H Value (KM-Log)		1.993
2368				KM Standard Error of Mean (logged)	0.158				95% H-UCL (KM -Log)		0.0033
2369				KM SD (logged)	0.602				95% Critical H Value (KM-Log)		1.993
2370				KM Standard Error of Mean (logged)	0.158						
2371											
2372					DL/2 Statistics						
2373				DL/2 Normal					DL/2 Log-Transformed		
2374				Mean in Original Scale	0.0024				Mean in Log Scale		-6.161
2375				SD in Original Scale	0.00127				SD in Log Scale		0.517
2376				95% t UCL (Assumes normality)	0.00275				95% H-Stat UCL		0.00285
2377					DL/2 is not a recommended method, provided for comparisons and historical reasons						
2378											
2379					Nonparametric Distribution Free UCL Statistics						
2380					Detected Data appear Normal Distributed at 1% Significance Level						
2381											
2382					Suggested UCL to Use						
2383				95% KM (t) UCL	0.00305						
2384											
2385	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

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General Statistics

Total Number of Observations	37	Number of Distinct Observations	3
Number of Detects	2	Number of Non-Detects	35
Number of Distinct Detects	2	Number of Distinct Non-Detects	2
Minimum Detect	0.004	Minimum Non-Detect	0.004
Maximum Detect	0.0041	Maximum Non-Detect	0.3
Variance Detects	5.0000E-9	Percent Non-Detects	94.59%
Mean Detects	0.00405	SD Detects	7.0711E-5
Median Detects	0.00405	CV Detects	0.0175
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-5.509	SD of Logged Detects	0.0175

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.00401	KM Standard Error of Mean	1.6536E-5
90KM SD	3.3072E-5	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00404	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00404	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00406	95% KM Chebyshev UCL	0.00408
97.5% KM Chebyshev UCL	0.00412	99% KM Chebyshev UCL	0.00418

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	6561	k star (bias corrected MLE)	N/A
Theta hat (MLE)	6.1732E-7	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	26243	nu star (bias corrected)	N/A
Mean (detects)	0.00405		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.00401	SD (KM)	3.3072E-5
Variance (KM)	1.0938E-9	SE of Mean (KM)	1.6536E-5
k hat (KM)	14720	k star (KM)	13527
nu hat (KM)	1089291	nu star (KM)	1000971
theta hat (KM)	2.7259E-7	theta star (KM)	2.9664E-7
80% gamma percentile (KM)	0.00404	90% gamma percentile (KM)	0.00406
95% gamma percentile (KM)	0.00407	99% gamma percentile (KM)	0.00409

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0431
Approximate Chi Square Value (N/A, α)	998645	Adjusted Chi Square Value (N/A, β)	998545

95% KM Approximate Gamma UCL					0.00402				95% KM Adjusted Gamma UCL			0.00402
Lognormal GOF Test on Detected Observations Only												
Not Enough Data to Perform GOF Test												
Lognormal ROS Statistics Using Imputed Non-Detects												
Mean in Original Scale					0.00378				Mean in Log Scale			-5.579
SD in Original Scale					2.0145E-4				SD in Log Scale			0.0532
95% t UCL (assumes normality of ROS data)					0.00384				95% Percentile Bootstrap UCL			0.00384
95% BCA Bootstrap UCL					0.00384				95% Bootstrap t UCL			0.00384
95% H-UCL (Log ROS)					N/A							
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution												
KM Mean (logged)					-5.518				KM Geo Mean			0.00401
KM SD (logged)					0.00817				95% Critical H Value (KM-Log)			N/A
KM Standard Error of Mean (logged)					0.00408				95% H-UCL (KM -Log)			N/A
KM SD (logged)					0.00817				95% Critical H Value (KM-Log)			N/A
KM Standard Error of Mean (logged)					0.00408							
DL/2 Statistics												
DL/2 Normal									DL/2 Log-Transformed			
Mean in Original Scale					0.118				Mean in Log Scale			-2.792
SD in Original Scale					0.0616				SD in Log Scale			1.734
95% t UCL (Assumes normality)					0.135				95% H-Stat UCL			0.725
DL/2 is not a recommended method, provided for comparisons and historical reasons												
Nonparametric Distribution Free UCL Statistics												
Data do not follow a Discernible Distribution												
Suggested UCL to Use												
95% KM (t) UCL					0.00404							
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.												
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
Titanium												
General Statistics												
Total Number of Observations					37				Number of Distinct Observations			15
Number of Detects					34				Number of Non-Detects			3
Number of Distinct Detects					14				Number of Distinct Non-Detects			1
Minimum Detect					0.011				Minimum Non-Detect			0.01
Maximum Detect					3				Maximum Non-Detect			0.01
Variance Detects					0.366				Percent Non-Detects			8.108%
Mean Detects					1.128				SD Detects			0.605
Median Detects					1.2				CV Detects			0.536
Skewness Detects					0.408				Kurtosis Detects			2.659
Mean of Logged Detects					-0.289				SD of Logged Detects			1.353
Normal GOF Test on Detects Only												
Shapiro Wilk Test Statistic					0.844				Shapiro Wilk GOF Test			
1% Shapiro Wilk Critical Value					0.908				Detected Data Not Normal at 1% Significance Level			

