Lambton Facility 2021 Annual Landfill Report Biomonitoring Program

2020 Field Year – Final Report

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Executive Summary

In 1991, Laidlaw Environmental Services Inc. initiated an annual Biomonitoring Program near their hazardous waste landfill and liquid-injection incinerator (the Lambton Facility) located on Lot 9, Concession 10, St. Clair Township in Lambton County, Ontario. The Lambton Facility is a hazardous waste management complex which includes a high temperature incinerator and a secure landfill and is currently owned and operated by Clean Harbors Canada Inc. (Clean Harbors).

The Biomonitoring Program is one of the Lambton Facility's ongoing monitoring programs, which are required under condition 9 of the Facility's Environmental Compliance Approval No. A031806 dated September 5, 1997 and as amended. The Biomonitoring Program provides an indication of trends, through time, in the concentration of analytes in several environmental media at a network of test Sites located within approximately 1.5 km of the Lambton Facility boundary. The locations of test Sites were selected based on wind directions at the Lambton Facility. In 2015, the test Sites were evaluated based on a wind rose (**Figure 2 of Appendix A**) generated using meteorological data collected from the Lambton Facility from July 2014 to June 2015. The wind rose indicated that the dominant wind direction came from the south and southwest and blew to lesser degree from the north and west. Sites N2, N4 and N5 in the north and Sites E1, E2, E5 in the east of the Lambton Facility were situated in the maximum deposition areas to the north and east of the Lambton incinerator. Site E6 was established within the Lambton Facility perimeter, east of the incinerator. Sites S1, S2 and S4 were situated to the south of the Lambton Facility to cover potential deposition areas due to the wind blowing to a lesser degree from the north of the Lambton incinerator. Sites W2 and W4 were situated in locations opposite from the predominant wind directions. In the 2019 Field Year, a new Site E7 was added to the northeast of the Lambton Facility based on dominant wind direction towards the northeast of the incinerator.

The annual Biomonitoring Program includes the collection of samples from up to four environmental media (soil, drainage ditch sediment, natural vegetation and agricultural crops) from each Site which are submitted to the analytical laboratory to determine the concentration of selected metals, pesticides, chlorinated phenols, and dioxins and furans. For the 2020 Field Year, a total of 12 test Sites were monitored.

The review and comparison of the 2020 data relative to the upper control limits (UL18)[1] for each Site and on a Site-wide basis was completed for inorganic analytes present in soil, sediment, natural grasses, soybean, winter wheat and field corn samples collected at the sites. The concentrations of 20 inorganic analytes (14 Group 1[2] analytes (i.e., barium, beryllium, calcium, chloride, chromium, cobalt, magnesium, manganese, molybdenum, nickel, phosphorus, silicon, strontium and sulfur) and six Group 2 analytes[3] (i.e., aluminum, arsenic, cadmium, lead, mercury and vanadium) exceeded their respective Site-specific UL18 while a single Group 1 analyte (i.e., chloride) and a single Group 2 analyte (i.e., lead) exceeded the Site-wide UL18.

Within the 14 Group 1 analytes which exceeded the Site-specific UL18, the concentrations of three Group 1 analytes (i.e., chloride, phosphorus and sulfur) in soil collected in 2020 exceeded the Ontario Typical Range for Rural Parkland Soil (OTR_{98}) (Ministry of Environment, Conservation and Parks (MECP), 2011). Concentration of one Group 1 analyte (i.e., magnesium) in soil exceeded the rural Upper Limit of Normal (ULN) (MECP, 1989), whereas concentrations of two Group 1 analytes (i.e., manganese and molybdenum) in natural grasses exceeded the rural ULN. No criteria were available for comparison of UL18 exceedances identified in crops. The exceedances of the Group 1 analytes do not warrant additional investigation at this time.

Within the six Group 2 analytes which exceeded their respective Site-specific UL18, the concentrations of a single analyte (i.e., arsenic) in sediment exceeded the Ontario Regulation (O. Reg) 153/04 Table 1 Site Condition Standards (SCS) and the Provincial Sediment Quality Guidelines (PSQG) (MECP, 2008). The exceedances of the Group 2 analytes do not warrant additional investigation at this time, with the exception of lead at Site E6 where an additional sample is proposed in future years.

Group 3 organic analytes[4] were not detected at concentrations representative of concern for ecological health during the 2020 Field Year.

Organochlorine pesticides (OCP) analytes were measured at concentrations greater than their applicable reporting detection limits (RDL)[5]. However, detected concentrations of OCPs were less than their respective guidelines, where available for comparison. There are no standards available for OCP comparison of vegetation. Monitoring should continue but no additional investigation is proposed.

The concentrations of polychlorinated biphenyls (PCBs) were measured greater than their applicable RDLs. Detected concentrations of PCBs were below their respective guidelines, where available for comparison. There are no standards available for PCBs comparison of vegetation. Monitoring should continue but no additional investigation is proposed.

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[1] The Upper Control Limits (UL) is the mean concentration of the analyte plus three standard deviations of the sample population. Site-specific and Site-wide UL18 values were calculated using data collected from 1991-2017.
[2] Group 1 Analytes are ubiquitous or required nutrients in the environment and are not expected to have harmful effects on plant, human and animal health from chemical toxicity.
[3] Group 2 Analytes are known to have toxicological effects.
[4] Organic analytes with reported toxicity that are produced when certain waste streams are incinerated. These organic analytes are documented to accumulate in the environment.
[5] The low concentration at which laboratory analyses will consistently detect the analytes when present.

Pentachlorophenols (PCPs) were not identified at concentrations greater than their respective RDLs. Monitoring should continue but no additional investigation is proposed.

Individual compounds of Dioxins/furans (PCDD/DF) were reported in soil at concentrations greater than the OTR_{98}, however, concentrations of total PCDD/DF (lower bound PCDD/DF TEQ and upper bound PCDD/DF TEQ) in soil were reported below the Table 1 SCS in the 2020 Field Year. No criteria were available for comparison of PCDD/DF concentrations in natural grasses. Monitoring should continue but no additional investigation is proposed.

An update to the upper and lower limits (UL21 and LL21) for inorganic analytes incorporating data from 1991-2020 was undertaken to comply with the three-year update cycle. Within this biomonitoring program, LLs and ULs have been developed when at least six years of data for a given analyte-matrix pair (site-wide or site-specific) were available. These limits have not previously been developed for organic analytes due to a high proportion of non-detect data. However, detection limits for most organic analytes decreased in 2013 due to updates to the analytical methods related to the change in analytical laboratory from ALS Edmonton to ALS Burlington. As such, the proportion of detected samples for these analytes increased considerably for samples collected between 2013 and 2017 compared to those collected prior to 2013. Given the increased proportion of detected samples, it was possible to calculate UL and LL values for some of the organic analytes for the first time. Overall, UL21 and LL21 values for inorganic and organic analytes will be used to represent the ‘typical range’ of concentrations specific to the local environment for the next three years.

The statements made in the Technical Summary are subject to the same limitations included in the Limitations Section 5.0 and are to be read in conjunction with the remainder of this report.

Abbreviations

ANOVA	Analysis of Variance
CALA	Canadian Association for Laboratory Accreditation Inc.
CEC	Cation Exchange Capacity
ECA	Environmental Compliance Approval
FC	Field Corn
GLP	Good Laboratory Practice
GC/HRMS	High Resolution Mass Spectrometry/Gas Chromatography
H^+	Hydrogen Ion
ISO	International Organization for Standardization
LL	Lower Control Limit
MDL	Method Detection Limit
meq	Milliequivalent
MECP	Ministry of the Environment, Conservation and Parks (formerly the Ministry of the Environment and Climate Change)
NG	Natural Grasses
NORM	Naturally Occurring Radiative Material
OCDD	Octachlorodibenzodioxin
OCP	Organochlorinated Pesticide
ODWS	Ontario Drinking Water Standard
OM	Organic Matter
OECD	Organization for Economic Cooperation and Development
OTR_{98}	Ontario Typical Range
PCB	Polychlorinated Biphenyls
PCDD	Polychlorodibenzo-p-Dioxin
PCDF	Polychlorodibenzo-Furan
PCP	Pentachlorophenol

pH	-log[H+]
pg	Picograms
ppm	Parts per Million
PSQG	Provincial Sediment Quality Guidelines
QA/QC	Quality Assurance/Quality Control
RDFN	Raw Data File Notebook
RDL	Reporting Detection Limit
RPD	Relative Percent Difference
SCC	Standards Council of Canada
SCS	Site Condition Standard
SD	Sediment
SB	Soybean
SS	Soil
Stantec	Stantec Consulting Ltd.
SWEDAC	Swedish Board for Accreditation and Conformity Assessment
TEF	Toxic Equivalency Factor
TEQ	Toxicity Equivalents
UL	Upper Control Limit
ULN	Upper Limit of Normal
US EPA	United States Environmental Protection Agency
WHO	World Health Organization
WW	Winter Wheat

1.0 INTRODUCTION

In 1991, Laidlaw Environmental Services Inc. initiated an annual Biomonitoring Program near their hazardous waste landfill and liquid-injection incinerator (the Lambton Facility) located on lot 9, concession 10, St. Clair Township in Lambton County, Ontario. The Lambton Facility is a hazardous waste management complex which includes a high temperature incinerator and a secure landfill and is currently owned and operated by Clean Harbors Canada Inc. (Clean Harbors). The Biomonitoring Program continues as one of the facility's ongoing monitoring programs required under condition 9 of its Environmental Compliance Approval (ECA No. A031806) dated September 5, 1997 and as amended. The Biomonitoring Program establishes baseline levels of selected chemicals in environmental media (soil, drainage ditch sediment, natural vegetation and agricultural crops) at selected locations (Sites) within approximately 1.5 kilometres of the Lambton Facility and provides an indication of trends, through time, in the concentration of analytes of the sampled media.

Biomonitoring is used to monitor the concentration, or presence/absence, of selected chemicals in environmental media associated with a facility or operation. The use of biological monitors allows changes in the concentration of chemicals in environmental media to be tracked over time. This is particularly important if changes in the concentration of one or more chemicals indicate an upward trend such that unacceptable threshold concentrations may be approached or exceeded.

Stantec Consulting Limited (Stantec) carried out the Biomonitoring Program for the 2020 Field Year and compared these data to accumulated biomonitoring data. Analytical testing of the 2020 media samples was undertaken by ALS Laboratories.

1.1 OBJECTIVES

The overall purpose of the Biomonitoring Program is to document through time the concentrations of selected analytes in environmental media (soil, sediment, natural vegetation and agricultural crops) in the vicinity of the Lambton Facility and evaluate if concentrations are changing relative to baseline or benchmark data.

The specific objectives of the program include:

1. Determine the concentrations of selected chemicals in environmental media at select Sites within approximately 1.5 km of the Lambton Facility and compare with past Biomonitoring Program year's analyte concentrations and relevant published guidelines.

2. Identify trends in chemical concentration over time for environmental media at Sites within approximately 1.5 km of the Lambton Facility, which, along with the results of other monitoring programs, may be used to determine the need for mitigative action on facility outputs or to direct potential remediation in the areas surrounding the Site.

3. Gather information (e.g., crop growth, sediment fertility and characterization[6] data) from the Sites that could be used to assist in the assessment of impacts if upset conditions (e.g., potential release of chemicals) were to occur at the Lambton Facility.

1.2 RATIONALE FOR PROGRAM APPROACH

The rationale for the selection of chemicals analyzed, environmental media sampled, test Site locations and the frequency of sampling for the Biomonitoring Program is summarized in the text below**.**

1.2.1 Selection of Chemicals for Analysis

The Biomonitoring Program monitors the concentrations of selected analytes at select locations within approximately 1.5 km of the Lambton Facility. Initially, the program was designed to address concerns identified in human health/environmental risk assessments conducted during previous environmental assessments (Laidlaw Environmental Services Inc., 1991; Laidlaw Environmental Services Inc., 1996). The selection of analytes was based on the results of the above-mentioned risk assessments.

The types of information considered when selecting the analytes included the nature of the Lambton Facility operations as a hazardous waste management facility, sources of potential release of chemicals, results of environmental monitoring in the Lambton county area, the types and composition of wastes to be incinerated or buried in the landfill Site and the toxicity of the chemicals in the wastes. The list of analytes required by the Ministry of Environment, Conservation and Parks (MECP) to monitor is provided in **Table 1** and in the design and operation manual which is an attachment to operating ECA No. A031806.

Table 1: List of Analytes, by Group, Monitored during the 2020 Biomonitoring Program, Lambton Facility

GROUP 1 ANALYTES			
Barium	Fluoride[7]	Potassium	Zirconium
Beryllium	Iron	Silicon	
Boron	Magnesium	Silver	
Calcium	Manganese	Sodium	
Chloride	Molybdenum	Strontium	
Chromium	Nickel	Sulfur	
Cobalt	Phosphorus	Titanium	
GROUP 2 ANALYTES			
Aluminum	Copper	Thallium	
Arsenic	Lead	Vanadium	
Cadmium	Mercury	Zinc	

[6] The influence of soil and sediment characterization/fertility is discussed in Section B.2 and Appendix B.
[7] The monitoring of fluoride was added to the Biomonitoring Program in the 2018 Field Year as per the MECP approved changes.

GROUP 3 ANALYTES		
Organochlorine Pesticides (OCPs)		
Aldrin	p,p' DDD	Endrin
a-BHC	p,p' DDE	Endrin Aldehyde
b-BHC	p,p' DDT	Heptachlor
g-BHC (Lindane)	Dieldrin	Heptachlor Epoxide
d-BHC	a Endosulfan	Methoxychlor
a-Chlordane	b Endosulfan	Mirex
g Chlordane	Endosulfan Sulphate	
Total Polychlorinated Biphenyls (PCB)		
Pentachlorophenol (PCP)		
Furans and Dioxins (PCDD/DF)		
Total Tetrachlorodibenzofurans (T4CDF)	Total Tetrachlorodibenzo-p-dioxins (T4CDD)	
Total Pentachlorodibenzofurans (T5CDF)	Total Pentachlorodibenzo-p-dioxins (T5CDD)	
Total Hexachlorodibenzofurans (T6CDF)	Total Hexachlorodibenzo-p-dioxins (T6CDD)	
Total Heptachlorodibenzofurans (T7CDF)	Total Heptachlorodibenzo-p-dioxins (T7CDD)	
Octachlorodibenzofuran (8CDF)	Octochlorodibenzo-p-dioxin (8CDD)	

Based on toxicity information in the scientific literature and on public perception of chemicals the analytes were grouped into three categories (**Table 1**):

Group 1: Inorganic analytes representing the lowest potential threat to livestock or to the consuming public that eats crops from the area. At the time of establishing the Biomonitoring Program in 1991, reports of toxic effects in either humans or livestock were not identified in the literature for exposures to the analyte at concentrations considered ‘typical’ in the environment.

Group 2: Inorganic analytes reported or theorized in the literature to have toxic effects on environmental receptors. However, at the time of establishing the Biomonitoring Program these analytes were not considered to be toxic contaminants that occur on a widespread or common basis.

Group 3: Organic analytes with reported toxicity that are produced when certain waste streams are incinerated. These organic analytes are documented to accumulate in the environment.

1.2.2 Selection of Environmental Media for Analysis

Several media were considered for inclusion in the Biomonitoring Program. These include soil, grass from hay or pastured fields, grain and oilseed crops, corn silage, sediment from drainage ditches and maple leaves. Prior to the 2018 Field Year, maple leaves were collected and reported outside of the Biomonitoring Program, as part of a voluntary program called the Maple Leaf Sampling Program that Clean Harbors engaged in. The findings from the Maple Leaf Sampling Program indicated that there was no significant difference between the concentrations measured in the maple leaves adjacent to the Clean Harbors facility in comparison with the randomly selected control sites. As a result, the maple leaf program provided no benefit to the core Biomonitoring Program. In 2018, the MECP approved Clean Harbors to discontinue the maple leaf program and no maple leaves were collected in the 2018, 2019 and 2020 Field Years. Consideration was also given to the typical practices used during crop production and the species of plants that grow as part of the natural vegetation surrounding the facility. For example, soybean, field corn and winter wheat rotations and natural grasses are more prevalent in the vicinity of the Lambton Facility than other agricultural crops and natural vegetation. The environmental media being tested for Group 1, 2 and 3 analytes are provided in **Table 2**.

Table 2: List of Analytes, by Group and Environmental Matrix, Monitored during the 2020 Biomonitoring Program, Lambton Facility

Group	Environmental Media			
	Soil (SS)	**Drainage Ditch Sediment (SD)**	**Natural Grasses (NG)**	**Agricultural Crop (e.g., Winter Wheat - WW, Soybean - SB, and Field Corn - FC)**
1	All analytes	All analytes	All analytes	All analytes
2	All analytes	All analytes	All analytes	All analytes
3 [A]	OCP PCB PCDD/DF	OCP PCB	OCP PCB PCDD/DF	OCP PCB PCP PCDD/DF

Note(s):

[A] OCP/PCB/PCP samples analyzed on a three-year cycle. Year 1, all samples will be submitted for analysis. Years 2 and 3, two samples per environmental media will be submitted for analytical testing: The Site with highest historical concentration and a randomly selected control site. Should concentrations of PCB, PCP or OCP be detected at concentrations greater than 50% of the applicable guidelines, the remaining samples will be submitted for analysis. The 2019 Field Year was Year 3 completing the three cycles. The 2020 Field Year is Year 1 of the succeeding three-year cycle.

1.2.3 Selection of Test Sites

When the Biomonitoring Program was established in 1991, test Site selection was based mainly on projections of the location of contaminants that could be dispersed by the facility's on-Site liquid waste incinerator and that could have potential impacts on the surrounding environment. In order to include potential emissions from the facility (i.e., to include fugitive and dust emissions from the landfill and other on-Site activities), the Site selection criteria were modified. Specifically, these modifications resulted in the selection of test Sites that were spaced at approximately equal distances, and located to the north, south, east and west of the Lambton Facility (**Figure 1** of **Appendix A**). The selection of Sites was based on criteria that would allow long-term, representative sampling of the media of interest. Existing test Site information (e.g., years in program and location relative to the facility) is provided in **Section 2.1**.

In 2017, based on the recommendations by Stantec, Clean Harbors requested MECP to approve a number of modifications to the Clean Harbors Biomonitoring Program. The changes included an addition of a test Site based on a review of wind directions, the removal of a test Site based on sufficient coverage to the south, and the relocation of an existing test Site to accommodate the expansion of the landfill. In 2018, the MECP approved the following changes in test Sites for the Biomonitoring Program:

- The addition of a new Site (i.e., E7) downwind from the Facility (i.e., northeast) approved based on a review of the predominant wind direction. This Site was included in the 2019 Field Year.
- The removal of Site S5 from the Biomonitoring Program. Sufficient coverage to the south of the Facility is provided by remaining sites.
- The removal of Site S3 and replacement by the addition of Site S7. Site S3 was previously destroyed by the construction of an access road that supported construction activities for the landfill expansion. The new Site S7 was located to the east of its original location as Site S3.

Ongoing construction activities at the Facility due to the landfill expansion and construction related to stormwater management at the Facility resulted in the subsequent destruction of the new Site S7 in 2019 as well Site S1 in 2020. With the construction activities expected to end in 2021, Site S7 will be replaced by Site S8 for the 2021 Field Year.

1.2.4 Frequency of Sampling

The frequency of sampling was based on the outcomes from the first six years (1991-1996) of the Biomonitoring Program.

The content of emissions released from the Lambton Facility between 1991 and 1996 varied. As such, sampling less frequently than annually could result in an incomplete understanding of changes in the concentrations of analytes in environmental media over time. Hence, annual sampling events were continued.

In 2018, the MECP approved a proposed modification to the Clean Harbors Biomonitoring Program where the frequency of analysis of select organic analytes (PCBs, PCP and OCPs) was reduced. Concentrations of these parameters were shown to be relatively consistent for over 20 years and there were few concentrations measured above the reportable detection limit since 1991. Samples will continue to be collected from available sites on an annual basis, but analytical frequency will change to a three-year cycle. In Year 1 all samples will be submitted for analysis. In Years 2 and 3 only one sample from the site that historically has the highest concentrations and one sample from the control site will be submitted for analysis. If PCB, PCP or OCP are detected at concentrations which exceed 50% of the applicable guidelines in the sample from the site that historically has the highest concentrations, the samples from the other sites can be submitted for analysis. However, if these analytes are not detected in the site that historically has the highest concentrations, it is assumed that the other sites will not have detected concentrations greater than applicable guidelines.

1.3 SCOPE OF WORK

The scope of work documented in this report includes the following tasks:

1. Collect samples of natural grasses, soil, sediment and agricultural crops during the appropriate time of year using the standardized sampling techniques outlined in the Revised Biomonitoring Sampling Program (Stantec, 2018) and as amended and filed in the Raw Data File Notebook.

2. Send samples to analytical testing facility for sample processing and analysis.

3. Conduct quality assurance and quality control on the analytical data received from the laboratory.

4. Review and compare 2020 Field Year data to the UL18 for each Site and on a Site-wide basis. Results with concentrations greater than the UL18 (referred to as exceedances) have been reviewed and reported herein.

5. Review and compare the exceedances (inorganic analytes) or detections (organic analytes) in the 2020 Field Year data to applicable guidelines relevant for various media as outlined in **Section 2.6**.

6. Calculate revised upper limits and lower limits (UL21, LL21) for inorganics and organics if applicable using data from 1991-2020.

7. Follow up on MECP approved changes to the Biomonitoring Program and recommendations identified in the 2019 Field Year Annual Landfill Report (Clean Harbors, 2021).

8. Provide recommendations regarding further investigation or issues to consider during future Biomonitoring Program events.

2.0 MATERIALS AND METHODS

The sampling and reporting cycles; location and management of test Sites; and methods used to characterize, collect, analyze and statistically analyze the data are summarized below. The field protocol for the 2020 Biomonitoring Program and field phase test records from the 2020 Field Year are included within the Raw Data File Notebook (RDFN) (Stantec, 2020). The field protocol for the Biomonitoring Program describes the methods used during the field and analytical phases of the program.

Table 3 details the sampling and reporting cycles of the Clean Harbors Biomonitoring Program and has been updated to reflect MECP approved changes to the Biomonitoring Program. More details regarding the MECP approved changes are provided in **Appendix G**.

Table 3: Sampling and Reporting Cycles, Biomonitoring Program, Lambton Facility

Task	Timing	2016 Report	2017 Report	2018 Report	2019 Report	2020 Report	2021 Report
		2015 Field Year	2016 Field Year	2017 Field Year	2018 Field Year	2019 Field Year	2020 Field Year
Sampling Task							
Collect biomonitoring chemistry samples at all Sites	annual	X	X	X	X	X	X
Collect sediment fertility & characterization samples at select Sites	3 yr cycle*	X	X	X			X
Collect soil fertility & characterization samples at all Sites	6 yr cycle*			X		[D]	
Analysis Task							
Laboratory analysis of inorganics and PCDD/DF	annual	X	X	X	X	X	X
Laboratory analysis of PCB, PCP and OCP	3 yr cycle	X	X	X[A]	X[B]	X[B, D]	X[A]
Reporting Task							
Compare annual findings with control chart upper limits	annual	X	X	X[C]	X	X	X[C]
Compare annual findings with available government guidelines	annual	X	X	X	X	X	X
Follow up on identified issues, if any	annual	X	X	X	X	X	X

Task	Timing	2016 Report	2017 Report	2018 Report	2019 Report	2020 Report	2021 Report
		2015 Field Year	2016 Field Year	2017 Field Year	2018 Field Year	2019 Field Year	2020 Field Year
Update control chart limits used for annual comparisons	3 yr cycle			X (UL18, LL18)			X (UL21, LL21)
Update inorganic Site-specific trends	3 yr cycle	X			X		
Update inorganic Site-wide trends	3 yr cycle		X			X	
Update organic Site-specific/Site-wide trends	6 yr cycle					X	

Note(s):

[A] Year 1, all samples will be submitted for analysis. 2018 Field Year was considered Year 1 of the first 3-year cycle. 2020 Field Year was considered Year 1 of the second 3-year cycle.

[B] Years 2 and 3, two samples per environmental media will be submitted for analytical testing: The Site with highest historical concentration and a randomly selected control site. Should concentrations of PCB, PCP or OCP be detected at concentrations greater than 50% of the applicable guidelines, the remaining samples will be submitted for analysis.

[C] Although control charts are updated this year, the current year's data is compared to the previous control chart limits (i.e., 2020 Field Year data is compared to the UL18).

[D] Site E7 was added to the Biomonitoring Program in the 2019 Field Year. Soil at this Site was analyzed for fertility and characterization. Samples from Site E7 were analyzed for PCB, PCP and OCP.

[*] Recommend collecting sediment fertility and characterization samples at all applicable Sites every four years and soil fertility and characterization samples every eight years.

2.1 LOCATION AND MANAGEMENT OF TEST SITES

The lands surrounding the Facility are predominantly agricultural, used for the production of crops. General descriptions of the test Sites are provided in **Table 4**. Additional detail about the location of each test site is not provided in order to respect landowner confidentiality. A diagram of the facility and the relative locations of the existing test sites is provided in **Figure 1** of **Appendix A**. Site S1 was not included in the 2020 Field Year due to construction activities due to the landfill expansion taking place at the location during the sampling event. The addition of Site S8, the proposed replacement to Site S7 which was previously destroyed, was postponed to the 2021 Field Year due to ongoing construction at the time of the sampling event.

Of the 12 Sites included in the 2020 Field Year, ten Sites have been managed under a crop rotation that included soybean, winter wheat and field corn. The remaining two sites (E6 and N5) are within the Clean Harbors facility and do not follow any cultural practices. In 2020, seven of the 12 Sites were cultivated with soybean (E1, E2, E5, W2, W4, S2 and S4), two Sites were cultivated with winter wheat (N2 and E7) and one Site cultivated with field corn (N4).

Table 4: Name and Location of Test Sites, Biomonitoring Program, Lambton Facility

Site	Years in Program	Location Relative to the Facility
N2	1991-present	North: located in an agricultural field approx. 700 m from the property boundary
N4	2001-present	North: located in an agricultural field approx. 400 m from the property boundary
N5	2002-present	North: located on a naturally landscaped, but previously disturbed, area at the northern property boundary
E1	1991-present	East: located in an agricultural field approx. 0.1 km from the property boundary
E2	1991-present	East: located in an agricultural field approx. 2.0 km from the property boundary
E5	1992-present	East: located in an agricultural field approx. 0.25 km from the property boundary
E6	2000-present	East: located on the cap of a previously filled waste cell at the property
E7	2019-present	East: located in an agricultural field approx. 0.7 km from the property boundary
S1[1]	1991-2020	South: located in an agricultural field approx. 0.2 km from the property boundary
S2	1991-present	South: located in an agricultural field approx. 0.4 km from the property boundary
S3	1991-2015	South: located on the cap of a previously filled waste cell at the property
S4[2]	1991-present	South: located in an agricultural field approx. 2.4 km from the property boundary
S5	1995-2017	South: located in an agricultural field approx. 0.8 km from the property boundary
S7	2016-2018	South: located on the cap of a previously filled waste cell at the property

Site	Years in Program	Location Relative to the Facility
W2	1991-present	West: located in an agricultural field approx. 0.1 km from the property boundary
W4	1997-present	West: located in an agricultural field approx. 1.4 km from the property boundary

Note(s):

[1] The drainage ditch at S1 was moved to a location next to a gravel road (2004-2008) and in 2009 was moved back to its original location north of the agricultural field. In 2020, Site S1 was destroyed during construction activities at the site.

[2] Only sediment monitored from 1991-1992; all media in 1993–present.

Typical tillage systems for agricultural practice in this area disturb approximately 15 cm of soil depth, although no-till management systems, which disturb approximately 5 cm of soil depth in 30% of the soil surface, have gained in popularity. Based on the cultural practices surveys[8] completed by the land managers (farmers) responsible for crop cultivation at the various test sites, Sites N2, N4, E1, E5, E7 and S2 were managed using a no-till system in 2020. No response was received from farmers of farms at Sites W2, W4, S4 and E2 at the time of reporting.

Site E6 was located on clay-capped waste cells and Site N5 was on a previously disturbed, but naturally re-vegetated area. The two Sites were maintained with a grass cover within the perimeter of the Lambton Facility. The soil was not tilled at the Sites within the facility boundary and was therefore considered undisturbed relative to typical agricultural tillage practices.

2.2 CHARACTERIZATION OF TEST SITES

Every year, the plants are characterized based on the type of agricultural crop, growth stage, plant stand and presence of pests and/or diseases. The field data is on file in the 2020 RDFN (Stantec, 2020). Sediment sampling for fertility and characterization (concentrations of nutrients, organic matter (OM), pH, cation exchange capacity (CEC) and texture) is completed on a three-year cycle and was completed in the 2020 Field Year. Soil characterization and fertility sampling (concentrations of nutrients, OM, pH, CEC and texture) occurs on a six-year cycle and was completed in the 2017 Field Year. The characterization of sediment and soil is further discussed in **Appendix B**.

[8] Cultural Practice Surveys are sent out to land managers of record for cropped test Sites following the conclusion of the sampling program to gather information on field management practices. Completed Cultural Practice Surveys are on file in the RDFN.

All the test Sites, except three (N5, E2 and W2), were located in areas free of known anomalies that could influence the results (e.g., dusty, gravel roads or other potential emission sources). Site W2 and the drainage ditch for Site E2 were located relatively close to gravel roads. Site N5 was located at the northern boundary of the facility and adjacent to a paved road (Petrolia Line) with constant truck and local traffic. Other potential sources of emissions (e.g., chemical plants, refineries) exist approximately nine kilometres west and southwest of the Lambton Facility. Emissions from these sources may have affected the results obtained from Sites S4 and W4 in the Biomonitoring Program due to their greater distance from the Lambton Facility.

Given the distance of Sites W4, S4 and E2 from the Lambton Facility, (approximately 1.4 km, 2.4 km, and 1.75 km, respectively), it is likely that data collected from these Sites are more influenced by activities unrelated to the Lambton Facility rather than activities related to the Lambton facility.

2.3 COLLECTION OF SAMPLES FOR CHEMICAL ANALYSES

Samples of soil, drainage ditch sediment, natural grasses and agricultural crop were collected as per the methods outlined in the Revised Biomonitoring Sampling Program (Stantec, 2018). Soil and natural grasses samples were collected from 12 Sites in 2020. Agricultural crops were sampled at 10 of the 12 Sites[9]. Samples of drainage ditch sediment were collected from test Sites where drainage ditches were present (i.e., N5, S4, E2, and N2).

Since the samples were analyzed to determine the concentration of organic chemicals, sampling equipment was cleaned according to a strict regimen designed to prevent sample contamination. Documentation of the chain of custody of the samples was maintained.

A photo log is provided in **Appendix D**.

2.4 ANALYTICAL PROCEDURES

The samples for chemical analysis from the 2020 Field Year were submitted to ALS Laboratories for the list of Group 1, 2 and 3 analytes identified in **Table 1**.

Analysis of PCB, PCP and OCP occurs on a three-year cycle as described in **Section 1.2.4**. In the 2020 Field Year, organic analysis was completed for each site in the Biomonitoring Program (Year 1).

The metals analysis for soil, sediment and unwashed tissue were conducted by the ALS Vancouver laboratory with the exception of chloride in unwashed tissue which was conducted by ALS Edmonton. In order to meet the detection limits required for the biomonitoring program, the silicon analyses in vegetation and in soil/sediment were conducted by the ALS Lulea, Sweden laboratory.

[9] The two remaining Sites (i.e., E6, N5) are not managed under a crop rotation.

The organics analysis was conducted by ALS Burlington with the exception of PCB analysis which was conducted by ALS Vancouver.

2.5 QUALITY ASSURANCE/QUALITY CONTROL

A QA/QC program, based on principles embodied in the United States Environmental Protection Agency (US EPA) Good Laboratory Practices (GLP) standards (US EPA, 1989) and the Organization for Economic Cooperation and Development (OECD) principles of good laboratory practice (OECD, 1981), was used during the field phase of the Biomonitoring Program.

All quantification used internal standardization. Appropriate quality assurance/quality control (QA/QC) measures were followed including the preparation and analysis of method blanks, analytical duplicates, matrix spikes and proper calibration of instruments according to protocols.

The analytical phase of the program relied on verification by the laboratory that government and industry standards were being met at the time of sample analysis. ALS Laboratories in Vancouver, British Columbia and Burlington, Ontario that were responsible for the analytical phase of the Biomonitoring Program, are accredited by the Standards Council of Canada (SCC) in cooperation with the Canadian Association for Laboratory Accreditation Inc. (CALA). The ALS laboratory in Lulea, Sweden, which conducted the analysis of silicon in vegetation and soil/sediment, is accredited by the Swedish Board for Accreditation and Conformity Assessment (SWEDAC), which is based on the same standards on which the Canadian ALS is accredited (International Organization for Standardization (ISO) 17025). Accreditation by SWEDAC is accepted in Canada (ALS, 2009). An Analytical Data Summary Package is provided by ALS and provides detailed documentation of the actual procedures used during laboratory phase of the 2020 Biomonitoring Program and is on file with Stantec.

The RDFN and the Analytical Data Summary Package provide detailed documentation of the actual procedures used during the field and laboratory phases of the Biomonitoring Program.

The data quality objective established for this sampling program was to produce data that were representative, reproducible, complete and suitable for comparison with the results of previous analyses within the Biomonitoring Program and the applicable standards.

To assess whether quality standards associated with the field program were achieved, a QA/QC program was included as a component of the sampling program. Eight blind field duplicates were collected and submitted for laboratory analysis to evaluate both laboratory precision and field sampling and handling procedures.

The formula used to determine the relative percent difference (RPD) from the mean between two concentrations, the original (a) and the duplicate (b), is provided below:

$$RPD\ (\%) = \ 100\ x\ \frac{(a-b)}{(a+b)/2}$$

The applicable limit of the RPD is 40% for soil and sediment samples and 60% for tissue samples. Field duplicates were considered acceptable if the RPD met the applicable limit set by the laboratory. The RPD could not be calculated if either of the concentrations were less than five times the method detection limit (MDL).

A total of three field blanks, three rinsate blanks and three trip blanks were also submitted to the testing laboratory to evaluate if proper sample handling practices were followed in the field during the 2020 Field Year. Interpretation of analytical results for the blank samples is provided in **Section 3.2**.

2.6 STATISTICAL ANALYSIS AND INTERPRETATION OF THE DATA

The following describes the methods and conventions that were used during the statistical analysis and interpretation of the data obtained during the 2020 Field Year of the Biomonitoring Program.

The analytical data obtained during the 2020 Field Year are compared to applicable guidelines, where available. Soil analytical data are preferentially compared to the soil O. Reg. 153/04 Table 1 Site Condition Standards[10] (SCS) (MECP, 2011). Where soil SCS are unavailable, the soil analytical data are compared to the rural parkland Ontario Typical Range (OTR) (MECP, 2011) (MECP, 1993), or the soil Upper Limit of Normal (ULN) (MECP, 1989). Sediment analytical data are preferentially compared to the sediment O. Reg. 153/04 Table 1 SCS. Where sediment SCS are unavailable, the sediment analytical data are compared to the Provincial Sediment Quality Guidelines (PSQG) (MECP, 2008). Natural grasses analytical data are compared to the ULN (MECP, 1989). There are no guidelines available for agricultural crops (i.e., soybeans, field corn and winter wheat).

The statistical conventions used in the statistical analysis include:

- The use of actual values of the Reporting Detection Limits (RDLs, reported by the analytical laboratory) to represent the concentrations of those analytes that were not detected in the samples. Equipment used by the analytical laboratory produced measurements of analytes in environmental media at high levels of reliability within certain limits. The "low" limit is often referred to as the MDL which represents the concentration below which reliable measurement of an individual analyte cannot be made by laboratory equipment. MDLs may vary between media, analytes, years and, as with dioxins and furans, between samples. The RDL is the concentration at which individual analyses will consistently detect the analytes when present. The RDL must be equal or greater than the MDL. The actual concentrations below the MDL or RDL are not known. Therefore, the value of the RDL was arbitrarily used for statistical treatment of those samples where the concentration of the analyte was not detected greater than its RDL. This is viewed as a “worst case” estimate of the concentration of the analyte.

[10] O.Reg.153/04 Soil, Ground Water and Sediment Standards for use Under Part XV.1 of the *Environmental Protection Act.*

- Assessment of normality prior to statistical analysis. For the data up to and including 2020, the normality of analytical datasets was assessed on a Site-wide basis for each analyte-matrix pair by comparing histograms of both the log-transformed and untransformed dataset. In all cases, log-transformation improved the normality of the plotted data. Therefore, statistical analyses in the current report were performed assuming an underlying lognormal distribution. Reported results (e.g., regression values, upper limits and lower limits) have been back transformed to the original scale for final reporting.

- Assessment of appropriate start date prior to statistical analysis. As noted in prior reports, RDLs have shifted since 1991 for certain analyte-matrix pairs due to changes in analytical methods. In most cases, RDLs have decreased because of increased sensitivity of the analytical method. However, in other cases, RDLs have increased, generally as a trade-off for greater sensitivity for other analytes. For analyte-matrix pairs that have large proportions of non-detect data, these changes in RDL can have major impacts on statistical results for analyses that consider all data collected throughout the Biomonitoring Program (e.g., linear regressions and calculations of upper and lower limits). Therefore, prior to analyses carried out in the present report, analytical data were reviewed for each analyte-matrix pair on a Site-wide basis to determine the appropriate start date for statistical analyses. This review is discussed in detail in Error! Reference source not found.. Statistical analyses (e.g., linear regression and calculation of upper and lower limits) in this report and future reports will rely on the analyte-matrix specific start dates indicated in Error! Reference source not found. unless future analysis indicates that a more recent start date is appropriate. Historical data will be retained for historical comparison purposes only.

- Missing data were accounted for within the statistical analysis and were left blank within each data set.

- In order to compare the toxicity of different samples with different congener profiles, toxic equivalency factors (TEFs) have been developed that standardize “dioxin-like” substances to a TEQ amount of 2,3,7,8-TCDD, the most toxic congener.

- Duplicate samples were relied on to assess analytical and/or sampling variability as discussed in **Section 2.5**. To avoid overrepresentation of individual samples, further statistical analysis (e.g., linear regression and calculations of upper and lower limits) excluded duplicate results and relied only on ‘parent’ sample results (when available).

2.6.1 Development and Interpretation of Control Charts

Industry has used control charts for many years as a useful tool that graphically monitors the performance of industrial processes. Control charts allow for identification of outlying values and temporal trends that may be developing in the data (King, 1982). Depending on the results, follow-up action may be warranted.

Two critical components of a control chart are the UL and LL. In industrial process control charts, these limits are chosen such that almost all data points will fall between them as long as the process remains in-control (i.e., observations that fall below the LL or above the UL indicate potential process errors). These control limits are frequently derived to capture the mean value for the in-control process plus or minus three standard deviations of the mean (an approximate probability of 0.997).

In the Biomonitoring Program, LLs and ULs have been calculated using a similar approach that relies on an overall annual mean[11] (or geometric mean, if data are determined to be log-distributed) of observed concentrations plus or minus three standard deviations of the overall annual mean (or geometric mean) calculated on a Site-wide or Site-specific basis. The resulting LLs and ULs describe a range of concentrations for each analyte in a given matrix that can be considered "typical" or "expected" (with an approximate probability of 0.997) for the monitored areas in the program (i.e., Site-wide and Site-specific). Individual values that fall outside of these control limits, and especially that are greater than an upper limit, are atypical for that Site-wide or Site-specific area and should be flagged for further consideration.

To generate upper and lower limits, the normality of each analyte-matrix pair was first assessed on a Site-wide basis. In general, the data collected in this program are largely lognormal and normality will be improved if data are log-transformed prior to analysis. As such, statistical analyses are typically performed on log-transformed data, which are back-transformed to regular units prior to report upper and lower limits. However, if analysis indicated that data were normally distributed, this process could also be carried out using un-transformed data.

The overall annual mean (or geometric mean, for lognormal data) for each analyte-matrix pair was calculated on a Site-wide and Site-specific basis by as a mean of annual means (or mean of annual geometric means for lognormal) to account for potential variability of sample numbers collected in individual years.

To calculate standard deviations for each analyte-matrix pair, the log-transformed (or normally distributed) data for each analyte in each medium on a Site-wide basis were then subjected to an analysis of variance (ANOVA) Type III model using Year and Site as independent variables with no interaction. Both Year and Site were considered categorical variables and Year was considered a random variable. The residual and year variance components were estimated from the ANOVA tables and used to compute the standard deviation for Site-specific and Site-wide concentrations of each analyte for each year.

For analyte-matrix pairs that were log-transformed, the mean and mean ±3 standard deviations, or upper and lower control limits (UL and LL), were computed on the log scale and then transformed back (by taking the antilog) before the control charts were prepared. For normally distributed data, the mean and mean ±3 standard deviations, or upper and lower control limits could be computed directly.

[11] This overall mean was calculated as a mean of annual means (or mean of annual geometric means for samples with lognormal distributions) to account for potential variability of sample numbers collected in individual years.

The mean and standard deviation of the annual concentrations of the analytes per matrix per test Site or on a Site-wide basis can be used to define the "normal" or "expected" variability of the annual mean concentrations of the analytes. Provided there are no outlying values or temporal trends, the annual mean concentrations of the analytes can be expected to fall within plus or minus three standard deviations of the mean, with an approximate probability of 0.997. The Site-specific calculations incorporate data from each Site individually to determine the typical ranges expected a specific Site, while the Site-wide calculations pool data from every Site together to calculate the typical range for all data. The change in number of Sites per year was accounted for in the computation of the standard deviation of the yearly means. Data that has a high degree of variability will result in a large standard deviation, causing the ±3 standard deviations, or control limits, to be wide.

Following this approach, LLs and ULs were initially calculated in 1997 using data from the first six years of the program (1991-1996). Since then, these limits have been periodically updated to encompass new data, as it became available, on a three-year cycle. The most recent update of these values prior to the current report incorporated data available between 1991 and 2017 (i.e., the UL18 and LL18 values). Throughout this program, LLs and ULs were not developed for Sites and matrices where concentrations of an element were not detected greater than the RDL. Also, LLs and ULs were not developed when less than six detected data points, collected over at least a 6-year period, were available.

When evaluating the data collected in the 2020 Field Year, the UL18 and LL18 values were considered indicative of the ‘typical range’ of concentrations specific to the local environment (Site-wide and/or Site-specific). Therefore, samples collected during the 2020 Field Year with concentrations that were higher than the applicable UL18 concentration for that analyte in that matrix (Site-wide and/or Site-specific) were treated as ‘exceedances’ that warranted further consideration (**Section 3.3 and Section 0**). In addition, measured concentrations of these analyte-matrix pairs (Site-wide and/or Site-specific) were compared with relevant guidelines when available. These guidelines include the rural parkland Table 1 SCS, OTR_{98}, ULN, and the PSQG.

2.6.2 Development and Interpretation of Trend Lines

Change in the environment over time may be influenced by many local, regional and global factors. In order to understand how concentrations of inorganic analytes have changed in environmental media collected at the biomonitoring Sites, concentration trend lines are developed based on linear regression statistics. Trend lines on a Site-wide and Site-specific basis are updated on a three-year cycle for inorganics and a six-year cycle for organics.

Prior to completing regression analyses, data were screened to identify only datasets with at least six samples (n≥6) collected after the start date specified in Error! Reference source not found.. In addition, only datasets for which at least 50% of samples had measured concentrations greater than the reported detection limit after the start date specified in Error! Reference source not found. were considered appropriate for regression analysis. The screening based on proportion of detected samples was introduced in the 2018 field-year report in order to minimize the generation of spurious or uncertain regressions that are highly influenced by non-detect samples that have been assigned the value of the full reported detection limit. Screening for number of samples and proportion of detected samples was completed on a Site-wide or Site-specific basis, depending on the linear regressions being updated (i.e., Site-wide if completing Site-wide regressions or Site-specific if completing Site-specific regressions). Only samples collected after the appropriate analyte-matrix specific start date described in Error! Reference source not found. were included in determining suitability for regression analysis.

For each dataset identified as suitable for linear regression, a regression analysis was performed with year of sample collection as the independent variable and either concentration or log-transformed concentration as the dependent variable. In most cases, the data collected in this program have been shown to be lognormal, therefore linear regressions were completed using log-transformed concentrations. However, if data were observed to have a normal distribution, regression could be completed using un-transformed concentrations. Linear regressions were considered to be statistically significant when the regression p-value was less than 0.003 ($p<0.003$).

3.0 RESULTS AND DISCUSSION

3.1 FACTORS AFFECTING THE RESULTS

Environmental factors can affect the movement and fate of chemicals in the environment. Factors potentially affecting the results of the Biomonitoring program include:

- Soil and sediment characteristics (e.g., CEC, OM, clay content and pH):
  - These factors can impact the movement and fate of chemicals in the local environment. Further discussion of these characteristics is provided in Appendix B.
- Continued use of the Ontario ULN and OTR, which may not be specific or relevant to the Site:
  - The ULN represent findings from the 1980s, which may not adequately represent current environmental conditions.
  - The rural parkland OTR_{98} values represent samples collected across the province. However, the land use surrounding the Lambton Facility could be better characterized by “rural agricultural” land use, thus the rural parkland OTR_{98} values are not necessarily specific to the conditions of the Lambton Facility.