				Lilliefors Test Statistic	0.269	Lilliefors GOF Test					
				1% Lilliefors Critical Value	0.175	Detected Data Not Normal at 1% Significance Level					
				Detected Data Not Normal at 1% Significance Level							
				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
				KM Mean	1.038	KM Standard Error of Mean	0.108				
				90KM SD	0.648	95% KM (BCA) UCL	1.218				
				95% KM (t) UCL	1.22	95% KM (Percentile Bootstrap) UCL	1.219				
				95% KM (z) UCL	1.215	95% KM Bootstrap t UCL	1.222				
				90% KM Chebyshev UCL	1.362	95% KM Chebyshev UCL	1.509				
				97.5% KM Chebyshev UCL	1.712	99% KM Chebyshev UCL	2.113				
				Gamma GOF Tests on Detected Observations Only							
				A-D Test Statistic	5.028	Anderson-Darling GOF Test					
				5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level					
				K-S Test Statistic	0.414	Kolmogorov-Smirnov GOF					
				5% K-S Critical Value	0.154	Detected Data Not Gamma Distributed at 5% Significance Level					
				Detected Data Not Gamma Distributed at 5% Significance Level							
				Gamma Statistics on Detected Data Only							
				k hat (MLE)	1.363	k star (bias corrected MLE)	1.262				
				Theta hat (MLE)	0.828	Theta star (bias corrected MLE)	0.894				
				nu hat (MLE)	92.67	nu star (bias corrected)	85.83				
				Mean (detects)	1.128						
				Gamma ROS Statistics using Imputed Non-Detects							
				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
				This is especially true when the sample size is small.							
				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
				Minimum	0.011	Mean	1.073				
				Maximum	3	Median	1.1				
				SD	0.609	CV	0.568				
				k hat (MLE)	1.386	k star (bias corrected MLE)	1.292				
				Theta hat (MLE)	0.774	Theta star (bias corrected MLE)	0.83				
				nu hat (MLE)	102.6	nu star (bias corrected)	95.6				
				Adjusted Level of Significance (β)	0.0431						
				Approximate Chi Square Value (95.60, α)	74.05	Adjusted Chi Square Value (95.60, β)	73.23				
				95% Gamma Approximate UCL	1.385	95% Gamma Adjusted UCL	1.4				
				Estimates of Gamma Parameters using KM Estimates							
				Mean (KM)	1.038	SD (KM)	0.648				
				Variance (KM)	0.419	SE of Mean (KM)	0.108				
				k hat (KM)	2.568	k star (KM)	2.378				
				nu hat (KM)	190	nu star (KM)	175.9				
				theta hat (KM)	0.404	theta star (KM)	0.436				
				80% gamma percentile (KM)	1.522	90% gamma percentile (KM)	1.939				
				95% gamma percentile (KM)	2.333	99% gamma percentile (KM)	3.197				
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (175.94, α)	146.3	Adjusted Chi Square Value (175.94, β)	145.1				
				95% KM Approximate Gamma UCL	1.248	95% KM Adjusted Gamma UCL	1.258				

	A	B	C	D	E	F	G	H	I	J	K	L
2545												
2546						Lognormal GOF Test on Detected Observations Only						
2547					Shapiro Wilk Test Statistic	0.607		Shapiro Wilk GOF Test				
2548					10% Shapiro Wilk Critical Value	0.943		Detected Data Not Lognormal at 10% Significance Level				
2549					Lilliefors Test Statistic	0.438		Lilliefors GOF Test				
2550					10% Lilliefors Critical Value	0.137		Detected Data Not Lognormal at 10% Significance Level				
2551					Detected Data Not Lognormal at 10% Significance Level							
2552												
2553						Lognormal ROS Statistics Using Imputed Non-Detects						
2554					Mean in Original Scale	1.043				Mean in Log Scale	-0.475	
2555					SD in Original Scale	0.648				SD in Log Scale	1.445	
2556				95% t UCL (assumes normality of ROS data)		1.223				95% Percentile Bootstrap UCL	1.22	
2557					95% BCA Bootstrap UCL	1.213				95% Bootstrap t UCL	1.228	
2558					95% H-UCL (Log ROS)	3.589						
2559												
2560						Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution						
2561					KM Mean (logged)	-0.639				KM Geo Mean	0.528	
2562					KM SD (logged)	1.738				95% Critical H Value (KM-Log)	3.351	
2563					KM Standard Error of Mean (logged)	0.29				95% H-UCL (KM -Log)	6.312	
2564					KM SD (logged)	1.738				95% Critical H Value (KM-Log)	3.351	
2565					KM Standard Error of Mean (logged)	0.29						
2566												
2567						DL/2 Statistics						
2568					DL/2 Normal					DL/2 Log-Transformed		
2569					Mean in Original Scale	1.037				Mean in Log Scale	-0.695	
2570					SD in Original Scale	0.657				SD in Log Scale	1.897	
2571					95% t UCL (Assumes normality)	1.22				95% H-Stat UCL	9.365	
2572					DL/2 is not a recommended method, provided for comparisons and historical reasons							
2573												
2574						Nonparametric Distribution Free UCL Statistics						
2575						Data do not follow a Discernible Distribution						
2576												
2577						Suggested UCL to Use						
2578					95% KM (t) UCL	1.22						
2579												
2580						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
2581						Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.						
2582						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
2583												
2584	Uranium											
2585												
2586						General Statistics						
2587					Total Number of Observations	37				Number of Distinct Observations	4	
2588					Number of Detects	2				Number of Non-Detects	35	
2589					Number of Distinct Detects	2				Number of Distinct Non-Detects	2	
2590					Minimum Detect	5.4000E-4				Minimum Non-Detect	4.0000E-4	
2591					Maximum Detect	6.8000E-4				Maximum Non-Detect	0.005	
2592					Variance Detects	9.8000E-9				Percent Non-Detects	94.59%	
2593					Mean Detects	6.1000E-4				SD Detects	9.8995E-5	
2594					Median Detects	6.1000E-4				CV Detects	0.162	
2595					Skewness Detects	N/A				Kurtosis Detects	N/A	
2596					Mean of Logged Detects	-7.409				SD of Logged Detects	0.163	
2597												