Another factor that can affect the results of the Biomonitoring Program is climate. Plant growth and environmental conditions are influenced significantly by precipitation, temperature and wind. Climate in the Sarnia-Lambton region is interpolated from data obtained at the Sarnia Climate weather station at the Sarnia Chris Hadfield Airport (Environment Canada, 2020a), which is approximately 15 km north of the Lambton Facility.

The Sarnia Climate weather information may provide a general indication of weather conditions during the 2020 growing season relative to the Canadian Climate Normals and Averages (1981-2010) for the region (Environment Canada, 2020b).

The 2020 growing season (April to October) experienced lower overall precipitation (484 mm) than the 30-year climate normal (572 mm). During the months of June and August, Sarnia received approximately 15.4 mm and 104.4 mm more precipitation than the 30-year climate normals. In the months of April, May, July, September and October, Sarnia received 68.7 mm, 30.2 mm, 34 mm, 52.3 mm, and 23.1 mm lesser precipitation, respectively, than the 30-year climate normals. The mean monthly temperatures over the growing season of April to October (15.1˚C) were similar to the 30-year mean for that time period (15.1˚C), confirming the overall climate conditions supported good plant growth.

3.2 QUALITY ASSURANCE/QUALITY CONTROL

Eight blind field duplicates were analyzed for inorganic and organic analytes. For inorganic analytes, the RPD of analytes in soil, winter wheat and soybean exceeded the acceptable ranges, whereas the RPD of analytes in sediment, natural grasses and field corn were below the acceptable ranges outlined in **Section 2.5**. In soil, the RPD of Group 1 analyte calcium in the soil sample collected at E2 exceeded the acceptable limit of 40%. In winter wheat, the RPD of Group 1 analytes barium, calcium, magnesium, molybdenum, phosphorus and strontium, and RPD of Group 2 analytes cadmium, copper and zinc in winter wheat samples collected at N2 exceeded the acceptable limit for tissue at 60%. Similarly, the RPD of Group 1 analyte calcium in the soybean sample collected at W2 also exceeded the acceptable limit for tissue.

For organic analytes, the RPD of analytes in soil, natural grasses, soybean, field corn and winter wheat exceeded the acceptable ranges, whereas the RPD of analytes in sediment were below the acceptable range. In soil at Site E1, the RPDs of several PCDD/DF parameters (octachlorodibenzofuran (OCDF), 1,2,3,4,6,7,8-heptachlorodibenzofuran, 1,2,3,4,7,8-hexachlorodibenzofuran, 1,2,3,6,7,8-hexachlorodibenzofuran, total tetrachlorodibenzofuran, total hexachlorodibenzofuran, total heptachlorodibenzofuran, total HxCDD, total PeCDD, total PeCDF, total TCDD, total TCDF, mid point PDFD/F TEQ and upper bound PCDD/F TEQ) exceeded the acceptable limit for soil. In soil at Site E2, the RPDs of several PCDD/DF parameters (total pentachlorodibenzo-p-dioxin, total heptachlorodibenzofuran, total HpCDF, total HxCDF, total PeCDD, lower bound PCDD/F TEQ, mid point PCDD/F TEQ, upper bound PCDD/F TEQ) and OCPs (heptachlor epoxide) also exceeded the acceptable limit for soil. The RPD of lower bound PCDD/F TEQ in natural grasses samples collected at Site E1, and the RPD of polychlorinated biphenyls (PCBs) in natural grasses samples collected at Site E2 exceeded the acceptable limit for natural grasses. Similarly, the RPDs of lower bound PCDD/F TEQ in winter wheat, soybean and field corn samples collected at Sites N2, N4 and W2, respectively exceeded the acceptable limit for crops. Where the RPDs exceeded the acceptable range, the results should be viewed with discretion and considered estimates. Although these results represented decreased precision, the results did not affect the overall interpretation of sample quality. The RPDs for the field duplicates are provided in **Tables C-1a** through **C-1d** and **Table C-2a** through **C-2d**.

The percent recovery for the laboratory duplicates, laboratory control samples, laboratory control sample duplicates, matrix spikes, matrix spike duplicates, method blanks, certified reference material, internal reference material and standard reference material were within the recovery range acceptable to the analytical laboratory for internal quality control requirements or the overall quality control met acceptability criteria. Where applicable, qualifiers were added to the data and are presented in the laboratory certificates provided in **Appendix H**.

Three field blanks (laboratory supplied distilled water) were collected from laboratory supplied containers to evaluate if sample handling practices would result in an artificial increase of the analytical results. In addition, in the 2020 Field Year, a rinsate sample (store bought distilled water) from every store-bought bottle of distilled water used for decontamination of field equipment was collected upon opening during three separate sampling events (July, September, October). The purpose of the rinsate samples is to verify that store bought distilled water used for decontaminating field equipment did not introduce detectable concentrations of confounding inorganics. The three field blanks and the three rinsate blanks (collected from newly opened bottles) were collected at Sites E1, E7 and W4. Three trip blanks (laboratory supplied distilled water in sealed containers) were also sent for analysis. The data quality objective for field, rinsate and trip blanks are concentrations less than or near the RDL. The analytical data from field blanks, rinsate blanks and trip blanks are provided in **Table C-1e**.

The trip blanks and field blanks met the data quality objective (no detectable analytes). Overall, the rinsate blanks met the data quality objective; however, calcium, manganese, silicon and aluminum were detected at concentrations greater than the RDL in rinsate blanks collected at Sites E1 and E7. Additionally, chromium, nickel and copper concentrations were detected above their respective RDL in the rinsate sample collected at Site E1. Aluminum was detected above the RDL in the rinsate sample collected at Site W4. While most analytes were non detects in the rinsate samples, the equipment rinse is not expected to have meaningfully influenced the analytical results.

3.3 INORGANIC ANALYTES

The analytical results for the 2020 inorganic parameters have been summarized according to their respective environmental media and compared to applicable guidelines and are provided in **Tables C-1a, C-1b, C-1c** and **C-1d** of **Appendix C**.

3.3.1 Annual Findings

In 2020, the concentrations of 20 analytes [14 Group 1 analytes (Ba, Be, Ca, Cl, Cr, Co, Mg, Mn, Mo, Ni, P, Si, Sr, S) and 6 Group 2 analytes (Al, As, Cd, Pb, Hg, V)] exceeded their respective Site-specific UL18 within various environmental media (**Table C-3** and **Table C-4** of **Appendix C**). The concentrations of chloride and lead exceeded their Site-wide (analyte by media) UL18 (**Table C-5** of **Appendix C**).

Control chart graphs of the site-specific and site-wide exceedances are presented in **Appendix F.2**.

3.3.2 Group 1 Analytes

The Group 1 analytes exceeding the UL18 are discussed below.

3.3.2.1 Barium

The barium concentrations exceeded the Site-specific UL18 in natural grasses at Sites E1 and E5. There is no ULN guideline available for natural grasses. The barium concentrations in natural grasses at Sites E1 and E5 did not exceed their Site-specific UL18 values in 2018 and 2019, or the UL15 values in 2015, 2016 and 2017. This suggest that the barium exceedance in natural grasses at Sites E1 and E5 is not a recurring exceedance.

The barium concentration marginally exceeded (2%) the Site-specific UL18 in soil at Site E2. However, barium concentration in soil at Site E2 did not exceed the Site-specific UL18 values in 2018 and 2019, or the UL15 values in 2015, 2016 and 2017. This suggests that the barium concentration in soil at Site E2 is not a recurring exceedance. Additionally, barium concentration in soil at the Site was below the MOE Table 1 SCS.

On a site-wide basis, barium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.2 Beryllium

The beryllium concentration marginally exceeded (9%) the Site-specific UL18 in soil at Site E2. However, beryllium concentrations in soil at the Site did not exceed the Site-specific UL18 values in 2018 and 2019, or the UL15 values in 2017. This suggests that the beryllium concentration in soil at Site E2 is not a recurring exceedance. Additionally, beryllium concentration in soil at the Site was below the MOE Table 1 SCS.

On a site-wide basis, beryllium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.3 Calcium

The calcium concentration exceeded the Site-specific UL18 in soil at Sites S4 and W2. The concentration of calcium in soil at both Sites was less than the OTR_{98} guideline.

The calcium concentration exceeded the Site-specific UL18 in sediment at Site N5. The concentration of calcium in sediment at Site N5 was below the Site-specific UL18 in 2018 and 2019, as well as the UL15 values in 2015, 2016 and 2017. This suggests that the exceedance of calcium concentration in sediment is not a recurring exceedance.

The calcium concentration exceeded the Site-specific UL18 in soybeans at Sites E1, S4 and W4. There are no guidelines available for agricultural crops. The concentrations of calcium in soybeans at the three Sites were below the Site-specific UL18 values in 2018 and 2019, as well as the UL15 in 2015, 2016 and 2017 when soybeans were planted at these sites (soybeans was not planted at Sites E1 and W4 in 2016, at Site S4 in 2017, and at Sites E1 and W4 in 2018). This suggests that the calcium exceedance in soybeans is not a recurring exceedance at the three Sites.

On a Site-wide basis, calcium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.4 Chloride

The chloride concentration exceeded the Site-specific UL18 in soil at Sites E1, E2, E5, N2 and W4. The chloride concentration also exceeded the OTR_{98} in soil at Sites E1 and E5. However, there were no chloride exceedances identified in soil at Sites E1, E5 and N2 in 2018 and 2019 Field Years, suggesting the chloride exceedances are non-recurring exceedances at the three Sites. The chloride concentrations in soil at Sites E2 and W4 were analyzed as non-detects, in which case the laboratory set RDL (5.0 mg/kg) for chloride was compared to the Site-specific UL18 (5.0 mg/kg) for chloride resulting in an exceedance for the two sites. Similarly, chloride concentrations in soil at Sites E2 and W4 in 2018 and 2019 Field Years were analyzed as non-detects and were considered to exceed the Site-specific UL18. While the increase in RDL of chloride by ALS Laboratories from 0.5 mg/kg in 2018 to 5.0 mg/kg has resulted in the occurrence of exceedances at Sites E2 and W4 since the 2018 Field Year, detected chloride concentrations in soil at the two Sites did not exceed the UL15 in 2015, 2016 and 2017. Given that chloride concentrations in soil at Sites E2 and W4 have either been non-detects or below the Site-specific UL and OTR_{98} since the 2015 Field Year, chloride concentration in soil is not considered a concern at the two Sites.

On a Site-wide basis, chloride concentrations exceeded the Site-wide UL18 in soil. The Site-wide chloride concentrations were below the Site-wide UL18 in 2018 and 2019, and below the Site-wide UL18 in 2015, 2016 and 2017. This suggests that the Site-wide chloride concentration is not a recurring exceedance. Additionally, the Site-wide chloride concentration was below the OTR_{98} guideline.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.5 Chromium

The chromium concentration exceeded the Site-specific UL18 in soil at Site E2. However, the concentration was below the MOE Table 1 SCS. The chromium concentration in soil at Site E2 was also below the Site-specific UL18 in 2018 and 2019, and the Site-specific UL15 in 2017. This suggests that the exceedance of chromium in soil at Site E2 is not a recurring exceedance.

On a Site-wide basis, chromium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.6 Cobalt

The cobalt concentration marginally exceeded (1%) the Site-specific UL18 in natural grasses at Site E6. The concentration was below the ULN for natural grasses, and below the Site-specific UL18 in 2018 and 2019, or the Site-specific UL15 in 2017. This suggests that the cobalt exceedance at Site E6 is not a recurring exceedance.

On a site-wide basis, cobalt concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.7 Magnesium

The magnesium concentrations exceeded the Site-specific UL18 in soil at Sites S4 and W2. The soil concentration at Site S4 also exceeded the ULN for soil. However, the concentrations at both Sites were below the OTR_{98} guideline. The magnesium concentrations in soil at Sites S4 and W2 were also below the Site-specific UL18 in 2018 and 2019, or Site-specific UL15 in 2017, and below the ULN and OTR_{98} guidelines in 2017, 2018 and 2019 Field Years. This suggests that the magnesium exceedances in soil at Sites S4 and W2 are not a recurring exceedance.

The magnesium concentration marginally exceeded (7%) the Site-specific UL18 in sediment at Site N5. There are no available guidelines for magnesium in sediment. The magnesium concentration in sediment at Site N5 was also below the Site-specific UL18 in 2018. This suggests that the magnesium exceedance at Site N5 is not a recurring exceedance.

On a Site-side basis, magnesium concentrations did not the exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.8 Manganese

The manganese concentration exceeded the Site specific UL18 and ULN in natural grasses at Site N2. An investigation into the manganese concentrations in natural grasses was conducted in the 2010 Annual Landfill Report and it was concluded that the injury threshold level in plants reported in scientific literature was 500 mg/kg dry weight (Clean Harbors, 2011). Thus, the concentration of manganese in natural grasses at Site N2 was less than the injury threshold level in plants.

The manganese concentration marginally (6%) exceeded the Site-specific UL18 in soil at Site E6. However, the soil concentration was below the OTR_{98} and ULN.

On a Site wide basis, manganese concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.9 Molybdenum

The molybdenum concentration exceeded the Site-specific UL18 in sediment at Site N2. The concentration of molybdenum in sediment at Site N2 in 2019 and 2018 was less than the UL18, and in 2015, 2016 and 2017 the concentration was less than the UL15. This suggests that the exceedance is not a recurring exceedance.

The molybdenum concentrations exceeded the Site-specific UL18 and ULN in natural grasses at Site S4. The concentration of molybdenum in natural grasses at Site S4 also exceeded the Site-specific UL18 and ULN in 2018 and the Site-specific UL15 and ULN in 2017. However, molybdenum concentration in natural grasses at the site was below the Site-specific UL18 and ULN in 2019. This suggests that the molybdenum exceedance in natural grasses at Site S4 is not a recurring exceedance.

On a Site-wide basis, molybdenum concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.10 Nickel

The nickel concentration exceeded the Site-specific UL18 in soil at Site E2. The nickel concentration was below MOE Table 1 SCS, OTR_{98} and ULN guidelines at Site E2. The concentration of nickel in soil at Site E2 was also below the Site-specific UL18, MOE Table 1 SCS, OTR_{98} and ULN guidelines in 2018 and 2019 Field Years. This suggests that the nickel exceedance in soil at Site E2 is not a recurring exceedance.

On a Site-wide basis, nickel concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.11 Phosphorus

The phosphorus concentration exceeded the Site-specific UL18 in natural grasses at Site E5. There is no ULN guideline available for comparison for natural grasses. The phosphorus concentration in natural grasses at Site E5 did not exceed its Site-specific UL18 value in 2019 and 2018, or the UL15 values in 2015, 2016 and 2017. This suggest that the phosphorus exceedance in natural grass at Site E5 is not a recurring exceedance.

The phosphorus concentrations exceeded the Site-specific UL18 in soil at Sites E2 and S4. The concentration at Site E2 also exceeded the OTR_{98} guideline in soil. However, the phosphorus concentration in soil at Site E2 was below the Site-specific UL18 and OTR_{98} guideline in 2018 and 2019, and below the Site-specific UL15 and OTR_{98} guidelines in 2017. This suggests that the phosphorus exceedance in soil at Site E2 is not a recurring exceedance. The phosphorus concentrations in soil at Site S4 was below the OTR_{98} guideline. This suggests that the elevated concentrations of phosphorous in soil at Site S4 is not considered a cause for concern.

On a Site-wide basis, phosphorus concentrations did not exceed the Site-wide UL18 in the sampled media.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.12 Silicon

The silicon concentration marginally (2%) exceeded the Site-specific UL18 in soil at Site N4. There is no soil SCS or OTR_{98} guideline available for comparison. Elevated concentrations of silicon in soil were also detected above the Site-specific UL18 at Site N4 in 2019. A UL15 was not calculated for silicon due to changes in the analytical method for silicon in soil and sediment in the 2010 Field Year, which resulted in higher analytical results compared to historical data, so a comparison of previous years' upper limits is not available. Given the marginal exceedance (2%) to the UL18, the elevated concentrations of silicon in soil may be the result of native soil conditions at the Site.

On a Site-wide basis, silicon concentrations did not exceed the UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.13 Strontium

The strontium concentration exceeded the Site-specific UL18 in soil and sediment at Site S4. The strontium concentration in soil also exceeded the Site-specific UL18 in 2019, but was below the Site-specific UL18 in 2018. The strontium concentration in soil is also below the OTR_{98} guideline. Thus, the elevated concentration of strontium in soil at Site S4 is not considered a concern at the site. The strontium concentration in sediment at S4 exceeded the Site-specific UL18, however, the elevated concentrations were below the Site-specific UL18 in 2018 and 2019, and below the Site-specific UL15 in 2017. This suggests that the strontium concentration in sediment at Site S4 is not a recurring exceedance.

The strontium concentration in soybean at Site W4 also exceeded the Site-specific UL18. There are no guidelines available for comparison for agricultural crops. However, the strontium concentration in soybean were below the Site-specific UL18 in 2018 and 2019, and below the Site-specific UL15 in 2017. This suggests that the exceedance in soybean at Site W4 is not a recurring exceedance.

On a Site-wide basis, strontium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.14 Sulfur

The sulfur RDL exceeded the Site-specific UL18 in soil at 10 (Sites E1, E2, E5, E6, N2, N4, S2, S4, W2 and W4) of the 12 Sites in the 2020 Field Year. The increased number of exceedances is the result of the testing laboratory raising the RDL of sulfur in soil from 200 mg/kg to 1000 mg/kg, above the Site-specific UL18, OTR_{98} and ULN guidelines, due to a change in testing facilities from ALS Edmonton to ALS Vancouver in 2018. With the raised RDL, sulfur in soil also exceeded the Site-specific UL18, OTR_{98} and ULN at most Sites in 2018 and 2019 Field Year. However, the concentration of sulfur in soil at all Sites were typically measured at concentrations less than the current RDL of 1000 mg/kg, and below the Site-specific UL15, OTR_{98} and ULN in 2016 and 2017 Field Years. Thus, the change in laboratory RDL for sulfur in soil has been the only factor to trigger sulfur exceedances in most Sites since 2018. This suggests that the 10 Sites where sulfur concentrations exceeded the Site-specific UL18 do not require additional investigation.

On a Site wide basis, sulfur concentrations did not exceed the Site wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.2.15 Other Group 1 Analytes

The concentrations of boron, iron, potassium, silver, sodium and titanium were below the Site-specific UL18 and Site-wide UL18 in the sampled media across all sites. The inorganic data from Site E7, for which UL18 values do not exist, is discussed in Section 3.3.4. Fluoride concentrations in the media sampled across sites is discussed in Section 3.3.5.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.3 Group 2 Analytes

The Group 2 analytes exceeding the UL18 are discussed below.

3.3.3.1 Aluminum

The aluminum concentration exceeded the Site-specific UL18 in a soil field duplicate at Site E2, whereas the aluminum concentration in the parent soil sample was below the Site-specific UL18. With the RPD of the parent and duplicate soil sample within the applicable limit of 40%, the aluminum concentration in both soil samples at Site E2 were also below the Site-specific UL18 in 2019. This suggests that the elevated concentrations of aluminum in soil at the site is not a recurring exceedance. Additionally, the aluminum concentration in soil at Site E2 was below the OTR_{98} guideline. Therefore, aluminum exceedance in soil is not considered a concern at the site.

On a Site-wide basis, aluminum concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.3.2 Arsenic

The arsenic concentrations marginally (1%, 3%) exceeded the Site-specific UL18 in soil at Sites E2 and E6. Additionally, arsenic concentrations in soil were below the Table 1 SCS. Therefore, arsenic in soil is not considered a concern at the site.

The arsenic concentrations in sediment also exceeded the Site-specific UL18 and MOE Table 1 SCS guidelines at Site N2. This exceedance in sediment was not recorded at Site N2 in 2017, 2018 and 2019. This suggests that the elevated concentrations in sediment at Site N2 is not a recurring exceedance.

On a Site-wide basis, arsenic concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.3.3 Cadmium

The cadmium concentration exceeded the Site-specific UL18 in natural grasses at Site E6. The cadmium concentration in natural grass at Site E6 also exceeded the Site-specific UL18 in 2019, but the concentration was below the Site-specific UL18 and ULN in 2018, and below the Site-specific UL15 and ULN in 2017. Further, the cadmium concentration in natural grasses at Site E6 was below the ULN in the 2020 Field Year. Thus, the cadmium exceedance in natural grasses is not a recurring exceedance.

The cadmium concentration exceeded the Site-specific UL18 in soybeans at Site W4. The cadmium concentration also exceeded the Site-specific UL18 in soybean at Site W4 in 2019 Field Year. However, there are no guidelines available for comparison for agricultural crops. Thus, the cadmium concentrations in soybeans at Site W4 were compared to the injury threshold level of 2.5 mg/kg in plants (Henson et.al., 2013), which is 9.5 times greater than the cadmium concentrations detected in soybeans at Site W4. Therefore, cadmium concentration in soybean at Site W4 is not considered a concern at the site.

On a site-wide basis, cadmium concentrations exceeded the Site-wide UL18 in natural grasses but was below the ULN.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.3.4 Lead

The lead concentration exceeded the Site-specific UL18 in natural grasses at Site E6. The lead concentration in natural grasses at Site E6 also exceeded the Site-specific UL18 in 2018 and 2019, but the concentration was below the Site-specific UL15 in 2017. Further, the lead concentration in natural grasses at Site E6 was below the ULN during the 2016, 2017, 2018, 2019 and 2020 Field Years. Thus, lead concentration in natural grasses at Site E6 is not considered a concern at the site.

On a Site-wide basis, lead concentrations exceeded the Site-wide UL18 in natural grasses but was below the ULN.

Monitoring should continue, but further investigation in the form of additional sample at Site E6 is recommended in the future.

3.3.3.5 Mercury

The mercury concentrations exceeded the Site-specific UL18 in soil at Sites E6 and N5. The mercury concentrations in also exceeded the Site-specific UL18 at Site E6 in the 2019 Field Year. However, mercury concentrations in soil at both sites did not exceed the MOE Table 1 SCS.

The mercury concentration also exceeded the Site-specific UL18 in natural grasses at Site E6, but the concentrations were below the Site-specific UL18 in the 2019 Field Year. This suggests that the mercury exceedance in natural grasses at Site E6 is not a recurring exceedance.

On a Site-wide basis, mercury concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.3.6 Vanadium

The vanadium concentration exceeded the Site specific UL18 in soil field duplicate at Site E2, whereas the soil concentration in the parent sample was below the Site-specific UL18. With the RPD of the parent and duplicate soil sample within the applicable limit of 40%, the vanadium concentration in both soil samples was below the MOE Table 1 SCS. Further, the vanadium concentration in soil at Site E2 was also below the Site-specific UL18 in 2018 and 2019 Field Years. This suggests that the vanadium exceedance in soil at Site E2 is not a recurring exceedance nor is it considered a concern at the site.

On a Site wide basis, vanadium concentrations did not exceed the Site-wide UL18 in the media sampled.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.4 Inorganic Analytes at Site E7

Site E7 is a new site that was added to the Biomonitoring Program in the 2019 Field Year. Since this is a new site, upper limit values have not been calculated. Thus, the laboratory analytical results for analytes in soil, natural grasses and soybean samples collected at the site were compared against applicable guidelines (where available) provided in **Tables C-1a, C-1b** and **C-1d** of **Appendix C**. Inorganic analytes in soil, natural grasses and soybeans, with the exception of chloride in natural grasses, were reported below the applicable MOE Table 1 SCS, OTR and ULN guidelines (where available). Chloride concentration in natural grasses exceeded the ULN, however, the concentration was below the Site-wide UL18 value for chloride in natural grasses.

Monitoring should continue, but no additional investigation is proposed at this time.

3.3.5 Fluoride

Fluoride analysis was added to the Biomonitoring Program in the 2018 Field Year and included in the 2019 and 2020 Field Years. Fluoride was added to the program after the discontinuation of the silver maple leaf monitoring program by the MECP which included analysis of fluoride in silver maple leaves collected from trees in the vicinity of the Clean Harbors facility. Fluoride was analyzed as it is phytotoxic and can reduce growth in plants. In the 2017 maple leaf sampling program, the maximum measured fluoride concentration in unwashed and washed silver maple leaves from trees around the Clean Harbors facility was 4 mg/kg and 2.7 mg/kg. These maple leaf results from 2017 are the most recent maple leaf results reported by the MECP.

In the 2020 Field Year, fluoride was measured in soil, natural grasses, sediment and agricultural crops. A UL18 is not available for fluoride since it requires six years of data to calculate an upper limit. Fluoride concentrations were compared to available criteria which include an OTR_{98} for soil and a ULN for natural grasses.

Prior to the submission of samples to the testing laboratory for the 2019 and 2020 Field Years, Stantec had requested the laboratory to lower the RDLs for analytes below their applicable guidelines. However, the laboratory could not achieve a lower RDL than 40 mg/kg for fluoride in natural grasses, which is greater than the ULN (12 mg/kg) and the measured fluoride concentration in silver maple leaves by the MECP in 2017.

Detected concentrations of fluoride in natural grasses at Sites N2 and W2 exceeded the ULN and the measured concentrations in silver maple leaves; however, there were no detected concentration at these two sites in the 2019 Field Year. This suggests that the elevated concentrations of fluoride in natural grasses are not recurring exceedances. The fluoride concentrations in agricultural crops (i.e., field corn and soybean) at Sites E1, E2, E5, E7, N2, N4, S2, S4, W2 and W4 were reported less than the RDL (40 mg/kg). There are no guidelines available for comparison for agricultural crops; however, the RDLs were greater than the fluoride concentrations measured in silver maple leaves by the MECP in 2017.

Fluoride was measured at detectable concentrations in soil at all sites but was less than the OTR_{98}. Fluoride was measured at detectable concentrations in sediment at all sites where sediment was sampled (i.e., Sites E2, N2, N5 and S4) but no guideline is available for comparison.

Monitoring should continue and no additional investigation is proposed at this time. For future years of the Biomonitoring Program, consideration will be given to a different analytical laboratory which can achieve a lower fluoride RDL in natural grasses and agricultural crops such that it allows for comparison to the ULN and/or MECP measured concentrations in maple leaves.

3.4 ORGANIC ANALYTES

The analytical results for the 2020 Field Year organic parameters have been summarized based on environmental media and are found in **Tables C-2a, C-2b, C-2c** and **C-2d** of **Appendix C**.

3.4.1 Annual Findings

3.4.1.1 OCP

The concentrations of several OCP parameters were measured at concentrations greater than their respective RDLs in various media.

Of the OCP analytes that were detected, none exceeded the applicable guidelines for soil for analytes with available guidelines (i.e., aldrin, chlordane-alpha, DDD, DDE, DDT, dieldrin, endrin, heptachlor, heptachlor epoxide, lindane and methoxychlor) and for sediment for analytes with available guidelines (i.e., aldrin, DDD, DDE, DDT, dieldrin, endrin and heptachlor epoxide) (**Tables C-2a, C-2b, C-2c** and **C-2d** of **Appendix C**). There are no standards available for comparison of vegetation. Monitoring should continue, but no additional investigation is proposed at this time.

3.4.1.2 PCBs

The concentrations of PCBs were measured in natural grasses, soil, sediment and agricultural crops greater than their respective RDLs.

The measured concentrations of PCBs in soil or sediment did not exceed the applicable guidelines. There are no standards available for comparison of vegetation.

Monitoring should continue, but no additional investigation is proposed at this time.

3.4.1.3 PCPs

The RDL for pentachlorophenol (PCP) varied from <0.6 ng/g to <1.7 ng/g in agricultural crops. None of the samples analyzed for PCPs had concentrations greater than the RDL in agricultural crops. There are no standards available for comparison of vegetation.

Monitoring should continue, but no additional investigation is proposed at this time.

3.4.1.4 PCDD/DF

The concentrations of polychlorodibenzo-p-dioxin/ polychlorodibenzo-furan (PCDD/DF) analytes were compared to their respective Table 1 SCS or rural parkland OTR_{98} (where Table 1 SCS were not available) for dioxins/furans (**Tables C-2a, C-2b, C-2c** and **C-2d** of **Appendix C**). There were no exceedances of the soil Table 1 SCS or OTR_{98}, with the exception of the concentration of total hexachlorodibenzofuran at Sites E1 and N5, total hexachlorodibenzo-p-dioxin at Site W4, and total heptachlorodibenzo-p-dioxin at Site N5 which exceeded the OTR_{98}. However, the upper bound PCDD/DF TEQ (2.15 and 2.52 and 2.14 pg/g, respectively) at Sites E1, N5 and W4 were less than the Ontario SCS Table 1 (i.e., 7.0 pg/g). Concentrations of upper bound PCCD/DF TEQ levels measured in soil were less than or within the range of levels in Canada reported in the scientific literature (TEQ 1.0 - 330 picogram (pg) /g, from Birmingham *et al.*, 1989).

The concentrations of various PCDD/DF analytes in natural grasses and agricultural crops were reported greater than their respective RDLs. Criteria for comparison of concentrations in natural grasses were not identified. The concentrations of octachlorodibenzodioxin (OCDD) measured in field corn and soybeans were within the range of the typical levels for vegetables (Ontario tomatoes, potatoes) reported in scientific literature (ND to 3 pg/g (fresh weight)) (Birmingham *et al.*, 1989).

Monitoring should continue, but no additional investigation is proposed at this time.

3.4.2 Organic Analytes at Site E7

Site E7 is a new site that was added to the Biomonitoring Program in the 2019 Field Year. Since this is a new site, upper limit values have not been calculated. Thus, the laboratory analytical results for organic analytes in soil collected at the site were compared against applicable guidelines provided in **Table C-2b**, whereas, laboratory analytical results for analytes in natural grasses and agricultural crops are presented in **Table C-2a** and **Table C-2d** of **Appendix C** without guidelines. The organic analytes in soil were reported below the applicable MECP, OTR and ULN guidelines as presented in Table C-2b.

Monitoring should continue, but no additional investigation is proposed at this time.

3.5 COMPARISON OF RESULTS

The soil, sediment and vegetation concentrations (as described in **Sections 3.3** and **Section 3.4**) around the Clean Harbors Facility were further evaluated based on the number of exceedances of the UL18 occurring at Sites located upwind and downwind of the Clean Harbors Facility. Group 2 parameters were considered for comparison as these parameters are known to have toxic effects on environmental receptors.

To further understand if frequency of Group 2 exceedances is related to the proximity of Sites to the Clean Harbors Facility, another comparison was made for the number of Group 2 exceedances of the UL18 occurring in various media at Sites within the Clean Harbors Facility (Sites E6 and N5) and Sites outside the facility (Sites N2, N4, E1, E2, E5, S2, S4, W2 and W4).

Site E7 located in the east of the Clean Harbors Facility was excluded from the evaluation as it is a relatively new Site and Site-specific UL18 values have not been established for the Site.

Comparison of analytical results of organic parameters (OCP, PCBs, PCPs, PCDD/DF) in the environmental media across Sites was not made as there are no established Site-specific UL18, or the detected concentrations were below applicable guidelines at all Sites, as discussed in **Section 3.4**.

3.5.1 Comparison of Results Between Sites Upwind and Downwind

With the dominant wind direction from south and southwest blowing to north and northeast, Sites N2, N4 and N5 (on-facility) located in the north and Sites E1, E2, E5 and E6 (on-facility) located in the east of the Clean Harbors were considered to be situated downwind to the north and east of the Lambton incinerator. Sites S2 and S4 located south of the Clean Harbors Facility were selected due to wind blowing to lesser degree from north to south. Sites W2 and W4 were situated at locations opposite the predominant wind direction and upwind of the Lambton incinerator. For comparison purposes, Sites S2 and S4 were coupled with Sites W2 and W4 as sites located upwind to the Clean Harbors Facility.

Based on analytical results generated for various media sampled during the 2020 Field Year, there were a total of 17 parameters at upwind sites and 29 parameters at downwind sites which exceeded their respective Site-specific UL18. In soil, three of the 16 parameter exceedances, or 19% of the total exceedances, were Group 2 parameter exceedances at the downwind sites, whereas no Group 2 parameters exceeded the Site-specific UL18 in soil at upwind Sites. There were no Group 2 exceedances observed in sediment across all Sites. In natural grasses, three of the eight parameter exceedances or 38% of the total parameter exceedances in sediment were Group 2 parameters at downwind sites, whereas no Group 2 parameters exceeded the Site-specific UL18 in sediment at upwind sites. In crops (soybean, field corn, winter wheat), one of the four parameter exceedances or 25% of the total exceedances were Group 2 parameter exceedances at the upwind Sites, whereas no Group 2 parameters exceeded the Site-specific UL18 in crops at downwind Sites. Thus, based on the frequency of Group 2 exceedances per Site, an increased number of Group 2 exceedances above the Site-specific UL18 in inorganics occurred in soils (19%) and natural grasses (38%) at downwind Sites, and a single Group 2 exceedance was observed in crops at an upwind site during the 2020 Field Year.

While Group 2 and Group 1 parameters exceeded the Site-specific UL18 in different media at both upwind and downwind Sites, they were recorded as non-recurring exceedances, or were below threshold limits and provincial guidelines such that no further investigation is required, as discussed in **Section 3.3.2** and **Section 3.3.3**.

Comparison of frequency of exceedances of Group 2 parameters based on upwind and downwind Sites is provided in Error! Reference source not found.. For a list of parameters exceeding in each matrix by site, refer to **Table C-4 in Appendix C**.

Table 5: Comparison of Group 2 Exceedances of a Site-Specific UL18 for Upwind and Downwind Sites

Sites	Group 2 Exceedances of Total Exceedances in Environmental Media				Total Group 1 and Group 2 Exceedances
	Soil	Sediment	Natural Grasses	Crops	
Upwind Sites (S2, S4, W2, W4)	0 of 11	0 of 1	0 of 1	1 of 4	17
Downwind Sites (N2, N4, N5, E1, E2, E5 and E6)	3 of 16	0 of 4	3 of 8	0 of 1	29
Group 2 Exceedances Across All Sites	3 of 27	0 of 5	3 of 9	1 of 5	-

3.5.2 Comparison of Results Between Sites On-Facility and Off-Facility

Based on analytical results generated for various media sampled during the 2020 Field Year, parameters exceeding the Site-specific UL18 were mostly observed at Sites located outside the Clean Harbors Facility. In soil, 5 exceedances in inorganics were observed at On-Facility Sites (E6 and N5) and 22 exceedances were observed at Off-Facility Sites (N2, N4, E1, E2, E5, S2, S4, W2 and W4).

In soil, three of the five UL18 exceedances or 60% of the total exceedances in soil were Group 2 parameters at On-Facility Sites, whereas no Group 2 parameters exceeded the Site-specific UL18 in soil at off-Facility Sites. In sediment, there were no Group 2 parameter exceedances in sediment across all Sites. At the On-Facility Sites, all four exceedances, or 100% of the parameter exceedances in natural grasses were Group 2 parameters, whereas no Group 2 parameters exceeded the Site-specific UL18 in natural grasses at Off-Facility Sites. Exceedances in crops were not compared as crops are not grown at On-Facility Sites. Thus, based on the frequency of Group 2 exceedances per site, an increased number of exceedances above the Site-specific UL18 in inorganics occurred in soil (60%) and natural grasses (100%) at On-Facility Sites, and no Group 2 parameter exceedances were observed at Off-Facility Sites during the 2020 Field Year.

While Group 2 and Group 1 parameters exceeded the Site-specific UL18 in different media at both On-Facility and Off-Facility Sites, they were recorded as non-recurring exceedances, or were below threshold limits and provincial guidelines such that no further investigation is required, as discussed in **Section 3.3.2** and **Section 3.3.3**.

Comparison of frequency of Group 2 exceedances of parameters based on Sites located on and outside the Clean Harbors Facility is provided in Error! Reference source not found.. For a list of parameters exceeding in each matrix by site, refer to **Table C-4 in Appendix C**.

Table 6: Comparison of Group 2 Exceedances of the Site-Specific UL18 for On-Facility and Off-Facility Sites

Sites	Group 2 Exceedances of Total Exceedances in Environmental Media			Total Group 1 and Group 2 Exceedances
	Soil	Sediment	Natural Grasses	
On-Facility Sites (N5 and E6)	3 of 5	0 of 2	4 of 4	11
Off-Facility Sites (N2, N4, E1, E2, E5, S2, S4, W2, W4)	0 of 22	0 of 3	0 of 5	30
Total Group 2 Exceedances Across All Sites	3 of 27	0 of 5	4 of 9	-

3.6 FOLLOW UP OF RECOMMENDATIONS FROM PREVIOUS BIOMONITORING REPORTS

Conclusions and recommendations presented previously in the 2019 Biomonitoring Program report which are to be address in the 2020 Field Year are listed in **Table 7** below.

Table 7: Status of Conclusions and Recommendations of the 2019 Field Year Biomonitoring Program

Conclusions and Recommendations	Discussion	Status
Monitoring of changes in the RDLs during the program should continue and impacts on the results should be reported where applicable.	The RDLs for chloride and sulfur are different from the 2017 to the 2018, 2019 and 2020 Field Years. These are discussed in Section 3.3.2.4 and Section 3.3.2.14. The RDL for fluoride in natural grasses exceeding guidelines is discussed in Section 3.3.5.	Monitoring of changes in the RDLs during the program should continue. Consideration will be given to a different analytical laboratory which can achieve a lower RDL.
When assessing the results for the Biomonitoring Program the greatest weight should be given to comparisons within and between sites monitored in the program versus comparisons with the Table 1 SCS, Ontario ULN and rural parkland OTR_{98} which are representative of aging databases.	Comparisons within and between sites monitored in the program are discussed in Section 3.0 along with comparisons to the Table 1 SCS, ULN and OTR_{98}. Where UL18s are not available comparison to available guidelines is conducted. Since fluoride was added to the Biomonitoring Program in the 2018 Field Year, a UL18 was not available to make comparisons within and between Sites, as discussed in Section 3.3.5.	Ongoing.

Conclusions and Recommendations	Discussion	Status
	Similarly, Site E7 was added in 2019 Field Year and site-specific UL18s were not available for this site, as discussed in Section 3.3.4.	
Discussion of recurring findings should continue annually so that previous discussions are compiled and either confirmed or revised based on new results.	Recurring exceedances of lead is discussed in Section 3.3.3.4. Collection of additional samples is proposed in the future Biomonitoring Program.	Ongoing.

3.7 DEVELOPMENT OF UPPER AND LOWER CONTROL LIMITS (UL21/LL21)

3.7.1 Inorganic Analytes

3.7.1.1 Upper and Lower Limits (UL21 and LL21)

An update to the upper and lower limits that incorporated data from 1991-2020 was undertaken to comply with the three-year update cycle**.** The resulting site-specific and site-wide UL21 and LL21 values are presented in **Appendix F (Tables F-1 and F-2)**.

3.7.1.2 Comparison of UL21 and UL18 values

Given that the upper limits represent the overall annual mean of observed concentrations plus three standard deviations, changes in the upper limit indicate a change in the sample mean, variability, or both. As such, substantial increases in the upper limit may indicate that the updated upper limit has incorporated an increasing trend or sudden increase in sample variability. Therefore, UL21 and LL21 values are presented in comparison to the last generated upper and lower limit values (i.e., UL18, and LL18) in **Appendix F (Tables F-3, and F-4)**. In addition, RPDs were calculated between the UL21 values and previously reported UL18 values for each analyte-matrix pair (site-wide and site-specific). These RPD values, calculated such that a negative RPD indicates that the UL21 is lower than the UL18 and a positive RPD indicates that the UL21 is greater than the UL18, are also reported in **Appendix F (Tables F-3, and F-4)**. A review of the stability of upper limits (Site-wide and Site-specific) is provided below:

- **Site-wide datasets**. Of the 128 analyte-matrix pairs (site-wide) where a comparison of the UL21 to the UL18 was made, the RPDs between UL21 and UL18 values were generally within acceptable analytical variability (i.e., +/- 40%) (see **Table F-3** in **Appendix F**). However, there were 13 analyte-matrix pairs where the UL increased by >40% (Arsenic (NG), Cadmium (NG), Chloride (SD, SS, SB), Chromium (NG, SB), Silicon (WW), Sulfur (SS), Thallium (NG, SD, SS), and Vanadium (NG)) and one analyte-matrix pair where the UL decreased by >40% (Boron (NG)), (see **Table F-3** in **Appendix F**).

- **Site-specific datasets**. Of the 1263 analyte-matrix-site-specific datasets where a comparison of the UL21 to the UL18 was made, the RPDs between UL21 and UL18 values were generally within acceptable analytical variability (i.e., +/- 40%) (see **Table F-4** in **Appendix F**). However, there were 106 analyte-matrix-site-specific datasets where the UL increased by >40% and 10 analyte-matrix-site-specific datasets where the UL decreased by >40% (see **Table F-4** in **Appendix F**). The site-specific datasets where ULs increased by >40% were for analyte-matrix pairs that were observed to have site-wide UL increases of >40% (i.e., Arsenic (NG), Cadmium (NG), Chloride (SD, SS, SB), Chromium (NG, SB), Silicon (WW), Sulfur (SS), Thallium (NG, SD, SS), and Vanadium (NG)). The site-specific datasets where ULs decreased by >40% included six site-specific groups of Boron (NG), which had a decrease of the site-wide UL of >40%. Additionally, decreases of the site-specific ULs of >40% were observed for subsets of Aluminum (NG), Molybdenum (SB), and Titanium (NG).

3.7.2 Organic Analytes

3.7.2.1 Upper and Lower Limits (UL21 and LL21)

Within this biomonitoring program, LLs and ULs have been developed when at least six years of data for a given analyte-matrix pair (site-wide or site-specific) were available. These limits have not previously been developed for organic analytes due to a high proportion of non-detect data. However, detection limits for most organic analytes decreased in 2013 due to updates to the analytical methods related to the change in analytical laboratory from ALS Edmonton to ALS Burlington. As such, the proportion of detected samples for these analytes increased considerably for samples collected between 2013 and 2017 compared to those collected prior to 2013 (see figures in **Section E.4** of **Appendix E**). Given the increased proportion of detected samples, it was possible to calculate UL21 and LL21 values for some of these analytes, using the start dates for analysis described in **Section E.5** of **Appendix E.** The resulting site-specific and site-wide UL21 and LL21 values are presented in **Appendix F (Tables F-5 and F-6)**. As LLs and ULs have not previously been calculated for organic analytes, no evaluation of the stability of upper limits (Site-wide and Site-specific) has been provided herein. However, such an analysis may be completed in three years when the UL24 and LL24 values are calculated.

4.0 CONCLUSIONS

Overall, the majority of exceedances of the UL18 in the 2020 Field Year were identified for Group 1 inorganic analytes (i.e., barium, beryllium, calcium, chloride, chromium, cobalt, cobalt, magnesium, manganese, molybdenum, nickel, phosphorus, silicon, strontium and sulfur). Many of these Group 1 analytes are ubiquitous or are required nutrients in the environment and are not expected to have deleterious effects on plant, human and animal health due to chemical toxicity. Although these analytes may be present in the material processed at the Facility, they are given a lower weighting in the Biomonitoring Report. Monitoring of these analytes in the Biomonitoring Program should continue to satisfy the requirements of ECA No. A031806 and do not warrant additional investigation at this time.

Group 2 analytes (i.e., aluminum, arsenic, cadmium, lead, mercury and vanadium) exceeded the Site-specific UL18 values. While continued monitoring of this analyte is important, additional investigation is not proposed at this time. For lead, an additional sample in natural grasses at Site E6 is proposed.

Fluoride analysis was added to the Biomonitoring Program in the 2018 Field Year and included in the 2019 and 2020 Field Years. The fluoride concentrations measured in soil were less than the OTR_{98}. A sediment guideline was not available for comparison. The fluoride RDL in plant tissue was greater than the ULN and detected concentrations at Sites N2 and W2 exceeded the ULN; however, these were not considered recurring exceedances as there were no detected fluoride concentrations in natural grasses for the 2019 Field Year at the two sites. Monitoring should continue, and a request will be made to the analytical laboratory to lower the RDL in natural grasses in future years of the Biomonitoring Program such that it allows for comparison to the ULN value. No additional investigation is proposed at this time.

Overall, the Group 3 organic analytes were not detected at concentrations which exceeded the applicable guidelines (i.e., OCPs and PCBs) or the concentrations were less than the RDLs (i.e., PCPs) in each media sampled. The concentrations of PCDD/DF analytes did not exceed the applicable guideline, with the exception of select congeners in soil at Sites E1, N5 and W4 which were greater than the OTR_{98}. However, the lower and upper bound PCDD/DF TEQ was less than the Table 1 SCS at the three sites.

In general, the results of the biomonitoring program based on field observations of agricultural crops, fertility and characteristization data, and/or measured analytical concentrations in sampled environmental media, do not indicate that upset conditions have occurred and that the biomonitoring results are comparable to previous years. Further, based on the findings of the report, there are a number of methods of data analysis and reporting that should continue or require change. These methods are outlined below:

- Monitoring of changes in the RDLs during the program should continue and impacts on the results should be reported where applicable.

- When assessing the results for the Biomonitoring Program the greatest weight should **continue** to be given to comparisons within and between Sites monitored in the program versus comparisons with the Table 1 SCS, Ontario ULN and rural parkland OTR_{98} which are representative of aging databases.

- Discussion of recurring findings should continue annually so that previous discussions are compiled and either confirmed or revised based on new results.

The concentrations of the identified chemicals were generally within the expected range in comparison with baseline levels, with exceptions/qualifications discussed herein. The range of results indicates that the Biomonitoring Program continues to effectively meet its specific objectives of monitoring environmental concentrations and identifying the trends in concentrations over time.

5.0 LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

Limitations
March 2, 2022

The conclusions are based on the Site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, Site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire Site. The purpose of this report is to identify Site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the Site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Bilal Siddiqui, B.Sc., statistical analysis was conducted by Melissa Whitfield Aslund, Ph.D., and reviewed by Katherine Ketis, P.Eng. and Tereza Dan, Ph.D.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.

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APPENDICES

APPENDIX A FIGURES

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Revised: 2022-02-18 By: lpodrug

February 2022
122160252

Stantec

Legend

- Existing Sampling Locations (Approximate)
- Existing Sampling Station to be Removed (Approximate)
- Watercourse
- Building
- Lambton Facility
- Waterbody
- Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2020.
3. Orthoimagery © Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, 2020. Imagery Date, 2018.

Client/Project

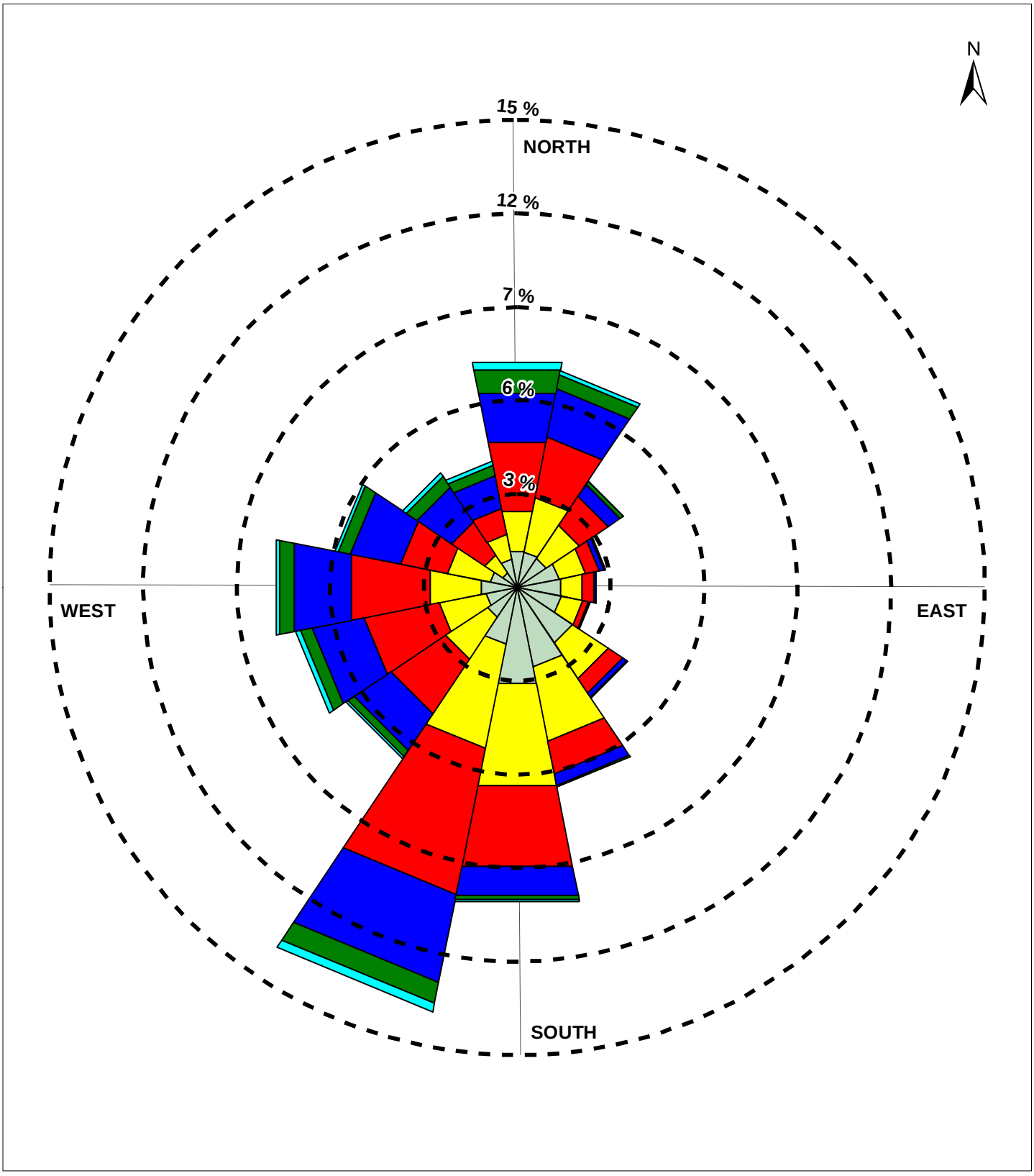
Clean Harbors Environmental Services Inc.
Biomonitoring Program
Lambton Facility

Figure No.

1

Title

Existing and Proposed Sampling Locations



\\cd1220-f02\work_group\01221\active\122160003\drawing\MXD\Internal\122160003_Fig0X_WindRose.mxd
Revised: 2015-12-03 By: svandamme

January 2019
122160003

Stantec

Notes
1. Note to scale.

Legend

Wind Speed (Knots)

- >= 22
- 17 - 21
- 11 - 17
- 7 - 11
- 4 -7
- 1 - 4

Calms: 3.06%

Client/Project

Clean Harbours Environmental Services Inc.
Biomonitoring Program
Lambton Facility

Figure No.

2

Title

Wind Speed Direction (blowing from), **July 2014 to June 2015**

APPENDIX B CHARACTERIZATION OF SOILS AT TEST SITES

B.1 SOIL AND SEDIMENT CHARACTERISTICS

The media used to monitor the inorganic and organic chemicals in the Biomonitoring Program include agricultural soil, crops, natural grasses and sediment from nearby drainage ditches (many of which collect water and eroded soil from adjacent farm fields, woodlots and grassy areas). Since the inherent characteristics of two of these media, soil and sediment, have a very significant impact on the movement and fate of chemicals in the local environment, they also have a very significant impact on the results of the program. In soil, cation exchange capacity CEC, OM, clay content and pH are among the most important factors affecting the fate of inorganic and organic chemicals. In general, soil consists of 25% air, 25% water, 45% mineral matter and 5% OM (Brady & Weil, 2002). Clay in mineral matter and humus in OM possess an abundance of positive and negative molecular charges on their surfaces. Negatively charged Sites, however, tend to predominate. This is particularly true for humus in neutral and alkaline (pH ≥ 7.0) soils. Thus, to varying degrees, chemicals in the soil solution, which are also positively and/or negatively charged, are attracted to and held by soil particles, or are repelled by soil particles and taken up by plants or leached into the groundwater.

CEC measures the ability of a soil to adsorb, or attract and hold, positively charged ions (e.g., Al3+, Ca2+, Mg2+, K+, NH4+, Na+) called cations (anions are negatively charged ions). Cations are attracted to the negatively charged surfaces of clay and humus particles in the soil. Hydrogen ions (H+), which are also positively charged, compete with other cations for negative charge Sites on clay and humus particles. The pH of the soil, which indicates the concentration of H+ ions in the soil, has a significant impact on the CEC.

In soil, these processes drive the movement of inorganic chemicals. Although these processes also affect some organic chemicals, most organic chemicals, due to their hydrophobic characteristics, are generally absorbed within the organic fraction of soils (Brady & Weil, 2002). This sorption process leads to a partitioning of the organic chemical: a portion becomes associated with OM and a portion remains in the soil solution. The following general statements apply to discussions on the effect of soil CEC, OM, clay content and pH on the findings arising from the Biomonitoring Program:

- Increase OM, increase CEC, may increase sorption.
- Increase clay, increase CEC, may increase sorption.
- Increase pH, increase CEC, may increase sorption.

Therefore, for inorganic chemicals:

- Increase pH (less H+), increase CEC (more negative Sites available).
- For cations increase soil adsorption, decrease plant and microbial uptake, decrease leaching.

Therefore, for organic chemicals:

- Increase OM (more sorption Sites).
- Increase soil sorption, decrease plant and microbial uptake, decrease leaching.

B.2 SOIL AND SEDIMENT CHARACTERIZATION

The soil at each test Site was characterized in two ways. First, when the Site was initiated, the soil profile was examined to a depth of 100 cm. The Site was classified and compared with the expected classification indicated in the Soil Survey of Lambton County Report No. 22 of the Ontario Soil Survey (Mathews et al., 1957). The soil and general conditions at each test Site were assessed in the field and described in accordance with the information presented in the Field Manual for Describing Soils in Ontario (Ontario Centre for Soil Resource Evaluation, 1993). This provided a method for the description and classification of soil properties, soil profiles and landscape features consistent with the Canadian System of Soil Classification (Research Branch, 1987). Second, samples of the soil are analyzed on a six-year cycle to determine the concentrations of nutrients, OM, pH and CEC and particle size distribution (texture).

Due to the potential influence of water movement in each drainage ditch on the characteristics of the sediment in each drainage ditch, samples of the sediment are analyzed to determine the concentrations of nutrients, OM, pH, CEC and particle size distribution (texture). These analyses are conducted annually to ensure that the characterization of the drainage ditch sediment represents the conditions under which the analytical samples were obtained. The detailed methodology for sediment sampling is provided in the Revised Biomonitoring Sampling Program (Stantec, 2015).

B.3 SOIL HORIZON LAYERS

The following information provides descriptions of the general soil horizons as identified on the biomonitoring Sites, soil characterization field sheets. Each horizon description is identified with a combination of an upper-case A, B or C letter code that describes the mineral layer or horizon and various lower-case suffixes that describe the characteristics of the horizon. The combination of upper- and lower-case codes represents the soil horizon sequence and specific attributes of each horizon.

Mineral Layers or Horizons:

A Dark coloured, mineral, surface horizons, enriched with OM.

B Brownish, subsurface horizons, often described as zones of accumulation.

C Relatively non-weathered material from which the soil profile has developed.

AB A transition horizon from A to B materials.

g A horizon characterized by grey colours and/or prominent mottling, indicating periodic intense reduction.

j A modifier of suffixes to denote an expression of, but failure to meet the requirements of the suffix it modifies. It must be placed to the right of and adjacent to the suffix it modifies.

k A horizon containing calcium and/or magnesium carbonates that will effervesce with dilute hydrochloric acid (HCl).

m A horizon slightly altered by hydrolysis, oxidation, or solution, or all three to give a change in colour or structure or both.

p A horizon disturbed by man's activities such as cultivation, logging and habitation.

t A horizon enriched with silicate clay.

Table B3-1: Explanation of Nutrient Levels

Nutrient	Typical Range for Agricultural Soils in Ontario (mg/kg)	Analysis Methodology
Phosphorous (P)	0-30	Phosphorous analysis was calculated as sodium bicarbonate extractable phosphorous and was expressed in parts per million (mg/kg).
Potassium (K)	150 - 250	Potassium analysis was calculated as ammonium acetate extractable potassium and was expressed in parts per million (mg/kg).
Magnesium (Mg)	100 - 400	Magnesium analysis was calculated as ammonium acetate extractable magnesium and was expressed in parts per million (mg/kg).
Calcium (Ca)	1,000 – 5,000	Calcium analysis was calculated as ammonium acetate extractable calcium and was expressed in parts per million (mg/kg).

B.4 SOIL CLASS

When the individual biomonitoring Sites were initiated, the soil profile was examined to a depth of 100 cm with the exception of Site S7. The soil profile at Site S7 is inferred to be comparable to Site S3 given their proximity. The soil types reported for the individual biomonitoring Sites were representative of the soils commonly found in the area surrounding the facility. The soil profile descriptions recorded for the 13 biomonitoring Sites were used to verify the type of soils identified in the Soil Survey of Lambton County Report No. 22 of the Ontario Soil Survey (Mathews et al., 1957). **Table B4-1** provides details on the soil profile identified at each Site.

The majority of the Sites (10 of 15) were classified as a Caistor clay loam. These soils are composed of fine textured limestone till materials containing abundant Huron shale fragments in the clayey parent material. The B horizon is frequently a dense and compact layer and restrictive to root growth. The topography is level to slightly undulating and embodies numerous shallow depression areas. One Site (W2) was classified as well to imperfectly drained Caistor-loamy phase soils. These soils are characterized as medium textured material over shallow clay till parent material that occurs within one metre of the surface. The entire profile contains numerous coarse fragments in the form of gravels and Huron shale particles. The three Sites (N5, E6, S7) located at the Lambton Facility were composed of calcareous clay materials. All of these Sites were consistent with the calcareous parent material associated with the Caistor clay soil series. However, the fact that they consisted of disturbed soil precluded actual naming of the soil series. One Site (W4) was classified as a poorly drained Brookston clay soil. These soils developed on level to slightly sloping topography and have slow internal and external drainage.

Table B4-1: Soil Profile Descriptions for Each Site, Biomonitoring Program, Lambton Facility

Site	Horizon[1] [2]	Depth (cm)	Texture[3]	Drainage Class	Slope (%)	Soil Type
N2	Ap Bmgj Btgj Ckgj	0 - 20 20 - 34 34 - 63 63 - 100	C SiCL C C	Imperfect	0.5	Caistor Clay Loam
N4	P MgJ KgJ	0 - 25 25 - 46 46 - 100	L/CL Si/CL Si/CL	Imperfect	1-1.5	Caistor Clay Loam
N5	Abk Bmgjk Ckgj	0 – 30 30 – 55 55 – 70+	SiCl SiCl SiCl	Not Applicable	<1	Disturbed (Landscaped Perimeter)
E1	Ap Bmgj Btgj Ckgj	0 - 23 23 - 49 49 - 92 92 - 100	L SCL SiCL SiCL	Imperfect	1.0	Caistor Clay Loam
E2	Ap Bmgj Btgj Ckgj	0 - 20 20 - 31 31 - 46 46 - 100	SCL CL SiCL SiCL	Imperfect	0.5	Caistor Clay Loam
E5	Ap AB Bmgj Btgj Ckgj	0 - 20 20 - 32 32 - 47 47 - 81 81 - 100	L CL CL SiC SiCL	Imperfect	1.0	Caistor Clay Loam

Appendix B Characterization of Soils at Test Sites
March 2, 2022

Site	Horizon[1] [2]	Depth (cm)	Texture[3]	Drainage Class	Slope (%)	Soil Type
E6	Ahk Ckg	0 - 20 20 - 25 > 25	C C Dense clay & shale fragments	Not Applicable	<1	Disturbed Soil (Landfill Cap)
E7	Ap Bkgjk Ckgj	0 - 26 26 - 48 48 - 100	CL CL CL	Imperfect	<1	Caistor Clay Loam
S2	Ap Bmgj Ckgj	0 - 22 22 - 35 35 - 100	CL SiC C	Imperfect	0.5	Caistor Clay Loam
S3 and S7*	Ap Ckgj	Disturbed Site	L[4]	Not Applicable	2.0	Disturbed Soil (Landfill Cap)
S4	Ap Btgj Ckg	0 - 22 22 - 71 71 - 100	SiCL C C	Imperfect	1.0	Caistor Clay Loam
S5	Ap Btgj Ckgj	0 - 25 25 - 58 58 - 100	SCL C C	Imperfect	1.0	Caistor Clay Loam
W2	Ap Bmgj Btgj Ckgj	0 - 23 23 - 45 45 - 61 61 - 100	L CL SiC SiC	Well	0.5	Caistor-Loamy Phase
W4	Ap Bmgj Ckgj	0 - 21 21 - 56 56 - 100	CL C C	Poor	<1.0	Brookston Clay

Note(s):

Data collected July 1993 for all Sites except S5 (1995), W4 (1997), E6 (2000), N4 (2001), N5 (2002) and E7 (2019) when these Sites entered the program.

C = Clay, L = Loam, S = Sand, Si = Silt

A Horizon Only

* Soil profile at Site S7 adopted from Site S3 (Site S3 removed from biomonitoring program). Site S7 was destroyed in the 2020 Field Year.

B.5 SOIL AND SEDIMENT RESULTS

B.5.1 Soil Class

Soil characterization samples were collected during the 2017 Field Year, with the exception of the samples collected at the new Site E7 during the 2019 Field Year (**Table B5-1**). This information is collected on a six-year cycle. The soil types reported for the individual biomonitoring Sites were representative of the soils commonly found in the area surrounding the facility. The soil profile descriptions recorded for the 15 biomonitoring Sites were used to verify the type of soils identified in the Soil Survey of Lambton County Report No. 22 of the Ontario Soil Survey (Mathews *et al*., 1957).

Table B5-1: Particle Size Distribution and Textural Class of Soil, 2017 Biomonitoring Program, Lambton Facility

Site	Soil Texture	Sand (%)	Silt (%)	Clay (%)
N2	Clay Loam	30	36	34
N4	Clay Loam	27	41	32
N5	Loam	38	40	22
E1	Clay Loam	35	36	29
E2	Loam	50	36	14
E5	Loam	41	35	24
E6	Loam	47	37	16
E7	Clay Loam	30	42	28
S1	Clay Loam	36	36	28
S2	Clay Loam	29	39	32
S4	Clay	15	38	47
S5	Clay Loam	28	37	35
S7	Loam	43	36	21
W2	Clay Loam	27	43	30
W4	Silty Clay Loam	19	42	39

B.5.2 Soil Nutrients, OM, CEC, pH, Clay Content and Surface Texture, 2017 Field Year

Soil fertility samples were collected during the 2017 Field Year, with the exception of the samples collected at the new Site E7 during the 2019 Field Year (**Table B5-2**). The 2017 and 2019 soil fertility results indicated that the nutrients, OM, CEC, pH and surface texture of the near surface soil varied from Site to Site. The soil fertility results were comparable to those last reported in 2011, taking into consideration natural variation.

Table B5-2: Nutrients (P, K, Mg, Ca), Organic Matter (OM), pH, Cation Exchange Capacity (CEC) of Soil, 2017 Biomonitoring Program, Lambton Facility

Site	P	K	Mg	Ca	OM	pH	CEC
	(ppm)	(ppm)	(ppm)	(ppm)	(%)		(MEQ/100g)
N2	43	128	479	2856	4.9	6.7	19.8
N4	30	149	263	5031	4.2	7.8	28.9
N5	6	113	420	4367	6.0	7.7	26.8
E1	7	89	391	1993	2.6	7.8	14.7
E2	21	81	261	2593	6.0	7.4	16.5
E5	8	93	429	2917	3.5	7.6	19.6
E6	6	144	260	4015	6.0	7.6	23.8
E7	7	115	376	3775	2.7	7.6	23.5
S1	6	81	401	2845	3.3	7.7	19.0
S2	14	102	407	2674	3.3	7.6	18.2
S4	34	212	467	4633	4.7	7.7	28.8
S5	13	106	523	3744	2.9	7.8	26.4
S7	7	198	385	2898	6.3	7.4	31.4
W2	7	94	458	3434	4.2	7.6	22.4
W4	62	161	508	2951	5.4	6.5	20.6

B.5.3 Sediment Depth

The depth of the sediment in each drainage ditch varies from year to year and Site to Site depending on soil erosion processes. Precipitation, cropping practices and the stability of the drainage ditch banks are a few of the factors affecting how much sediment may be present in a drainage ditch at a given time.

B.5.4 Sediment Nutrients, OM, CEC, pH, Clay Content and Surface Texture, 2016 Field Year

The sediment nutrients, OM, CEC, pH, clay content and surface texture are described below. Sediment was sampled under dry conditions for all Sites where drainage ditch sediment was sampled (Sites N2, N5, S1, S4, E2 and S7).

As expected, in 2017 the sand, silt and clay content (**Table B5-3**) and the nutrients, OM, CEC and pH (**Table B5-4**) of the sediment varied from Site to Site, similar to last year. These sediment characteristics can be affected by the annual and historical management practices used at each field or location in which each test Site is located. The data fell within the expected range for southern Ontario and there were no observable spatial trends among the Sites.

Table B5-3: Particle Size Distribution and Textural Class of Sediment, 2017 Biomonitoring Program, Lambton Facility

Site	Sediment Texture	Sand (%)	Silt (%)	Clay (%)
N2	Silt Clay	18	41	41
N5	Silty Clay Loam	19	45	36
E2	Silty Clay Loam	16	49	35
S1	Clay Loam	34	38	28
S4	Clay	21	38	41
S7	Clay Loam	27	38	35

Table B5-4: Nutrients (P, K, Mg, Ca), Organic Matter (OM), pH, Cation Exchange Capacity (CEC) of Sediment, 2017 Biomonitoring Program, Lambton Facility

Site	P (ppm)	K (ppm)	Mg (ppm)	Ca (ppm)	OM (%)	pH	CEC (MEQ/100g)
N2	21	114	518	4910	7.4	7.5	30.4
N5	10	113	359	4689	2.9	8.0	27.9
E2	8	89	365	4463	1.7	8.0	26.7
S1	10	104	540	3489	6.0	7.2	23.4
S4	17	141	509	5220	4.7	7.9	31.9
S7	4	73	526	5129	2.0	7.9	31.4

B.6 REFERENCES

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APPENDIX C TABLES

Table C-1a
Summary of Natural Grass 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location			E1									E2									E5		
Sample Date			13-Oct-20	13-Oct-20	13-Oct-20	13-Oct-20		13-Oct-20		13-Oct-20		21-Sep-20	21-Sep-20	21-Sep-20	21-Sep-20		21-Sep-20		21-Sep-20		13-Oct-20	13-Oct-20	13-Oct-20
Sample ID			20-E1-NG-CH-039	20-E1-NG-CH-039	20-E1-NG-CH-039	20-D8-NG-CH-208		20-D8-NG-CH-208		20-D8-NG-CH-208		20-E2-NG-CH-049	20-E2-NG-CH-049	20-E2-NG-CH-049	20-D3-NG-CH-203		20-D3-NG-CH-203		20-D3-NG-CH-203		20-E5-NG-CH-055	20-E5-NG-CH-055	20-E5-NG-CH-055
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC		STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC		STANTEC	STANTEC	STANTEC
Laboratory			ALS	ALS	ALS	ALS		ALS		ALS		ALS	ALS	ALS	ALS		ALS		ALS		ALS	ALS	ALS
Laboratory Work Order			K2100368	L2100666	L2522291	K2100368		L2100666		L2522291		K2100368	L2100666	L2522291	K2100368		L2100666		L2522291		K2100368	L2100666	L2522291
Laboratory Sample ID			K2100368-010	L2522291-18	L2522291-18	K2100368-024		L2522291-42		L2522291-42		K2100368-012	L2522291-22	L2522291-22	K2100368-023		L2522291-41		L2522291-41		K2100368-014	L2522291-25	L2522291-25
Sample Type	Units	MOE				Field Duplicate	RPD (%)		RPD (%)	Field Duplicate	RPD (%)				Field Duplicate	RPD (%)	Field Duplicate	RPD (%)	Field Duplicate	RPD (%)			
General Chemistry																							
Chloride	mg/kg	10,000[A]	-	-	5,090	-	-	-	-	4,300	-	-	-	3,470	-	-	-	-	6,420	-	-	-	5,780
Fluoride	mg/kg	12[A]	***<43***	-	-	***<41***	nc	-	-	-	-	***<40***	-	-	***<41***	nc	-	-	-	-	***<42***	-	-
Metals, Group 1																							
Barium	mg/kg	n/v	-	-	48.2	-	-	-	-	48.1	0%	-	-	27.5	-	-	-	-	22.8	19%	-	-	50.8
Beryllium	mg/kg	n/v	-	-	<0.010	-	-	-	-	<0.010	nc	-	-	<0.010	-	-	-	-	<0.010	nc	-	-	<0.010
Boron	mg/kg	20[A]	-	-	8.7	-	-	-	-	8.2	6%	-	-	10.2	-	-	-	-	9.3	9%	-	-	6.4
Calcium	mg/kg	n/v	-	-	7,410	-	-	-	-	6,920	7%	-	-	6,810	-	-	-	-	6,100	11%	-	-	6,980
Chromium	mg/kg	5[A]	-	-	0.395	-	-	-	-	0.394	0%	-	-	0.342	-	-	-	-	0.406	17%	-	-	0.398
Cobalt	mg/kg	2[A]	-	-	0.051	-	-	-	-	0.046	nc	-	-	0.039	-	-	-	-	0.033	nc	-	-	0.047
Iron	mg/kg	500[A]	-	-	142	-	-	-	-	129	10%	-	-	110	-	-	-	-	91.9	18%	-	-	127
Magnesium	mg/kg	n/v	-	-	2,050	-	-	-	-	1,710	18%	-	-	2,450	-	-	-	-	2,150	13%	-	-	1,960
Manganese	mg/kg	50[A]	-	-	19.9	-	-	-	-	17.5	13%	-	-	25.9	-	-	-	-	19.0	31%	-	-	15.7
Molybdenum	mg/kg	6[A]	-	-	4.10	-	-	-	-	3.56	14%	-	-	**6.62[A]**	-	-	-	-	5.00	28%	-	-	4.33
Nickel	mg/kg	5[A]	-	-	0.34	-	-	-	-	0.28	nc	-	-	0.26	-	-	-	-	0.23	nc	-	-	0.28
Phosphorus	mg/kg	n/v	-	-	3,780	-	-	-	-	3,330	13%	-	-	4,120	-	-	-	-	3,820	8%	-	-	3,920
Potassium	mg/kg	n/v	-	-	15,000	-	-	-	-	14,700	2%	-	-	15,200	-	-	-	-	14,700	3%	-	-	19,900
Silicon	mg/kg	n/v	-	9,610	-	-	-	10,200	nc	-	-	-	8,600	-	-	-	9,260	nc	-	-	-	4,900	-
Silver	mg/kg	n/v	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	<0.0050
Sodium	mg/kg	n/v	-	-	41	-	-	-	-	28	nc	-	-	29	-	-	-	-	27	nc	-	-	55
Strontium	mg/kg	n/v	-	-	25.9	-	-	-	-	24.9	4%	-	-	18.2	-	-	-	-	16.0	13%	-	-	23.6
Sulfur	mg/kg	5,000[A]	-	-	3,120	-	-	-	-	3,070	2%	-	-	3,470	-	-	-	-	3,220	7%	-	-	3,150
Titanium	mg/kg	n/v	-	-	1.85	-	-	-	-	1.92	4%	-	-	1.33	-	-	-	-	1.12	nc	-	-	1.31
Zirconium	mg/kg	n/v	-	-	0.20	-	-	-	-	<0.20	nc	-	-	<0.20	-	-	-	-	<0.20	nc	-	-	<0.20
Metals, Group 2																							
Aluminum	mg/kg	n/v	-	-	77.6	-	-	-	-	75.2	3%	-	-	61.5	-	-	-	-	52.3	16%	-	-	67.4
Arsenic	mg/kg	n/v	-	-	0.066	-	-	-	-	0.059	nc	-	-	0.059	-	-	-	-	0.046	nc	-	-	0.058
Cadmium	mg/kg	0.5[A]	-	-	0.0460	-	-	-	-	0.0451	2%	-	-	0.0442	-	-	-	-	0.0335	28%	-	-	0.0330
Copper	mg/kg	7[A]	-	-	5.34	-	-	-	-	4.65	14%	-	-	6.31	-	-	-	-	5.22	19%	-	-	4.91
Lead	mg/kg	20[A]	-	-	0.461	-	-	-	-	0.413	11%	-	-	0.193	-	-	-	-	0.147	27%	-	-	0.454
Mercury	mg/kg	n/v	-	-	0.0255	-	-	-	-	0.0288	12%	-	-	0.0152	-	-	-	-	0.0150	nc	-	-	0.0271
Thallium	mg/kg	n/v	-	-	<0.0020	-	-	-	-	<0.0020	nc	-	-	<0.0020	-	-	-	-	<0.0020	nc	-	-	<0.0020
Vanadium	mg/kg	6[A]	-	-	0.27	-	-	-	-	0.26	nc	-	-	0.19	-	-	-	-	0.17	nc	-	-	0.24
Zinc	mg/kg	40[A]	-	-	20.5	-	-	-	-	17.5	16%	-	-	24.6	-	-	-	-	22.0	11%	-	-	21.4

See notes on last page

Table C-1a
Summary of Natural Grass 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location			E6			E7			N2			N4			N5			S2		
Sample Date			23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20
Sample ID			20-E6-NG-CH-061	20-E6-NG-CH-061	20-E6-NG-CH-061	20-E7-NG-CH-305	20-E7-NG-CH-305	20-E7-NG-CH-305	20-N2-NG-CH-019	20-N2-NG-CH-019	20-N2-NG-CH-019	20-N4-NG-CH-025	20-N4-NG-CH-025	20-N4-NG-CH-025	20-N5-NG-CH-035	20-N5-NG-CH-035	20-N5-NG-CH-035	20-S2-NG-CH-075	20-S2-NG-CH-075	20-S2-NG-CH-075
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order			K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291
Laboratory Sample ID			K2100368-016	L2522291-28	L2522291-28	K2100368-017	L2522291-30	L2522291-30	K2100368-005	L2522291-9	L2522291-9	K2100368-007	L2522291-12	L2522291-12	K2100368-009	L2522291-16	L2522291-16	K2100368-019	L2522291-33	L2522291-33
Sample Type	Units	MOE																		
General Chemistry																				
Chloride	mg/kg	10,000[A]	-	-	**12,300[A]**	-	-	**10,200[A]**	-	-	5,730	-	-	**10,800[A]**	-	-	6,500	-	-	7,680
Fluoride	mg/kg	12[A]	***<42***	-	-	***<42***	-	-	**41[A]**	-	-	***<40***	-	-	***<41***	-	-	***<41***	-	-
Metals, Group 1																				
Barium	mg/kg	n/v	-	-	7.43	-	-	9.20	-	-	8.01	-	-	6.31	-	-	10.2	-	-	43.6
Beryllium	mg/kg	n/v	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	<0.010
Boron	mg/kg	20[A]	-	-	12.4	-	-	10.9	-	-	10.1	-	-	11.0	-	-	15.1	-	-	7.9
Calcium	mg/kg	n/v	-	-	6,460	-	-	5,300	-	-	5,830	-	-	6,230	-	-	6,670	-	-	5,630
Chromium	mg/kg	5[A]	-	-	1.25	-	-	0.216	-	-	0.174	-	-	0.224	-	-	0.495	-	-	0.271
Cobalt	mg/kg	2[A]	-	-	0.296	-	-	0.022	-	-	0.035	-	-	<0.020	-	-	0.078	-	-	0.041
Iron	mg/kg	500[A]	-	-	168	-	-	66.5	-	-	77.3	-	-	67.9	-	-	133	-	-	101
Magnesium	mg/kg	n/v	-	-	3,060	-	-	2,860	-	-	2,380	-	-	2,320	-	-	2,480	-	-	2,000
Manganese	mg/kg	50[A]	-	-	27.0	-	-	42.1	-	-	**78.1[A]**	-	-	28.4	-	-	17.8	-	-	15.8
Molybdenum	mg/kg	6[A]	-	-	**13.3[A]**	-	-	3.47	-	-	**6.94[A]**	-	-	**9.04[A]**	-	-	0.851	-	-	1.74
Nickel	mg/kg	5[A]	-	-	1.79	-	-	0.70	-	-	0.35	-	-	0.61	-	-	0.54	-	-	0.30
Phosphorus	mg/kg	n/v	-	-	1,170	-	-	4,210	-	-	2,170	-	-	3,060	-	-	1,390	-	-	3,060
Potassium	mg/kg	n/v	-	-	18,600	-	-	19,200	-	-	20,100	-	-	20,100	-	-	16,000	-	-	15,400
Silicon	mg/kg	n/v	-	9,050	-	-	10,400	-	-	10,600	-	-	9,910	-	-	12,600	-	-	10,300	-
Silver	mg/kg	n/v	-	-	0.0158	-	-	<0.0050	-	-	<0.0050	-	-	0.0129	-	-	<0.0050	-	-	<0.0050
Sodium	mg/kg	n/v	-	-	57	-	-	35	-	-	56	-	-	33	-	-	31	-	-	27
Strontium	mg/kg	n/v	-	-	38.8	-	-	12.0	-	-	13.4	-	-	7.95	-	-	57.5	-	-	18.2
Sulfur	mg/kg	5,000[A]	-	-	4,090	-	-	3,710	-	-	2,750	-	-	2,990	-	-	4,010	-	-	2,080
Titanium	mg/kg	n/v	-	-	3.15	-	-	0.65	-	-	0.77	-	-	0.53	-	-	1.96	-	-	1.45
Zirconium	mg/kg	n/v	-	-	<0.20	-	-	<0.20	-	-	<0.20	-	-	<0.20	-	-	<0.20	-	-	0.32
Metals, Group 2																				
Aluminum	mg/kg	n/v	-	-	107	-	-	22.3	-	-	29.0	-	-	20.8	-	-	71.4	-	-	57.9
Arsenic	mg/kg	n/v	-	-	0.231	-	-	0.026	-	-	0.033	-	-	0.021	-	-	0.075	-	-	0.050
Cadmium	mg/kg	0.5[A]	-	-	0.499	-	-	0.0724	-	-	0.0495	-	-	0.0117	-	-	0.0786	-	-	0.0930
Copper	mg/kg	7[A]	-	-	5.95	-	-	5.72	-	-	6.19	-	-	6.68	-	-	5.73	-	-	6.97
Lead	mg/kg	20[A]	-	-	8.44	-	-	0.106	-	-	0.177	-	-	0.144	-	-	0.690	-	-	0.480
Mercury	mg/kg	n/v	-	-	0.235	-	-	0.0114	-	-	0.0100	-	-	0.0122	-	-	0.0268	-	-	0.0210
Thallium	mg/kg	n/v	-	-	0.0114	-	-	<0.0020	-	-	<0.0020	-	-	<0.0020	-	-	0.0034	-	-	<0.0020
Vanadium	mg/kg	6[A]	-	-	0.48	-	-	<0.10	-	-	0.10	-	-	<0.10	-	-	0.23	-	-	0.19
Zinc	mg/kg	40[A]	-	-	**40.1[A]**	-	-	37.1	-	-	26.6	-	-	24.9	-	-	39.2	-	-	18.4

See notes on last page

Table C-1a
Summary of Natural Grass 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location			S4			W2			W4		
Sample Date			22-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	21-Sep-20	21-Sep-20	21-Sep-20
Sample ID			20-S4-NG-CH-093	20-S4-NG-CH-093	20-S4-NG-CH-093	20-W2-NG-CH-003	20-W2-NG-CH-003	20-W2-NG-CH-003	20-W4-NG-CH-009	20-W4-NG-CH-009	20-W4-NG-CH-009
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order			K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291
Laboratory Sample ID			K2100368-021	L2522291-37	L2522291-37	K2100368-001	L2522291-2	L2522291-2	K2100368-003	L2522291-5	L2522291-5
Sample Type	Units	MOE									
General Chemistry											
Chloride	mg/kg	10,000[A]	-	-	**10,100[A]**	-	-	5,380	-	-	4,080
Fluoride	mg/kg	12[A]	***<41***	-	-	**51[A]**	-	-	***<44***	-	-
Metals, Group 1											
Barium	mg/kg	n/v	-	-	7.91	-	-	10.5	-	-	8.85
Beryllium	mg/kg	n/v	-	-	<0.010	-	-	<0.010	-	-	<0.010
Boron	mg/kg	20[A]	-	-	7.7	-	-	13.8	-	-	5.3
Calcium	mg/kg	n/v	-	-	7,350	-	-	7,930	-	-	3,100
Chromium	mg/kg	5[A]	-	-	0.317	-	-	0.353	-	-	0.337
Cobalt	mg/kg	2[A]	-	-	0.043	-	-	0.033	-	-	0.028
Iron	mg/kg	500[A]	-	-	59.7	-	-	97.2	-	-	70.3
Magnesium	mg/kg	n/v	-	-	2,480	-	-	2,620	-	-	3,150
Manganese	mg/kg	50[A]	-	-	26.3	-	-	46.2	-	-	34.1
Molybdenum	mg/kg	6[A]	-	-	**9.13[A]**	-	-	**10.3[A]**	-	-	2.94
Nickel	mg/kg	5[A]	-	-	0.65	-	-	0.24	-	-	1.37
Phosphorus	mg/kg	n/v	-	-	3,700	-	-	3,060	-	-	4,290
Potassium	mg/kg	n/v	-	-	21,100	-	-	15,900	-	-	18,400
Silicon	mg/kg	n/v	-	10,900	-	-	10,600	-	-	11,200	-
Silver	mg/kg	n/v	-	-	<0.0050	-	-	<0.0050	-	-	<0.0050
Sodium	mg/kg	n/v	-	-	34	-	-	33	-	-	58
Strontium	mg/kg	n/v	-	-	14.7	-	-	11.5	-	-	5.39
Sulfur	mg/kg	5,000[A]	-	-	2,970	-	-	2,300	-	-	2,140
Titanium	mg/kg	n/v	-	-	0.30	-	-	1.25	-	-	0.64
Zirconium	mg/kg	n/v	-	-	<0.20	-	-	<0.20	-	-	<0.20
Metals, Group 2											
Aluminum	mg/kg	n/v	-	-	62.9	-	-	49.6	-	-	25.9
Arsenic	mg/kg	n/v	-	-	0.029	-	-	0.037	-	-	0.028
Cadmium	mg/kg	0.5[A]	-	-	0.0966	-	-	0.0354	-	-	0.0471
Copper	mg/kg	7[A]	-	-	4.79	-	-	**9.41[A]**	-	-	6.03
Lead	mg/kg	20[A]	-	-	0.125	-	-	0.315	-	-	0.103
Mercury	mg/kg	n/v	-	-	0.0089	-	-	0.0247	-	-	0.0064
Thallium	mg/kg	n/v	-	-	<0.0020	-	-	<0.0020	-	-	<0.0020
Vanadium	mg/kg	6[A]	-	-	0.17	-	-	0.21	-	-	0.10
Zinc	mg/kg	40[A]	-	-	19.5	-	-	33.0	-	-	36.2

See notes on last page

Table C-1a
Summary of Natural Grass 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Notes:

MOE	Ontario Ministry of the Environment
A	Ontario Ministry of the Environment Rural "upper limit of normal" contaminant guidelines for phytotoxicology samples (1989)
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 60%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-1b
Summary of Soil 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location				E1						E2						E5		E6		
Sample Date				13-Oct-20	13-Oct-20	13-Oct-20		13-Oct-20		21-Sep-20	21-Sep-20	21-Sep-20		21-Sep-20		13-Oct-20	13-Oct-20	23-Sep-20	23-Sep-20	23-Sep-20
Sample ID				20-E1-SS-CH-037	20-E1-SS-CH-037	20-D2-SS-CH-201		20-D2-SS-CH-201		20-E2-SS-CH-043	20-E2-SS-CH-043	20-D1-SS-CH-200		20-D1-SS-CH-200		20-E5-SS-CH-053	20-E5-SS-CH-053	20-E6-SS-CH-059	20-E6-SS-CH-059	Duplicate
Sample Depth				15 cm	15 cm	15 cm		15 cm		15 cm	15 cm	15 cm		15 cm		15 cm	15 cm	15 cm	15 cm	15 cm
Sampling Company				STANTEC	STANTEC	STANTEC		STANTEC		STANTEC	STANTEC	STANTEC		STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	
Laboratory				ALS	ALS	ALS		ALS		ALS	ALS	ALS		ALS		ALS	ALS	ALS	ALS	ALS
Laboratory Work Order				L2100667	L2522291	L2100667		L2522291		L2100667	L2522291	L2522291		L2522291		L2100667	L2522291	L2100667	L2522291	WG3471704-2
Laboratory Sample ID				L2522291-17	L2522291-17	L2522291-40	RPD	L2522291-40	RPD	L2522291-20	L2522291-20	L2522291-39	RPD	L2522291-39	RPD	L2522291-24	L2522291-24	L2522291-27	L2522291-27	Lab Replicate
Sample Type	Units	Ontario SCS	MOE *			Field Duplicate	(%)	Field Duplicate	(%)			Field Duplicate	(%)	Field Duplicate	(%)					
General Chemistry																				
Chloride	mg/kg	n/a[A]	35[B]	-	*85.0*[B]	-	-	*87.4*[B]	3%	-	<5.0	-	-	<5.0	nc	-	*90.1*[B]	-	6.0	6.2
Fluoride	mg/kg	n/v	84[B]	-	1.47	-	-	1.49	1%	-	2.26	-	-	2.47	9%	-	3.44	-	4.37	-
Metals, Group 1																				
Barium	mg/kg	210[A]	170[B]	-	70.6	-	-	68.2	3%	-	77.7	-	-	95.9	21%	-	72.3	-	91.6	-
Beryllium	mg/kg	2.5[A]	1.1[B]	-	0.74	-	-	0.75	1%	-	0.65	-	-	0.85	27%	-	0.70	-	0.84	-
Boron	mg/kg	36[A]	30[B]	-	13.8	-	-	11.7	nc	-	11.0	-	-	14.2	nc	-	9.3	-	13.1	-
Calcium	mg/kg	n/v	54,000[B]	-	3,720	-	-	3,880	4%	-	5,330	-	-	10,200	**63%**	-	6,290	-	12,800	-
Chromium	mg/kg	67[A]	58[B]	-	26.3	-	-	25.7	2%	-	23.6	-	-	30.2	25%	-	27.1	-	30.4	-
Cobalt	mg/kg	19[A]	16[B]	-	6.36	-	-	6.43	1%	-	7.84	-	-	9.30	17%	-	6.66	-	11.0	-
Iron	mg/kg	n/v	36,000[B]	-	16,700	-	-	16,600	1%	-	18,500	-	-	22,000	17%	-	18,600	-	23,400	-
Magnesium	mg/kg	n/v	19,000[B]	-	4,180	-	-	4,130	1%	-	4,550	-	-	5,260	14%	-	5,240	-	8,480	-
Manganese	mg/kg	n/v	1,900[B]	-	328	-	-	307	7%	-	331	-	-	436	27%	-	268	-	651	-
Molybdenum	mg/kg	2[A]	0.984[B]	-	1.04	-	-	1.10	6%	-	1.64	-	-	1.81	10%	-	1.57	-	2.82[A]	-
Nickel	mg/kg	37[A]	34[B]	-	21.0	-	-	20.7	1%	-	19.0	-	-	23.3	20%	-	20.2	-	28.1	-
Phosphorus	mg/kg	n/v	830[B]	-	773	-	-	789	2%	-	*854*[B]	-	-	*1,010*[B]	17%	-	597	-	615	-
Potassium	mg/kg	n/v	6,500[B]	-	3,070	-	-	2,790	10%	-	2,940	-	-	3,530	18%	-	2,270	-	2,730	-
Silicon	mg/kg	n/v	n/v	305,000	-	325,000	nc	-	-	315,000	-	309,000	nc	-	-	301,000	-	310,000	-	-
Silver	mg/kg	0.5[A]	0.27[B]	-	<0.10	-	-	<0.10	nc	-	<0.10	-	-	<0.10	nc	-	<0.10	-	<0.10	-
Sodium	mg/kg	n/a[A]	690[B]	-	58	-	-	58	nc	-	58	-	-	68	nc	-	52	-	88	-
Strontium	mg/kg	n/v	63[B]	-	14.3	-	-	13.9	3%	-	21.0	-	-	28.2	29%	-	15.8	-	42.2	-
Sulfur	mg/kg	n/v	790[B]	-	***<1,000***	-	-	***<1,000***	nc	-	***<1,000***	-	-	***<1,000***	nc	-	***<1,000***	-	***<1,000***	-
Titanium	mg/kg	n/v	5,500[B]	-	128	-	-	97.5	27%	-	109	-	-	140	25%	-	101	-	109	-
Zirconium	mg/kg	n/v	n/v	-	1.7	-	-	2.2	nc	-	1.6	-	-	2.0	nc	-	1.6	-	2.7	-
Metals, Group 2																				
Aluminum	mg/kg	n/v	30,000[B]	-	15,600	-	-	15,300	2%	-	16,100	-	-	20,100	22%	-	15,900	-	18,600	-
Arsenic	mg/kg	11[A]	11[B]	-	4.66	-	-	4.51	3%	-	5.42	-	-	6.23	14%	-	5.10	-	7.58	-
Cadmium	mg/kg	1[A]	0.7[B]	-	0.429	-	-	0.387	10%	-	0.377	-	-	0.446	17%	-	0.339	-	0.797	-
Copper	mg/kg	62[A]	46[B]	-	16.1	-	-	16.2	1%	-	15.9	-	-	18.8	17%	-	12.0	-	18.6	-
Lead	mg/kg	45[A]	34[B]	-	12.9	-	-	12.5	3%	-	19.8	-	-	22.3	12%	-	13.2	-	17.3	-
Mercury	mg/kg	0.16[A]	0.13[B]	-	0.0507	-	-	0.0507	0%	-	0.0599	-	-	0.0605	1%	-	0.0319	-	0.0806	-
Thallium	mg/kg	1[A]	n/v	-	0.205	-	-	0.186	nc	-	0.207	-	-	0.246	nc	-	0.193	-	0.264	-
Vanadium	mg/kg	86[A]	86[B]	-	34.9	-	-	33.2	5%	-	34.3	-	-	41.8	20%	-	35.1	-	40.7	-
Zinc	mg/kg	290[A]	160[B]	-	61.1	-	-	60.2	1%	-	63.3	-	-	74.6	16%	-	56.9	-	81.4	-