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.5250E-4	KM Standard Error of Mean	4.8718E-5
90KM SD	9.7436E-5	95% KM (BCA) UCL	N/A
95% KM (t) UCL	5.3475E-4	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	5.3263E-4	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	5.9865E-4	95% KM Chebyshev UCL	6.6486E-4
97.5% KM Chebyshev UCL	7.5674E-4	99% KM Chebyshev UCL	9.3724E-4

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	75.6	k star (bias corrected MLE)	N/A
Theta hat (MLE)	8.0684E-6	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	302.4	nu star (bias corrected)	N/A
Mean (detects)	6.1000E-4		

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.5250E-4	SD (KM)	9.7436E-5
Variance (KM)	9.4938E-9	SE of Mean (KM)	4.8718E-5
k hat (KM)	21.57	k star (KM)	19.84
nu hat (KM)	1596	nu star (KM)	1468
theta hat (KM)	2.0981E-5	theta star (KM)	2.2811E-5
80% gamma percentile (KM)	5.3505E-4	90% gamma percentile (KM)	5.8660E-4
95% gamma percentile (KM)	6.3154E-4	99% gamma percentile (KM)	7.2173E-4

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.0431
Approximate Chi Square Value (N/A, α)	1380	Adjusted Chi Square Value (N/A, β)	1376
95% KM Approximate Gamma UCL	4.8135E-4	95% KM Adjusted Gamma UCL	4.8264E-4

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.5634E-4	Mean in Log Scale	-8.059
SD in Original Scale	1.8022E-4	SD in Log Scale	0.497
95% t UCL (assumes normality of ROS data)	4.0636E-4	95% Percentile Bootstrap UCL	4.0637E-4
95% BCA Bootstrap UCL	4.0913E-4	95% Bootstrap t UCL	4.1504E-4
95% H-UCL (Log ROS)	4.1922E-4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-7.72	KM Geo Mean	4.4377E-4
KM SD (logged)	0.189	95% Critical H Value (KM-Log)	1.731
KM Standard Error of Mean (logged)	0.0944	95% H-UCL (KM -Log)	4.7705E-4
KM SD (logged)	0.189	95% Critical H Value (KM-Log)	1.731

2651				KM Standard Error of Mean (logged)	0.0944							
2652				Note: KM UCLs may be biased low with this dataset. Other substitution method recommended								
2653												
2654				DL/2 Statistics								
2655				DL/2 Normal				DL/2 Log-Transformed				
2656				Mean in Original Scale	0.00202			Mean in Log Scale	-6.478			
2657				SD in Original Scale	9.2107E-4			SD in Log Scale	0.966			
2658				95% t UCL (Assumes normality)	0.00228			95% H-Stat UCL	0.00358			
2659				DL/2 is not a recommended method, provided for comparisons and historical reasons								
2660												
2661				Nonparametric Distribution Free UCL Statistics								
2662				Data do not follow a Discernible Distribution								
2663												
2664				Suggested UCL to Use								
2665				95% KM (t) UCL	5.3475E-4							
2666												
2667				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
2668				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
2669				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
2670												
2671	Vanadium											
2672												
2673				General Statistics								
2674				Total Number of Observations	37			Number of Distinct Observations	5			
2675				Number of Detects	3			Number of Non-Detects	34			
2676				Number of Distinct Detects	3			Number of Distinct Non-Detects	2			
2677				Minimum Detect	0.0049			Minimum Non-Detect	0.004			
2678				Maximum Detect	0.0082			Maximum Non-Detect	0.05			
2679				Variance Detects	2.8233E-6			Percent Non-Detects	91.89%			
2680				Mean Detects	0.00637			SD Detects	0.00168			
2681				Median Detects	0.006			CV Detects	0.264			
2682				Skewness Detects	0.935			Kurtosis Detects	N/A			
2683				Mean of Logged Detects	-5.079			SD of Logged Detects	0.259			
2684												
2685				Warning: Data set has only 3 Detected Values.								
2686				This is not enough to compute meaningful or reliable statistics and estimates.								
2687												
2688												
2689				Normal GOF Test on Detects Only								
2690				Shapiro Wilk Test Statistic	0.964			Shapiro Wilk GOF Test				
2691				1% Shapiro Wilk Critical Value	0.753			Detected Data appear Normal at 1% Significance Level				
2692				Lilliefors Test Statistic	0.253			Lilliefors GOF Test				
2693				1% Lilliefors Critical Value	0.429			Detected Data appear Normal at 1% Significance Level				
2694				Detected Data appear Normal at 1% Significance Level								
2695				Note GOF tests may be unreliable for small sample sizes								
2696												
2697				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs								
2698				KM Mean	0.00489			KM Standard Error of Mean	6.1521E-4			
2699				90KM SD	0.00142			95% KM (BCA) UCL	N/A			
2700				95% KM (t) UCL	0.00593			95% KM (Percentile Bootstrap) UCL	N/A			
2701				95% KM (z) UCL	0.0059			95% KM Bootstrap t UCL	N/A			
2702				90% KM Chebyshev UCL	0.00673			95% KM Chebyshev UCL	0.00757			
2703				97.5% KM Chebyshev UCL	0.00873			99% KM Chebyshev UCL	0.011			