Table C-1b
Summary of Soil 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location				E7		N2		N4		N5		S2		S4		W2			
Sample Date				7-Jul-20	7-Jul-20	7-Jul-20	7-Jul-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20
Sample ID				20-E7-SS-CH-303	20-E7-SS-CH-303	20-N2-SS-CH-013	20-N2-SS-CH-013	20-N4-SS-CH-023	20-N4-SS-CH-023	20-N5-SS-CH-029	20-N5-SS-CH-029	20-S2-SS-CH-073	20-S2-SS-CH-073	20-S4-SS-CH-087	20-S4-SS-CH-087	20-W2-SS-CH-001	20-W2-SS-CH-001	Duplicate	Duplicate
Sample Depth				15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	ALS	ALS
Laboratory				ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order				L2100667	L2522291	L2100667	L2522291	L2100667	L2522291	L2100667	L2522291	L2100667	L2522291	L2100667	L2522291	L2100667	L2522291	WG3471533-3	WG3471534-2
Laboratory Sample ID				L2522291-29	L2522291-29	L2522291-7	L2522291-7	L2522291-11	L2522291-11	L2522291-14	L2522291-14	L2522291-32	L2522291-32	L2522291-35	L2522291-35	L2522291-1	L2522291-1	Lab Replicate	Lab Replicate
Sample Type	Units	Ontario SCS	MOE *																
General Chemistry																			
Chloride	mg/kg	n/a[A]	35[B]	-	<5.0	-	12.1	-	<5.0	-	7.8	-	<5.0	-	6.9	-	6.0	-	-
Fluoride	mg/kg	n/v	84[B]	-	4.32	-	2.99	-	5.58	-	4.90	-	5.29	-	4.85	-	5.40	5.41	-
Metals, Group 1																			
Barium	mg/kg	210[A]	170[B]	-	89.5	-	121	-	74.7	-	77.2	-	107	-	145	-	67.6	-	65.4
Beryllium	mg/kg	2.5[A]	1.1[B]	-	0.94	-	1.26	-	0.70	-	0.66	-	0.97	-	1.29	-	0.67	-	0.70
Boron	mg/kg	36[A]	30[B]	-	12.7	-	15.6	-	9.8	-	16.4	-	16.7	-	25.5	-	8.7	-	8.0
Calcium	mg/kg	n/v	54,000[B]	-	8,270	-	6,250	-	6,820	-	24,500	-	8,250	-	14,000	-	8,200	-	5,690
Chromium	mg/kg	67[A]	58[B]	-	30.1	-	42.6	-	28.2	-	26.8	-	34.2	-	45.3	-	22.9	-	24.2
Cobalt	mg/kg	19[A]	16[B]	-	12.0	-	11.7	-	8.65	-	9.13	-	12.0	-	12.9	-	7.94	-	7.09
Iron	mg/kg	n/v	36,000[B]	-	21,900	-	27,000	-	19,700	-	18,600	-	25,100	-	31,900	-	18,500	-	19,200
Magnesium	mg/kg	n/v	19,000[B]	-	6,640	-	7,310	-	5,600	-	10,700	-	8,300	-	10,800	-	5,590	-	4,450
Manganese	mg/kg	n/v	1,900[B]	-	368	-	333	-	307	-	481	-	467	-	408	-	491	-	313
Molybdenum	mg/kg	2[A]	0.984[B]	-	1.70	-	1.36	-	**2.01[A]**	-	**2.45[A]**	-	1.62	-	0.92	-	1.90	-	1.86
Nickel	mg/kg	37[A]	34[B]	-	24.8	-	**37.5[A]** *1,110[B]*	-	21.5	-	22.1	-	28.8	-	33.3	-	18.4	-	19.3
Phosphorus	mg/kg	n/v	830[B]	-	614	-	4,150	-	686	-	490	-	597	-	803	-	504	-	560
Potassium	mg/kg	n/v	6,500[B]	-	2,750	-	4,150	-	2,020	-	2,440	-	3,690	-	5,410	-	1,620	-	1,570
Silicon	mg/kg	n/v	n/v	314,000	-	301,000	-	327,000	-	269,000	-	284,000	-	270,000	-	337,000	-	-	-
Silver	mg/kg	0.5[A]	0.27[B]	-	<0.10	-	0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.10	-	<0.1
Sodium	mg/kg	n/a[A]	690[B]	-	65	-	67	-	61	-	102	-	78	-	104	-	59	-	57
Strontium	mg/kg	n/v	63[B]	-	19.2	-	24.0	-	19.2	-	*68.8[B]*	-	24.3	-	38.4	-	14.8	-	14.7
Sulfur	mg/kg	n/v	790[B]	-	***<1,000***	-	***<1,000***	-	***<1,000***	-	***<1,000***	-	***<1,000***	-	***<1,000***	-	***<1,000***	-	***<1,000***
Titanium	mg/kg	n/v	5,500[B]	-	151	-	101	-	139	-	146	-	188	-	192	-	137	-	106
Zirconium	mg/kg	n/v	n/v	-	1.7	-	6.0	-	2.1	-	1.4	-	1.7	-	2.8	-	1.4	-	1.5
Metals, Group 2																			
Aluminum	mg/kg	n/v	30,000[B]	-	20,600	-	26,200	-	16,700	-	15,700	-	23,300	-	*31,900[B]*	-	15,500	-	15,900
Arsenic	mg/kg	11[A]	11[B]	-	6.74	-	5.96	-	5.91	-	6.32	-	6.92	-	6.53	-	6.71	-	6.50
Cadmium	mg/kg	1[A]	0.7[B]	-	0.348	-	0.554	-	0.415	-	0.625	-	0.363	-	0.280	-	0.482	-	0.433
Copper	mg/kg	62[A]	46[B]	-	14.5	-	34.0	-	14.3	-	17.2	-	14.8	-	19.1	-	12.4	-	13.2
Lead	mg/kg	45[A]	34[B]	-	15.1	-	17.7	-	14.8	-	23.2	-	15.2	-	16.0	-	15.4	-	15.7
Mercury	mg/kg	0.16[A]	0.13[B]	-	0.0369	-	0.0594	-	0.0381	-	0.0946	-	0.0384	-	0.0410	-	0.0518	-	0.0464
Thallium	mg/kg	1[A]	n/v	-	0.256	-	0.257	-	0.220	-	0.271	-	0.264	-	0.272	-	0.221	-	0.225
Vanadium	mg/kg	86[A]	86[B]	-	43.1	-	46.3	-	37.3	-	35.1	-	48.4	-	58.0	-	38.7	-	38.5
Zinc	mg/kg	290[A]	160[B]	-	55.1	-	90.0	-	61.7	-	77.7	-	62.0	-	77.3	-	56.1	-	57.8

Table C-1b
Summary of Soil 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location				W4	
Sample Date				21-Sep-20	21-Sep-20
Sample ID				20-W4-SS-CH-007	20-W4-SS-CH-007
Sample Depth				15 cm	15 cm
Sampling Company				STANTEC	STANTEC
Laboratory				ALS	ALS
Laboratory Work Order				L2100667	L2522291
Laboratory Sample ID				L2522291-4	L2522291-4
Sample Type	Units	Ontario SCS	MOE *		
General Chemistry					
Chloride	mg/kg	n/a[A]	35[B]	-	<5.0
Fluoride	mg/kg	n/v	84[B]	-	2.20
Metals, Group 1					
Barium	mg/kg	210[A]	170[B]	-	91.7
Beryllium	mg/kg	2.5[A]	1.1[B]	-	0.98
Boron	mg/kg	36[A]	30[B]	-	14.7
Calcium	mg/kg	n/v	54,000[B]	-	4,810
Chromium	mg/kg	67[A]	58[B]	-	32.0
Cobalt	mg/kg	19[A]	16[B]	-	8.81
Iron	mg/kg	n/v	36,000[B]	-	21,900
Magnesium	mg/kg	n/v	19,000[B]	-	5,660
Manganese	mg/kg	n/v	1,900[B]	-	284
Molybdenum	mg/kg	2[A]	0.984[B]	-	1.34
Nickel	mg/kg	37[A]	34[B]	-	28.4
Phosphorus	mg/kg	n/v	830[B]	-	*1,020*[B]
Potassium	mg/kg	n/v	6,500[B]	-	3,730
Silicon	mg/kg	n/v	n/v	292,000	-
Silver	mg/kg	0.5[A]	0.27[B]	-	<0.10
Sodium	mg/kg	n/a[A]	690[B]	-	61
Strontium	mg/kg	n/v	63[B]	-	18.5
Sulfur	mg/kg	n/v	790[B]	-	***<1,000***
Titanium	mg/kg	n/v	5,500[B]	-	91.6
Zirconium	mg/kg	n/v	n/v	-	3.1
Metals, Group 2					
Aluminum	mg/kg	n/v	30,000[B]	-	20,500
Arsenic	mg/kg	11[A]	11[B]	-	5.31
Cadmium	mg/kg	1[A]	0.7[B]	-	0.459
Copper	mg/kg	62[A]	46[B]	-	23.2
Lead	mg/kg	45[A]	34[B]	-	14.8
Mercury	mg/kg	0.16[A]	0.13[B]	-	0.0490
Thallium	mg/kg	1[A]	n/v	-	0.266
Vanadium	mg/kg	86[A]	86[B]	-	40.3
Zinc	mg/kg	290[A]	160[B]	-	81.9

Notes:

Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
[A]	Table 1 - Agricultural or Other Property Use
MOE	Ontario Ministry of the Environment
[B]	Ontario Typical Range (OTR) values for Rural Parks, Ontario Ministry of Environment and Energy (OMEE, 1993)
*	Results are only compared to the MOE OTR value in the absence of an Ontario SCS value
6.5[A]	Concentration exceeds standard A.
6.5[B]	Concentration exceeds standard B.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
[n/a]	Not applicable.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-1c
Summary of Sediment 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location				E2		N2							N5		S4	
Sample Date				14-Oct-20	14-Oct-20	23-Sep-20	23-Sep-20	23-Sep-20		23-Sep-20		23-Sep-20	23-Sep-20	23-Sep-20	22-Sep-20	22-Sep-20
Sample ID				20-E2-SD-CH-045	20-E2-SD-CH-045	20-N2-SD-CH-015	20-N2-SD-CH-015	20-D4-SD-CH-204		20-D4-SD-CH-204		20-D4-SD-CH-204 LR	20-N5-SD-CH-031	20-N5-SD-CH-031	20-S4-SD-CH-089	20-S4-SD-CH-089
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory				ALS	ALS	ALS	ALS	ALS		ALS		ALS	ALS	ALS	ALS	ALS
Laboratory Work Order				L2100667	L2522291	L2100667	L2522291	L2100667		L2522291		L2100667	L2100667	L2522291	L2100667	L2522291
Laboratory Sample ID				L2522291-21	L2522291-21	L2522291-8	L2522291-8	L2522291-43	RPD	L2522291-43	RPD	L2522291-43	L2522291-15	L2522291-15	L2522291-36	L2522291-36
Sample Type	Units	Ontario SCS	PSQG*					Field Duplicate	(%)	Field Duplicate	(%)	Lab Replicate				
General Chemistry																
Chloride	mg/kg	n/v	n/v	-	130	-	14.2	-	-	14.5	nc	-	-	102	-	10.2
Fluoride	mg/kg	n/v	n/v	-	6.30	-	5.86	-	-	5.48	7%	-	-	6.54	-	7.66
Metals, Group 1																
Barium	mg/kg	n/v	n/v	-	76.8	-	67.9	-	-	66.2	3%	-	-	75.6	-	112
Beryllium	mg/kg	n/v	n/v	-	0.73	-	0.66	-	-	0.65	2%	-	-	0.71	-	1.03
Boron	mg/kg	n/v	n/v	-	21.8	-	18.0	-	-	17.9	nc	-	-	22.9	-	32.4
Calcium	mg/kg	n/v	n/v	-	101,000	-	101,000	-	-	102,000	1%	-	-	96,700	-	87,400
Chromium	mg/kg	26[A]	26[B]	-	**27.7[A]**	-	25.3	-	-	25.0	1%	-	-	**26.5[A]**	-	**39.7[A]**
Cobalt	mg/kg	50[A]	n/v	-	10.0	-	10.4	-	-	9.54	9%	-	-	9.08	-	12.2
Iron	mg/kg	n/v	20,000[B]	-	**21,600[B]**	-	**20,400[B]**	-	-	19,200	6%	-	-	**20,100[B]**	-	**26,700[B]**
Magnesium	mg/kg	n/v	n/v	-	31,900	-	32,900	-	-	31,500	4%	-	-	31,100	-	29,800
Manganese	mg/kg	n/v	460[B]	-	414	-	403	-	-	394	2%	-	-	379	-	436
Molybdenum	mg/kg	n/v	n/v	-	3.33	-	4.02	-	-	3.85	4%	-	-	2.72	-	1.84
Nickel	mg/kg	16[A]	16[B]	-	**27.6[A]**	-	**28.0[A]**	-	-	**27.2[A]**	3%	-	-	**27.0[A]**	-	**33.8[A]**
Phosphorus	mg/kg	n/v	600[B]	-	429	-	444	-	-	452	2%	-	-	406	-	**620[B]**
Potassium	mg/kg	n/v	n/v	-	3,310	-	2,960	-	-	3,020	2%	-	-	3,570	-	5,460
Silicon	mg/kg	n/v	n/v	173,000	-	192,000	-	179,000	nc	-	-	177,000	184,000	-	177,000	-
Silver	mg/kg	0.5[A]	n/v	-	<0.10	-	<0.10	-	-	<0.10	nc	-	-	<0.10	-	<0.10
Sodium	mg/kg	n/v	n/v	-	318	-	171	-	-	171	nc	-	-	268	-	270
Strontium	mg/kg	n/v	n/v	-	103	-	90.8	-	-	89.6	1%	-	-	99.2	-	128
Sulfur	mg/kg	n/v	n/v	-	<1,000	-	<1,000	-	-	<1,000	nc	-	-	<1,000	-	<1,000
Titanium	mg/kg	n/v	n/v	-	238	-	223	-	-	206	8%	-	-	240	-	310
Zirconium	mg/kg	n/v	n/v	-	10.5	-	11.3	-	-	11.0	3%	-	-	10.1	-	7.9
Metals, Group 2																
Aluminum	mg/kg	n/v	n/v	-	15,500	-	13,500	-	-	13,500	0%	-	-	15,200	-	22,600
Arsenic	mg/kg	6[A]	6[B]	-	5.94	-	**7.48[A]**	-	-	**7.17[A]**	4%	-	-	5.36	-	5.72
Cadmium	mg/kg	0.6[A]	0.6[B]	-	0.148	-	0.181	-	-	0.177	2%	-	-	0.181	-	0.174
Copper	mg/kg	16[A]	16[B]	-	**18.1[A]**	-	**18.1[A]**	-	-	**17.0[A]**	6%	-	-	**17.3[A]**	-	**21.5[A]**
Lead	mg/kg	31[A]	31[B]	-	8.10	-	8.21	-	-	8.07	2%	-	-	7.73	-	9.79
Mercury	mg/kg	0.2[A]	0.2[B]	-	0.0187	-	0.0211	-	-	0.0202	nc	-	-	0.0204	-	0.0259
Thallium	mg/kg	n/v	n/v	-	0.241	-	0.256	-	-	0.241	nc	-	-	0.263	-	0.240
Vanadium	mg/kg	n/v	n/v	-	34.5	-	31.5	-	-	31.1	1%	-	-	34.9	-	47.4
Zinc	mg/kg	120[A]	120[B]	-	45.1	-	47.6	-	-	45.5	5%	-	-	46.3	-	58.6

Notes:

Ontario SCS [A]	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS) Table 1 - All Types of Property Uses
PSQG [B]	Ontario Provincial Sediment Quality Guidelines Table 1: PSQG for Metals and Nutrients - Lowest Effect Level
6.5[A]	Concentration exceeds the indicated standard.
*	Results are only compared to the PSQG value in the absence of an Ontario SCS value
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-1d
Summary of Agricultural Crops 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		E1			E2			E5				E7		
Sample Date		19-Sep-20	19-Sep-20	19-Sep-20	21-Sep-20	21-Sep-20	21-Sep-20	19-Sep-20	19-Sep-20	19-Sep-20	19-Sep-20	7-Jul-20	7-Jul-20	7-Jul-20
Sample ID		20-E1-SB-CH-041	20-E1-SB-CH-041	20-E1-SB-CH-041	20-E2-SB-CH-051	20-E2-SB-CH-051	20-E2-SB-CH-051	20-E5-SB-CH-057	20-E5-SB-CH-057	20-E5-SB-CH-057	Duplicate	20-E7-WW-CH-300	20-E7-WW-CH-300	20-E7-WW-CH-300
Sampling Company		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC
Laboratory		ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order		K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	L2522291	K2100368	L2100666	L2522291
Laboratory Sample ID		K2100368-011	L2522291-19	L2522291-19	K2100368-013	L2522291-23	L2522291-23	K2100368-015	L2522291-26	L2522291-26	WG3482681-2	K2100368-018	L2522291-31	L2522291-31
Sample Type	Units										Lab Replicate			
General Chemistry														
Chloride	mg/kg	-	-	77	-	-	44	-	-	87	-	-	-	785
Fluoride	mg/kg	<22	-	-	<21	-	-	<20	-	-	-	<21	-	-
Metals, Group 1														
Barium	mg/kg	-	-	1.26	-	-	1.36	-	-	0.958	0.975	-	-	6.19
Beryllium	mg/kg	-	-	<0.010	-	-	<0.010	-	-	<0.010	<0.01	-	-	<0.010
Boron	mg/kg	-	-	32.4	-	-	29.2	-	-	26.4	28.2	-	-	1.9
Calcium	mg/kg	-	-	3,210	-	-	2,380	-	-	2,880	3,220	-	-	628
Chromium	mg/kg	-	-	<0.050	-	-	<0.050	-	-	<0.050	0.051	-	-	0.477
Cobalt	mg/kg	-	-	0.046	-	-	0.058	-	-	0.056	0.054	-	-	<0.020
Iron	mg/kg	-	-	55.1	-	-	61.8	-	-	56.9	57.3	-	-	18.9
Magnesium	mg/kg	-	-	2,580	-	-	2,540	-	-	2,440	2,500	-	-	1,110
Manganese	mg/kg	-	-	25.8	-	-	22.3	-	-	20.6	21.0	-	-	17.8
Molybdenum	mg/kg	-	-	4.24	-	-	8.80	-	-	7.22	7.65	-	-	5.32
Nickel	mg/kg	-	-	2.58	-	-	2.17	-	-	1.21	1.21	-	-	0.29
Phosphorus	mg/kg	-	-	5,520	-	-	6,960	-	-	6,000	6,090	-	-	2,440
Potassium	mg/kg	-	-	19,300	-	-	22,300	-	-	17,600	17,900	-	-	5,050
Silicon	mg/kg	-	55.1	-	-	56.9	-	-	49.8	-	-	-	8,330	-
Silver	mg/kg	-	-	<0.0050	-	-	<0.0050	-	-	<0.0050	<0.005	-	-	<0.0050
Sodium	mg/kg	-	-	<20	-	-	<20	-	-	<20	<20	-	-	<20
Strontium	mg/kg	-	-	2.50	-	-	3.30	-	-	2.99	3.12	-	-	3.07
Sulfur	mg/kg	-	-	3,240	-	-	3,600	-	-	3,000	3,170	-	-	1,020
Titanium	mg/kg	-	-	<0.25	-	-	<0.25	-	-	<0.25	<0.25	-	-	<0.25
Zirconium	mg/kg	-	-	<0.20	-	-	<0.20	-	-	<0.20	<0.2	-	-	<0.20
Metals, Group 2														
Aluminum	mg/kg	-	-	<2.0	-	-	<2.0	-	-	<2.0	<2	-	-	2.2
Arsenic	mg/kg	-	-	<0.020	-	-	<0.020	-	-	<0.020	<0.02	-	-	<0.020
Cadmium	mg/kg	-	-	0.0414	-	-	0.0207	-	-	0.0279	0.0307	-	-	0.0763
Copper	mg/kg	-	-	11.6	-	-	10.2	-	-	10.0	10.1	-	-	3.31
Lead	mg/kg	-	-	<0.020	-	-	<0.020	-	-	<0.020	<0.02	-	-	<0.020
Mercury	mg/kg	-	-	<0.0050	-	-	<0.0050	-	-	<0.0050	<0.005	-	-	<0.0050
Thallium	mg/kg	-	-	<0.0020	-	-	<0.0020	-	-	0.0031	0.0033	-	-	<0.0020
Vanadium	mg/kg	-	-	<0.10	-	-	<0.10	-	-	<0.10	<0.1	-	-	<0.10
Zinc	mg/kg	-	-	35.3	-	-	33.9	-	-	34.4	34.2	-	-	12.9

See notes on last page.

Table C-1d
Summary of Agricultural Crops 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		N2										N4									
Sample Date		7-Jul-20	7-Jul-20	7-Jul-20	7-Jul-20		7-Jul-20		7-Jul-20		7-Jul-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20		23-Sep-20		23-Sep-20	
Sample ID		20-N2-WW-CH-021	20-N2-WW-CH-021	20-N2-WW-CH-021	20-D7-WW-CH-209		20-D7-WW-CH-209		20-D7-WW-CH-209		20-D7-WW-CH-209 LR	20-N4-FC-CH-027	20-N4-FC-CH-027	20-N4-FC-CH-027	Duplicate	20-D6-FC-CH-207		20-D6-FC-CH-207		20-D6-FC-CH-207	
Sampling Company		STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC		STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC		STANTEC	
Laboratory		ALS	ALS	ALS	ALS		ALS		ALS		ALS	ALS	ALS	ALS	ALS	ALS		ALS		ALS	
Laboratory Work Order		K2100368	L2100666	L2522291	K2100368		L2100666		L2522291		L2100666	K2100368	L2100666	L2522291	L2522291	K2100368		L2100666		L2522291	
Laboratory Sample ID		K2100368-006	L2522291-10	L2522291-10	K2100368-027		L2522291-46		L2522291-46		L2522291-46	K2100368-008	L2522291-13	L2522291-13	WG3482672-2	K2100368-026		L2522291-45		L2522291-45	
Sample Type	Units				Field Duplicate	RPD (%)	Field Duplicate	RPD (%)	Field Duplicate	RPD (%)	Lab Replicate				Lab Replicate	Field Duplicate	RPD (%)	Field Duplicate	RPD (%)	Field Duplicate	RPD (%)
General Chemistry																					
Chloride	mg/kg	-	-	951	-	-	-	-	935	2%	-	-	-	421	-	-	-	-	-	337	22%
Fluoride	mg/kg	<42	-	-	<21	nc	-	-	-	-	-	<21	-	-	-	<22	nc	-	-	-	-
Metals, Group 1																					
Barium	mg/kg	-	-	5.21	-	-	-	-	2.10	**85%**	-	-	-	0.057	0.059	-	-	-	-	<0.050	nc
Beryllium	mg/kg	-	-	<0.010	-	-	-	-	<0.010	nc	-	-	-	<0.010	<0.01	-	-	-	-	<0.010	nc
Boron	mg/kg	-	-	1.8	-	-	-	-	1.0	nc	-	-	-	2.3	2.3	-	-	-	-	2.1	nc
Calcium	mg/kg	-	-	702	-	-	-	-	323	**74%**	-	-	-	29	29	-	-	-	-	28	nc
Chromium	mg/kg	-	-	0.188	-	-	-	-	<0.050	nc	-	-	-	<0.050	<0.05	-	-	-	-	<0.050	nc
Cobalt	mg/kg	-	-	<0.020	-	-	-	-	<0.020	nc	-	-	-	<0.020	<0.02	-	-	-	-	<0.020	nc
Iron	mg/kg	-	-	12.5	-	-	-	-	6.0	nc	-	-	-	13.1	13.7	-	-	-	-	11.6	nc
Magnesium	mg/kg	-	-	986	-	-	-	-	508	**64%**	-	-	-	918	1,010	-	-	-	-	897	2%
Manganese	mg/kg	-	-	18.6	-	-	-	-	10.7	54%	-	-	-	2.57	2.53	-	-	-	-	2.26	13%
Molybdenum	mg/kg	-	-	0.984	-	-	-	-	0.454	**74%**	-	-	-	0.424	0.417	-	-	-	-	0.317	29%
Nickel	mg/kg	-	-	0.32	-	-	-	-	<0.20	nc	-	-	-	<0.20	<0.2	-	-	-	-	<0.20	nc
Phosphorus	mg/kg	-	-	2,350	-	-	-	-	1,200	**65%**	-	-	-	2,840	2,920	-	-	-	-	2,780	2%
Potassium	mg/kg	-	-	4,480	-	-	-	-	2,500	57%	-	-	-	3,440	3,670	-	-	-	-	3,510	2%
Silicon	mg/kg	-	8,180	-	-	-	3,260	nc	-	-	2,960	-	52.2	-	-	-	-	62.0	nc	-	-
Silver	mg/kg	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	-	<0.0050	<0.005	-	-	-	-	<0.0050	nc
Sodium	mg/kg	-	-	24	-	-	-	-	<20	nc	-	-	-	<20	<20	-	-	-	-	<20	nc
Strontium	mg/kg	-	-	1.95	-	-	-	-	0.877	**76%**	-	-	-	0.061	0.057	-	-	-	-	0.050	nc
Sulfur	mg/kg	-	-	1,000	-	-	-	-	540	60%	-	-	-	820	860	-	-	-	-	870	6%
Titanium	mg/kg	-	-	<0.25	-	-	-	-	<0.25	nc	-	-	-	<0.25	<0.25	-	-	-	-	<0.25	nc
Zirconium	mg/kg	-	-	<0.20	-	-	-	-	<0.20	nc	-	-	-	<0.20	<0.2	-	-	-	-	<0.20	nc
Metals, Group 2																					
Aluminum	mg/kg	-	-	3.0	-	-	-	-	<2.0	nc	-	-	-	<2.0	<2	-	-	-	-	<2.0	nc
Arsenic	mg/kg	-	-	<0.020	-	-	-	-	<0.020	nc	-	-	-	<0.020	<0.02	-	-	-	-	<0.020	nc
Cadmium	mg/kg	-	-	0.158	-	-	-	-	0.0727	**74%**	-	-	-	<0.0050	<0.005	-	-	-	-	<0.0050	nc
Copper	mg/kg	-	-	3.75	-	-	-	-	1.98	**62%**	-	-	-	1.29	1.31	-	-	-	-	1.02	23%
Lead	mg/kg	-	-	<0.020	-	-	-	-	<0.020	nc	-	-	-	<0.020	<0.02	-	-	-	-	<0.020	nc
Mercury	mg/kg	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	-	<0.0050	<0.005	-	-	-	-	<0.0050	nc
Thallium	mg/kg	-	-	<0.0020	-	-	-	-	<0.0020	nc	-	-	-	<0.0020	<0.002	-	-	-	-	<0.0020	nc
Vanadium	mg/kg	-	-	<0.10	-	-	-	-	<0.10	nc	-	-	-	<0.10	<0.1	-	-	-	-	<0.10	nc
Zinc	mg/kg	-	-	17.7	-	-	-	-	9.40	**61%**	-	-	-	13.1	13.9	-	-	-	-	11.6	12%

See notes on last page.

Table C-1d
Summary of Agricultural Crops 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		S2		S4			W2										W4			
Sample Date		22-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20		23-Sep-20		23-Sep-20		23-Sep-20	21-Sep-20	21-Sep-20	21-Sep-20	21-Sep-20
Sample ID		20-S2-SB-CH-077	20-S2-SB-CH-077	20-S4-SB-CH-095	20-S4-SB-CH-095	20-S4-SB-CH-095	20-W2-SB-CH-005	20-W2-SB-CH-005	20-W2-SB-CH-005	20-D5-SB-CH-205		20-D5-SB-CH-205		20-D5-SB-CH-205		Duplicate	20-W4-SB-CH-011	20-W4-SB-CH-011	20-W4-SB-CH-011	Duplicate
Sampling Company		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC			STANTEC	STANTEC	STANTEC	
Laboratory		ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS		ALS		ALS		ALS	ALS	ALS	ALS	ALS
Laboratory Work Order		K2100368	L2522291	K2100368	L2100666	L2522291	K2100368	L2100666	L2522291	K2100368		L2100666		L2522291		WG3486826-7	K2100368	L2100666	L2522291	WG3486826-3
Laboratory Sample ID		K2100368-020	L2522291-34	K2100368-022	L2522291-38	L2522291-38	K2100368-002	L2522291-3	L2522291-3	K2100368-025		L2522291-44		L2522291-44		Lab Replicate	K2100368-004	L2522291-6	L2522291-6	Lab Replicate
Sample Type	Units									Field Duplicate	RPD (%)	Field Duplicate	RPD (%)	Field Duplicate	RPD (%)					
General Chemistry																				
Chloride	mg/kg	-	65	-	-	89	-	-	70	-	-	-	-	75	-	74	-	-	37	35
Fluoride	mg/kg	<19	-	<21	-	-	22	-	-	<20	nc	-	-	-	-	-	<20	-	-	-
Metals, Group 1																				
Barium	mg/kg	-	0.775	-	-	1.04	-	-	0.803	-	-	-	-	1.04	26%	-	-	-	1.34	-
Beryllium	mg/kg	-	<0.010	-	-	<0.010	-	-	<0.010	-	-	-	-	<0.010	nc	-	-	-	<0.010	-
Boron	mg/kg	-	22.2	-	-	33.6	-	-	28.2	-	-	-	-	30.9	9%	-	-	-	30.0	-
Calcium	mg/kg	-	2,130	-	-	3,530	-	-	388	-	-	-	-	2,590	**148%**	-	-	-	3,240	-
Chromium	mg/kg	-	<0.050	-	-	<0.050	-	-	<0.050	-	-	-	-	<0.050	nc	-	-	-	<0.050	-
Cobalt	mg/kg	-	0.108	-	-	0.108	-	-	0.044	-	-	-	-	0.060	nc	-	-	-	0.050	-
Iron	mg/kg	-	44.8	-	-	56.5	-	-	36.5	-	-	-	-	52.2	35%	-	-	-	46.2	-
Magnesium	mg/kg	-	2,000	-	-	2,680	-	-	1,980	-	-	-	-	2,360	18%	-	-	-	2,770	-
Manganese	mg/kg	-	21.1	-	-	22.3	-	-	13.0	-	-	-	-	23.7	58%	-	-	-	22.4	-
Molybdenum	mg/kg	-	7.85	-	-	8.90	-	-	7.20	-	-	-	-	6.69	7%	-	-	-	7.17	-
Nickel	mg/kg	-	0.95	-	-	1.99	-	-	0.61	-	-	-	-	0.94	nc	-	-	-	3.66	-
Phosphorus	mg/kg	-	5,210	-	-	7,010	-	-	5,830	-	-	-	-	6,600	12%	-	-	-	6,130	-
Potassium	mg/kg	-	15,600	-	-	21,000	-	-	17,900	-	-	-	-	19,800	10%	-	-	-	21,200	-
Silicon	mg/kg	-	-	-	112	-	-	43.0	-	-	-	111	nc	-	-	-	-	46.1	-	-
Silver	mg/kg	-	<0.0050	-	-	<0.0050	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	-	<0.0050	-
Sodium	mg/kg	-	<20	-	-	<20	-	-	<20	-	-	-	-	<20	nc	-	-	-	<20	-
Strontium	mg/kg	-	2.79	-	-	5.60	-	-	1.22	-	-	-	-	2.17	56%	-	-	-	2.80	-
Sulfur	mg/kg	-	2,600	-	-	3,650	-	-	2,980	-	-	-	-	3,420	14%	-	-	-	4,170	-
Titanium	mg/kg	-	<0.25	-	-	<0.25	-	-	<0.25	-	-	-	-	<0.25	nc	-	-	-	<0.25	-
Zirconium	mg/kg	-	<0.20	-	-	<0.20	-	-	<0.20	-	-	-	-	<0.20	nc	-	-	-	<0.20	-
Metals, Group 2																				
Aluminum	mg/kg	-	<2.0	-	-	<2.0	-	-	<2.0	-	-	-	-	<2.0	nc	-	-	-	<2.0	-
Arsenic	mg/kg	-	<0.020	-	-	<0.020	-	-	<0.020	-	-	-	-	<0.020	nc	-	-	-	<0.020	-
Cadmium	mg/kg	-	0.0467	-	-	0.0162	-	-	0.0062	-	-	-	-	0.0179	nc	-	-	-	0.267	-
Copper	mg/kg	-	8.92	-	-	10.3	-	-	6.39	-	-	-	-	8.57	29%	-	-	-	11.3	-
Lead	mg/kg	-	<0.020	-	-	<0.020	-	-	<0.020	-	-	-	-	<0.020	nc	-	-	-	<0.020	-
Mercury	mg/kg	-	<0.0050	-	-	<0.0050	-	-	<0.0050	-	-	-	-	<0.0050	nc	-	-	-	<0.0050	-
Thallium	mg/kg	-	<0.0020	-	-	<0.0020	-	-	<0.0020	-	-	-	-	<0.0020	nc	-	-	-	<0.0020	-
Vanadium	mg/kg	-	<0.10	-	-	<0.10	-	-	<0.10	-	-	-	-	<0.10	nc	-	-	-	<0.10	-
Zinc	mg/kg	-	24.0	-	-	36.8	-	-	20.4	-	-	-	-	29.0	35%	-	-	-	37.8	-

Notes:

15.2	Measured concentration.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
-	Parameter not analyzed / not available.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 60%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-1e
Summary of Quality Control 2020 Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		Field Blank (E1)		Field Blank (E7)	Field Blank (W4)	Rinsate Blank (E1)	Rinsate Blank (E7)	Rinsate Blank (W4)	Trip Blank (E1)	Trip Blank (E7)
Sample Date		13-Oct-20	13-Oct-20	7-Jul-20	21-Sep-20	13-Oct-20	7-Jul-20	21-Sep-20	13-Oct-20	7-Jul-20
Sample ID		20-E1-FB-CH-213	Duplicate	20-E7-FB-CH-211	20-W4-FB-CH-212	20-E1-RB-CH-217	20-E7-RB-CH-215	20-W4-RB-CH-216	20-E1-TB-CH-220	20-E7-TB-CH-218
Sampling Company		STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order		L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291
Laboratory Sample ID		L2522291-49	WG3471307-3	L2522291-47	L2522291-48	L2522291-52	L2522291-50	L2522291-51	L2522291-55	L2522291-53
Sample Type	Units	Field Blank	Lab Replicate	Field Blank	Field Blank	Material Rinse Blank	Material Rinse Blank	Material Rinse Blank	Trip Blank	Trip Blank
Metals, Group 1										
Barium	mg/L	<0.020	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Beryllium	mg/L	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Boron	mg/L	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Calcium	mg/L	<0.10	-	<0.10	<0.10	0.18	0.22	<0.10	<0.10	<0.10
Chromium	mg/L	<0.0010	-	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010
Cobalt	mg/L	<0.00030	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Iron	mg/L	<0.030	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Magnesium	mg/L	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Manganese	mg/L	<0.00030	-	<0.00030	<0.00030	0.00032	0.00041	<0.00030	<0.00030	<0.00030
Molybdenum	mg/L	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nickel	mg/L	<0.0010	-	<0.0010	<0.0010	0.0025	<0.0010	<0.0010	<0.0010	<0.0010
Potassium	mg/L	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Silicon	mg/L	<0.21	-	<0.21	<0.21	0.37	0.61	<0.21	<0.21	<0.21
Silver	mg/L	<0.000020	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Sodium	mg/L	<2.0	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Sulfur	mg/L	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Titanium	mg/L	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Metals, Group 2										
Aluminum	mg/L	<0.0050	-	<0.0050	<0.0050	0.0231	0.0230	0.0147	<0.0050	<0.0050
Arsenic	mg/L	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cadmium	mg/L	<0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Copper	mg/L	<0.0010	-	<0.0010	<0.0010	0.0028	<0.0010	<0.0010	<0.0010	<0.0010
Lead	mg/L	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Mercury	mg/L	<0.0000050	<0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Thallium	mg/L	<0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Vanadium	mg/L	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Notes:

15.2	Measured concentration.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
-	Parameter not analyzed / not available.