					Gamma GOF Tests on Detected Observations Only						
			A-D Test Statistic	0.275	Anderson-Darling GOF Test						
			5% A-D Critical Value	0.635	Detected data appear Gamma Distributed at 5% Significance Level						
			K-S Test Statistic	0.248	Kolmogorov-Smirnov GOF						
			5% K-S Critical Value	0.431	Detected data appear Gamma Distributed at 5% Significance Level						
			Detected Data Not Gamma Distributed at 5% Significance Level								
					Gamma Statistics on Detected Data Only						
			k hat (MLE)	22.19			k star (bias corrected MLE)	N/A			
			Theta hat (MLE)	2.8689E-4			Theta star (bias corrected MLE)	N/A			
			nu hat (MLE)	133.2			nu star (bias corrected)	N/A			
			Mean (detects)	0.00637							
					Gamma ROS Statistics using Imputed Non-Detects						
			GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs								
			GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)								
			For such situations, GROS method may yield incorrect values of UCLs and BTVs								
			This is especially true when the sample size is small.								
			For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates								
			Minimum	0.0049			Mean	0.00972			
			Maximum	0.0107			Median	0.01			
			SD	0.00109			CV	0.112			
			k hat (MLE)	57.94			k star (bias corrected MLE)	53.26			
			Theta hat (MLE)	1.6783E-4			Theta star (bias corrected MLE)	1.8257E-4			
			nu hat (MLE)	4287			nu star (bias corrected)	3941			
			Adjusted Level of Significance (β)	0.0431							
			Approximate Chi Square Value (N/A, α)	3796			Adjusted Chi Square Value (N/A, β)	3790			
			95% Gamma Approximate UCL	0.0101			95% Gamma Adjusted UCL	N/A			
					Estimates of Gamma Parameters using KM Estimates						
			Mean (KM)	0.00489			SD (KM)	0.00142			
			Variance (KM)	2.0186E-6			SE of Mean (KM)	6.1521E-4			
			k hat (KM)	11.83			k star (KM)	10.89			
			nu hat (KM)	875.7			nu star (KM)	806			
			theta hat (KM)	4.1301E-4			theta star (KM)	4.4871E-4			
			80% gamma percentile (KM)	0.00607			90% gamma percentile (KM)	0.00686			
			95% gamma percentile (KM)	0.00755			99% gamma percentile (KM)	0.00897			
					Gamma Kaplan-Meier (KM) Statistics						
			Approximate Chi Square Value (806.03, α)	741.1			Adjusted Chi Square Value (806.03, β)	738.5			
			95% KM Approximate Gamma UCL	0.00532			95% KM Adjusted Gamma UCL	0.00533			
					Lognormal GOF Test on Detected Observations Only						
			Shapiro Wilk Test Statistic	0.985	Shapiro Wilk GOF Test						
			10% Shapiro Wilk Critical Value	0.789	Detected Data appear Lognormal at 10% Significance Level						
			Lilliefors Test Statistic	0.223	Lilliefors GOF Test						
			10% Lilliefors Critical Value	0.389	Detected Data appear Lognormal at 10% Significance Level						
			Detected Data appear Lognormal at 10% Significance Level								
			Note GOF tests may be unreliable for small sample sizes								
					Lognormal ROS Statistics Using Imputed Non-Detects						
			Mean in Original Scale	0.00393			Mean in Log Scale	-5.727			

			SD in Original Scale	0.0025					SD in Log Scale	0.625	
		95% t UCL (assumes normality of ROS data)		0.00462				95% Percentile Bootstrap UCL		0.00462	
			95% BCA Bootstrap UCL	0.00468					95% Bootstrap t UCL	0.00477	
			95% H-UCL (Log ROS)	0.00489							
			Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								
			KM Mean (logged)	-5.356					KM Geo Mean	0.00472	
			KM SD (logged)	0.25				95% Critical H Value (KM-Log)		1.759	
		KM Standard Error of Mean (logged)		0.108					95% H-UCL (KM -Log)	0.00524	
			KM SD (logged)	0.25				95% Critical H Value (KM-Log)		1.759	
		KM Standard Error of Mean (logged)		0.108							
		Note: KM UCLs may be biased low with this dataset. Other substitution method recommended									
			DL/2 Statistics								
		DL/2 Normal						DL/2 Log-Transformed			
			Mean in Original Scale	0.0204					Mean in Log Scale	-4.143	
			SD in Original Scale	0.00898					SD in Log Scale	0.916	
			95% t UCL (Assumes normality)	0.0229					95% H-Stat UCL	0.0343	
		DL/2 is not a recommended method, provided for comparisons and historical reasons									
			Nonparametric Distribution Free UCL Statistics								
			Detected Data appear Normal Distributed at 1% Significance Level								
			Suggested UCL to Use								
			95% KM (t) UCL	0.00593							
		Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.									
		Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.									
		However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.									
Zinc											
			General Statistics								
			Total Number of Observations	37					Number of Distinct Observations	20	
									Number of Missing Observations	0	
			Minimum	4					Mean	10.28	
			Maximum	57.6					Median	7	
			SD	10.13					Std. Error of Mean	1.666	
			Coefficient of Variation	0.985					Skewness	3.561	
			Normal GOF Test								
			Shapiro Wilk Test Statistic	0.553				Shapiro Wilk GOF Test			
			1% Shapiro Wilk Critical Value	0.814				Data Not Normal at 1% Significance Level			
			Lilliefors Test Statistic	0.298				Lilliefors GOF Test			
			1% Lilliefors Critical Value	0.168				Data Not Normal at 1% Significance Level			
			Data Not Normal at 1% Significance Level								
			Assuming Normal Distribution								
		95% Normal UCL						95% UCLs (Adjusted for Skewness)			
			95% Student's-t UCL	13.1					95% Adjusted-CLT UCL (Chen-1995)	14.07	
									95% Modified-t UCL (Johnson-1978)	13.26	