Table C-2a
Summary of Natural Grass 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		E1			E2			E5	E6	E7	N2	N4	N5	S2	S4	W2		W4
Sample Date		13-Oct-20	13-Oct-20		21-Sep-20	21-Sep-20		13-Oct-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	21-Sep-20
Sample ID		20-E1-NG-CH-039	20-D8-NG-CH-208		20-E2-NG-CH-049	20-D3-NG-CH-203		20-E5-NG-CH-055	20-E6-NG-CH-061	20-E7-NG-CH-305	20-N2-NG-CH-019	20-N4-NG-CH-025	20-N5-NG-CH-035	20-S2-NG-CH-075	20-S4-NG-CH-093	20-W2-NG-CH-003	Duplicate	20-W4-NG-CH-009
Sampling Company		STANTEC	STANTEC		STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory		ALS	ALS		ALS	ALS		ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order		L2522291	L2522291		L2522291	L2522291		L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291
Laboratory Sample ID		L2522291-18	L2522291-42		L2522291-22	L2522291-41		L2522291-25	L2522291-28	L2522291-30	L2522291-9	L2522291-12	L2522291-16	L2522291-33	L2522291-37	L2522291-2	WG3465282-4	L2522291-5
Sample Type	Units		Field Duplicate	RPD (%)		Field Duplicate	RPD (%)										Lab Replicate	
General Chemistry																		
Moisture Content, Subcontacted	%	51.2	50.2	2 %	42.5	46.1	8 %	57.4	54.8	59.3	60.2	61.2	53.0	43.4	62.5	68.5	-	63.4
Dioxins/Furans (PCDD/DF)																		
Tetrachlorodibenzofuran, 2,3,7,8-	pg/g	<0.063	<0.11	nc	<0.12	<0.093	nc	<0.097	<0.039	<0.049	<0.087 XM	<0.061	<0.094	<0.058	<0.071	<0.25	<0.17	<0.20
Tetrachlorodibenzo-p-Dioxin, 2,3,7,8-	pg/g	<0.064	<0.098	nc	<0.095	<0.12	nc	<0.087	<0.040	<0.041	<0.092	<0.061	<0.089	<0.061	<0.076	<0.28	<0.15 XM	<0.21
Pentachlorodibenzofuran, 1,2,3,7,8- (PeCDF)	pg/g	<0.049 XM	<0.13 XM	nc	<0.093 XM	<0.081	nc	<0.064	<0.032 XM	<0.033	<0.044	<0.038 XM	<0.11 XM	<0.034	<0.088	<0.21	<0.13 XM	<0.11 XM
Pentachlorodibenzofuran, 2,3,4,7,8-	pg/g	<0.040 XM	<0.10	nc	<0.069	<0.065	nc	<0.049	0.038 EN JA XM	0.049 EN JA	<0.038	<0.031	<0.083 XM	<0.027	<0.069	<0.15	<0.11	0.081 JA XM
Pentachlorodibenzo-p-Dioxin, 1,2,3,7,8-	pg/g	<0.064	<0.11	nc	<0.090	<0.095	nc	<0.065	0.071 JA XM	<0.052	<0.054	<0.067	<0.093	0.046 EN JA XM	<0.11	<0.25	<0.13	<0.20
Octachlorodibenzofuran (OCDF)	pg/g	0.401 JA XM	0.84 JA XM	nc	0.635 JA	0.67 JA	5 %	0.48 JA	3.93 JA	0.600 JA XM	0.28 EN JA XM	0.270 EN JA XM	0.75 JA	0.310 EN JA	0.595 JA XM	0.53 EN JA	0.86 EN JA	0.66 JA XM
Octachlorodibenzo-p-dioxin	pg/g	4.33 JA	4.43 JA	2 %	2.63 JA XM	2.45 JA	7 %	5.16 JA	20.2	3.05 JA	1.79 JA	1.54 JA XM	4.97 JA	2.13 JA	1.70 EN JA	6.07 JA XM	3.75 JA	3.32 JA
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	pg/g	0.266 JA XM	0.19 EN JA XM	nc	0.16 EN JA XM	0.160 EN JA	nc	0.259 JA	1.16 JA	0.190 EN JA	0.143 JA XM	0.165 JA	0.250 EN JA XM	0.140 EN JA XM	<0.047	<0.13	0.320 EN JA XM	0.26 JA XM
Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	pg/g	<0.057	<0.23	nc	<0.17	<0.088	nc	<0.058	0.092 EN JA XM	<0.030	<0.054	<0.080	<0.077	<0.063	<0.061	<0.18	<0.092	<0.24
Heptachlorodibenzo-p-Dioxin, 1,2,3,4,6,7,8-	pg/g	0.990 EN JA XM	0.94 EN JA	5 %	0.590 EN JA	0.60 EN JA XM	2 %	1.29 JA	3.55	0.830 EN JA	0.629 JA	0.650 JA	1.14 JA	0.525 JA	0.46 EN JA XM	1.35 JA XM	1.42 JA	1.10 EN JA XM
Hexachlorodibenzofuran, 1,2,3,4,7,8-	pg/g	0.046 JA XM	<0.095	nc	<0.080	<0.066	nc	<0.068	0.086 JA XM	0.050 JA XM	<0.036 XM	<0.042	<0.063	<0.062	<0.061 XM	<0.18	<0.09	<0.11
Hexachlorodibenzofuran, 1,2,3,6,7,8-	pg/g	0.067 EN JA XM	<0.090	nc	<0.087 XM	<0.061	nc	<0.069	0.080 EN JA XM	<0.032	<0.035	<0.038	<0.067	<0.066	<0.060 XM	<0.17	<0.087	<0.12
Hexachlorodibenzofuran, 1,2,3,7,8,9-	pg/g	<0.053	<0.14	nc	0.13 EN JA	<0.090	nc	<0.081	0.057 JA XM	0.043 JA XM	0.054 EN JA XM	<0.049 XM	0.100 JA	<0.083	<0.081 XM	<0.25	<0.11	<0.16
Hexachlorodibenzofuran, 2,3,4,6,7,8-	pg/g	<0.070	<0.10	nc	<0.083	<0.064	nc	<0.074	0.107 JA	0.045 EN JA	<0.039	<0.068	<0.062	<0.065	<0.063	<0.18	<0.13	<0.20
Hexachlorodibenzo-p-Dioxin, 1,2,3,4,7,8-	pg/g	0.056 EN JA	<0.12	nc	<0.053	<0.078	nc	<0.071 XM	0.111 JA XM	0.084 JA XM	<0.064	<0.052	<0.066	<0.045	<0.082	<0.15	<0.22	<0.23
Hexachlorodibenzo-p-Dioxin, 1,2,3,6,7,8-	pg/g	0.090 EN JA	<0.10	nc	<0.051	<0.073	nc	0.082 JA	0.200 JA XM	<0.057	<0.064	<0.054	<0.068	<0.040	<0.072	<0.13	<0.21 XM	<0.23
Hexachlorodibenzo-p-Dioxin, 1,2,3,7,8,9-	pg/g	0.100 JA XM	<0.11	nc	<0.053	<0.077	nc	<0.074 XM	0.163 JA XM	0.082 JA XM	<0.065	0.058 EN JA XM	<0.069	<0.044	<0.079	<0.14	<0.22	<0.24
Total Tetrachlorodibenzofuran	pg/g	0.475	<0.11	nc	<0.12	0.142	nc	<0.097	0.077	0.788	<0.087	<0.061	0.237	0.074	<0.071	<0.25	<0.17	<0.20
Total Tetrachlorodibenzo-p-dioxin	pg/g	0.289	<0.098	nc	0.144	<0.12	nc	<0.087	0.231	0.455	0.120	0.220	<0.089	0.075	<0.076	<0.28	0.34	<0.21
Total Pentachlorodibenzofuran	pg/g	0.166	<0.13	nc	<0.093	0.193	nc	0.095	0.117	0.338	<0.044	<0.038	<0.11	0.149	<0.088	<0.21	<0.13	<0.11
Total Pentachlorodibenzo-p-dioxin	pg/g	0.991	0.17	nc	0.247	<0.095	nc	0.630	0.893	0.986	0.841	0.581	0.481	<0.044	0.23	<0.25	1.35	<0.20
Total Hexachlorodibenzofuran	pg/g	0.118	<0.14	nc	<0.11	<0.090	nc	<0.081	1.34	0.094	<0.045	<0.068	0.100	<0.083	<0.081	0.28	<0.13	0.31
Total Hexachlorodibenzo-p-dioxin	pg/g	2.33	1.57	39 %	1.16	1.51	26 %	2.66	1.77	3.08	1.01	1.81	<0.069	0.900	0.536	<0.15	<0.22	2.66
Total Heptachlorodibenzofuran	pg/g	0.399	<0.23	nc	<0.17	<0.088	nc	0.353	2.81	<0.030	0.143	0.165	<0.077	<0.063	<0.061	<0.18	<0.092	0.26
Total Heptachlorodibenzo-p-dioxin	pg/g	2.17	<0.17	nc	1.41	1.20	16 %	3.43	7.49	<0.030	0.629	1.76	2.84	1.48	<0.22	3.45	3.95	<0.21
Total HpCDD # Homologues	none	1	0	nc	1	1	nc	2	2	0	1	2	2	2	0	2	-	0
Total HpCDF # Homologues	none	2	0	nc	0	0	nc	2	2	0	1	1	0	0	0	0	-	1
Total HxCDD # Homologues	none	3	1	nc	1	1	nc	3	4	5	1	2	0	1	1	0	-	1
Total HxCDF # Homologues	none	2	0	nc	0	0	nc	0	6	2	0	0	1	0	0	1	-	1
Total PeCDD # Homologues	none	4	1	nc	1	0	nc	2	3	2	3	1	1	0	1	0	-	0
Total PeCDF # Homologues	none	2	0	nc	0	1	nc	1	2	3	0	0	0	1	0	0	-	0
Total TCDD # Homologues	none	2	0	nc	1	0	nc	0	4	2	1	2	0	2	0	0	-	0
Total TCDF # Homologues	none	3	0	nc	0	1	nc	0	1	5	0	0	2	1	0	0	-	0
Lower Bound PCDD/F TEQ (WHO 2005)	pg/g	0.0187	0.00158	**169 %**	0.000980	0.000935	5 %	0.0254	0.197	0.0270	0.00826	0.00861	0.0231	0.00589	0.000179	0.0153	-	0.0281
Mid Point PCDD/F TEQ (WHO 2005)	pg/g	0.130	0.178	31 %	0.153	0.158	3 %	0.137	0.240	0.110	0.113	0.102	0.156	0.112	0.139	0.380	-	0.321
Upper Bound PCDD/F TEQ (WHO 2005)	pg/g	0.211	0.344	48 %	0.284	0.307	8 %	0.248	0.262	0.164	0.212	0.190	0.285	0.170	0.273	0.745	-	0.604
Organochlorinated pesticides (OCP)																		
Aldrin	ng/g	<0.064	<0.0014	nc	<0.28	<0.0018	nc	<0.49	<0.047	<0.027	<0.011	<0.081	<0.079	<0.012	<0.0038	<0.094	<0.13	<0.053
BHC, alpha-	ng/g	<0.31	<0.010	nc	<1.2	<0.012	nc	<1.7	<0.42	<0.15	<0.075	<0.39	<0.35	<0.064	<0.019	<0.65	<0.81	<0.34
BHC, beta-	ng/g	<0.93	<0.022	nc	<3.1	<0.029	nc	<9.7	<0.84	<0.27	<0.18	<1.0	<0.83	<0.15	<0.045	<1.5	<2.1	<0.86
BHC, delta-	ng/g	<0.46	<0.013	nc	<1.4	<0.015	nc	<5.1	<0.47	<0.16	<0.091	<0.54	<0.42	<0.087	<0.025	<0.81	<1.1	<0.44
Chlordane, alpha-	ng/g	<0.30	0.027 EN JA XM	nc	<0.78	0.030 JA XM	nc	<4.0	<0.32	<0.10	<0.071	<0.38	<0.43	<0.084	<0.022	<0.61	<0.57	<0.28
Chlordane, trans- (gamma-Chlordane)	ng/g	<0.33	<0.019 XM	nc	<0.85	<0.013	nc	<4.4	<0.33	<0.10	<0.077	<0.41	<0.46	<0.086	<0.023	<0.66	<0.61	<0.30
DDD (p,p'-DDD)	ng/g	<0.28	<0.0018	nc	<0.36	<0.0037	nc	<1.9	<0.075	<0.038	<0.020	<0.17	<0.11	<0.015	<0.0045	<0.14	<0.19	<0.11
DDE (p,p'-DDE)	ng/g	0.44 EN JA XM	0.0665 JA	nc	0.92 EN JA XM	0.0603 JA	nc	<2.7	0.340 JA	0.239 JA	0.257 JA	<0.22	<0.14	0.157 JA	0.0250 JA	0.39 EN JA XM	0.30 EN JA XM	<0.20
DDT (p,p'-DDT)	ng/g	<0.52	0.0342 JA	nc	<0.58	0.0330 JA XM	nc	<3.4	0.19 JA XM	0.081 EN JA XM	<0.058	<0.13	<0.16	0.097 EN JA XM	<0.0052	<0.37	<0.41	<0.17
Dieldrin	ng/g	0.49 JA XM	0.0732 JA	nc	<0.41	0.0490 EN JA XM	nc	<3.0	0.22 EN JA XM	0.18 EN JA XM	0.190 EN JA XM	<0.26	<0.23	0.123 JA XM	0.030 JA XM	0.46 EN JA XM	<0.52	0.31 JA XM
Endosulfan I	ng/g	<0.60	0.048 JA XM	nc	<0.82	<0.021	nc	<4.5	<0.27	<0.18	<0.12	<0.36	<0.54	0.13 JA XM	<0.024	<0.63	<0.78	<0.29
Endosulfan II	ng/g	<1.5	<0.023	nc	<3.9	<0.023	nc	<8.4	<0.71	<0.28	<0.16	<0.79	<0.79	<0.11	<0.045	<1.2	<1	<0.87
Endosulfan Sulfate	ng/g	<0.18	<0.014	nc	<0.37	0.0097 EN JA XM	nc	<2.0	<0.17	<0.068	<0.035	<0.10	<0.17	<0.029	<0.0068	<0.35	<0.31	<0.11
Endrin	ng/g	<0.39	<0.0092 XM	nc	<0.59	<0.010	nc	<4.0	0.28 EN JA XM	<0.22 XM	<0.060	<0.37	<0.35	<0.038	0.027 JA XM	<0.37	0.91 JA XM	<0.27
Endrin Aldehyde	ng/g	<0.19	<0.0038	nc	<0.32	<0.0071	nc	<1.4	<0.16	<0.056	<0.035	<0.11	<0.13	<0.036	<0.016	<0.24	<0.15	<0.18
Heptachlor	ng/g	<0.029 XM	0.00240 EN JA XM	nc	<0.12 XM	0.00110 EN JA XM	nc	<0.29	<0.035 XM	0.026 EN JA XM	0.0130 EN JA XM	<0.042 XM	<0.046	0.0092 EN JA XM	<0.0018 XM	<0.044 XM	0.082 EN JA XM	0.036 EN JA XM
Heptachlor Epoxide	ng/g	0.14 JA XM	0.0253 JA XM	nc	<0.31	0.0159 JA XM	nc	<0.98	<0.092	<0.026	<0.0075	<0.098 XM	<0.071	0.048 JA XM	<0.0051	<0.084	<0.18	<0.077
Lindane (Hexachlorocyclohexane, gamma)	ng/g	<0.42	<0.014	nc	<1.5	<0.015	nc	<3.1	<0.48	<0.17	<0.097	<0.50	<0.43	<0.080	<0.024	<0.81	<1	<0.44
Methoxychlor (4,4'-Methoxychlor)	ng/g	<0.59	<0.014	nc	<3.4	<0.022	nc	<5.3	<0.13	<0.049	<0.22	<0.60	<0.69	<0.049	<0.012	<0.20	<0.26	<0.17
Mirex	ng/g	<0.049	0.00480 EN JA XM	nc	<0.077	<0.0010 EN JA XM	nc	<0.27	0.039 EN JA XM	0.0220 EN JA XM	<0.0077	<0.026	<0.032	0.0120 EN JA XM	0.00110 EN JA XM	<0.028	<0.038	<0.034
Polychlorinated biphenyls (PCB)																		
Polychlorinated Biphenyls (PCBs)	ng/g	<0.030	0.456 B	nc	3.12	0.560 B	**139 %**	<0.12	<0.30	0.58	<0.040	<0.090	3.67	<0.18	<0.22	-	-	<0.092

See last page for notes

Table C-2a
Summary of Natural Grass 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Notes:

6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
B	Indicates analyte was found in associated blank, as well as in the sample.
EN	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
JA	Analyte was detected below the calibrated range but above the detection limit.
XM	A peak has been manually integrated.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 60%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-2b
Summary of Soil 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location					E1			E2			E5	E6	E7	N2	N4	N5	S2	S4	W2				W4
Sample Date					13-Oct-20	13-Oct-20		21-Sep-20	21-Sep-20		13-Oct-20	23-Sep-20	7-Jul-20	7-Jul-20	23-Sep-20	23-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	21-Sep-20
Sample ID					20-E1-SS-CH-037	20-D2-SS-CH-201		20-E2-SS-CH-043	20-D1-SS-CH-200		20-E5-SS-CH-053	20-E6-SS-CH-059	20-E7-SS-CH-303	20-N2-SS-CH-013	20-N4-SS-CH-023	20-N5-SS-CH-029	20-S2-SS-CH-073	20-S4-SS-CH-087	20-W2-SS-CH-001	Duplicate	Duplicate	Duplicate	20-W4-SS-CH-007
Sample Depth					15 cm	15 cm		15 cm	15 cm		15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm	15 cm
Sampling Company					STANTEC	STANTEC		STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	ALS	ALS	ALS	STANTEC
Laboratory					ALS	ALS		ALS	ALS		ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
Laboratory Work Order					L2522291	L2522291		L2522291	L2522291		L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	WG3465271-4	WG3465299-6	WG3471536-3	L2522291
Laboratory Sample ID					L2522291-17	L2522291-40		L2522291-20	L2522291-39		L2522291-24	L2522291-27	L2522291-29	L2522291-7	L2522291-11	L2522291-14	L2522291-32	L2522291-35	L2522291-1	Lab Replicate	Lab Replicate	Lab Replicate	L2522291-4
Sample Type	Units	Ontario SCS	MOE *			Field Duplicate	RPD (%)		Field Duplicate	RPD (%)													
General Chemistry																							
Moisture Content	%	n/v	n/v	n/v	20.5	21.8	6%	18.8	18.8	0%	19.8	14.0	7.35	12.4	14.3	16.4	12.5	17.3	13.7	-	-	13.7	17.8
Dioxins/Furans (PCDD/DF)																							
Tetrachlorodibenzofuran, 2,3,7,8-	pg/g	n/v	n/v	n/v	0.422 JA	0.39 JA	nc	0.361 JA	0.31 JA XM	nc	0.319 JA	0.448 JA XM	<0.35	0.53 JA	0.44 EN JA XM	0.520 EN JA XM	0.367 JA XM	0.424 JA	0.31 JA XM	0.376 JA	-	-	0.66
Tetrachlorodibenzo-p-Dioxin, 2,3,7,8-	pg/g	n/v	0.9	n/v	0.282 JA	0.23 EN JA XM	nc	0.202 JA	0.140 EN JA XM	nc	0.131 JA	0.352 JA	<0.24	0.303 JA	0.146 JA XM	0.295 JA XM	0.281 JA	0.181 JA XM	0.269 JA XM	0.266 JA XM	-	-	0.46 EN JA XM
Pentachlorodibenzofuran, 1,2,3,7,8- (PeCDF)	pg/g	n/v	n/v	n/v	0.270 EN JA XM	0.42 EN JA XM	nc	0.18 EN JA	0.179 JA	nc	0.170 EN JA XM	0.465 JA	<0.31 XM	0.276 JA	0.214 JA	0.548 JA XM	0.274 JA	0.270 JA XM	0.28 JA XM	0.261 JA	-	-	0.35 JA XM
Pentachlorodibenzofuran, 2,3,4,7,8-	pg/g	n/v	n/v	n/v	0.470 JA	0.63 JA	29%	0.44 JA	0.317 JA	nc	0.301 JA	0.719 JA XM	0.50 JA XM	0.568 JA XM	0.491 JA	0.686 JA XM	0.411 JA	0.493 JA	0.618 JA	0.690 JA	-	-	0.71 JA
Pentachlorodibenzo-p-Dioxin, 1,2,3,7,8-	pg/g	n/v	n/v	n/v	0.302 JA	0.190 EN JA XM	nc	0.254 JA XM	0.110 EN JA	nc	0.167 JA	0.394 JA	<0.32	0.246 JA XM	0.210 EN JA	0.392 JA XM	0.245 JA XM	0.243 JA	0.279 JA	0.305 JA	-	-	0.26 EN JA
Octachlorodibenzofuran (OCDF)	pg/g	n/v	n/v	n/v	4.91 JA	98.9	**181%**	2.08 JA	1.40 EN JA XM	39%	1.93 JA	7.73	7.37 XM	2.20 JA	3.89 JA	52.5	1.67 JA	5.56 JA	2.60 JA XM	3.46 JA	-	-	11.0 EN XM
Octachlorodibenzo-p-dioxin	pg/g	n/v	n/v	n/v	46.5	44.3	5%	39.7	30.6	26%	24.5	99.2	72.5	28.5	40.3	255	27.6	62.3	39.9	42.3	-	-	134
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	pg/g	n/v	n/v	n/v	4.08	52.1	**171%**	1.60 EN JA	1.60 JA	0%	1.66 JA XM	4.98	1.86 JA	2.02 JA	2.18 JA	25.7	1.60 EN JA	3.04 JA	2.17 JA	3.33	-	-	7.63 XM
Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	pg/g	n/v	n/v	n/v	0.282 JA	1.10 EN JA	nc	<0.092	<0.079	nc	0.110 EN JA XM	0.439 JA	<0.92	0.120 EN JA XM	0.160 EN JA	1.39 JA	0.224 JA XM	0.296 JA	0.23 JA XM	0.330 JA	-	-	<1.1
Heptachlorodibenzo-p-Dioxin, 1,2,3,4,6,7,8-	pg/g	n/v	n/v	n/v	7.29	6.21	16%	6.20	5.26	16%	4.59	12.8	8.51 XM	5.88	5.91	34.3	4.39	11.7	6.94	7.69	-	-	26.8
Hexachlorodibenzofuran, 1,2,3,4,7,8-	pg/g	n/v	n/v	n/v	0.767 JA XM	4.42	**141%**	0.32 EN JA	0.320 JA XM	nc	0.349 JA	0.986 JA	<0.43 XM	0.572 JA	0.439 JA XM	1.76 JA	0.410 EN JA	0.423 JA	0.499 JA XM	0.553 JA	-	-	0.64 EN JA XM
Hexachlorodibenzofuran, 1,2,3,6,7,8-	pg/g	n/v	n/v	n/v	0.489 JA	1.99 JA	**121%**	0.22 EN JA	0.190 JA XM	nc	0.235 JA	0.786 JA	0.35 EN JA XM	0.369 JA	0.220 EN JA XM	1.31 JA	0.220 EN JA	0.326 JA	0.361 JA	0.465 JA	-	-	0.69 JA XM
Hexachlorodibenzofuran, 1,2,3,7,8,9-	pg/g	n/v	n/v	n/v	0.140 EN JA	<0.26	nc	<0.13	<0.12	nc	0.086 JA	0.170 JA XM	<0.56	0.100 EN JA XM	0.12 JA XM	0.31 JA	0.099 EN JA	0.149 JA	0.22 JA XM	0.221 JA	-	-	<0.53
Hexachlorodibenzofuran, 2,3,4,6,7,8-	pg/g	n/v	n/v	n/v	0.560 EN JA XM	0.73 EN JA XM	nc	0.41 EN JA	0.323 JA	nc	0.240 EN JA XM	0.742 JM	0.51 EN JA XM	0.420 EN JA XM	0.430 EN JA	1.47 JA	0.388 JA XM	0.436 JA	0.555 JA	0.935 JA	-	-	0.85 JA
Hexachlorodibenzo-p-Dioxin, 1,2,3,4,7,8-	pg/g	n/v	n/v	n/v	0.220 EN JA XM	<0.16	nc	0.250 EN JA XM	<0.071	nc	0.150 EN JA XM	0.397 JA	<0.37	0.230 EN JA	0.223 JA	0.639 JA XM	0.195 JA XM	0.276 JA	0.25 JA XM	0.283 JA	-	-	0.63 EN JA XM
Hexachlorodibenzo-p-Dioxin, 1,2,3,6,7,8-	pg/g	n/v	n/v	n/v	0.526 JA XM	0.43 EN JA	nc	0.428 JA XM	<0.067	nc	0.280 EN JA XM	0.817 JA	<0.32	0.500 EN JA	0.392 JA	1.56 JA XM	0.260 EN JA XM	0.643 JA	0.504 JA XM	0.549 JA	-	-	2.32 JA XM
Hexachlorodibenzo-p-Dioxin, 1,2,3,7,8,9-	pg/g	n/v	n/v	n/v	0.668 JA XM	0.53 EN JA XM	nc	0.494 JA XM	<0.070	nc	0.507 JA XM	1.07 JA	<0.35	0.645 JA XM	0.621 JA	1.48 JA XM	0.370 EN JA XM	0.795 JA	0.51 JA XM	0.625 JA	-	-	1.69 JA
Total Tetrachlorodibenzofuran	pg/g	n/v	12	n/v	5.20	2.74	**62%**	2.92	2.88	1%	2.44	8.12	<0.35	7.32	4.53	4.77	3.60	7.09	5.56	5.77	-	-	5.28
Total Tetrachlorodibenzo-p-dioxin	pg/g	n/v	6.6	n/v	1.77	0.19	nc	0.949	0.781	19%	1.19	1.35	<0.24	1.53	0.935	2.21	1.59	1.69	1.40	0.894	-	-	3.13
Total Pentachlorodibenzofuran	pg/g	n/v	19	n/v	6.56	6.28	4%	1.28	1.06	19%	3.25	9.26	1.21	7.50	7.15	9.28	2.76	5.39	7.37	9.14	-	-	6.55
Total Pentachlorodibenzo-p-dioxin	pg/g	n/v	16	n/v	2.90	2.11	32%	3.47	1.47	**81%**	1.21	6.64	0.63	2.05	1.81	5.67	2.35	3.56	2.16	3.41	-	-	2.41
Total Hexachlorodibenzofuran	pg/g	n/v	28	n/v	4.57	12.0	**90%**	1.93	2.39	21%	2.34	7.92	1.93	3.06	3.44	17.5	0.761	4.42	4.24	6.43	-	-	6.48
Total Hexachlorodibenzo-p-dioxin	pg/g	n/v	13	n/v	6.36	5.19	20%	3.17	3.54	11%	3.54	9.13	<0.37	5.76	3.96	12.6	2.24	6.54	5.83	7.82	-	-	**15.4[B]**
Total Heptachlorodibenzofuran	pg/g	n/v	32	n/v	6.00	**55.9[B]**	**161%**	0.828	2.31	**94%**	2.52	8.45	1.86	3.09	3.23	**43.4[B]**	0.905	6.39	2.17	5.81	-	-	8.5
Total Heptachlorodibenzo-p-dioxin	pg/g	n/v	55	n/v	15.6	14.7	6%	12.8	10.2	23%	9.46	26.1	17.8	12.0	11.1	**62.4[B]**	4.39	20.3	13.6	14.7	-	-	49.8
Total HpCDD # Homologues	none	n/v	n/v	n/v	2	2	0%	2	2	0%	2	2	2	2	2	2	1	2	2	-	-	-	2
Total HpCDF # Homologues	none	n/v	n/v	n/v	3	2	40%	1	2	**67%**	2	4	1	2	2	4	2	3	1	-	-	-	2
Total HxCDD # Homologues	none	n/v	n/v	n/v	4	2	**67%**	3	2	40%	3	5	0	3	5	5	2	5	5	-	-	-	4
Total HxCDF # Homologues	none	n/v	n/v	n/v	7	5	33%	3	5	**50%**	8	12	2	4	6	10	2	7	5	-	-	-	5
Total PeCDD # Homologues	none	n/v	n/v	n/v	5	3	**50%**	6	3	**67%**	7	7	1	4	3	8	5	7	5	-	-	-	4
Total PeCDF # Homologues	none	n/v	n/v	n/v	12	7	**53%**	6	4	40%	7	13	3	9	12	9	5	10	7	-	-	-	4
Total TCDD # Homologues	none	n/v	n/v	n/v	7	1	**150%**	4	5	22%	8	3	0	5	5	7	7	8	4	-	-	-	2
Total TCDF # Homologues	none	n/v	n/v	n/v	12	7	**53%**	6	7	15%	9	18	0	11	8	6	8	15	9	-	-	-	6
Lower Bound PCDD/F TEQ (WHO 2005)	pg/g	7	4.8	n/v	1.14	1.49	27%	0.791	0.292	**92%**	0.608	1.73	0.277	1.03	0.574	2.47	0.807	1.10	1.17	-	-	-	1.23
Mid Point PCDD/F TEQ (WHO 2005)	pg/g	7	4.8	n/v	1.24	2.13	**53%**	0.939	0.559	**51%**	0.682	1.73	0.772	1.15	0.894	2.52	0.959	1.10	1.17	-	-	-	2.11
Upper Bound PCDD/F TEQ (WHO 2005)	pg/g	7	4.8	n/v	1.24	2.15	**54%**	0.946	0.576	**49%**	0.682	1.73	1.18	1.15	0.894	2.52	0.959	1.10	1.17	-	-	-	2.14
Organochlorinated pesticides (OCP)																							
Aldrin	ng/g	50	1_p	n/v	<0.0033	<0.0019	nc	<0.0031	<0.0016	nc	<0.0025	<0.0034	0.606	<0.0013	<0.0018	0.0051 JA XM	<0.0022	<0.0025	<0.0011	-	<0.0016	-	<0.0014
BHC, alpha-	ng/g	n/v	n/v	n/v	<0.034	<0.018	nc	<0.024	<0.013	nc	<0.029	<0.021	<0.014	<0.011	<0.013	0.030 EN JA XM	<0.012	<0.019	<0.0097	-	<0.012	-	<0.016
BHC, beta-	ng/g	n/v	n/v	n/v	<0.046	<0.026	nc	<0.030	<0.018	nc	<0.033	<0.027	<0.019	<0.016	<0.017	<0.017	<0.017 XM	<0.023	<0.012	-	<0.014	-	<0.018
BHC, delta-	ng/g	n/v	n/v	n/v	<0.044	<0.025	nc	<0.031	<0.018	nc	<0.032	<0.027	<0.020	<0.015	<0.017	<0.016	<0.017	<0.025	<0.012	-	<0.015	-	<0.018
Chlordane, alpha-	ng/g	n/v	2_p	n/v	<0.023	<0.014	nc	<0.026	0.019 EN JA XM	nc	<0.021	<0.040	0.0212 JA XM	0.0260 EN JA XM	<0.019	<0.022	<0.0095	<0.016	<0.011	-	<0.011	-	0.037 JA XM
Chlordane, trans- (gamma-Chlordane)	ng/g	n/v	n/v	n/v	<0.024	<0.015	nc	<0.026	<0.012	nc	<0.021	<0.040	<0.0059	<0.0095	<0.019	<0.022	<0.011	<0.018	<0.011	-	<0.011	-	<0.016
DDD (p,p'-DDD)	ng/g	50_{s4}	n/v	n/v	0.016 EN JA	0.0118 JA	nc	<0.014	<0.0070	nc	0.0080 JA	0.046 JA	0.0061 EN JA	0.0340 JA	0.0210 EN JA XM	0.0988 JA	0.0080 EN JA	0.0240 EN JA	0.0096 EN JA XM	-	0.0076 JA	-	0.0243 JA
DDE (p,p'-DDE)	ng/g	50_{s4}	n/v	n/v	0.151	0.149	1%	0.222	0.244	9%	0.111 JA	0.373	0.361	0.472	0.331	0.694	0.494	0.486	0.416	-	0.415	-	0.398
DDT (p,p'-DDT)	ng/g	78_{s4}	75	n/v	0.357 XM	0.372	4%	0.180	0.228	24%	0.134	0.390	0.484	0.652	0.294 XM	0.633	0.581	0.390 XM	0.353	-	0.353	-	0.719
Dieldrin	ng/g	50	4_p	n/v	0.040 JA XM	0.0395 JA XM	nc	0.035 JA XM	0.035 JA XM	nc	<0.012	0.030 EN JA XM	4.13	0.0570 EN JA XM	0.0455 JA XM	0.0311 JA XM	0.0330 JA XM	0.040 JA XM	0.0193 JA XM	-	0.0260 JA XM	-	0.144
Endosulfan I	ng/g	n/v	n/v	n/v	<0.031	<0.017	nc	<0.014	<0.020	nc	<0.019	<0.023	<0.0073	<0.014	<0.011	<0.015	<0.0077	<0.014	<0.0057	-	<0.008	-	<0.011 XM
Endosulfan II	ng/g	n/v	n/v	n/v	<0.039	0.020 JA XM	nc	<0.047	<0.020	nc	<0.028	<0.041	<0.026 XM	<0.024	<0.025	<0.022	<0.011	<0.017	<0.023	-	<0.02	-	<0.015
Endosulfan Sulfate	ng/g	n/v	n/v	n/v	<0.0082	<0.0068	nc	<0.0053	<0.0035	nc	<0.0053	<0.0089	0.0057 JA XM	0.0061 JA XM	<0.0055	<0.011	<0.0034	<0.0055	<0.0015	-	<0.0053	-	<0.0053
Endrin	ng/g	40	4_p	n/v	<0.014	<0.0064	nc	<0.012	<0.012	nc	<0.012	0.017 JA XM	0.0310 JA XM	<0.0060	<0.0078 XM	<0.0072	<0.0072	<0.027	0.0100 EN JA XM	-	0.0175 JA XM	-	<0.0086
Endrin Aldehyde	ng/g	n/v	n/v	n/v	<0.0071	<0.010	nc	<0.0091	<0.0066	nc	<0.0050	<0.0080	<0.0056	<0.0077	<0.0081	<0.0076	<0.0056	<0.0046	<0.0065	-	<0.0039	-	<0.0038
Heptachlor	ng/g	50	1_p	n/v	0.0059 EN JA XM	0.0033 JA XM	nc	<0.0020	0.0019 EN JA XM	nc	<0.0012	0.0033 EN JA XM	0.00310 JA XM	0.00150 EN JA XM	<0.0015 XM	0.0026 EN JA XM	0.00290 EN JA XM	<0.0013	0.00180 EN JA XM	-	<0.0011	-	<0.0012
Heptachlor Epoxide	ng/g	50	1_p	n/v	0.0130 EN JA XM	0.0189 JA	nc	0.0203 JA	0.0357 JA	**55%**	0.0063 EN JA XM	0.0140 EN JA XM	0.0257 JA	0.0292 JA	0.0170 EN JA XM	0.0122 JA XM	0.0229 JA	0.0224 JA XM	0.0149 JA XM	-	0.0140 EN JA XM	-	0.0469 JA
Lindane (Hexachlorocyclohexane, gamma)	ng/g	10	1_p	n/v	<0.041	<0.023	nc	<0.030	<0.017	nc	<0.034	0.292	<0.017	<0.015	<0.016	0.108 JA XM	0.019 JA XM	<0.023	<0.012	-	<0.014	-	0.050 JA XM
Methoxychlor (4,4'-Methoxychlor)	ng/g	50	5_p	n/v	<0.0051	0.0160 EN JA XM	nc	<0.0041	<0.0049	nc	<0.0036	0.0190 EN JA XM	0.0084 JA XM	<0.0045	<0.0043	0.0511 JA XM	<0.0028	<0.0041	0.0090 EN JA XM	-	0.0083 JA XM	-	<0.0041
Mirex	ng/g	n/v	n/v	n/v	<0.00088	0.00700 JA XM	nc	0.00580 EN JA XM	0.00460 EN JA	23%	0.00240 EN JA XM	0.0089 JA XM	0.00560 EN JA XM	0.0068 EN JA XM	0.00940 EN JA XM	0.0111 JA XM	0.00450 EN JA	0.0050 JA XM	0.00750 EN JA	-	0.00756 JA XM	-	0.00700 EN JA
Polychlorinated biphenyls (PCB)																							
Polychlorinated Biphenyls (PCBs)	ng/g	300_{s14}	15_p	n/v	0.960	0.961	0%	1.83	1.69	8%	0.683	1.85	1.45	2.30	3.33	2.25	1.33	3.94	1.56	-	1.67	-	2.14

See notes on last page.

Table C-2b
Summary of Soil 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Notes:

Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
A	Table 1 - Agricultural or Other Property Use
MOE	Ontario Ministry of the Environment
B	Ontario Typical Range (OTR) values for Rural Parks, Ontario Ministry of Environment and Energy (OMEE, 1993)
C	Ontario Ministry of the Environment Rural "upper limit of normal" contaminant guidelines for phytotoxicology samples (1989)
*	Results are only compared to the Rural OTR and Rural ULN values in the absence of an Ontario SCS value
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
p	Provisional
s4	Standard is applicable to total sum of isomers, individual isomers must be summed for comparison.
s14	Standard is applicable to total PCBs, and the individual Aroclors should be added for comparison.
EN	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
JA	Analyte was detected below the calibrated range but above the detection limit.
JM	Estimated Maximum Possible Concentration. Parameter detected but didn't meet all criteria for positive identification.
XM	A peak has been manually integrated.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-2c
Summary of Sediment 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location				E2	N2			N5	S4
Sample Date				14-Oct-20	23-Sep-20	23-Sep-20		23-Sep-20	22-Sep-20
Sample ID				20-E2-SD-CH-045	20-N2-SD-CH-015	20-D4-SD-CH-204		20-N5-SD-CH-031	20-S4-SD-CH-089
Sampling Company				STANTEC	STANTEC	STANTEC		STANTEC	STANTEC
Laboratory				ALS	ALS	ALS		ALS	ALS
Laboratory Work Order				L2522291	L2522291	L2522291		L2522291	L2522291
Laboratory Sample ID				L2522291-21	L2522291-8	L2522291-43		L2522291-15	L2522291-36
Sample Type	Units	Ontario SCS	PSQG			Field Duplicate	RPD (%)		
General Chemistry									
Moisture Content	%	n/v	n/v	22.3	17.2	18.4	7%	16.9	26.3
Organochlorinated pesticides (OCP)									
Aldrin	ng/g	2	n/v	<0.0033	<0.0016	<0.0030	nc	<0.0025	<0.0048
BHC, alpha-	ng/g	n/v	n/v	<0.036	<0.017	<0.020	nc	<0.033	<0.023
BHC, beta-	ng/g	n/v	n/v	<0.041	<0.020	<0.024	nc	<0.037	<0.027
BHC, delta-	ng/g	n/v	n/v	<0.043	<0.020	<0.025	nc	<0.038	<0.027
Chlordane, alpha-	ng/g	n/v	n/v	<0.037	<0.017	<0.013	nc	<0.026	<0.024
Chlordane, trans- (gamma-Chlordane)	ng/g	n/v	n/v	<0.038	<0.017	<0.014	nc	<0.026	<0.027
DDD (p,p'-DDD)	ng/g	8_{s4}	n/v	<0.013	<0.0045	<0.010	nc	0.017 JA XM	0.035 JA
DDE (p,p'-DDE)	ng/g	5_{s4}	n/v	0.020 EN JA	<0.0076	<0.0071	nc	<0.015 XM	0.149 JA
DDT (p,p'-DDT)	ng/g	7_{s4}	n/v	<0.011	<0.0099	<0.011 XM	nc	<0.0099	0.053 JA XM
Dieldrin	ng/g	2	n/v	<0.015	<0.010	<0.011	nc	<0.0096	0.0150 EN JA XM
Endosulfan I	ng/g	n/v	n/v	<0.025	<0.015	<0.020	nc	<0.012	<0.025
Endosulfan II	ng/g	n/v	n/v	<0.042	<0.033	<0.037	nc	<0.029	<0.050
Endosulfan Sulfate	ng/g	n/v	n/v	<0.0096	<0.0070	<0.0054	nc	<0.0078	<0.0073
Endrin	ng/g	3	n/v	<0.014	<0.0097	<0.011	nc	0.0110 EN JA XM	<0.0081
Endrin Aldehyde	ng/g	n/v	n/v	<0.0086	<0.0064	<0.0050	nc	<0.0066	<0.0076
Heptachlor	ng/g	n/v	n/v	<0.0036 XM	<0.0019	0.0024 JA XM	nc	<0.0015	<0.0027
Heptachlor Epoxide	ng/g	5	n/v	<0.0047	<0.0014	<0.0022	nc	<0.0048	<0.0026
Lindane (Hexachlorocyclohexane, gamma)	ng/g	n/v	n/v	<0.043	<0.019	<0.022	nc	<0.039	<0.028
Methoxychlor (4,4'-Methoxychlor)	ng/g	n/v	n/v	<0.012	<0.010	<0.011	nc	<0.0063	<0.014
Mirex	ng/g	n/v	n/v	<0.0017 XM	<0.0013	<0.00087 XM	nc	<0.00096	0.0026 EN JA XM
Polychlorinated biphenyls (PCB)									
Polychlorinated Biphenyls (PCBs)	ng/g	70_{s14}	n/v	0.011	0.016	<0.12	nc	0.268	0.476

Notes:

Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
A	Table 1 - All Types of Property Uses
PSQG	Ontario Provincial Sediment Quality Guidelines
B	Table 1: PSQG for Metals and Nutrients - Lowest Effect Level
6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
s4	Standard is applicable to total sum of isomers, individual isomers must be summed for comparison.
s14	Standard is applicable to total PCBs, and the individual Aroclors should be added for comparison.
EN	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
JA	Analyte was detected below the calibrated range but above the detection limit.
XM	A peak has been manually integrated.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 40%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-2d
Summary of Agricultural Crop 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Sample Location		E1	E2	E5		E7	N2			N4				S2	S4			W2				W4
Sample Date		19-Sep-20	21-Sep-20	19-Sep-20	19-Sep-20	7-Jul-20	7-Jul-20	7-Jul-20		23-Sep-20	23-Sep-20	23-Sep-20		22-Sep-20	22-Sep-20	22-Sep-20	22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20		21-Sep-20
Sample ID		20-E1-SB-CH-041	20-E2-SB-CH-051	20-E5-SB-CH-057	20-E5-SB-CH-057 LR	20-E7-WW-CH-300	20-N2-WW-CH-021	20-D7-WW-CH-209		20-N4-FC-CH-027	Duplicate	20-D6-FC-CH-207		20-S2-SB-CH-077	20-S4-SB-CH-095	Duplicate	Duplicate	20-W2-SB-CH-005	20-W2-SB-CH-005 LR	20-D5-SB-CH-205		20-W4-SB-CH-011
Sampling Company		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC		STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC
Laboratory		ALS	ALS	ALS	ALS	ALS	ALS	ALS		ALS	ALS	ALS		ALS	ALS	ALS	ALS	ALS	ALS	ALS		ALS
Laboratory Work Order		L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291		L2522291	L2522291	L2522291		L2522291	L2522291	L2522291	L2522291	L2522291	L2522291	L2522291		L2522291
Laboratory Sample ID		L2522291-19	L2522291-23	L2522291-26	WG3485254-4 Lab Replicate	L2522291-31	L2522291-10	L2522291-46 Field Duplicate	RPD (%)	L2522291-13	WG3480040-3 Lab Replicate	L2522291-45 Field Duplicate	RPD (%)	L2522291-34	L2522291-38	WG3465294-4 Lab Replicate	WG3465309-5 Lab Replicate	L2522291-3	WG3465312-6 Lab Replicate	L2522291-44 Field Duplicate	RPD (%)	L2522291-6
Sample Type	Units																					
General Chemistry																						
Moisture Content, Subcontacted	%	20.3	22.8	14.7	14.7	24.1	41.9	41.3	1 %	36.0, 41.9	36.4	37.4	nc	12.1	18.5	-	-	11.9	11.9	11.7	2 %	21.0
Dioxins/Furans (PCDD/DF)																						
Tetrachlorodibenzofuran, 2,3,7,8-	pg/g	<0.016	<0.042	<0.0092	-	<0.010	<0.019	<0.014	nc	<0.016	-	<0.021	nc	<0.010	<0.011	<0.011	-	<0.013	-	<0.014	nc	<0.011
Tetrachlorodibenzo-p-Dioxin, 2,3,7,8-	pg/g	<0.019	<0.047	<0.013	-	<0.012	<0.022	<0.021	nc	<0.022	-	<0.024	nc	<0.013	<0.017	<0.017	-	<0.022	-	<0.016	nc	<0.018
Pentachlorodibenzofuran, 1,2,3,7,8- (PeCDF)	pg/g	<0.0092	<0.019	<0.0063	-	<0.0086	<0.015 XM	<0.016	nc	<0.011	-	<0.019	nc	<0.0054	<0.014	<0.012 XM	-	<0.010	-	<0.0078	nc	<0.0079
Pentachlorodibenzofuran, 2,3,4,7,8-	pg/g	<0.0072	<0.016	<0.0047	-	<0.0068	<0.012 XM	<0.013	nc	<0.0086	-	<0.015	nc	<0.0042	<0.011	<0.0089	-	<0.0083	-	<0.0063	nc	<0.0063
Pentachlorodibenzo-p-Dioxin, 1,2,3,7,8-	pg/g	<0.011	<0.025	<0.0067	-	<0.010	<0.017	<0.019	nc	<0.011	-	<0.021	nc	<0.0085	<0.022	<0.016	-	<0.0066	-	<0.014	nc	<0.0084
Octachlorodibenzofuran (OCDF)	pg/g	0.085 EN JA XM	<0.11	0.037 EN JA	-	0.093 EN JA XM	0.066 EN JA XM	0.100 EN JA XM	nc	0.113 JA	-	0.093 EN JA XM	nc	0.034 EN JA XM	0.121 JA	0.110 EN JA XM	-	0.053 JA XM	-	0.080 JA	nc	0.079 JA XM
Octachlorodibenzo-p-dioxin	pg/g	0.100 EN JA XM	0.56 JA XM	0.087 EN JA XM	-	0.132 JA	0.160 EN JA	0.320 EN JA	nc	0.130 EN JA XM	-	0.200 EN JA XM	nc	0.130 JA	0.243 JA XM	0.200 JA XM	-	0.181 JA	-	0.391 JA XM	nc	0.059 EN JA
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	pg/g	0.020 EN JA XM	<0.037	<0.012	-	0.019 EN JA XM	<0.019	<0.014	nc	<0.014	-	<0.013	nc	<0.0097 XM	<0.0094	<0.0078	-	<0.011	-	0.019 EN JA XM	nc	<0.0064
Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	pg/g	<0.018	<0.055	<0.017	-	<0.015	<0.025	<0.022	nc	<0.023	-	<0.020	nc	<0.013	<0.015	<0.012	-	<0.016	-	<0.026	nc	<0.0088
Heptachlorodibenzo-p-Dioxin, 1,2,3,4,6,7,8-	pg/g	0.019 EN JA XM	<0.056	0.040 JA	-	0.0329 JA XM	<0.034 XM	0.047 JA	nc	<0.033 XM	-	0.049 JA XM	nc	0.0130 EN JA XM	<0.018 EN JA XM	0.023 EN JA	-	0.020 EN JA XM	-	<0.014	nc	0.014 EN JA XM
Hexachlorodibenzofuran, 1,2,3,4,7,8-	pg/g	<0.0065	<0.019	<0.0085	-	<0.0065	0.020 JA XM	<0.011	nc	<0.0098	-	<0.019	nc	<0.0046	0.0090 EN JA XM	<0.012	-	<0.0049	-	<0.0063	nc	<0.0069
Hexachlorodibenzofuran, 1,2,3,6,7,8-	pg/g	<0.0067	<0.018	<0.0082	-	<0.0066	<0.010	<0.011	nc	<0.011	-	<0.019	nc	<0.0045	<0.0086	<0.012	-	<0.0051	-	<0.0063	nc	<0.0073
Hexachlorodibenzofuran, 1,2,3,7,8,9-	pg/g	0.0190 EN JA XM	<0.028	0.016 JA XM	-	0.0130 EN JA XM	<0.013	0.016 EN JA XM	nc	<0.014 XM	-	<0.025	nc	0.0130 EN JA XM	<0.013	<0.016	-	<0.0065	-	<0.0093	nc	0.0120 EN JA XM
Hexachlorodibenzofuran, 2,3,4,6,7,8-	pg/g	<0.0068	<0.019	<0.0083	-	<0.012	<0.017	<0.014	nc	<0.010	-	<0.021	nc	<0.0047	<0.0095	<0.012	-	<0.0048	-	<0.0069	nc	<0.0071
Hexachlorodibenzo-p-Dioxin, 1,2,3,4,7,8-	pg/g	<0.010	<0.026	<0.013	-	<0.014	<0.018	<0.014	nc	<0.016	-	<0.025	nc	<0.0082	<0.014	<0.013	-	<0.012	-	<0.012	nc	<0.010
Hexachlorodibenzo-p-Dioxin, 1,2,3,6,7,8-	pg/g	<0.0097	<0.025	<0.012	-	<0.013	<0.018	<0.011	nc	<0.015	-	<0.024	nc	<0.0079	<0.013	<0.012	-	<0.010	-	<0.011	nc	<0.010
Hexachlorodibenzo-p-Dioxin, 1,2,3,7,8,9-	pg/g	<0.010	<0.026	<0.013	-	<0.014	<0.019	<0.013	nc	<0.016	-	<0.025	nc	<0.0082	<0.013	<0.013	-	<0.011	-	<0.012	nc	<0.011
Total Tetrachlorodibenzofuran	pg/g	<0.016	<0.042	<0.0092	-	<0.010	<0.019	<0.014	nc	<0.016	-	<0.021	nc	<0.010	<0.011	<0.011	-	<0.013	-	<0.014	nc	<0.011
Total Tetrachlorodibenzo-p-dioxin	pg/g	<0.019	<0.047	<0.013	-	<0.012	<0.022	<0.021	nc	<0.022	-	<0.024	nc	<0.013	<0.017	<0.017	-	<0.022	-	<0.016	nc	<0.018
Total Pentachlorodibenzofuran	pg/g	<0.0092	<0.019	<0.0063	-	<0.0086	<0.015	<0.016	nc	<0.011	-	<0.019	nc	<0.0054	<0.014	<0.012	-	<0.010	-	<0.0078	nc	<0.0079
Total Pentachlorodibenzo-p-dioxin	pg/g	<0.011	<0.025	<0.0067	-	0.082	<0.017	<0.019	nc	<0.011	-	<0.021	nc	<0.0085	<0.022	<0.016	-	<0.0066	-	<0.014	nc	<0.0084
Total Hexachlorodibenzofuran	pg/g	<0.0087	<0.028	0.016	-	<0.012	0.020	<0.015	nc	<0.014	-	<0.025	nc	<0.0058	<0.013	<0.016	-	<0.0065	-	<0.0093	nc	<0.0098
Total Hexachlorodibenzo-p-dioxin	pg/g	<0.010	<0.026	<0.013	-	<0.014	<0.019	0.048	nc	<0.016	-	<0.025	nc	<0.0082	<0.014	<0.013	-	<0.012	-	<0.012	nc	<0.011
Total Heptachlorodibenzofuran	pg/g	<0.018	<0.055	<0.017	-	<0.015	<0.025	<0.022	nc	<0.023	-	<0.020	nc	<0.013	<0.015	<0.012	-	<0.016	-	<0.026	nc	<0.0088
Total Heptachlorodibenzo-p-dioxin	pg/g	<0.017	<0.056	0.040	-	0.0329	<0.034	0.093	nc	<0.033	-	0.049	nc	<0.0095	<0.018	0.026	-	<0.018	-	<0.014	nc	<0.012
Total HpCDD # Homologues	none	0	0	1	-	1	0	2	nc	0	-	1	nc	0	0	-	-	0	-	0	nc	0
Total HpCDF # Homologues	none	0	0	0	-	0	0	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total HxCDD # Homologues	none	0	0	0	-	0	0	1	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total HxCDF # Homologues	none	0	0	1	-	0	1	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total PeCDD # Homologues	none	0	0	0	-	2	0	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total PeCDF # Homologues	none	0	0	0	-	0	0	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total TCDD # Homologues	none	0	0	0	-	0	0	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Total TCDF # Homologues	none	0	0	0	-	0	0	0	nc	0	-	0	nc	0	0	-	-	0	-	0	nc	0
Lower Bound PCDD/F TEQ (WHO 2005)	pg/g	0.00	0.000168	0.00202	-	0.000369	0.00204	0.000471	**125 %**	0.0000339	-	0.000488	**174 %**	0.0000390	0.000109	-	-	0.0000703	-	0.000141	**67 %**	0.0000238
Mid Point PCDD/F TEQ (WHO 2005)	pg/g	0.0219	0.0498	0.0165	-	0.0179	0.0297	0.0290	2 %	0.0238	-	0.0347	37 %	0.0155	0.0268	-	-	0.0195	-	0.0205	5 %	0.0189
Upper Bound PCDD/F TEQ (WHO 2005)	pg/g	0.0415	0.0994	0.0309	-	0.0339	0.0573	0.0557	3 %	0.0475	-	0.0689	37 %	0.0294	0.0524	-	-	0.0387	-	0.0406	5 %	0.0364
Organochlorinated pesticides (OCP)																						
Aldrin	ng/g	<0.0012	<0.015	<0.046	-	<0.00051	<0.0013	<0.020	nc	<0.0018	-	<0.024	nc	<0.0010	<0.00082	-	-	<0.0011	-	<0.012	nc	<0.0019
BHC, alpha-	ng/g	<0.0070	<0.045	<0.11	-	<0.0032	<0.010	<0.068	nc	<0.0064	-	<0.057	nc	<0.0059	<0.0047	-	-	<0.0067	-	<0.045	nc	0.0100 EN JA XM
BHC, beta-	ng/g	<0.018	<0.32	<0.85	-	<0.0063	<0.025	<0.40	nc	<0.016	-	<0.39	nc	<0.012	<0.011	-	-	<0.017	-	<0.31	nc	<0.020
BHC, delta-	ng/g	<0.0097	<0.18	<0.43	-	<0.0038	<0.012	<0.21	nc	<0.0092	-	<0.21	nc	<0.0080	<0.0066	-	-	<0.0086	-	<0.18	nc	<0.010
Chlordane, alpha-	ng/g	0.0130 EN JA XM	<0.15	<0.34	-	<0.0030	<0.014	<0.17	nc	<0.0089	-	<0.16	nc	0.0065 EN JA XM	0.0130 EN JA XM	-	-	0.0154 JA XM	-	<0.18	nc	0.0140 EN JA XM
Chlordane, trans- (gamma-Chlordane)	ng/g	0.0120 EN JA XM	<0.17	<0.37	-	<0.0030	<0.015	<0.18	nc	<0.0097	-	<0.17	nc	<0.0058	<0.0047 XM	-	-	0.0177 JA XM	-	<0.19	nc	<0.0086
DDD (p,p'-DDD)	ng/g	<0.0030	<0.11	<0.27	-	<0.00041	<0.0031	<0.069	nc	<0.0044	-	<0.096	nc	<0.0017	<0.0015	-	-	<0.0027	-	<0.082	nc	<0.0053
DDE (p,p'-DDE)	ng/g	<0.0039	<0.099	<0.25	-	0.00458 JA	0.0137 JA XM	<0.067	nc	<0.0032	-	<0.11	nc	<0.0024	<0.0017	-	-	<0.0042	-	<0.083	nc	<0.0046
DDT (p,p'-DDT)	ng/g	<0.0087	<0.14	<0.35	-	0.00413 JA	<0.0078	<0.083	nc	<0.0035	-	<0.12	nc	<0.0024	<0.0015	-	-	<0.0062	-	<0.093	nc	<0.0072
Dieldrin	ng/g	0.0655	<0.12	<0.18	-	0.0120 EN JA XM	0.0169 JA XM	<0.074	nc	<0.0056	-	<0.089	nc	0.0311 JA XM	0.0449 JA	-	-	0.0639	-	<0.093	nc	0.0810
Endosulfan I	ng/g	<0.017	<0.13	<0.48	-	<0.0025	<0.011	<0.15	nc	<0.017	-	<0.19	nc	<0.0071	<0.0061	-	-	0.014 JA XM	-	<0.22	nc	<0.011
Endosulfan II	ng/g	<0.025	<0.48	<0.48	-	<0.0096	<0.029	<0.32	nc	<0.020	-	<0.38	nc	<0.018	<0.0081	-	-	<0.017	-	<0.15	nc	<0.026
Endosulfan Sulfate	ng/g	0.0082 JA XM	<0.12	<0.23	-	<0.0011	<0.0050	<0.068	nc	<0.0031	-	<0.090	nc	<0.0040	0.00630 JA XM	-	-	0.0038 EN JA XM	-	<0.085	nc	<0.0041
Endrin	ng/g	<0.0056	<0.20	<0.39	-	0.0035 EN JA XM	<0.0064	<0.10	nc	<0.0072	-	<0.14	nc	<0.0054	0.0047 JA XM	-	-	<0.0062	-	<0.15	nc	<0.0070
Endrin Aldehyde	ng/g	<0.0028	<0.13	<0.37	-	<0.0018	<0.0031	<0.058	nc	<0.0030	-	<0.066	nc	<0.0036	<0.0042	-	-	<0.0021	-	<0.098	nc	<0.0029
Heptachlor	ng/g	0.00130 EN JA XM	<0.0084	<0.016	-	0.00076 EN JA XM	0.00140 EN JA XM	<0.0062	nc	<0.00058	-	<0.0087	nc	0.00077 EN JA XM	0.00056 EN JA XM	-	-	0.00094 EN JA XM	-	<0.0056	nc	<0.0012 XM
Heptachlor Epoxide	ng/g	0.0268 JA XM	<0.029	<0.046 XM	-	0.00274 JA XM	0.0035 EN JA XM	<0.015	nc	<0.0012	-	<0.037	nc	0.0177 JA	0.0189 JA	-	-	0.0254 JA XM	-	<0.020	nc	0.0222 JA XM
Lindane (Hexachlorocyclohexane, gamma)	ng/g	0.0298 JA XM	<0.080	<0.19	-	<0.0038	<0.012	<0.12	nc	<0.0084	-	<0.10	nc	<0.0071	<0.0059	-	-	<0.0085	-	<0.076	nc	<0.010
Methoxychlor (4,4'-Methoxychlor)	ng/g	<0.014	<0.17	<0.23	-	<0.0015	<0.011	<0.30	nc	<0.011	-	<0.31	nc	<0.0070	<0.0036	-	-	<0.0044	-	<0.077	nc	<0.0095
Mirex	ng/g	<0.0010	<0.014	<0.038	-	0.00031 EN JA XM	<0.0011	<0.0096	nc	<0.00074	-	0.015 EN JA XM	nc	<0.00056	0.00042 EN JA XM	-	-	<0.00050	-	<0.011	nc	<0.00067
Polychlorinated biphenyls (PCB)																						
Polychlorinated Biphenyls (PCBs)	ng/g	<0.010	<0.013	<0.010	-	<0.010	<0.010	<0.030	nc	0.982	-	0.051 B	nc	<0.060	<0.024	-	<0.024	-	-	<0.010 B	nc	<0.0060
Pentachlorophenol (PCP)																						
Pentachlorophenol	ng/g	<1.2	<1.3	<0.6	<0.6	<1.3	<1.7	<1.6	nc	<1.5	-	<1.6	nc	<1.1	<1.2	-	-	<1.1	<1.1	<1.1	nc	<1.2