2810					Gamma GOF Test							
2811				A-D Test Statistic	2.869		Anderson-Darling Gamma GOF Test					
2812				5% A-D Critical Value	0.757		Data Not Gamma Distributed at 5% Significance Level					
2813				K-S Test Statistic	0.191		Kolmogorov-Smirnov Gamma GOF Test					
2814				5% K-S Critical Value	0.147		Data Not Gamma Distributed at 5% Significance Level					
2815				Data Not Gamma Distributed at 5% Significance Level								
2816												
2817					Gamma Statistics							
2818				k hat (MLE)	2.371				k star (bias corrected MLE)	2.197		
2819				Theta hat (MLE)	4.337				Theta star (bias corrected MLE)	4.681		
2820				nu hat (MLE)	175.5				nu star (bias corrected)	162.6		
2821				MLE Mean (bias corrected)	10.28				MLE Sd (bias corrected)	6.938		
2822									Approximate Chi Square Value (0.05)	134.1		
2823				Adjusted Level of Significance	0.0431				Adjusted Chi Square Value	133		
2824												
2825					Assuming Gamma Distribution							
2826				95% Approximate Gamma UCL	12.47				95% Adjusted Gamma UCL	12.57		
2827												
2828					Lognormal GOF Test							
2829				Shapiro Wilk Test Statistic	0.842		Shapiro Wilk Lognormal GOF Test					
2830				10% Shapiro Wilk Critical Value	0.946		Data Not Lognormal at 10% Significance Level					
2831				Lilliefors Test Statistic	0.158		Lilliefors Lognormal GOF Test					
2832				10% Lilliefors Critical Value	0.132		Data Not Lognormal at 10% Significance Level					
2833				Data Not Lognormal at 10% Significance Level								
2834												
2835					Lognormal Statistics							
2836				Minimum of Logged Data	1.386				Mean of logged Data	2.105		
2837				Maximum of Logged Data	4.054				SD of logged Data	0.584		
2838												
2839					Assuming Lognormal Distribution							
2840				95% H-UCL	11.8				90% Chebyshev (MVUE) UCL	12.65		
2841				95% Chebyshev (MVUE) UCL	13.99				97.5% Chebyshev (MVUE) UCL	15.86		
2842				99% Chebyshev (MVUE) UCL	19.52							
2843												
2844					Nonparametric Distribution Free UCL Statistics							
2845					Data do not follow a Discernible Distribution							
2846												
2847					Nonparametric Distribution Free UCLs							
2848				95% CLT UCL	13.02				95% BCA Bootstrap UCL	14.22		
2849				95% Standard Bootstrap UCL	12.96				95% Bootstrap-t UCL	16.6		
2850				95% Hall's Bootstrap UCL	25.13				95% Percentile Bootstrap UCL	13.13		
2851				90% Chebyshev(Mean, Sd) UCL	15.28				95% Chebyshev(Mean, Sd) UCL	17.55		
2852				97.5% Chebyshev(Mean, Sd) UCL	20.69				99% Chebyshev(Mean, Sd) UCL	26.86		
2853												
2854					Suggested UCL to Use							
2855				95% Student's-t UCL	13.1							
2856												
2857	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
2858	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
2859	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
2860												
2861	Zirconium											
2862												

					General Statistics						
			Total Number of Observations	8			Number of Distinct Observations	1			
			Number of Detects	0			Number of Non-Detects	8			
			Number of Distinct Detects	0			Number of Distinct Non-Detects	1			

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!

Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Zirconium was not processed!

Aluminum

					General Statistics						
			Total Number of Observations	8			Number of Distinct Observations	4			
			Number of Detects	3			Number of Non-Detects	5			
			Number of Distinct Detects	3			Number of Distinct Non-Detects	1			
			Minimum Detect	0.89			Minimum Non-Detect	0.4			
			Maximum Detect	1.55			Maximum Non-Detect	0.4			
			Variance Detects	0.137			Percent Non-Detects	62.5%			
			Mean Detects	1.317			SD Detects	0.37			
			Median Detects	1.51			CV Detects	0.281			
			Skewness Detects	-1.709			Kurtosis Detects	N/A			
			Mean of Logged Detects	0.245			SD of Logged Detects	0.313			

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

					Normal GOF Test on Detects Only						
			Shapiro Wilk Test Statistic	0.795			Shapiro Wilk GOF Test				
			1% Shapiro Wilk Critical Value	0.753			Detected Data appear Normal at 1% Significance Level				
			Lilliefors Test Statistic	0.366			Lilliefors GOF Test				
			1% Lilliefors Critical Value	0.429			Detected Data appear Normal at 1% Significance Level				