See last page for notes

Table C-2d
Summary of Agricultural Crop 2020 Organic Analytical Results
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Notes:

6.5[A]	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
B	Indicates analyte was found in associated blank, as well as in the sample.
EN	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
JA	Analyte was detected below the calibrated range but above the detection limit.
XM	A peak has been manually integrated.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 60%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

Table C-3: Concentrations of Analytes in Environmental Media That Exceeded Upper Control Limits on a Site-Specific Basis
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Analyte Group Number	Analyte	Matrix	Site	Sample ID	Sample Type	Detected Conc. (mg/kg)	MDL (mg/kg)	Value Compared to UL18 (mg/kg)	UL18 (mg/kg)	Conc. as % of UL18	LL18 (mg/kg)	Rural OTR98 MOE 2011 (mg/kg)	Rural ULN (mg/kg)	MOE O. Reg. 153/04 Table 1 Sediment (1) (mg/kg)	PSQG - Table 1 - LEL (mg/kg)	MOE O. Reg. 153/04 Table 1 Agricultural/ Other Property Use	Exceedance
Group1	Barium	NG	E1	20-E1-NG-CH-039	N	48.2	0.050	48.2	39.3	123	5						>UL18
Group1	Barium	NG	E1	20-D8-NG-CH-208	FD	48.1	0.050	48.1	39.3	122	5						>UL18
Group1	Barium	NG	E5	20-E5-NG-CH-055	N	50.8	0.050	50.8	41.6	122	6						>UL18
Group1	Barium	SS	E2	20-D1-SS-CH-200	FD	95.9	0.50	95.9	94.2	102	41	170				210	>UL18
Group1	Beryllium	SS	E2	20-D1-SS-CH-200	FD	0.85	0.10	0.85	0.78	109	0	1.1				2.5	>UL18
Group1	Calcium	SD	N5	20-N5-SD-CH-031	N	96700	50	96700	93190	104	21940						>UL18
Group1	Calcium	SS	S4	20-S4-SS-CH-087	N	14000	50	14000	6026	232	2704	54000					>UL18
Group1	Calcium	SS	W2	20-W2-SS-CH-001	N	8200	50	8200	6886	119	3090	54000					>UL18
Group1	Calcium	SB	E1	20-E1-SB-CH-041	N	3210	20	3210	2975	108	1182						>UL18
Group1	Calcium	SB	S4	20-S4-SB-CH-095	N	3530	20	3530	3345	106	1329						>UL18
Group1	Calcium	SB	W4	20-W4-SB-CH-011	N	3240	20	3240	2796	116	1111						>UL18
Group1	Chloride	SS	E1	20-E1-SS-CH-037	N	85	5.0	85	5.47	1553	1	35					>UL18, >OTR
Group1	Chloride	SS	E1	20-D2-SS-CH-201	FD	87.4	5.0	87.4	5.47	1596	1	35					>UL18, >OTR
Group1	Chloride	SS	E2	20-E2-SS-CH-043	N		5.0	5.0	4.84	103	1	35					>UL18
Group1	Chloride	SS	E2	20-D1-SS-CH-200	FD		5.0	5.0	4.84	103	1	35					>UL18
Group1	Chloride	SS	E5	20-E5-SS-CH-053	N	90.1	5.0	90.1	5.08	1774	1	35					>UL18, >OTR
Group1	Chloride	SS	N2	20-N2-SS-CH-013	N	12.1	5.0	12.1	9.95	122	2	35					>UL18
Group1	Chloride	SS	W4	20-W4-SS-CH-007	N		5.0	5.0	4.59	109	1	35					>UL18
Group1	Chromium	SS	E2	20-D1-SS-CH-200	FD	30.2	0.50	30.2	24.7	122	12	58	50			67	>UL18
Group1	Cobalt	NG	E6	20-E6-NG-CH-061	N	0.296	0.020	0.296	0.29	101	0		2				>UL18
Group1	Magnesium	SD	N5	20-N5-SD-CH-031	N	31100	20	31100	29045	107	11642						>UL18
Group1	Magnesium	SS	S4	20-S4-SS-CH-087	N	10800	20	10800	9731	111	4554	19000	10000				>UL18, >ULN
Group1	Magnesium	SS	W2	20-W2-SS-CH-001	N	5590	20	5590	5460	102	2556	19000	10000				>UL18
Group1	Manganese	NG	N2	20-N2-NG-CH-019	N	78.1	0.050	78.1	73.9	106	22		50				>UL18, >ULN
Group1	Manganese	SS	E6	20-E6-SS-CH-059	N	651	1.0	651	615	106	212	1900	700				>UL18
Group1	Molybdenum	NG	S4	20-S4-NG-CH-093	N	9.13	0.020	9.13	8.21	111	1		6				>UL18, >ULN
Group1	Molybdenum	SD	N2	20-N2-SD-CH-015	N	4.02	0.10	4.02	3.26	123	1						>UL18
Group1	Molybdenum	SD	N2	20-D4-SD-CH-204	FD	3.85	0.10	3.85	3.26	118	1						>UL18
Group1	Nickel	SS	E2	20-D1-SS-CH-200	FD	23.3	0.50	23.3	21	111	11	34	60			37	>UL18
Group1	Phosphorus	NG	E5	20-E5-NG-CH-055	N	3920	10	3920	3259	120	1313						>UL18
Group1	Phosphorus	SS	E2	20-E2-SS-CH-043	N	854	50	854	830	103	439	830					>UL18, >OTR
Group1	Phosphorus	SS	E2	20-D1-SS-CH-200	FD	1010	50	1010	830	122	439	830					>UL18, >OTR
Group1	Phosphorus	SS	S4	20-S4-SS-CH-087	N	803	50	803	748	107	395	830					>UL18
Group1	Silicon	SS	N4	20-N4-SS-CH-023	N	327000		327000	319941	102	238009						>UL18
Group1	Strontium	SD	S4	20-S4-SD-CH-089	N	128	0.50	128	111	115	38						>UL18
Group1	Strontium	SS	S4	20-S4-SS-CH-087	N	38.4	0.50	38.4	30.4	127	13	63					>UL18
Group1	Strontium	SB	W4	20-W4-SB-CH-011	N	2.8	0.050	2.8	2.78	101	1						>UL18
Group1	Sulfur	SS	E1	20-E1-SS-CH-037	N		1000	1000	610	164	141	790	1000				>UL18, >OTR
Group1	Sulfur	SS	E1	20-D2-SS-CH-201	FD		1000	1000	610	164	141	790	1000				>UL18, >OTR
Group1	Sulfur	SS	E2	20-E2-SS-CH-043	N		1000	1000	771	130	178	790	1000				>UL18, >OTR
Group1	Sulfur	SS	E2	20-D1-SS-CH-200	FD		1000	1000	771	130	178	790	1000				>UL18, >OTR
Group1	Sulfur	SS	E5	20-E5-SS-CH-053	N		1000	1000	512	195	118	790	1000				>UL18, >OTR
Group1	Sulfur	SS	E6	20-E6-SS-CH-059	N		1000	1000	763	131	176	790	1000				>UL18, >OTR
Group1	Sulfur	SS	N2	20-N2-SS-CH-013	N		1000	1000	643	155	148	790	1000				>UL18, >OTR
Group1	Sulfur	SS	N4	20-N4-SS-CH-023	N		1000	1000	546	183	126	790	1000				>UL18, >OTR
Group1	Sulfur	SS	S2	20-S2-SS-CH-073	N		1000	1000	479	209	110	790	1000				>UL18, >OTR
Group1	Sulfur	SS	S4	20-S4-SS-CH-087	N		1000	1000	406	246	94	790	1000				>UL18, >OTR
Group1	Sulfur	SS	W2	20-W2-SS-CH-001	N		1000	1000	536	186	124	790	1000				>UL18, >OTR
Group1	Sulfur	SS	W4	20-W4-SS-CH-007	N		1000	1000	693	144	160	790	1000				>UL18, >OTR

See notes on last page.

Table C-3: Concentrations of Analytes in Environmental Media That Exceeded Upper Control Limits on a Site-Specific Basis
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Analyte Group Number	Analyte	Matrix	Site	Sample ID	Sample Type	Detected Conc. (mg/kg)	MDL (mg/kg)	Value Compared to UL18 (mg/kg)	UL18 (mg/kg)	Conc. as % of UL18	LL18 (mg/kg)	Rural OTR98 MOE 2011 (mg/kg)	Rural ULN (mg/kg)	MOE O. Reg. 153/04 Table 1 Sediment (1) (mg/kg)	PSQG - Table 1 - LEL (mg/kg)	MOE O. Reg. 153/04 Table 1 Agricultural/ Other Property Use	Exceedance
Group2	Aluminum	SS	E2	20-D1-SS-CH-200	FD	20100	50	20100	18115	111	6609	30000					>UL18
Group2	Arsenic	SD	N2	20-N2-SD-CH-015	N	7.48	0.10	7.48	6.81	110	3			6	6		>UL18, >MOE, >PSQG
Group2	Arsenic	SD	N2	20-D4-SD-CH-204	FD	7.17	0.10	7.17	6.81	105	3			6	6		>UL18, >MOE, >PSQG
Group2	Arsenic	SS	E2	20-D1-SS-CH-200	FD	6.23	0.10	6.23	6.19	101	3	11	10			11	>UL18
Group2	Arsenic	SS	E6	20-E6-SS-CH-059	N	7.58	0.10	7.58	7.37	103	3	11	10			11	>UL18
Group2	Cadmium	NG	E6	20-E6-NG-CH-061	N	0.499	0.0050	0.499	0.358	140	0		0.5				>UL18
Group2	Cadmium	SB	W4	20-W4-SB-CH-011	N	0.267	0.0050	0.267	0.122	219	0						>UL18
Group2	Lead	NG	E6	20-E6-NG-CH-061	N	8.44	0.020	8.44	1.72	491	0		20				>UL18
Group2	Mercury	NG	E6	20-E6-NG-CH-061	N	0.235	0.0050	0.235	0.159	148	0						>UL18
Group2	Mercury	SS	E6	20-E6-SS-CH-059	N	0.0806	0.0050	0.0806	0.0710	114	0	0.13	0.15			0.16	>UL18
Group2	Mercury	SS	N5	20-N5-SS-CH-029	N	0.0946	0.0050	0.0946	0.0811	117	0	0.13	0.15			0.16	>UL18
Group2	Vanadium	SS	E2	20-D1-SS-CH-200	FD	41.8	0.20	41.8	41.5	101	15	86	70			86	>UL18

Notes:

Rural OTR98	Rural parkland Ontario Typical Range
Rural ULN	Rural Upper Limit of the Normal
MOE O. Reg 153/04 Table 1	Ontario Regulation 153/04 Table 1 site condition standards
PSQG	Provincial Sediment Quality Guideline
MDL	Method Detection Limit
UL18	Upper Limit 2018
LL18	Lower Limit 2018
SS	Soil
NG	Natural grasses
SB	Soybean
N/A	Not applicable
N/V	No value

Table C-4: List of Sites and Matrices Where the Concentrations of Analytes in Environmental Media Exceeded Upper Control Limits on a Site-Specific Basis
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Site	FC	NG	SB	SD	SS	WW	Total Exceedances of UL18
E1	N/A	Barium	Calcium	N/A	Chloride, Sulfur	N/A	**4**
E2	N/A	0	0	0	Chloride, Phosphorus, Sulfur	N/A	**3**
E5	N/A	Barium, Phosphorus	0	N/A	Chloride, Sulfur	N/A	**4**
E6	N/A	**Cadmium**, Cobalt, **Lead**, **Mercury**	N/A	N/A	**Arsenic**, Manganese, **Mercury**, Sulfur	N/A	**8**
N2	N/A	Manganese	N/A	**Arsenic**, Molybdenum	Chloride, Sulfur	0	**5**
N4	0	0	N/A	N/A	Silicon, Sulfur	N/A	**2**
N5	N/A	0	N/A	Calcium, Magnesium	**Mercury**	N/A	**3**
S1	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
S2	N/A	0	0	N/A	Sulfur	N/A	**1**
S4	N/A	Molybdenum	Calcium	Strontium	Calcium, Magnesium, Phosphorus, Strontium, Sulfur	N/A	**8**
W2	N/A	0	0	N/A	Calcium, Magnesium, Sulfur	N/A	**3**
W4	N/A	0	**Cadmium**, Calcium, Strontium	N/A	Chloride, Sulfur	N/A	**5**
Total	**0**	**9**	**5**	**5**	**27**	**0**	**46**

Notes:

N/A	Not Available
Chloride	Group 1 Analyte
Mercury	Group 2 Analyte

Appendix C-5: Inorganic Analytes Where Concentrations of Analytes in Environmental Media Exceeded Upper Control Limits on a Site-Wide Basis
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 Field Year

Analyte Group Number	Analyte	Matrix	No. Samples (n)	MDL (mg/kg)	Mean Conc. (mg/kg)	LL18 (mg/kg)	UL18 (mg/kg)	Conc. as % of UL18	Rural OTR98 MOE 2011 (mg/kg)	Rural ULN (mg/kg)	Exceedances
Group1	Chloride	SS	12	5.0	20.0	1.8	9.6	207	35		>UL18
Group2	Lead	NG	12	0.020	1.0	0.1	0.7	137		20	>UL18

Notes:

Rural OTR98	Rural parkland Ontario Typical Range
Rural ULN	Rural Upper Limit of the Normal
MDL	Method Detection Limit
UL18	Upper Limit 2018
LL18	Lower Limit 2018
SS	Soil
NG	Natural grasses

APPENDIX D PHOTOLOG

Photo 1: Winter wheat collection area at Site N2.

Photo 2: Collecting natural grasses samples at Site W2.

Photo 3: Collecting soil samples at Site S2.

Photo 4: Collecting soil samples at Site S2.

Photo 5: Collecting winter wheat at Site E7.

Photo 6: Collecting soybean samples at Site E1.

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Photo 7: Collecting sediment samples Site E2.

Photo 8: Soybean collection area at Site W4.

Photo 9: Collecting soil samples at Site W2.

Photo 10: Collecting soil samples at Site E7.

Photo 11: Collecting winter wheat at Site N2.

Photo 12: Natural Grass collection area at Site E6.

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Photo 13: Field corn sampling area at Site E7.

Photo 14: Collecting field corn at Site E7.

Photo 15: Sediment collection area at Site N2.

Photo 16: Collecting soybean at Site S4.

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APPENDIX E ASSESSMENT OF APPROPRIATE START DATE FOR STATISTICAL ANALYSIS

E.1 RATIONALE AND DISCUSSION

As noted in prior reports, RDLs have shifted since 1991 for certain analyte-matrix pairs due to changes in analytical methods. In most cases, RDLs have decreased because of increased sensitivity of the analytical method. However, in other cases, RDLs have increased, generally as a trade-off for greater sensitivity for other analytes. For analyte-matrix pairs that have large proportions of non-detect data, these changes in RDL can have major impacts on statistical results for analyses that consider all data collected throughout the Biomonitoring Program (e.g., linear regressions and calculations of upper and lower limits).

Therefore, prior to analyses carried out in the present report, analytical data were reviewed for each analyte-matrix pair to determine the appropriate start date for statistical analyses. To facilitate this review, scatterplots of available analytical data for these analyte-matrix pairs since 1991 were plotted on a Site-wide basis. The plots for inorganic analytes are provided in **Section E.2** of this appendix and the plots for organic analytes are provided in **Section E.4.** of this appendix. As noted elsewhere, values reported as less than the RDL were assigned the full RDL value in these plots. As such, areas of these graphs with points that form a horizontal line are indicative of several years of data points reported as less than the RDL with a stable RDL. Therefore, a visual analysis was applied to identify datasets where results over time appear to be influenced by instability in the analytical method rather than actual meaningful changes in measured analyte concentrations and the appropriate start date was identified accordingly. For example, see the scatterplot for aluminum in soybean in **Section E.2.5** of this appendix. In this dataset, reported values were largely less than the RDL, but the RDL has fluctuated from 30 mg/kg from 1991 to 2001, down to 10 mg/kg in 2001 to 2002, further down to 4 mg/kg in 2003 and 2004, and then back up to 10 mg/kg from 2005 to 2017. For this dataset, truncating the dataset to 2005 onwards will create a dataset with a consistent detection limit and avoid statistical artefacts related to RDL fluctuations.

The assessed appropriate start dates for statistical analysis (control charts and linear regression) for each analyte-matrix pair on a Site-wide basis are indicated by a dashed vertical line on the figures in **Section E.2** and **Section E.4** of this appendix, with summary tables provided in **Section E.3** and **Section E.5** of this appendix for inorganic and organic analytes, respectively. The inorganic analyte statistical analysis start dates were last updated as part of the 2018 Field Year report in support of Site-specific trend analysis and the scatterplots of inorganic analyte concentrations provided in **Section E.2** include data from 1991 to 2018. The organic analyte statistical analysis start dates were last updated as part of the 2019 Field Year report in support of Site-specific trend analysis and the scatterplots of inorganic analyte concentrations provided in **Section E.4** include data from 1991 to 2019. Statistical analyses (e.g., linear regression and calculation of upper and lower limits) that rely on data collected over time in this report and future reports will adopt the analyte-matrix specific start dates described herein unless future analysis identifies a more suitable approach. Historical data will be retained for historical comparison purposes only.

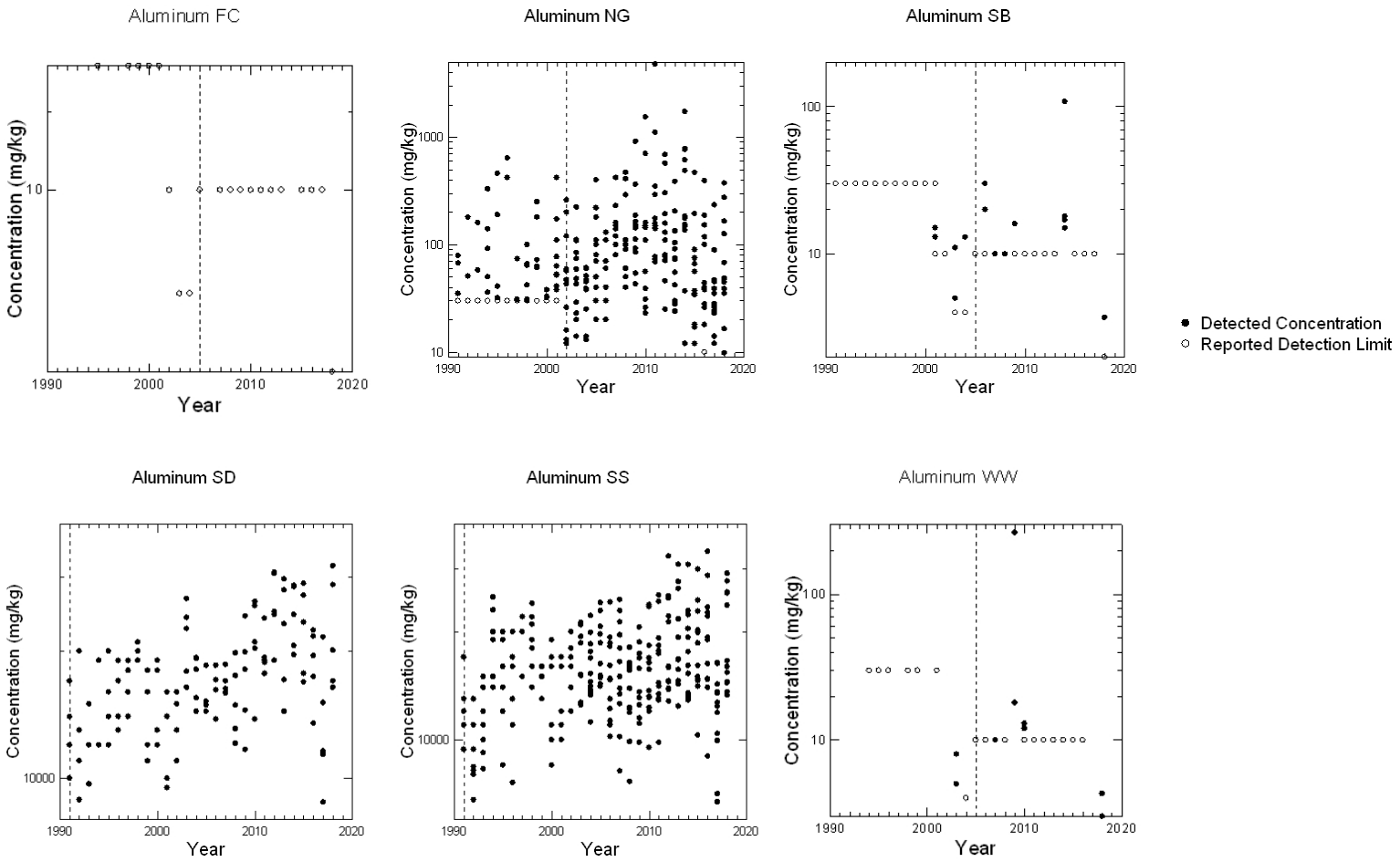
E.2 SCATTERPLOTS OF SITE-WIDE ANALYTICAL DATA AVAILABLE FOR EACH ANALYTE-MATRIX PAIR SINCE 1991 (INORGANIC)

This appendix provides scatterplots of available analytical data for each analyte-matrix pair for inorganic analytes on a Site-wide basis. The assessed appropriate start dates for statistical analysis (control charts and linear regression) for each analyte-matrix pair on a Site-wide basis are indicated by a dashed vertical line on the figures.

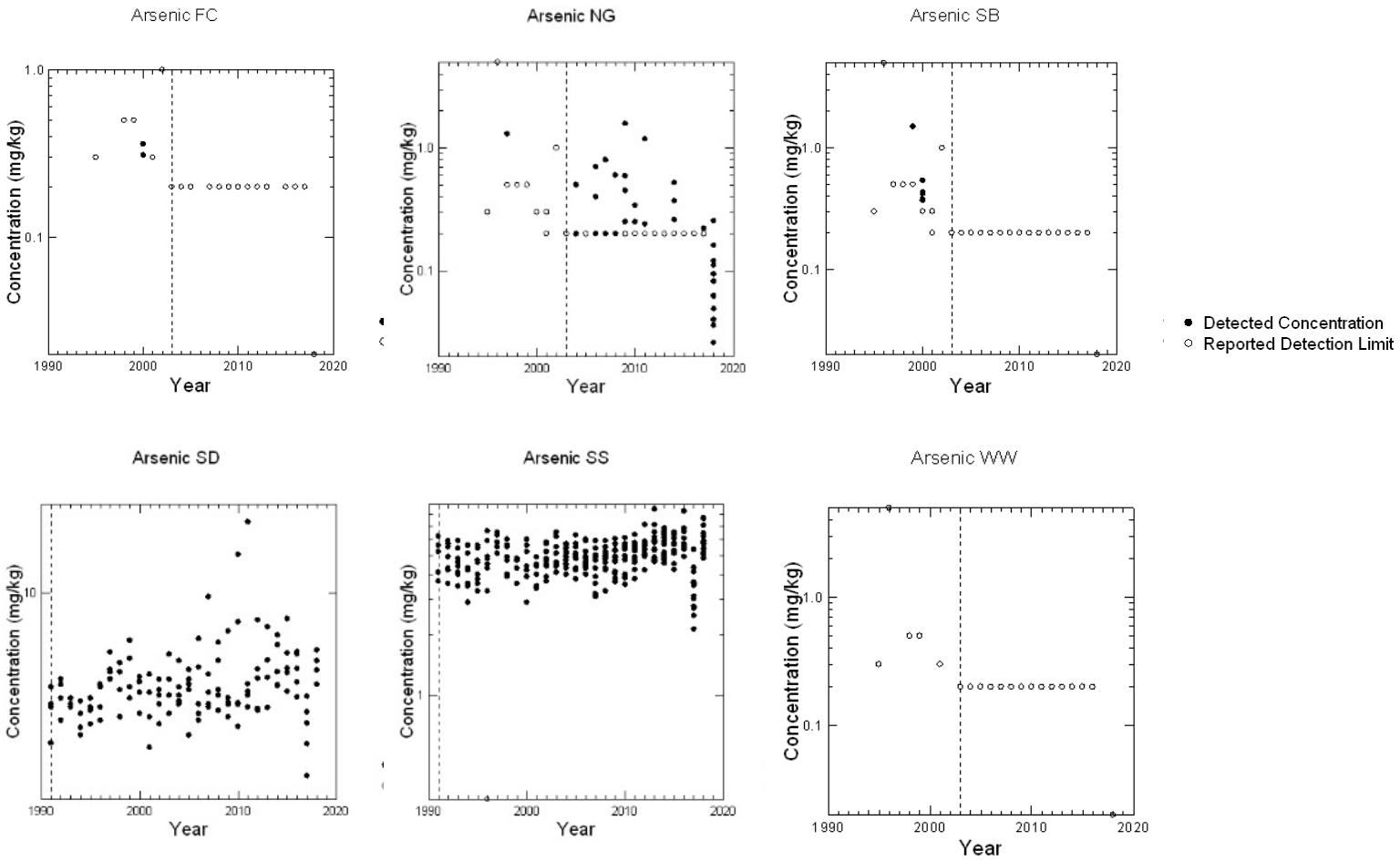
Note, the monitoring of fluoride was initiated in the 2018 Field Year as per the MECP approved changes. Therefore, fluoride has been exempted from the assessment of appropriate start date due to the limited amount of available data. A review of the appropriate start date for fluoride analysis will be considered when there are at least six years of available data, as this is the minimum data requirement set in this biomonitoring program for the calculation of an upper limit. In the interim, regression analyses for fluoride will be evaluated with a start date of 2018.

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
March 2, 2022

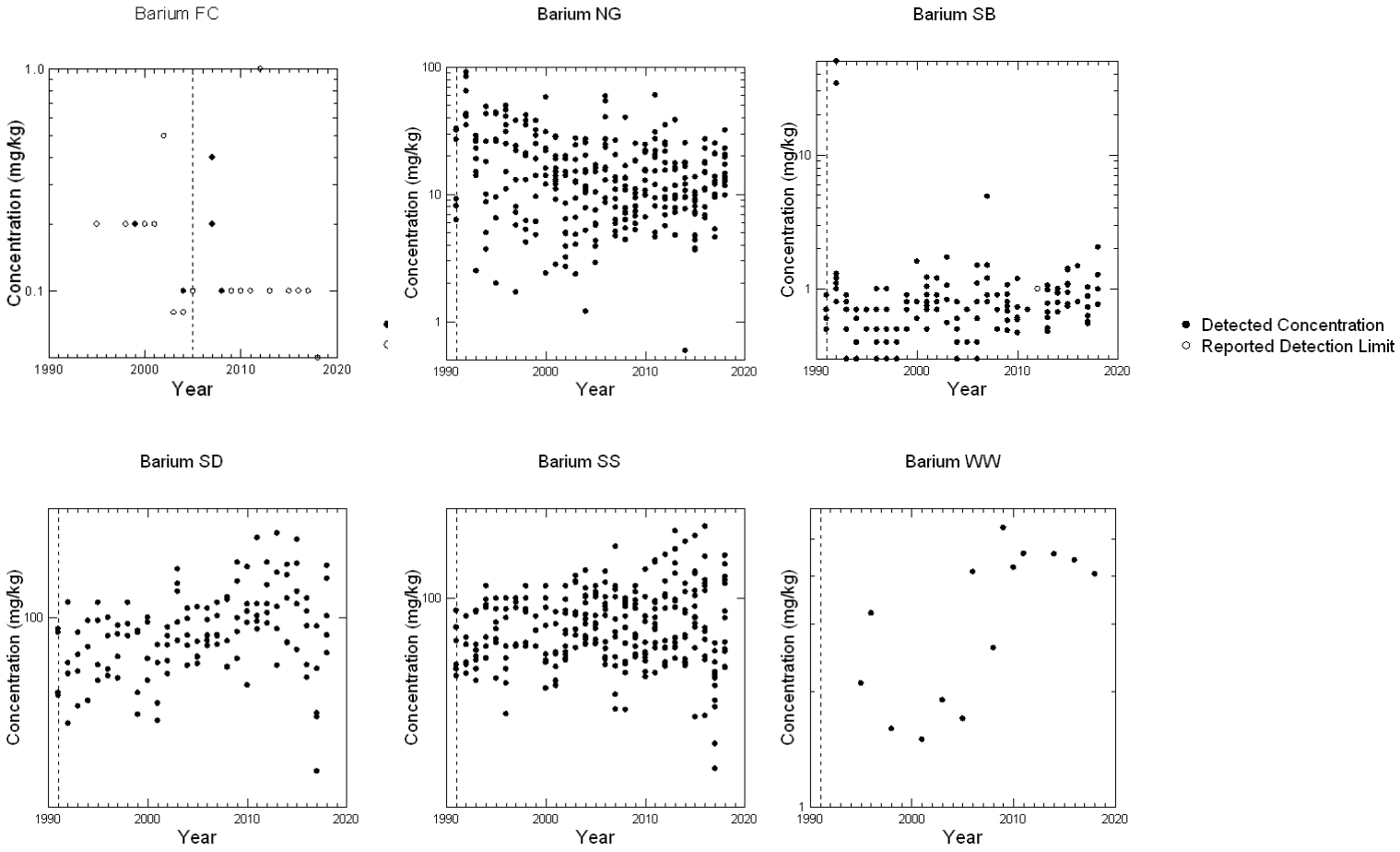
E.2.1 Aluminum



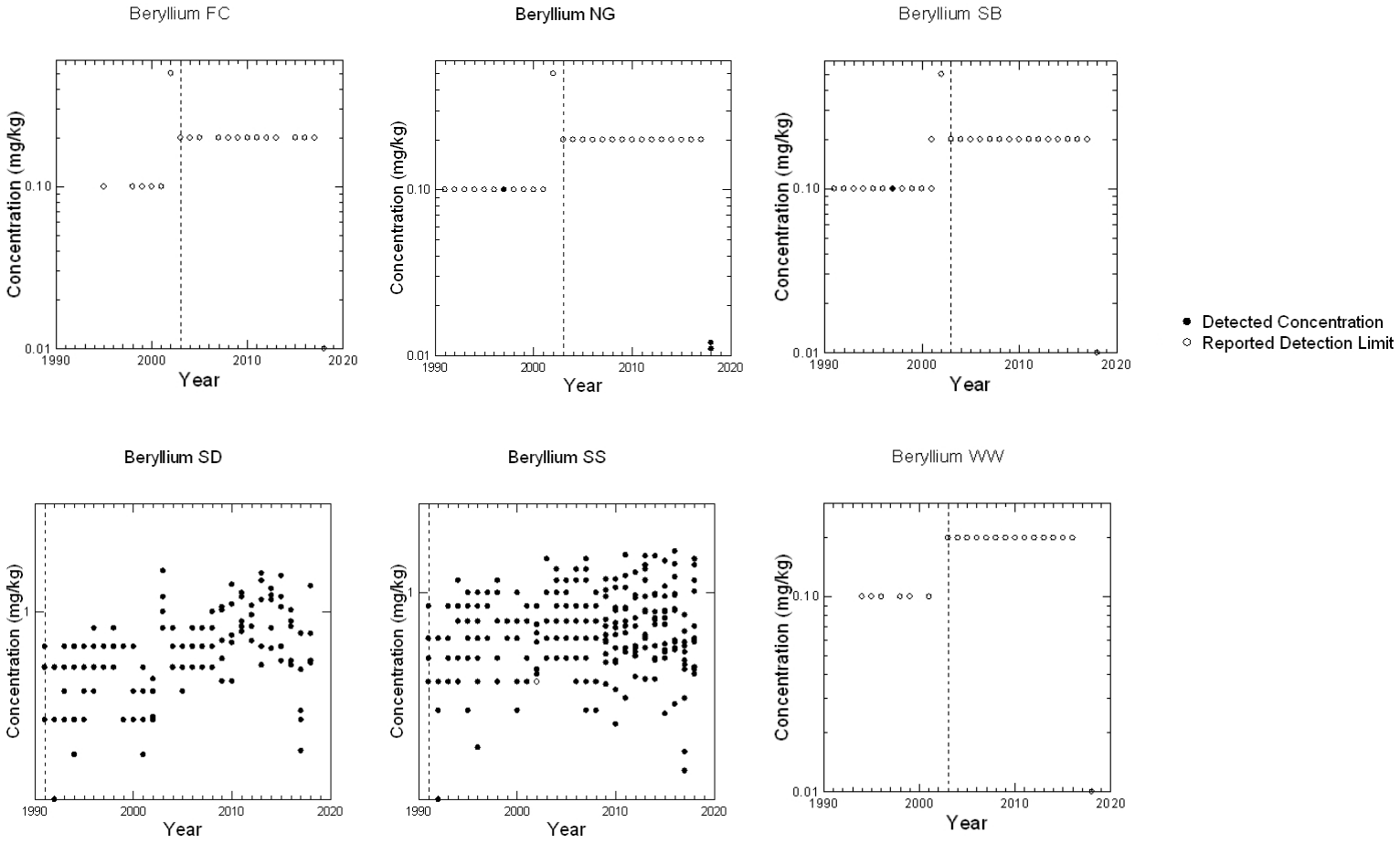
E.2.2 Arsenic


Arsenic FC
Arsenic NG
Arsenic SB
Arsenic SD
Arsenic SS
Arsenic WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
1.0
0.1
10
Detected Concentration
Reported Detection Limit

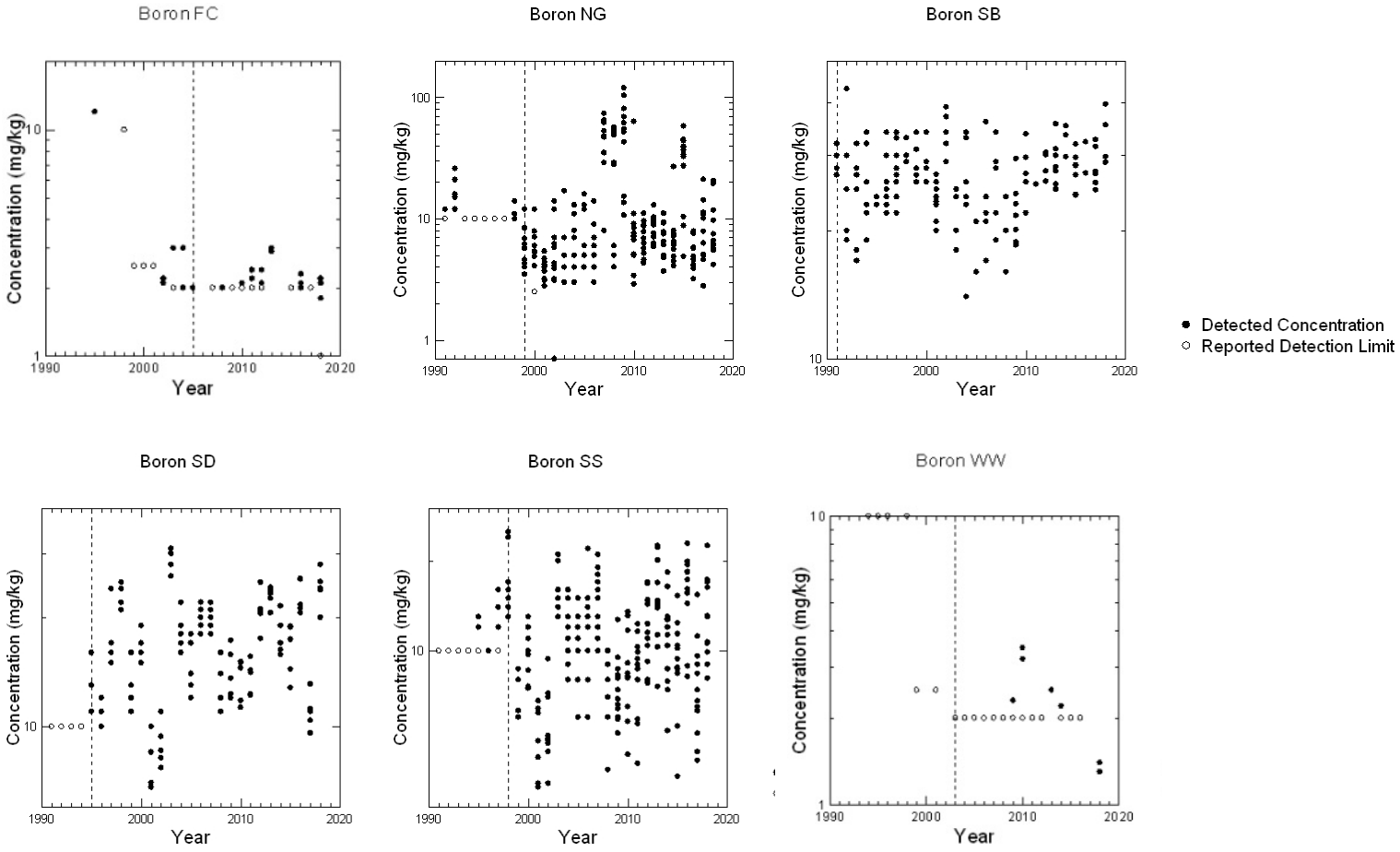
E.2.3 Barium


Barium FC
Barium NG
Barium SB
Barium SD
Barium SS
Barium WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
Detected Concentration
Reported Detection Limit