Detected Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
			KM Mean	0.744			KM Standard Error of Mean	0.208			
			90KM SD	0.481			95% KM (BCA) UCL	N/A			
			95% KM (t) UCL	1.138			95% KM (Percentile Bootstrap) UCL	N/A			
			95% KM (z) UCL	1.086			95% KM Bootstrap t UCL	N/A			
			90% KM Chebyshev UCL	1.368			95% KM Chebyshev UCL	1.651			
			97.5% KM Chebyshev UCL	2.044			99% KM Chebyshev UCL	2.815			

Gamma GOF Tests on Detected Observations Only

				A-D Test Statistic	0.559	Anderson-Darling GOF Test					
				5% A-D Critical Value	0.635	Detected data appear Gamma Distributed at 5% Significance Level					
				K-S Test Statistic	0.409	Kolmogorov-Smirnov GOF					
				5% K-S Critical Value	0.432	Detected data appear Gamma Distributed at 5% Significance Level					
				Detected Data Not Gamma Distributed at 5% Significance Level							
				Gamma Statistics on Detected Data Only							
				k hat (MLE)	16.56	k star (bias corrected MLE)	N/A				
				Theta hat (MLE)	0.0795	Theta star (bias corrected MLE)	N/A				
				nu hat (MLE)	99.37	nu star (bias corrected)	N/A				
				Mean (detects)	1.317						
				Gamma ROS Statistics using Imputed Non-Detects							
				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
				This is especially true when the sample size is small.							
				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
				Minimum	0.01	Mean	0.668				
				Maximum	1.55	Median	0.539				
				SD	0.606	CV	0.907				
				k hat (MLE)	0.764	k star (bias corrected MLE)	0.561				
				Theta hat (MLE)	0.875	Theta star (bias corrected MLE)	1.192				
				nu hat (MLE)	12.22	nu star (bias corrected)	8.969				
				Adjusted Level of Significance (β)	0.0195						
				Approximate Chi Square Value (8.97, α)	3.308	Adjusted Chi Square Value (8.97, β)	2.5				
				95% Gamma Approximate UCL	1.812	95% Gamma Adjusted UCL	N/A				
				Estimates of Gamma Parameters using KM Estimates							
				Mean (KM)	0.744	SD (KM)	0.481				
				Variance (KM)	0.231	SE of Mean (KM)	0.208				
				k hat (KM)	2.393	k star (KM)	1.579				
				nu hat (KM)	38.29	nu star (KM)	25.26				
				theta hat (KM)	0.311	theta star (KM)	0.471				
				80% gamma percentile (KM)	1.144	90% gamma percentile (KM)	1.531				
				95% gamma percentile (KM)	1.905	99% gamma percentile (KM)	2.746				
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (25.26, α)	14.81	Adjusted Chi Square Value (25.26, β)	12.83				
				95% KM Approximate Gamma UCL	1.268	95% KM Adjusted Gamma UCL	1.464				
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.785	Shapiro Wilk GOF Test					
				10% Shapiro Wilk Critical Value	0.789	Detected Data Not Lognormal at 10% Significance Level					
				Lilliefors Test Statistic	0.37	Lilliefors GOF Test					
				10% Lilliefors Critical Value	0.389	Detected Data appear Lognormal at 10% Significance Level					
				Detected Data appear Approximate Lognormal at 10% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.791	Mean in Log Scale	-0.405				
				SD in Original Scale	0.494	SD in Log Scale	0.627				
				95% t UCL (assumes normality of ROS data)	1.121	95% Percentile Bootstrap UCL	1.073				

95% BCA Bootstrap UCL					1.098				95% Bootstrap t UCL		1.43
95% H-UCL (Log ROS)					1.497						
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
KM Mean (logged)					-0.481				KM Geo Mean		0.618
KM SD (logged)					0.583				95% Critical H Value (KM-Log)		2.503
KM Standard Error of Mean (logged)					0.253				95% H-UCL (KM -Log)		1.273
KM SD (logged)					0.583				95% Critical H Value (KM-Log)		2.503
KM Standard Error of Mean (logged)					0.253						
DL/2 Statistics											
DL/2 Normal									DL/2 Log-Transformed		
Mean in Original Scale					0.619				Mean in Log Scale		-0.914
SD in Original Scale					0.611				SD in Log Scale		0.974
95% t UCL (Assumes normality)					1.028				95% H-Stat UCL		2.221
DL/2 is not a recommended method, provided for comparisons and historical reasons											
Nonparametric Distribution Free UCL Statistics											
Detected Data appear Normal Distributed at 1% Significance Level											
Suggested UCL to Use											
95% KM (t) UCL					1.138						
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
Gallium											
General Statistics											
Total Number of Observations					8				Number of Distinct Observations		1
Number of Detects					0				Number of Non-Detects		8
Number of Distinct Detects					0				Number of Distinct Non-Detects		1
Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
The data set for variable Gallium was not processed!											
Lanthanum											
General Statistics											
Total Number of Observations					8				Number of Distinct Observations		1
Number of Detects					0				Number of Non-Detects		8
Number of Distinct Detects					0				Number of Distinct Non-Detects		1
Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
The data set for variable Lanthanum was not processed!											

Lithium

General Statistics

Total Number of Observations	8	Number of Distinct Observations	4
Number of Detects	3	Number of Non-Detects	5
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	0.021	Minimum Non-Detect	0.02
Maximum Detect	0.102	Maximum Non-Detect	0.02
Variance Detects	0.00206	Percent Non-Detects	62.5%
Mean Detects	0.0497	SD Detects	0.0454
Median Detects	0.026	CV Detects	0.914
Skewness Detects	1.708	Kurtosis Detects	N/A
Mean of Logged Detects	-3.265	SD of Logged Detects	0.857

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,
refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,
but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.796	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.753	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.366	Lilliefors GOF Test
1% Lilliefors Critical Value	0.429	Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level
Note GOF tests may be unreliable for small sample sizes

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0311	KM Standard Error of Mean	0.0116
90KM SD	0.0269	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0532	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.0503	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.066	95% KM Chebyshev UCL	0.0818
97.5% KM Chebyshev UCL	0.104	99% KM Chebyshev UCL	0.147

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.494	Anderson-Darling GOF Test
5% A-D Critical Value	0.637	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.39	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.435	Detected data appear Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.054	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0242	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	12.32	nu star (bias corrected)	N/A

				Mean (detects)	0.0497						
				Gamma ROS Statistics using Imputed Non-Detects							
				GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs							
				GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)							
				For such situations, GROS method may yield incorrect values of UCLs and BTVs							
				This is especially true when the sample size is small.							
				For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates							
				Minimum	0.01				Mean	0.0249	
				Maximum	0.102				Median	0.01	
				SD	0.0318				CV	1.278	
				k hat (MLE)	1.366				k star (bias corrected MLE)	0.937	
				Theta hat (MLE)	0.0182				Theta star (bias corrected MLE)	0.0265	
				nu hat (MLE)	21.85				nu star (bias corrected)	14.99	
				Adjusted Level of Significance (β)	0.0195						
				Approximate Chi Square Value (14.99, α)	7.255				Adjusted Chi Square Value (14.99, β)	5.948	
				95% Gamma Approximate UCL	0.0514				95% Gamma Adjusted UCL	N/A	
				Estimates of Gamma Parameters using KM Estimates							
				Mean (KM)	0.0311				SD (KM)	0.0269	
				Variance (KM)	7.2136E-4				SE of Mean (KM)	0.0116	
				k hat (KM)	1.343				k star (KM)	0.923	
				nu hat (KM)	21.49				nu star (KM)	14.76	
				theta hat (KM)	0.0232				theta star (KM)	0.0337	
				80% gamma percentile (KM)	0.0504				90% gamma percentile (KM)	0.0731	
				95% gamma percentile (KM)	0.0959				99% gamma percentile (KM)	0.149	
				Gamma Kaplan-Meier (KM) Statistics							
				Approximate Chi Square Value (14.76, α)	7.097				Adjusted Chi Square Value (14.76, β)	5.807	
				95% KM Approximate Gamma UCL	0.0647				95% KM Adjusted Gamma UCL	0.0791	
				Lognormal GOF Test on Detected Observations Only							
				Shapiro Wilk Test Statistic	0.849				Shapiro Wilk GOF Test		
				10% Shapiro Wilk Critical Value	0.789				Detected Data appear Lognormal at 10% Significance Level		
				Lilliefors Test Statistic	0.34				Lilliefors GOF Test		
				10% Lilliefors Critical Value	0.389				Detected Data appear Lognormal at 10% Significance Level		
				Detected Data appear Lognormal at 10% Significance Level							
				Note GOF tests may be unreliable for small sample sizes							
				Lognormal ROS Statistics Using Imputed Non-Detects							
				Mean in Original Scale	0.0201				Mean in Log Scale	-5.293	
				SD in Original Scale	0.0345				SD in Log Scale	1.939	
				95% t UCL (assumes normality of ROS data)	0.0432				95% Percentile Bootstrap UCL	0.0423	
				95% BCA Bootstrap UCL	0.0501				95% Bootstrap t UCL	0.098	
				95% H-UCL (Log ROS)	2.609						
				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution							
				KM Mean (logged)	-3.669				KM Geo Mean	0.0255	
				KM SD (logged)	0.531				95% Critical H Value (KM-Log)	2.407	
				KM Standard Error of Mean (logged)	0.23				95% H-UCL (KM -Log)	0.0476	
				KM SD (logged)	0.531				95% Critical H Value (KM-Log)	2.407	
				KM Standard Error of Mean (logged)	0.23						

					DL/2 Statistics							
		DL/2 Normal						DL/2 Log-Transformed				
				Mean in Original Scale	0.0249					Mean in Log Scale	-4.103	
				SD in Original Scale	0.0318					SD in Log Scale	0.831	
				95% t UCL (Assumes normality)	0.0462					95% H-Stat UCL	0.0604	
		DL/2 is not a recommended method, provided for comparisons and historical reasons										
					Nonparametric Distribution Free UCL Statistics							
					Detected Data appear Normal Distributed at 1% Significance Level							
					Suggested UCL to Use							
				95% KM (t) UCL	0.0532							
		Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
		Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.										
		However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
Rhenium												
					General Statistics							
				Total Number of Observations	8					Number of Distinct Observations	1	
				Number of Detects	0					Number of Non-Detects	8	
				Number of Distinct Detects	0					Number of Distinct Non-Detects	1	
		Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!										
		Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!										
		The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).										
					The data set for variable Rhenium was not processed!							
Rubidium												
					General Statistics							
				Total Number of Observations	8					Number of Distinct Observations	8	
										Number of Missing Observations	0	
				Minimum	3.32					Mean	7.058	
				Maximum	12.5					Median	5.62	
				SD	3.467					Std. Error of Mean	1.226	
				Coefficient of Variation	0.491					Skewness	0.897	
		Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,										
		refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,										
		but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).										
		The Chebyshev UCL often results in gross overestimates of the mean.										
		Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.										
					Normal GOF Test							
				Shapiro Wilk Test Statistic	0.856			Shapiro Wilk GOF Test				
				1% Shapiro Wilk Critical Value	0.749			Data appear Normal at 1% Significance Level				
				Lilliefors Test Statistic	0.279			Lilliefors GOF Test				
				1% Lilliefors Critical Value	0.333			Data appear Normal at 1% Significance Level				