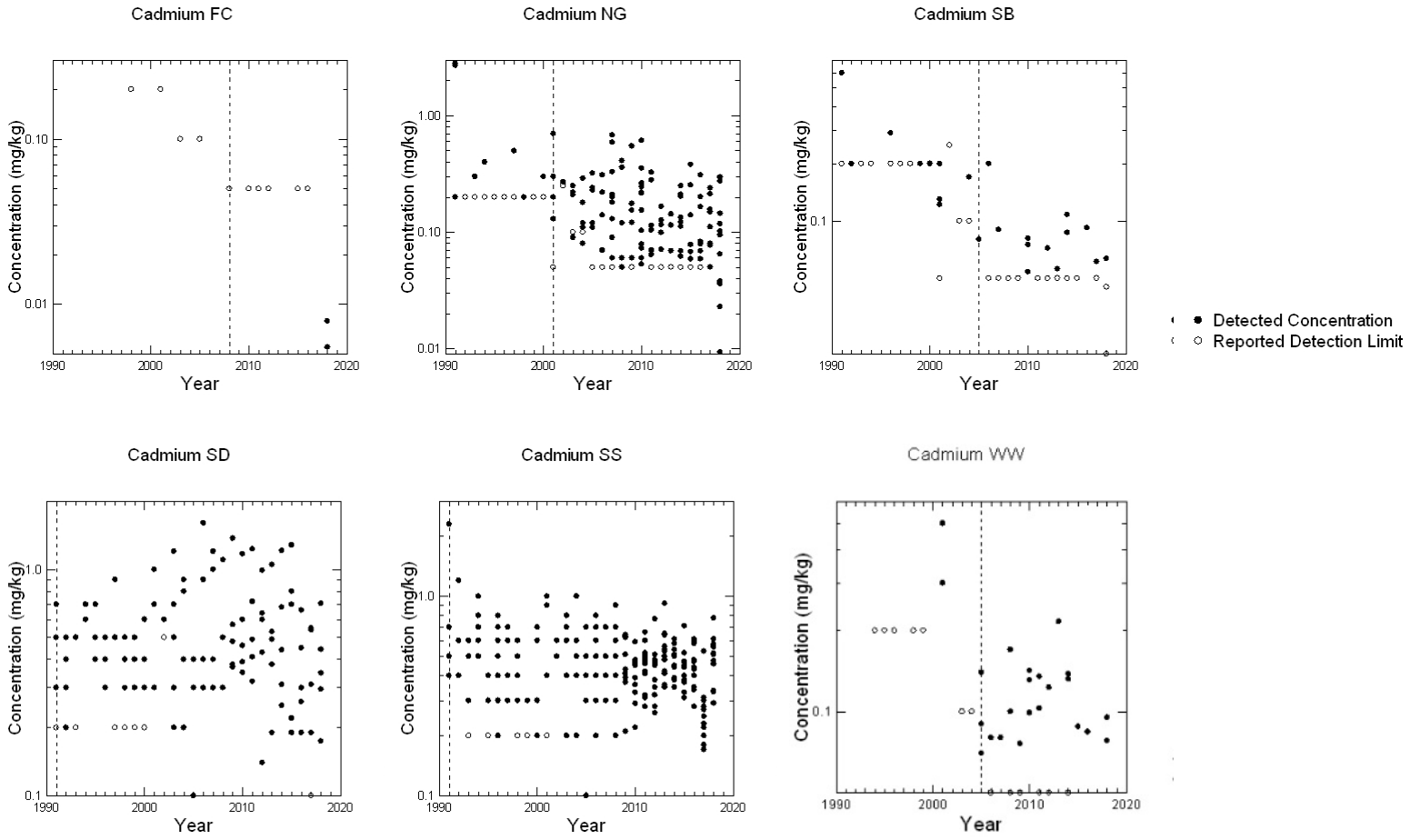
E.2.4 Beryllium



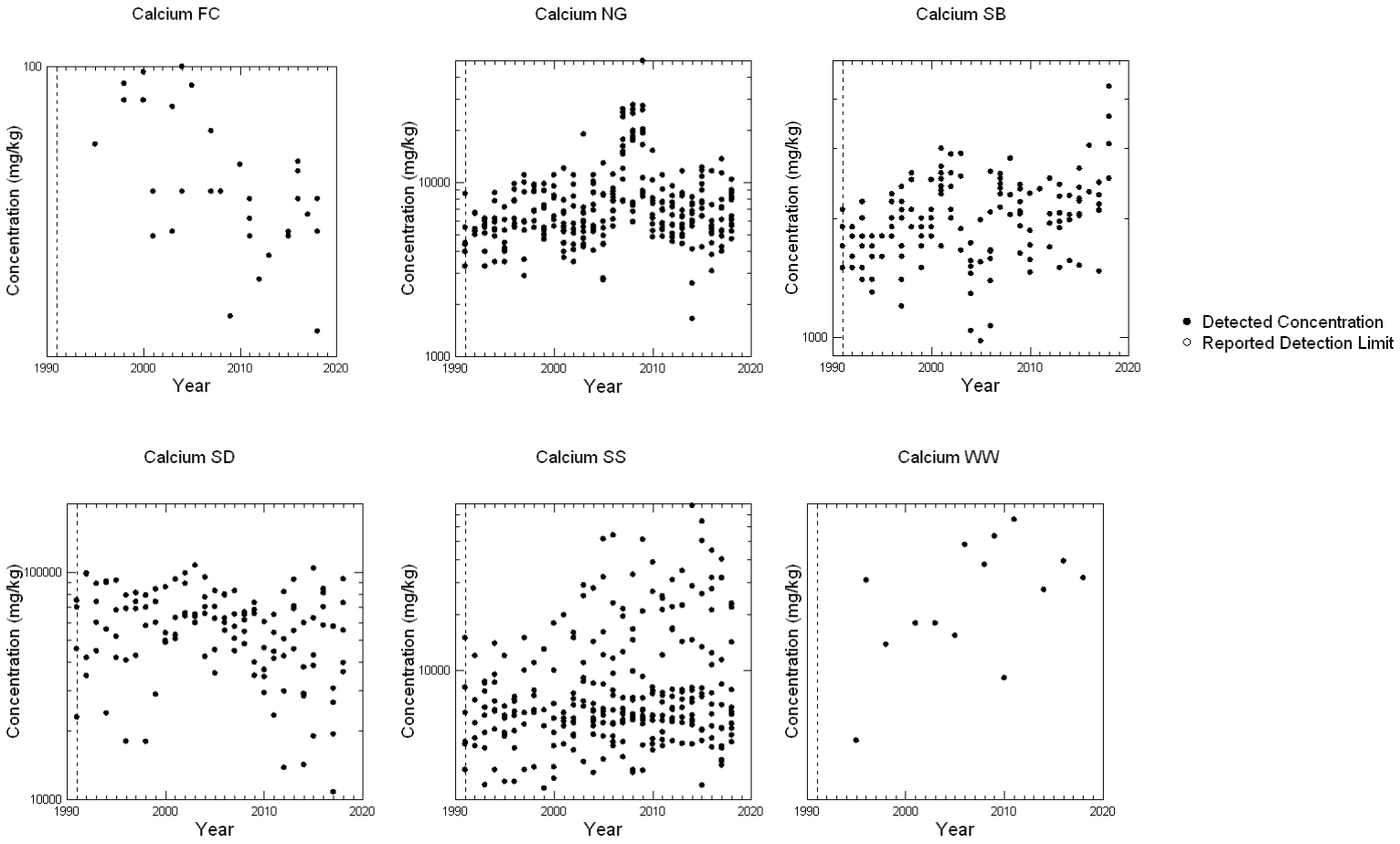
E.2.5 Boron


Boron FC
Boron NG
Boron SB
Boron SD
Boron SS
Boron WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
1
10
100
Detected Concentration
Reported Detection Limit

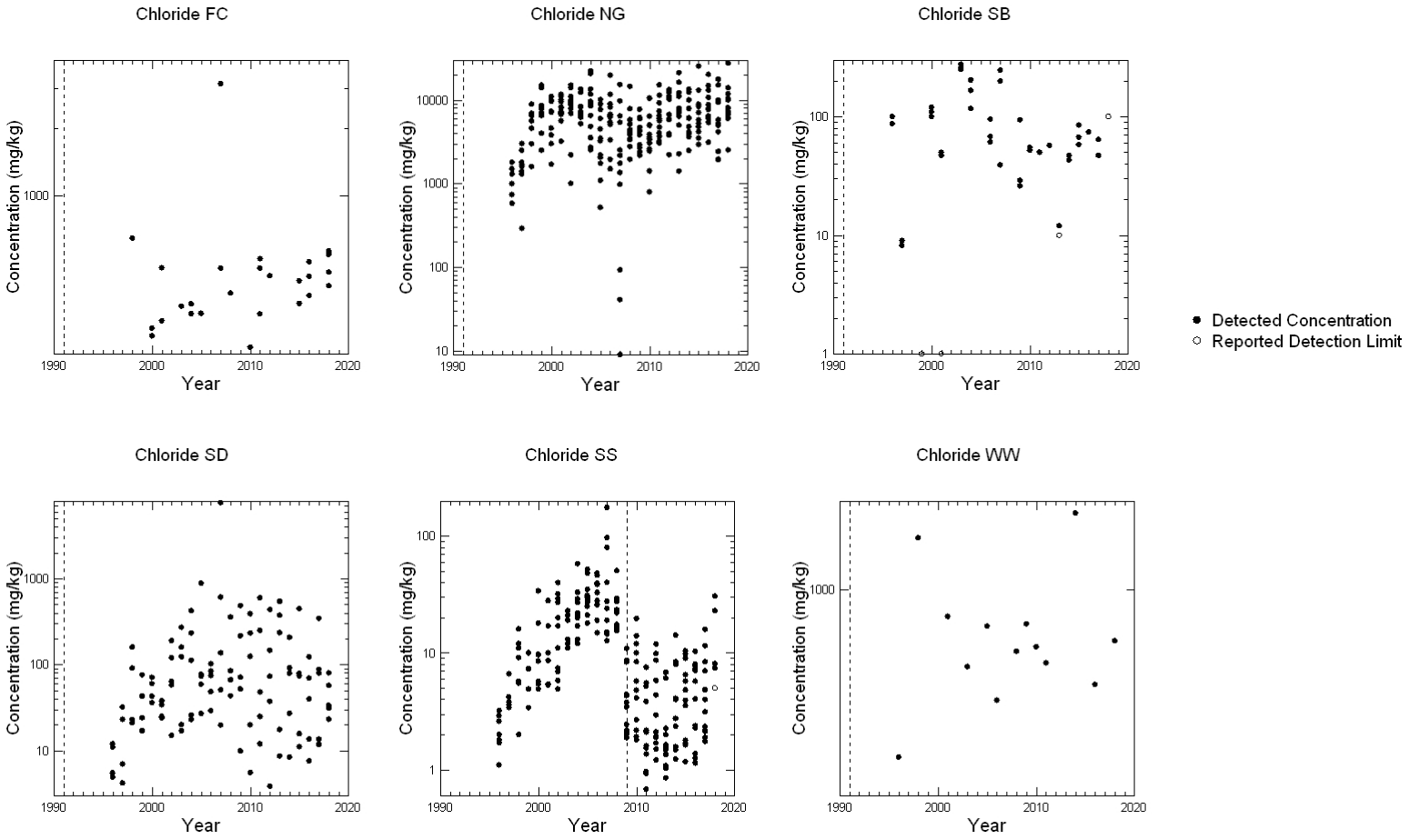
E.2.6 Cadmium


Cadmium FC
Cadmium NG
Cadmium SB
Cadmium SD
Cadmium SS
Cadmium WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
0.01
0.10
1.00
0.1
1.0
Detected Concentration
Reported Detection Limit

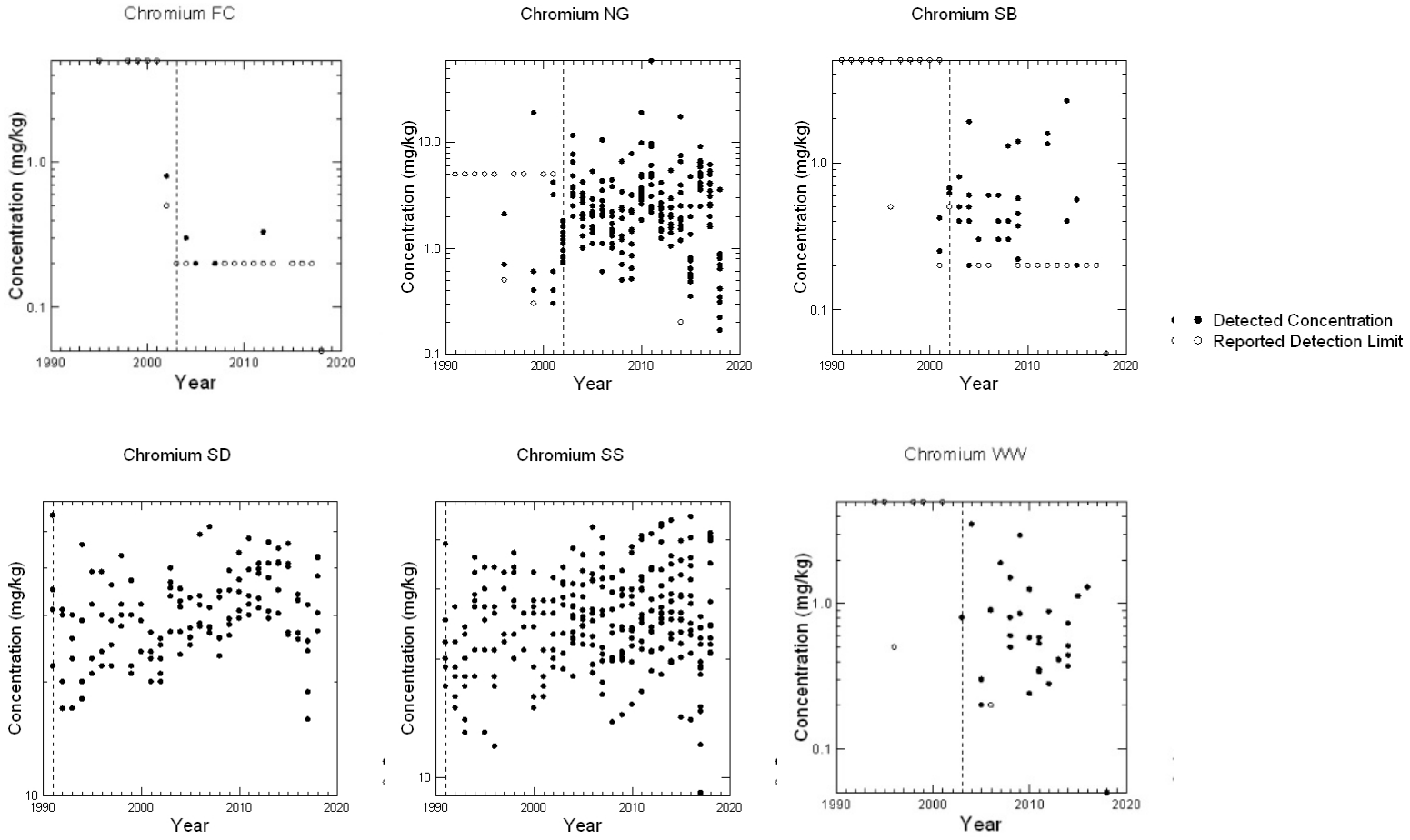
E.2.7 Calcium


Calcium FC
Calcium NG
Calcium SB
Calcium SD
Calcium SS
Calcium WW
Concentration (mg/kg)
Year
100
1000
10000
100000
1990
2000
2010
2020
Detected Concentration
Reported Detection Limit

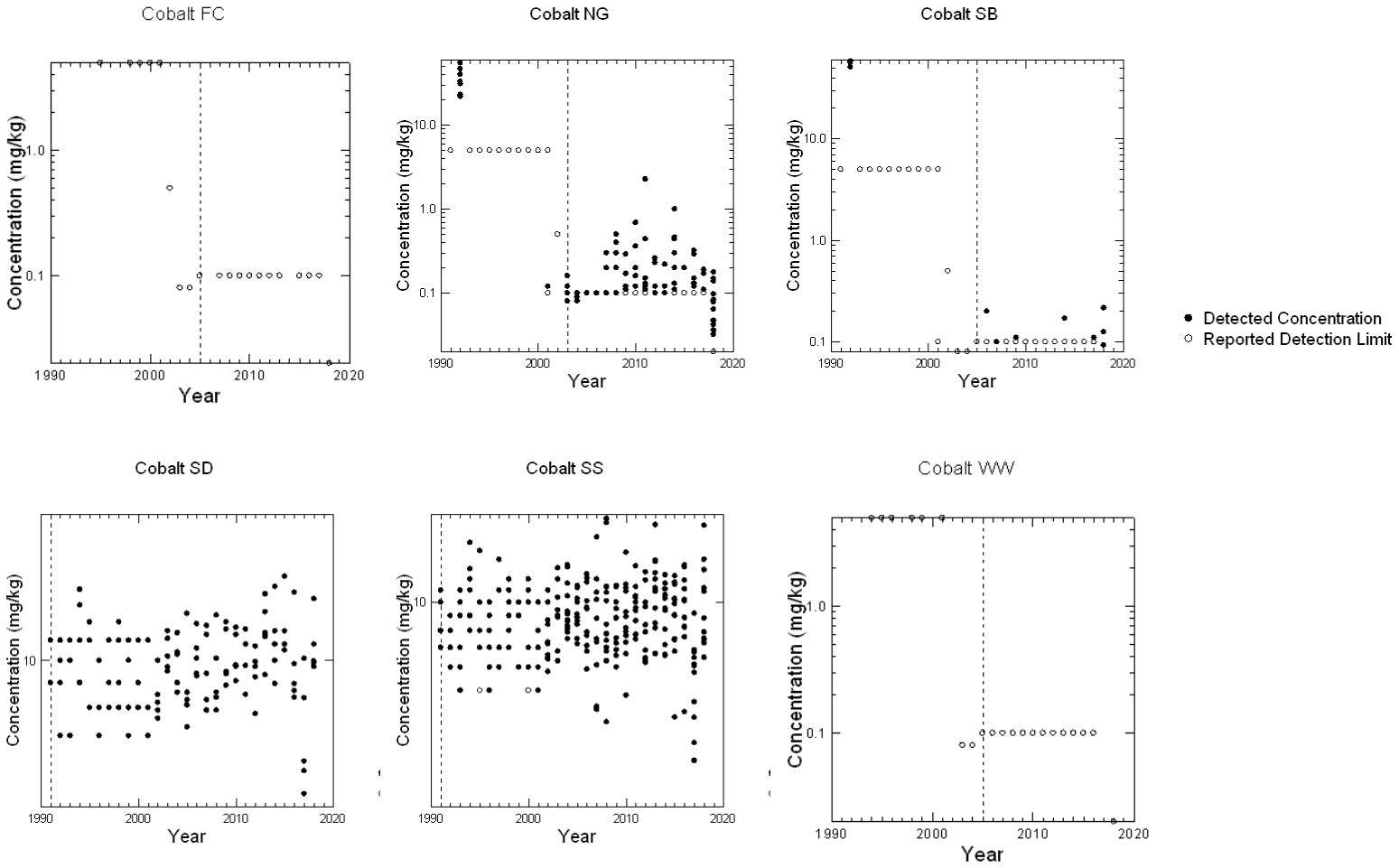
E.2.8 Chloride



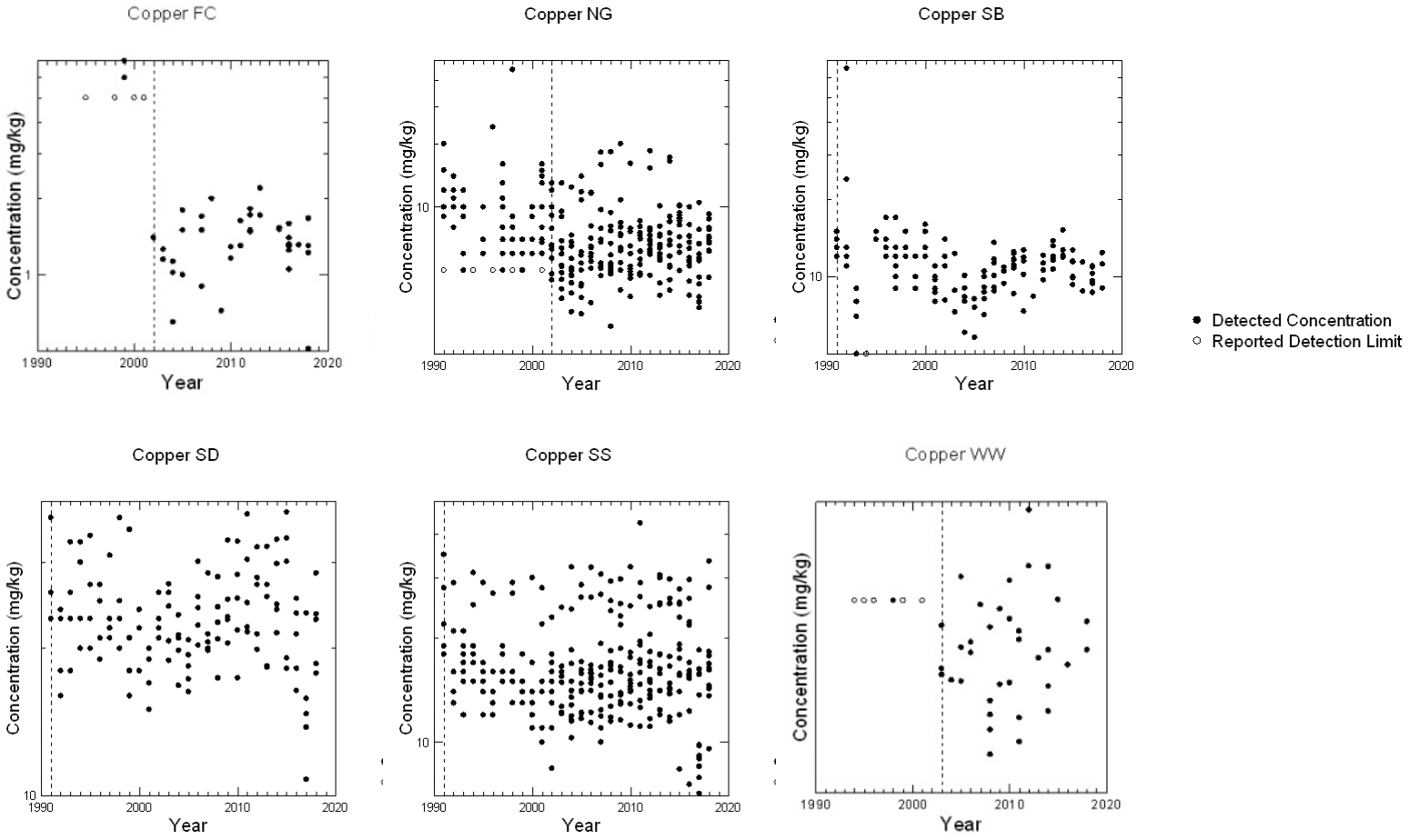
E.2.9 Chromium



E.2.10 Cobalt


Cobalt FC
Cobalt NG
Cobalt SB
Cobalt SD
Cobalt SS
Cobalt WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
0.1
1.0
10.0
10
Detected Concentration
Reported Detection Limit

E.2.11 Copper


Copper FC
Copper NG
Copper SB
Copper SD
Copper SS
Copper WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
Detected Concentration
Reported Detection Limit

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
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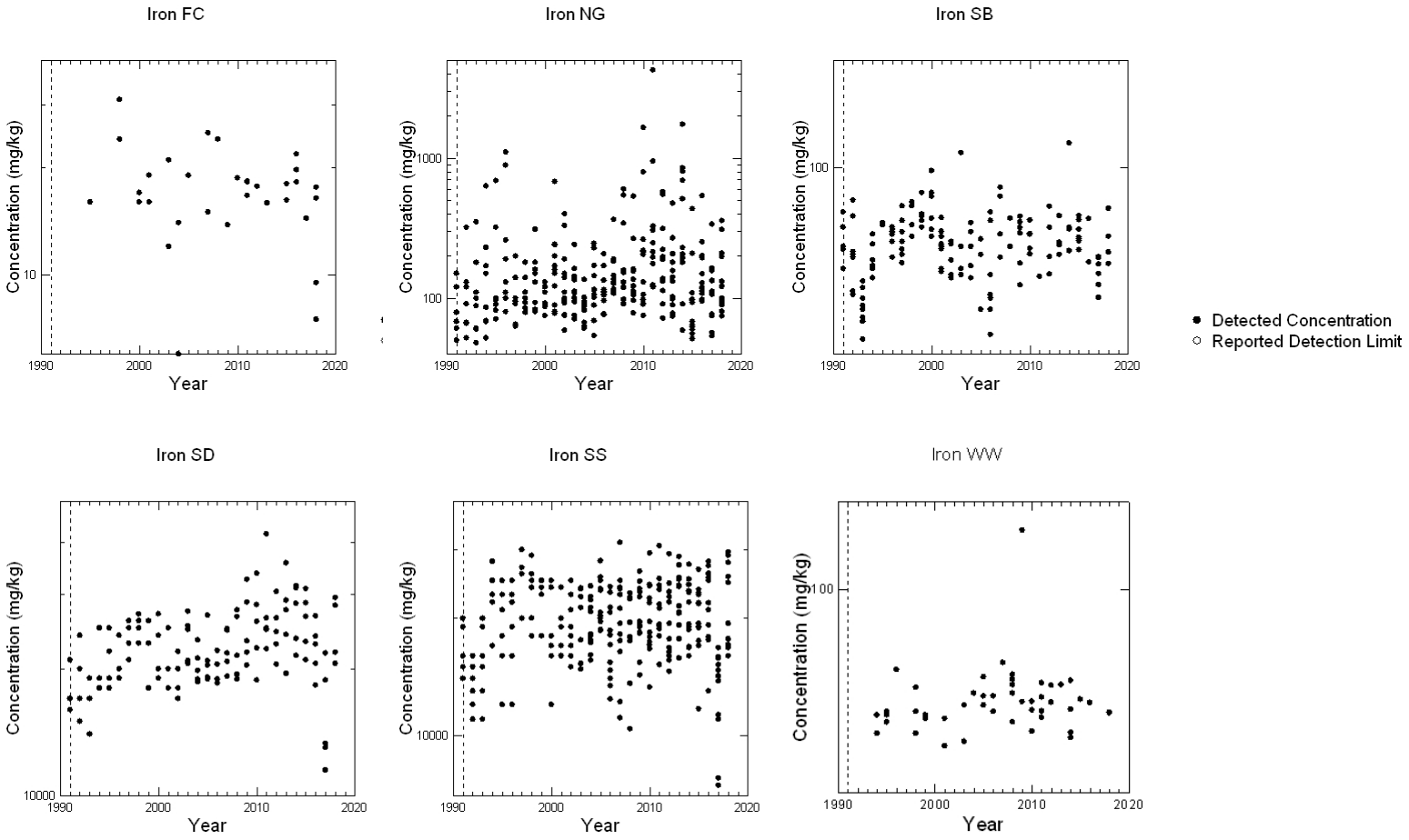
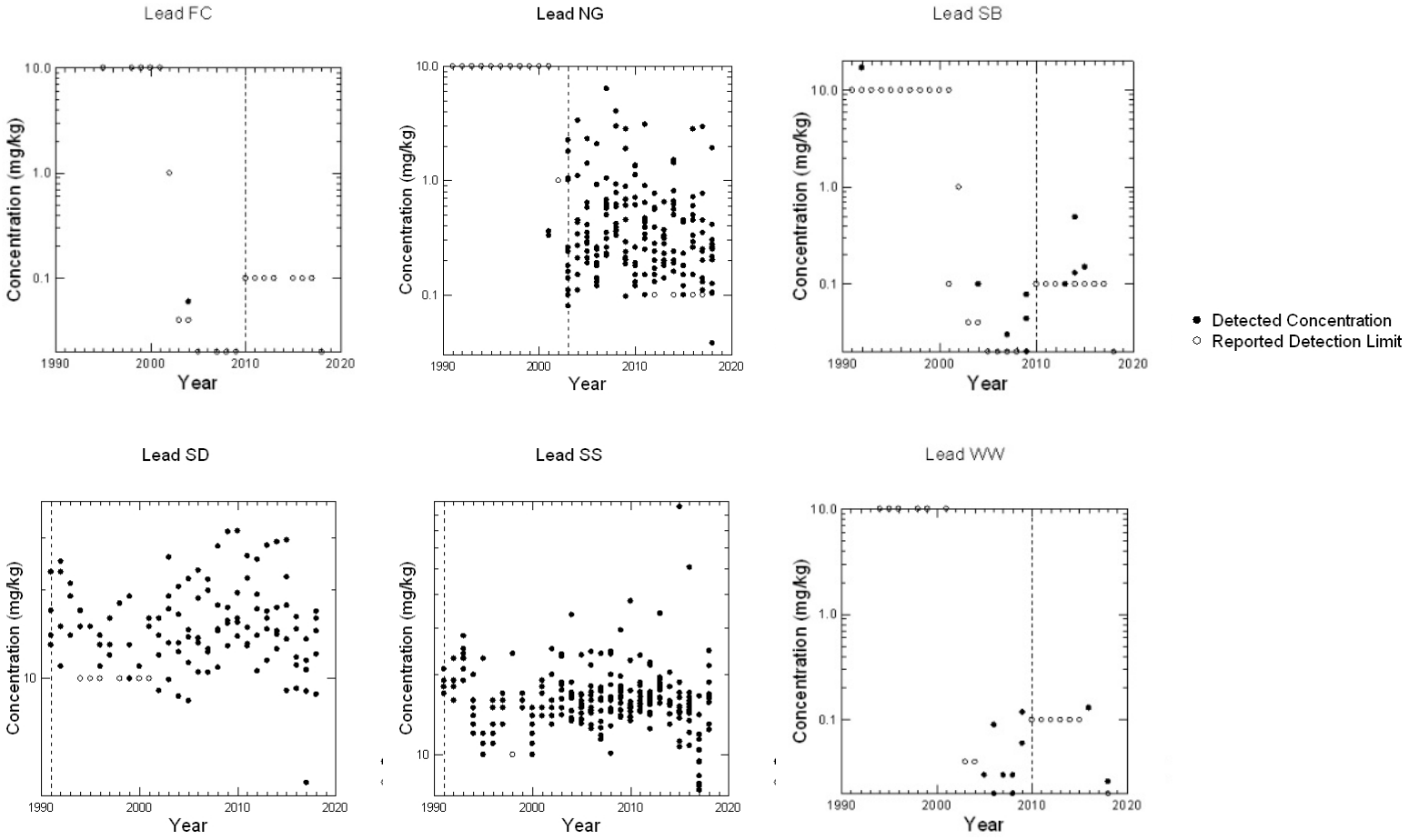
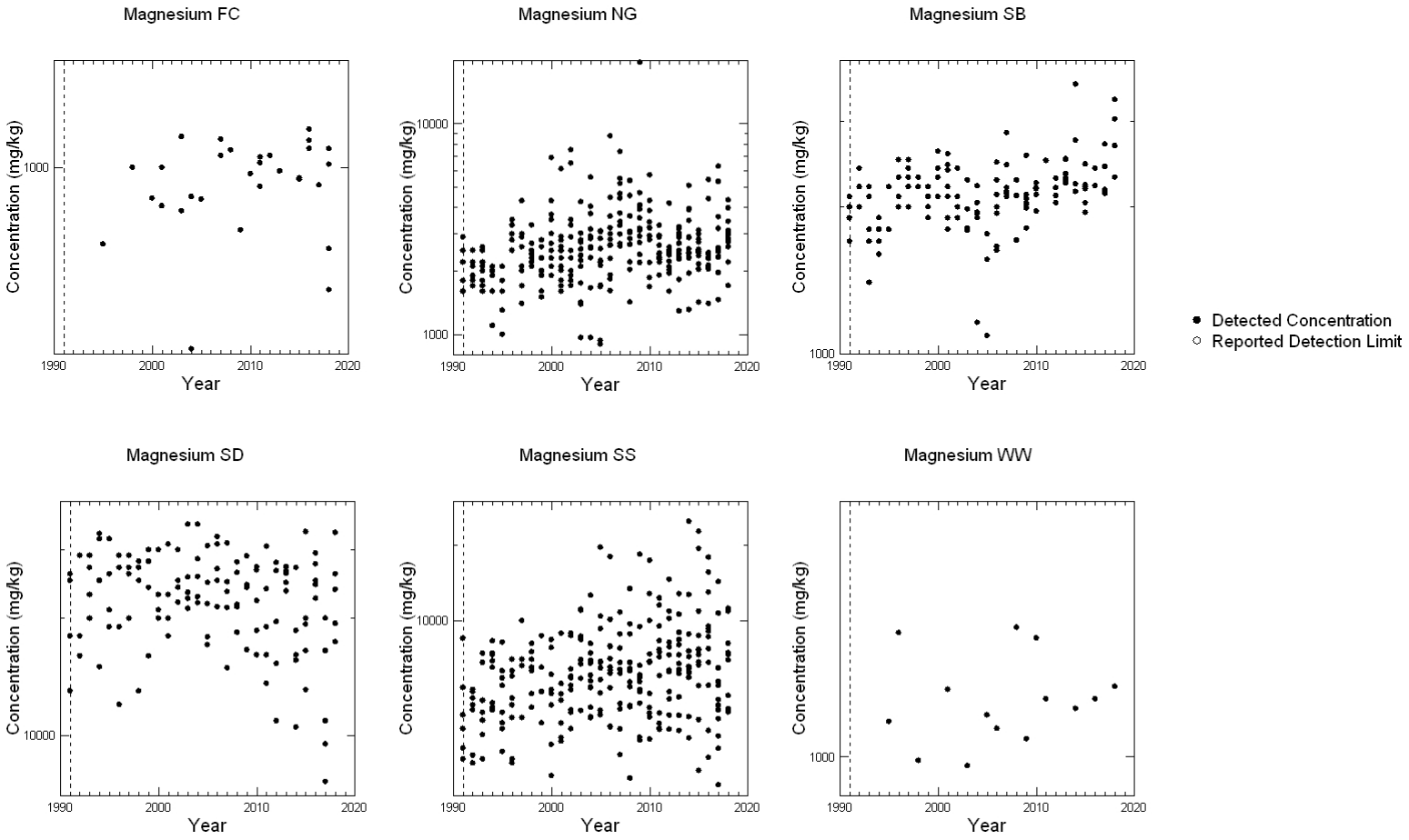
E.2.12 Iron



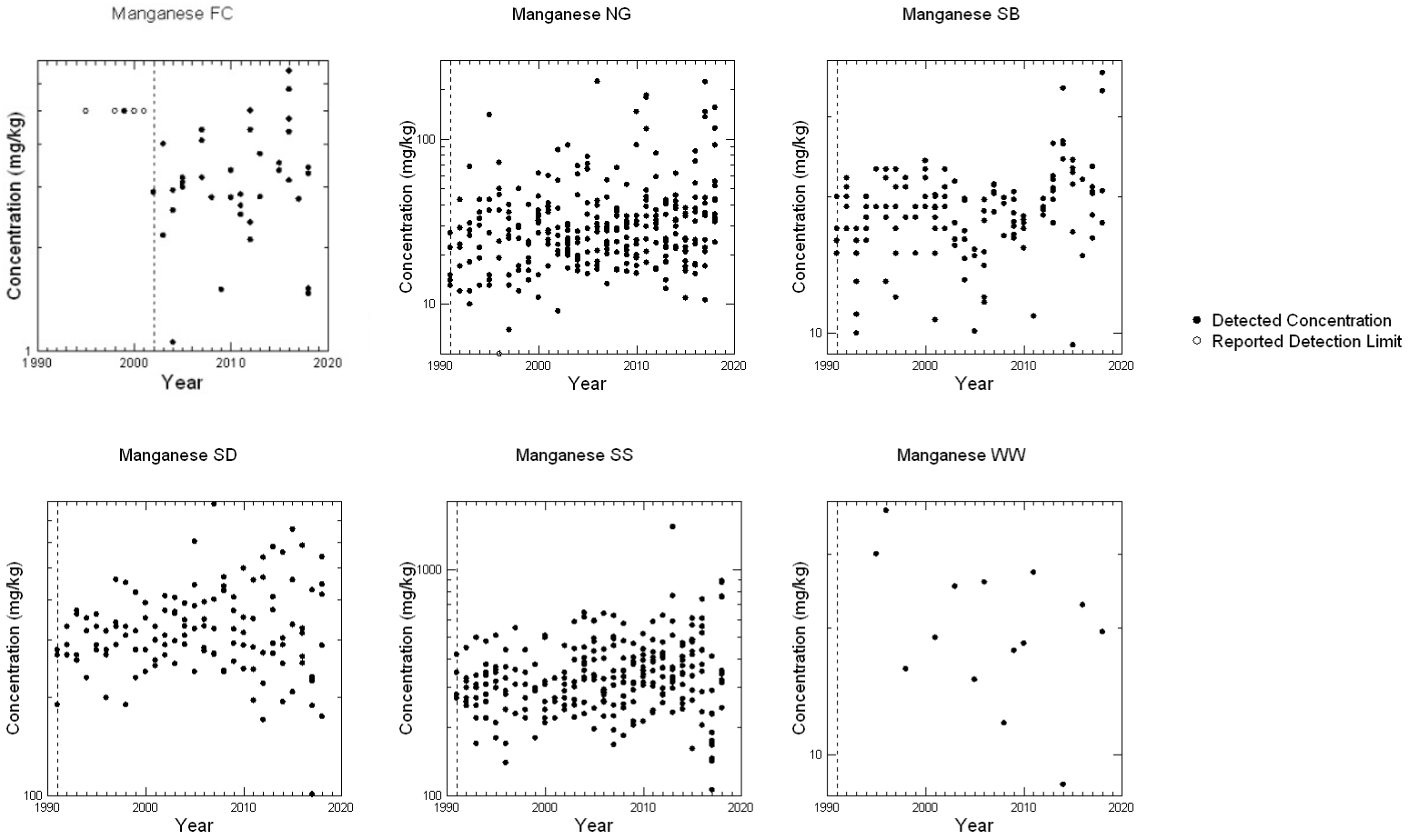
E.2.13 Lead


Lead FC
Lead NG
Lead SB
Lead SD
Lead SS
Lead WW
Concentration (mg/kg)
Year
10.0
1.0
0.1
10
1990
2000
2010
2020
Detected Concentration
Reported Detection Limit