3181					Data appear Normal at 1% Significance Level							
3182					Note GOF tests may be unreliable for small sample sizes							
3183												
3184					Assuming Normal Distribution							
3185			95% Normal UCL					95% UCLs (Adjusted for Skewness)				
3186				95% Student's-t UCL	9.38				95% Adjusted-CLT UCL (Chen-1995)	9.489		
3187									95% Modified-t UCL (Johnson-1978)	9.445		
3188												
3189					Gamma GOF Test							
3190				A-D Test Statistic	0.424			Anderson-Darling Gamma GOF Test				
3191				5% A-D Critical Value	0.719			Detected data appear Gamma Distributed at 5% Significance Level				
3192				K-S Test Statistic	0.253			Kolmogorov-Smirnov Gamma GOF Test				
3193				5% K-S Critical Value	0.295			Detected data appear Gamma Distributed at 5% Significance Level				
3194					Detected data appear Gamma Distributed at 5% Significance Level							
3195					Note GOF tests may be unreliable for small sample sizes							
3196												
3197					Gamma Statistics							
3198				k hat (MLE)	5.167				k star (bias corrected MLE)	3.313		
3199				Theta hat (MLE)	1.366				Theta star (bias corrected MLE)	2.131		
3200				nu hat (MLE)	82.67				nu star (bias corrected)	53		
3201				MLE Mean (bias corrected)	7.058				MLE Sd (bias corrected)	3.878		
3202									Approximate Chi Square Value (0.05)	37.28		
3203				Adjusted Level of Significance	0.0195				Adjusted Chi Square Value	33.97		
3204												
3205					Assuming Gamma Distribution							
3206				95% Approximate Gamma UCL	10.03				95% Adjusted Gamma UCL	11.01		
3207												
3208					Lognormal GOF Test							
3209				Shapiro Wilk Test Statistic	0.929			Shapiro Wilk Lognormal GOF Test				
3210				10% Shapiro Wilk Critical Value	0.851			Data appear Lognormal at 10% Significance Level				
3211				Lilliefors Test Statistic	0.223			Lilliefors Lognormal GOF Test				
3212				10% Lilliefors Critical Value	0.265			Data appear Lognormal at 10% Significance Level				
3213					Data appear Lognormal at 10% Significance Level							
3214					Note GOF tests may be unreliable for small sample sizes							
3215												
3216					Lognormal Statistics							
3217				Minimum of Logged Data	1.2				Mean of logged Data	1.854		
3218				Maximum of Logged Data	2.526				SD of logged Data	0.472		
3219												
3220					Assuming Lognormal Distribution							
3221				95% H-UCL	10.78				90% Chebyshev (MVUE) UCL	10.59		
3222				95% Chebyshev (MVUE) UCL	12.2				97.5% Chebyshev (MVUE) UCL	14.44		
3223				99% Chebyshev (MVUE) UCL	18.83							
3224												
3225					Nonparametric Distribution Free UCL Statistics							
3226					Data appear to follow a Discernible Distribution							
3227												
3228					Nonparametric Distribution Free UCLs							
3229				95% CLT UCL	9.074				95% BCA Bootstrap UCL	9.531		
3230				95% Standard Bootstrap UCL	8.969				95% Bootstrap-t UCL	11.34		
3231				95% Hall's Bootstrap UCL	11.05				95% Percentile Bootstrap UCL	9.116		
3232				90% Chebyshev(Mean, Sd) UCL	10.74				95% Chebyshev(Mean, Sd) UCL	12.4		
3233				97.5% Chebyshev(Mean, Sd) UCL	14.71				99% Chebyshev(Mean, Sd) UCL	19.26		

	A	B	C	D	E	F	G	H	I	J	K	L
3234												
3235						Suggested UCL to Use						
3236					95% Student's-t UCL	9.38						
3237												
3238				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.								
3239				Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.								
3240				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.								
3241												
3242	Tellurium											
3243												
3244						General Statistics						
3245					Total Number of Observations	8			Number of Distinct Observations	2		
3246					Number of Detects	1			Number of Non-Detects	7		
3247					Number of Distinct Detects	1			Number of Distinct Non-Detects	1		
3248												
3249				Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!								
3250				s suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BT								
3251												
3252					The data set for variable Tellurium was not processed!							
3253												
3254												
3255	Thorium											
3256												
3257						General Statistics						
3258					Total Number of Observations	8			Number of Distinct Observations	1		
3259					Number of Detects	0			Number of Non-Detects	8		
3260					Number of Distinct Detects	0			Number of Distinct Non-Detects	1		
3261												
3262				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!								
3263				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!								
3264				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).								
3265												
3266					The data set for variable Thorium was not processed!							
3267												
3268												
3269	Yttrium											
3270												
3271						General Statistics						
3272					Total Number of Observations	8			Number of Distinct Observations	1		
3273					Number of Detects	0			Number of Non-Detects	8		
3274					Number of Distinct Detects	0			Number of Distinct Non-Detects	1		
3275												
3276				Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!								
3277				Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!								
3278				The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).								
3279												
3280					The data set for variable Yttrium was not processed!							
3281												
3282												

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