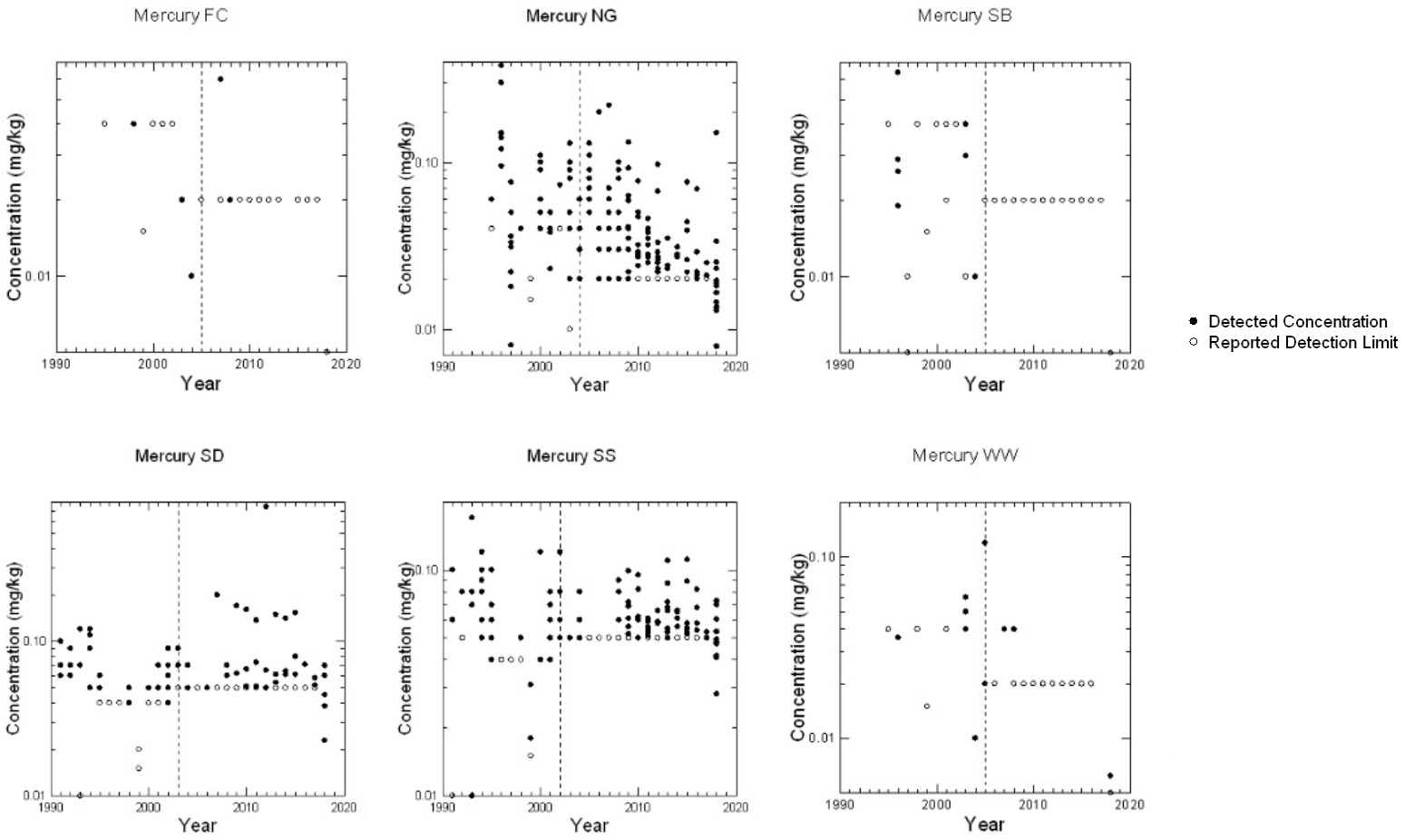
E.2.14 Magnesium



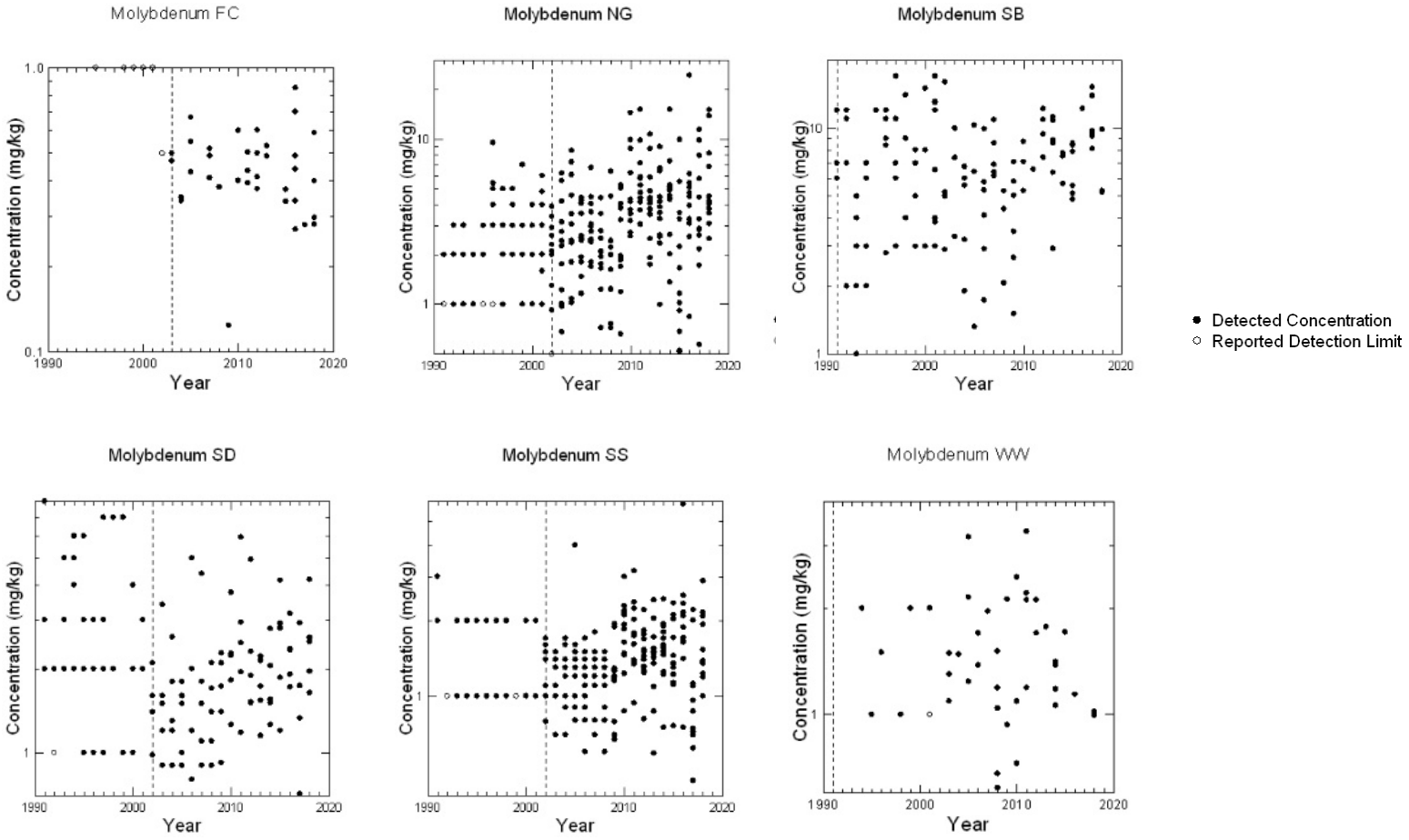
E.2.15 Manganese



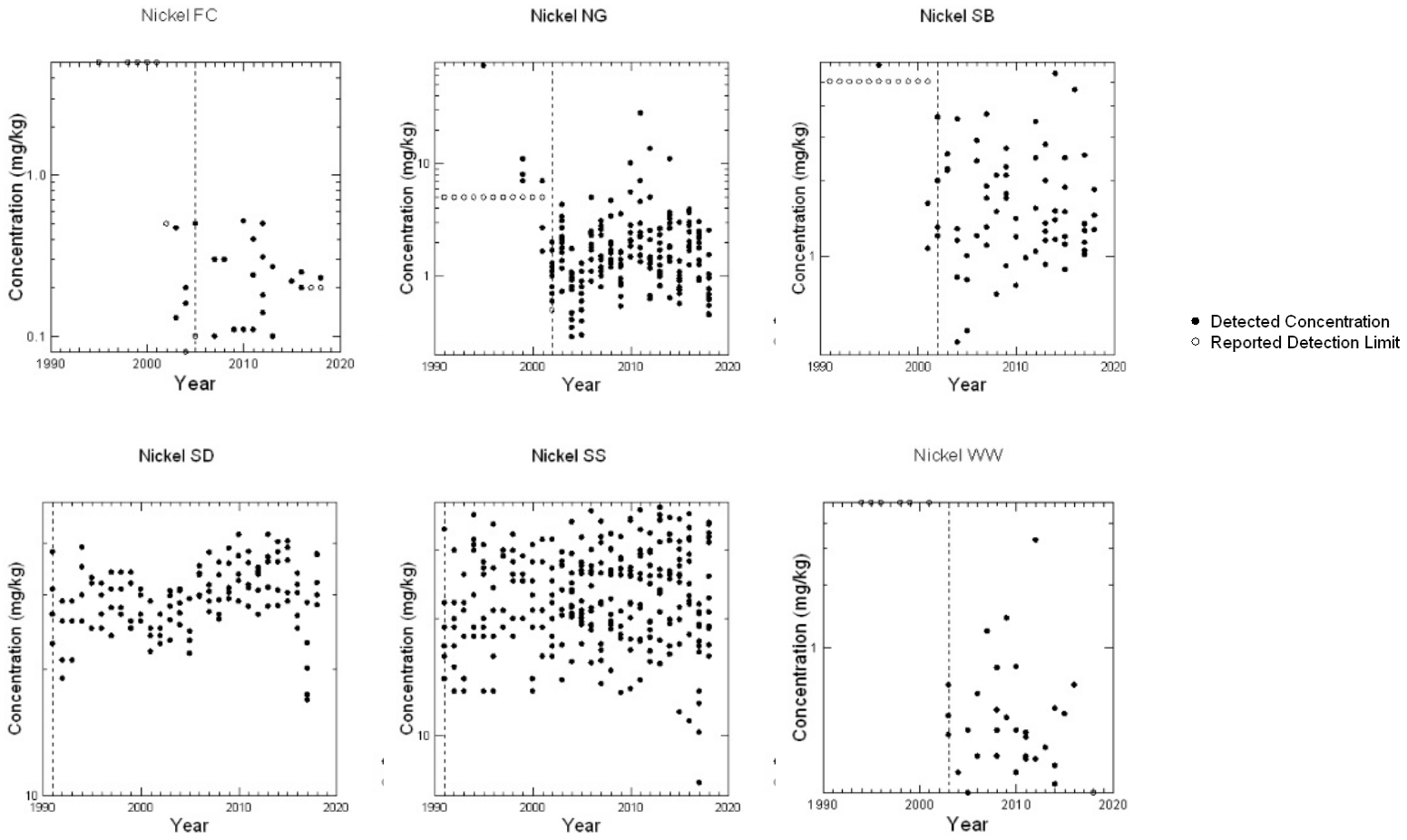
E.2.16 Mercury



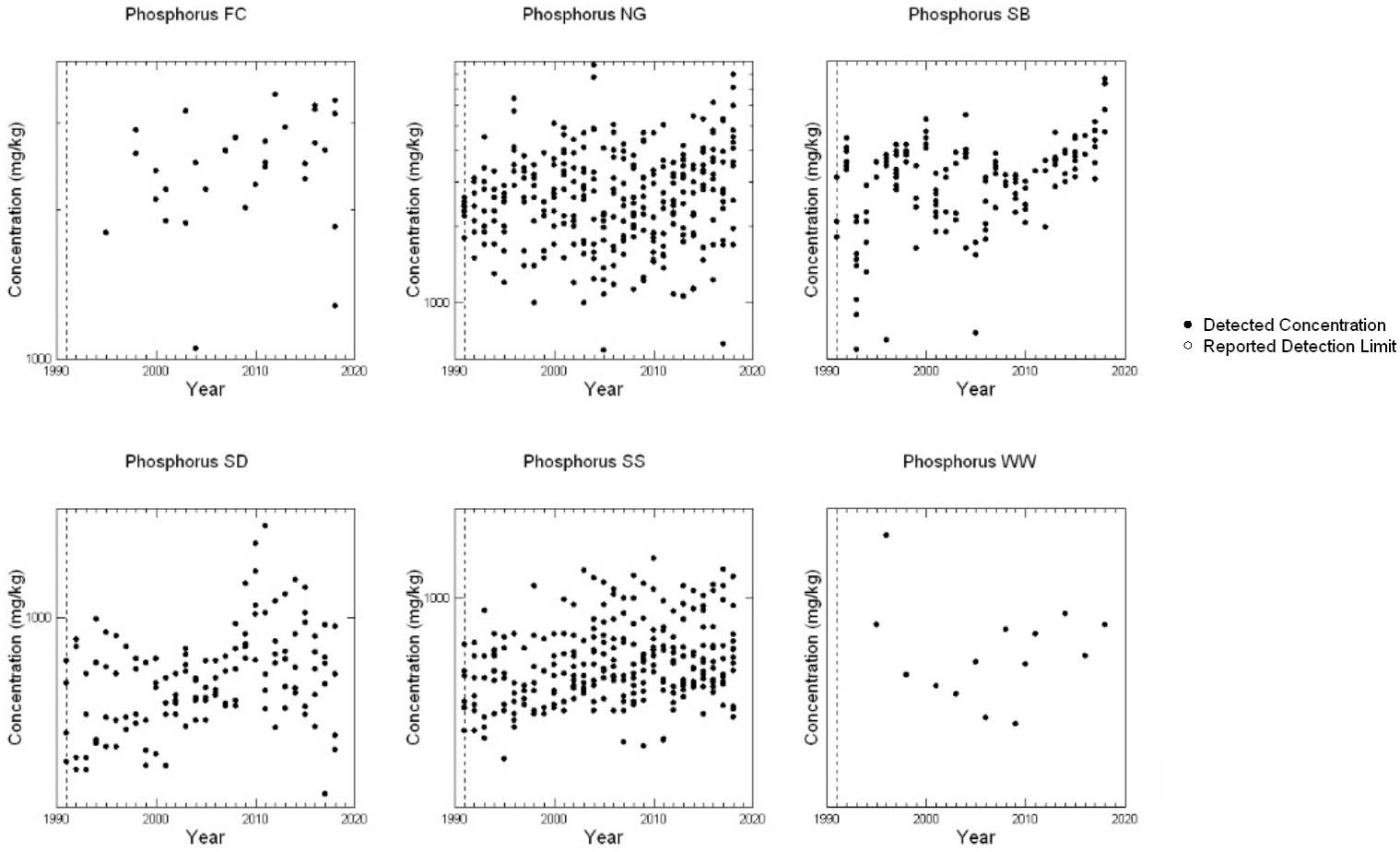
E.2.17 Molybdenum



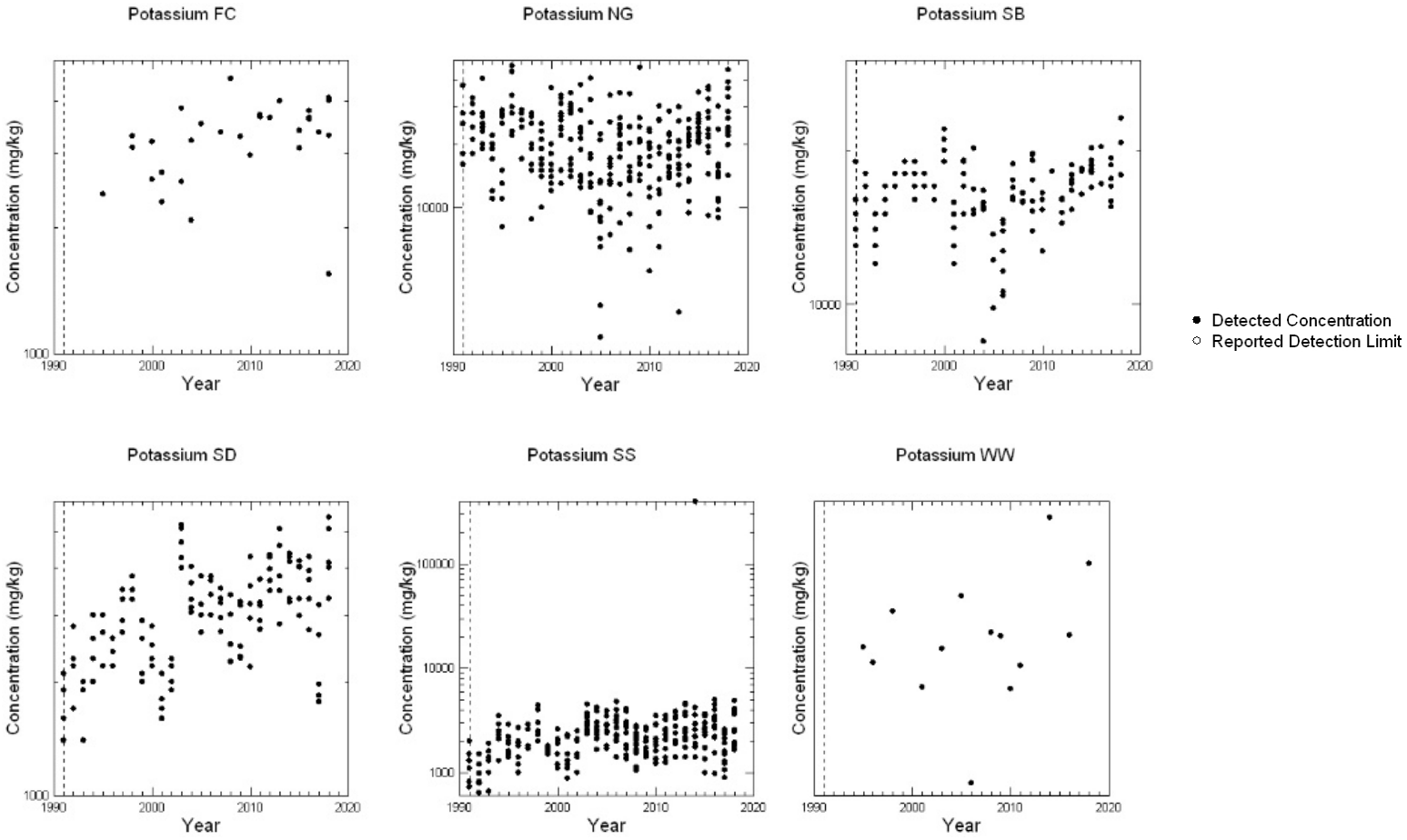
E.2.18 Nickel


Nickel FC
Nickel NG
Nickel SB
Nickel SD
Nickel SS
Nickel WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
0.1
1.0
1
10
Detected Concentration
Reported Detection Limit

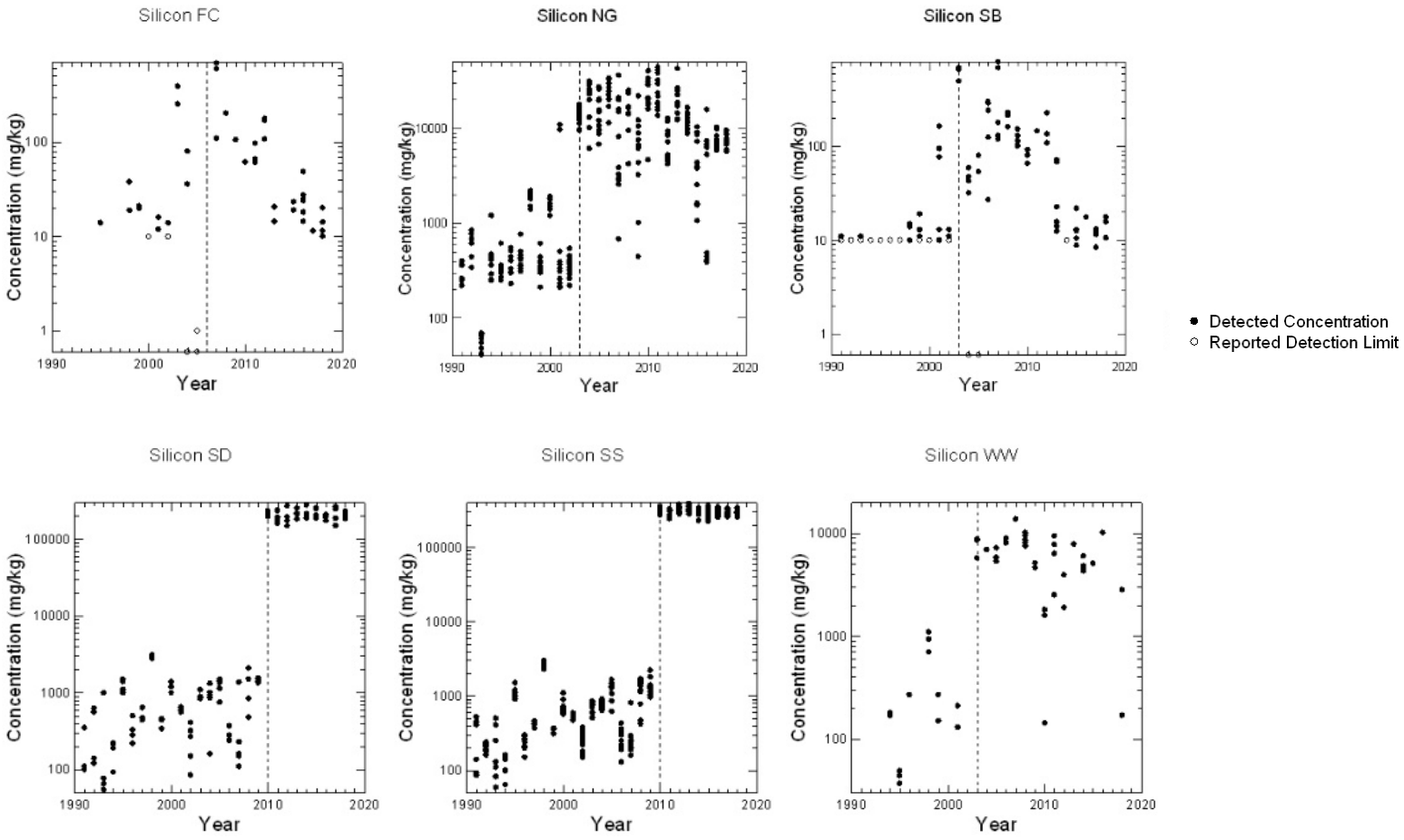
E.2.19 Phosphorus



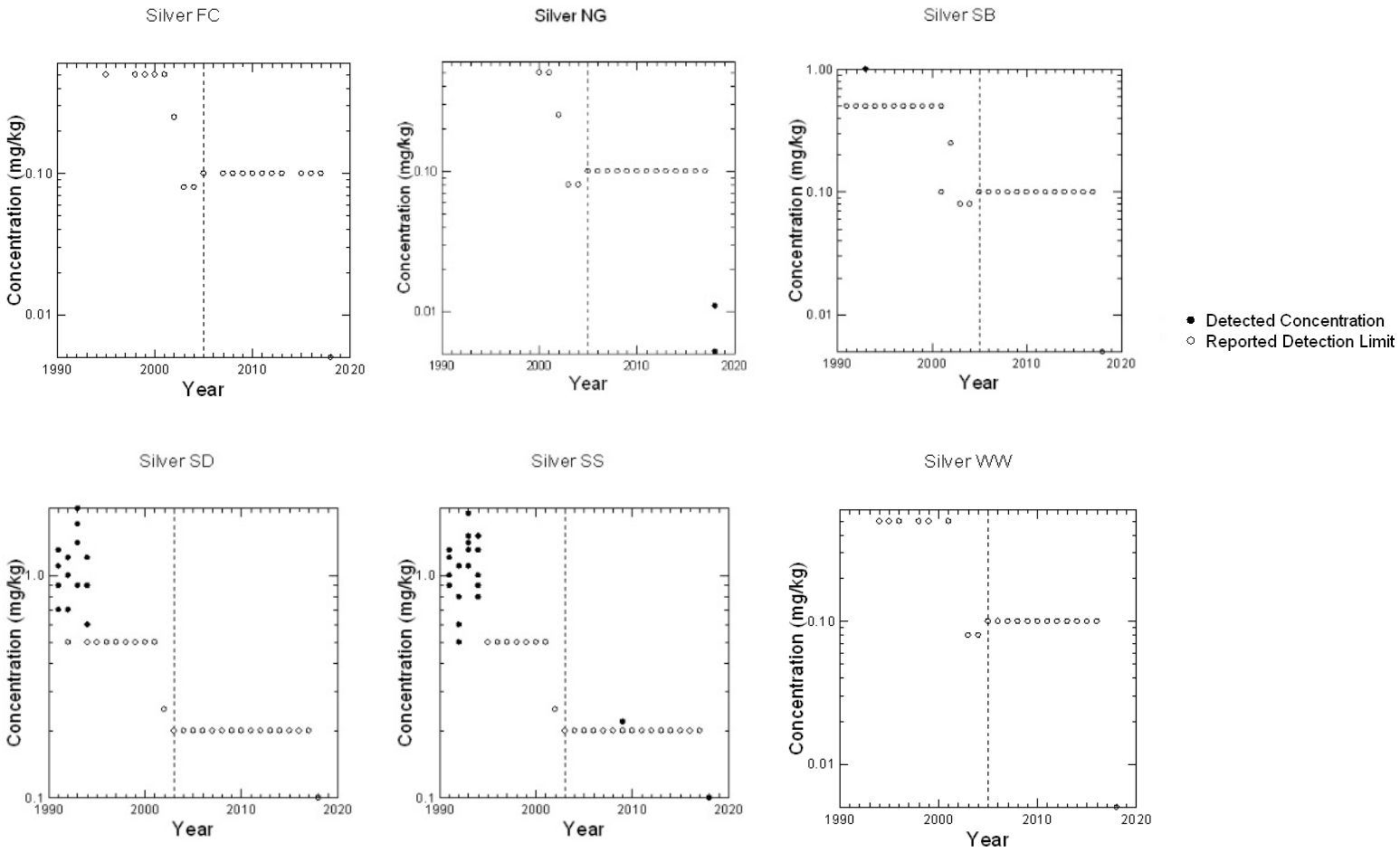
E.2.20 Potassium



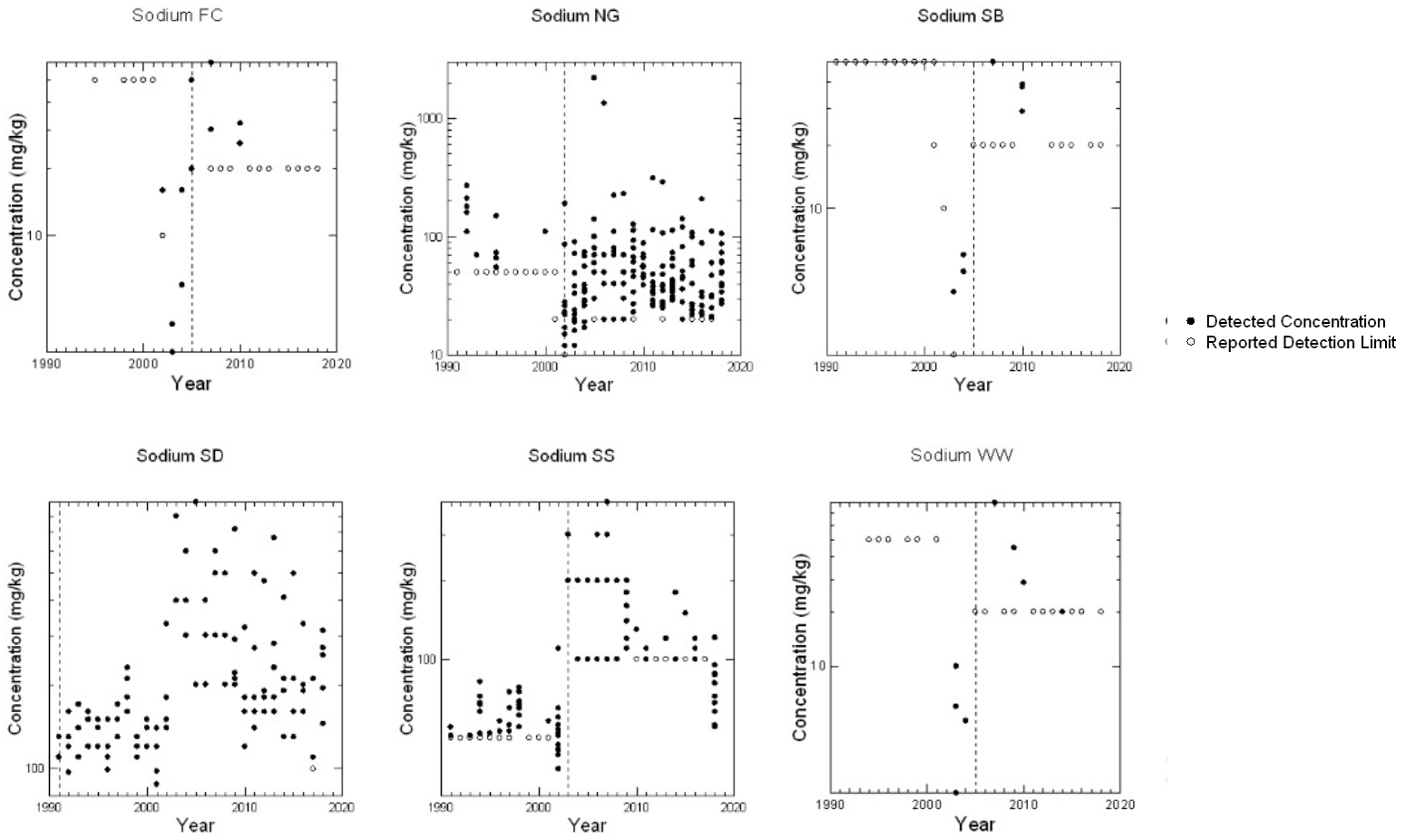
E.2.21 Silicon



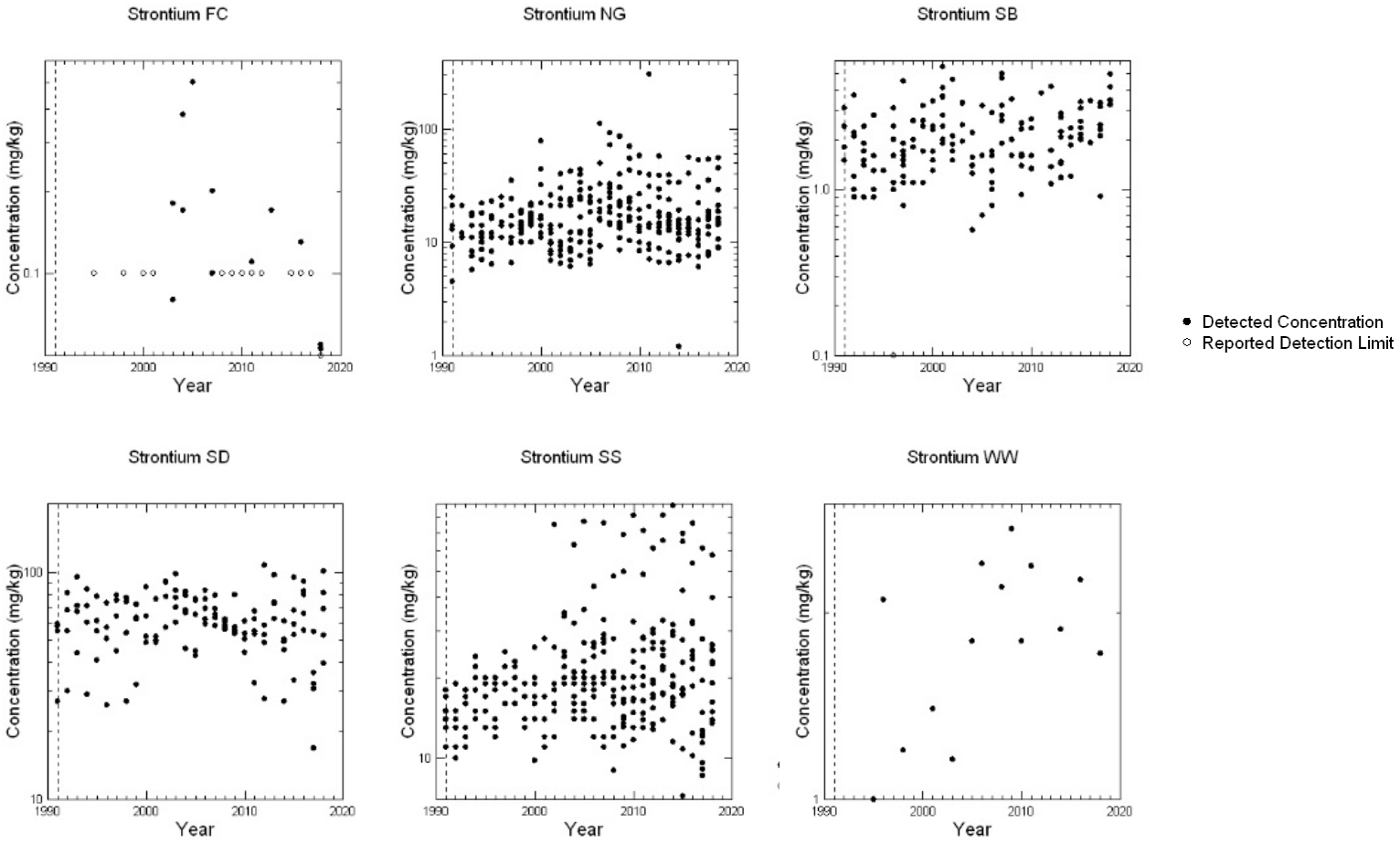
E.2.22 Silver


Silver FC
Silver NG
Silver SB
Silver SD
Silver SS
Silver WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
0.01
0.10
1.0
1.00
Detected Concentration
Reported Detection Limit

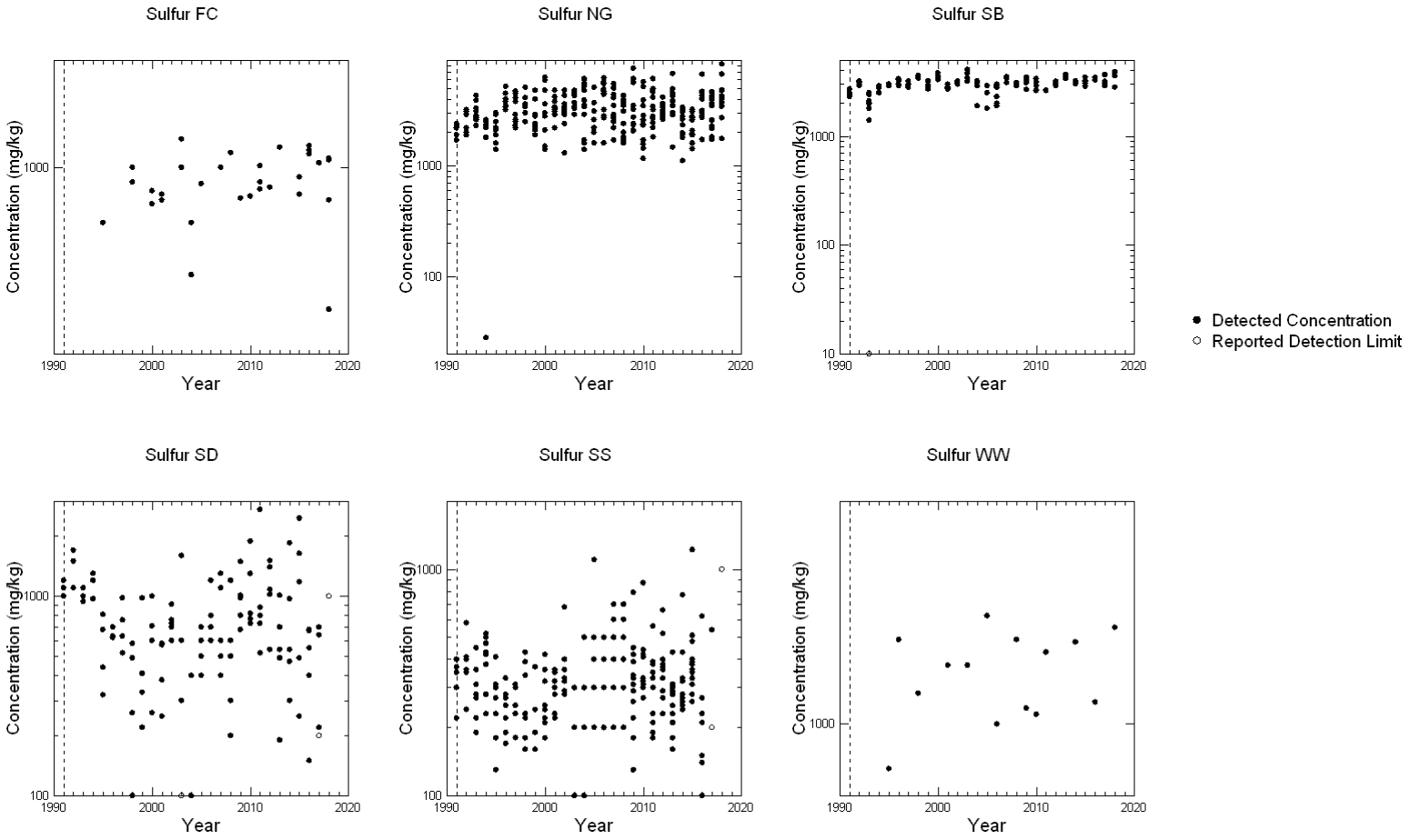
E.2.23 Sodium


Sodium FC
Sodium NG
Sodium SB
Sodium SD
Sodium SS
Sodium WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
Detected Concentration
Reported Detection Limit

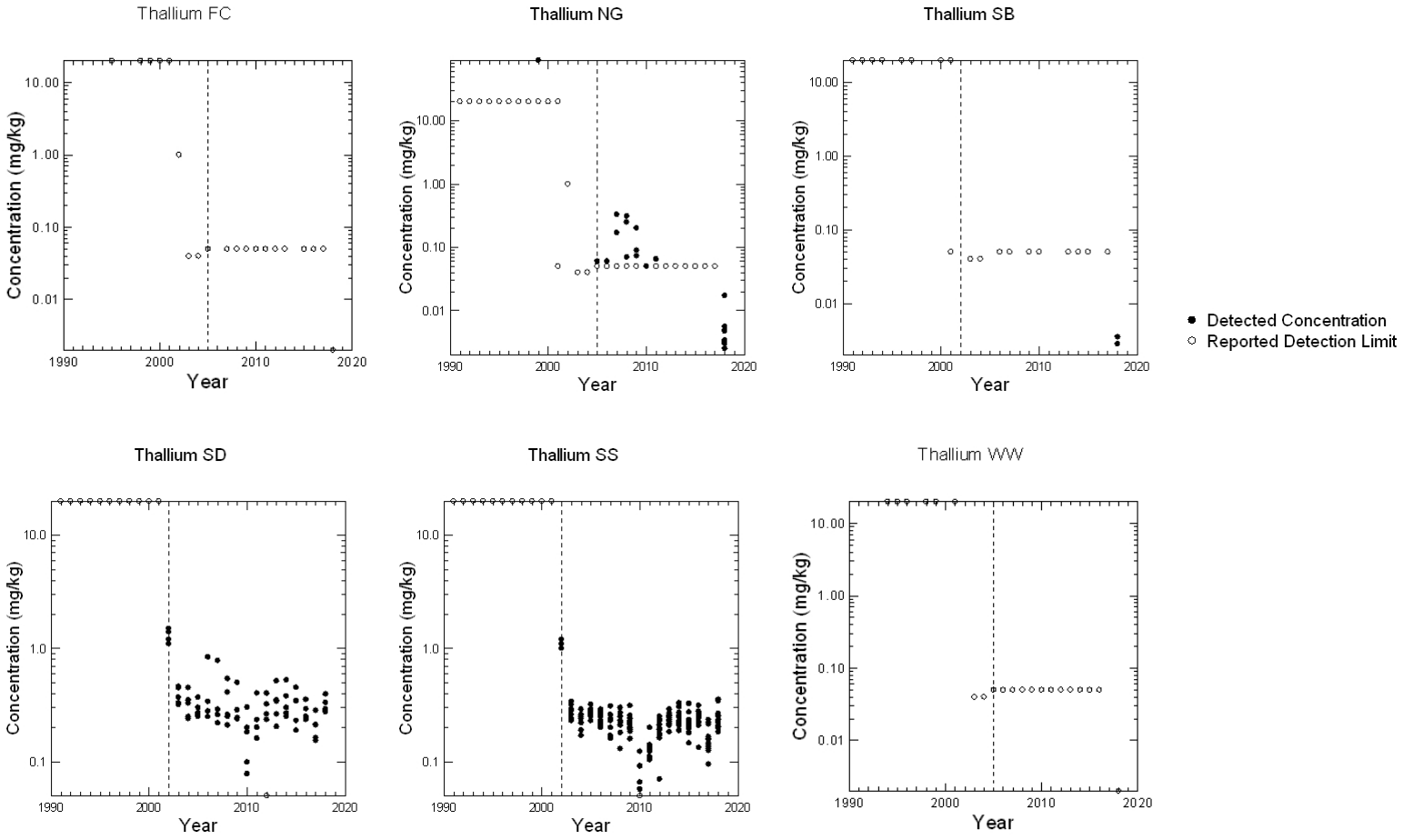
E.2.24 Strontium



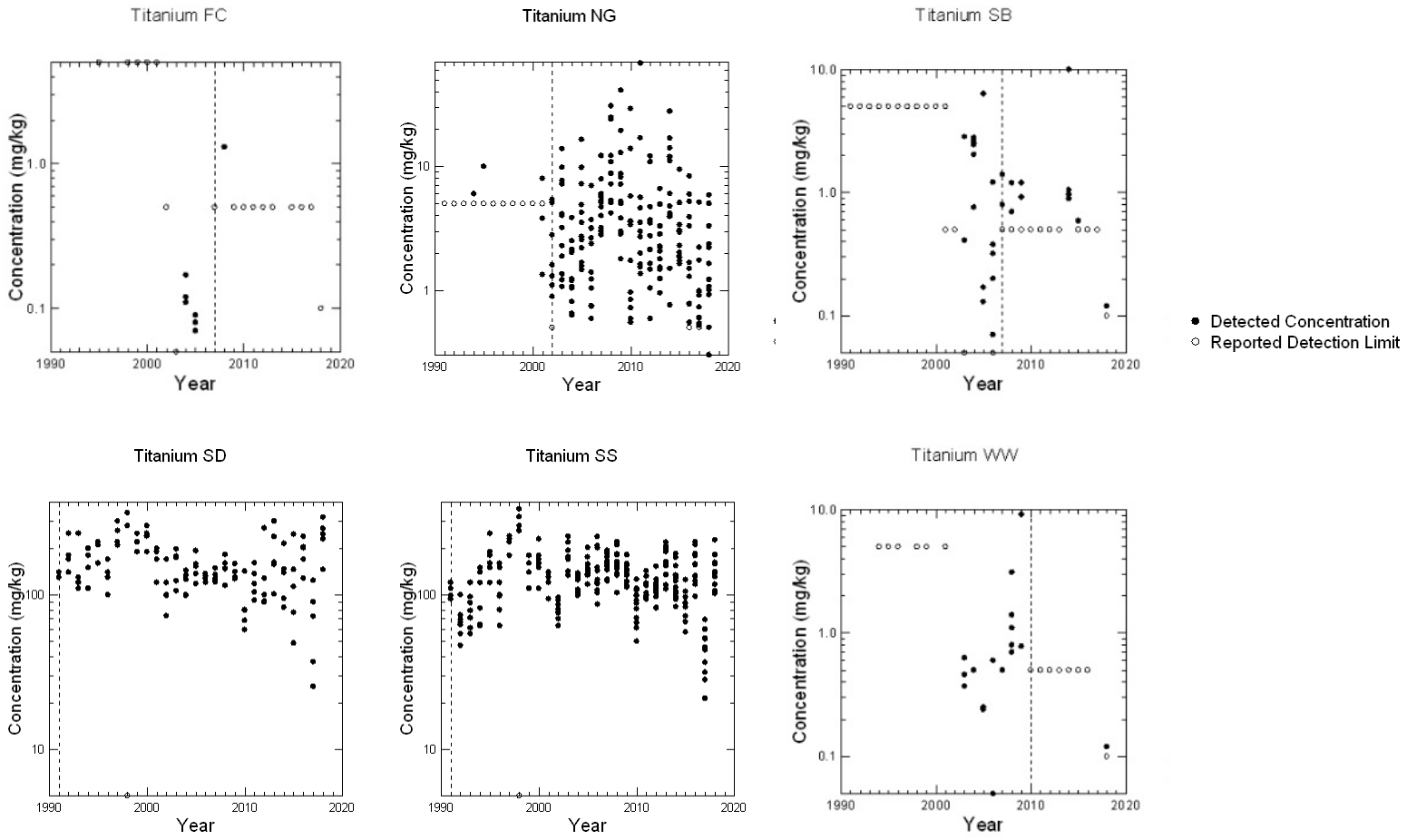
E.2.25 Sulfur


Sulfur FC
Sulfur NG
Sulfur SB
Sulfur SD
Sulfur SS
Sulfur WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
10
100
1000
Detected Concentration
Reported Detection Limit

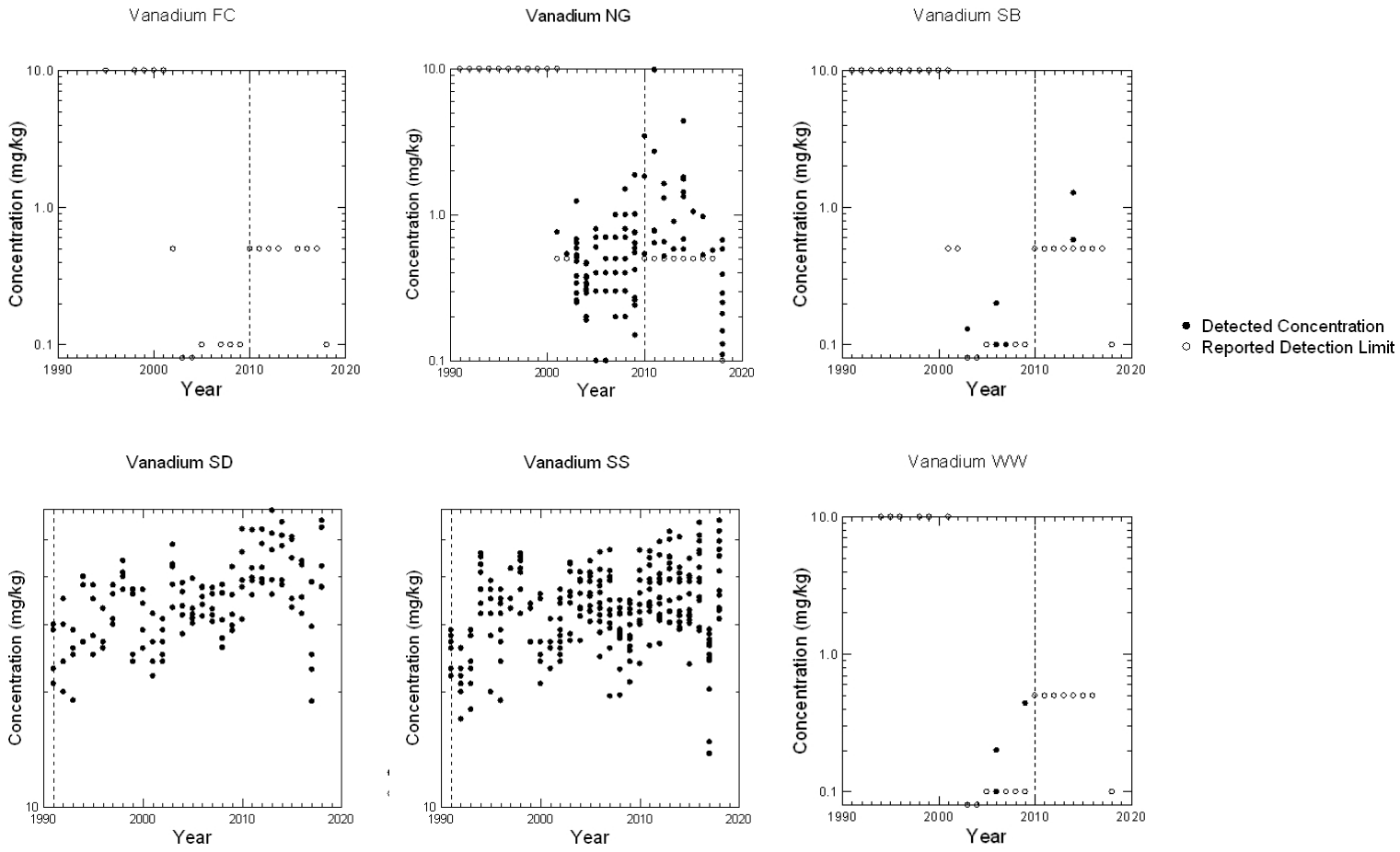
E.2.26 Thallium



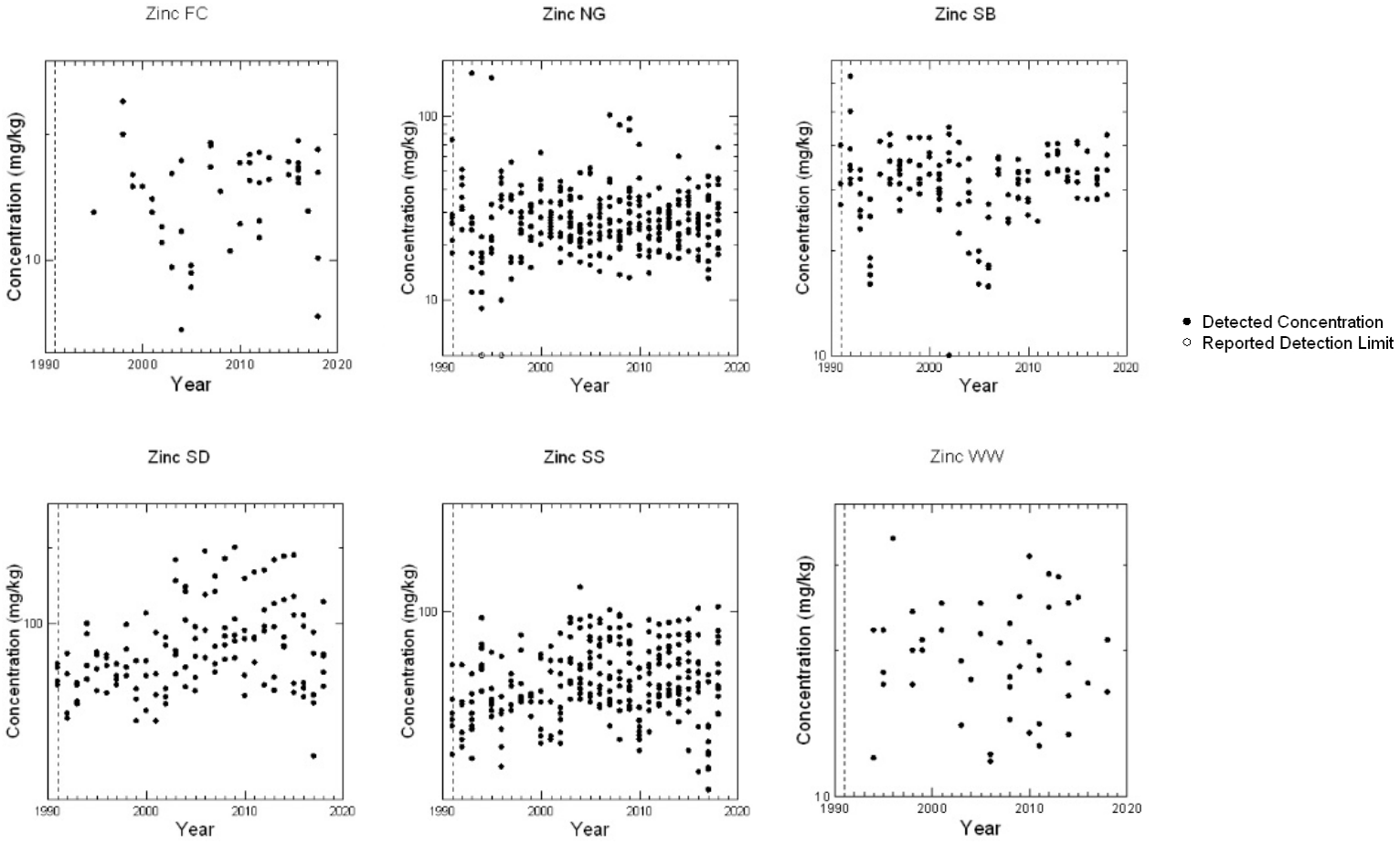
E.2.27 Titanium



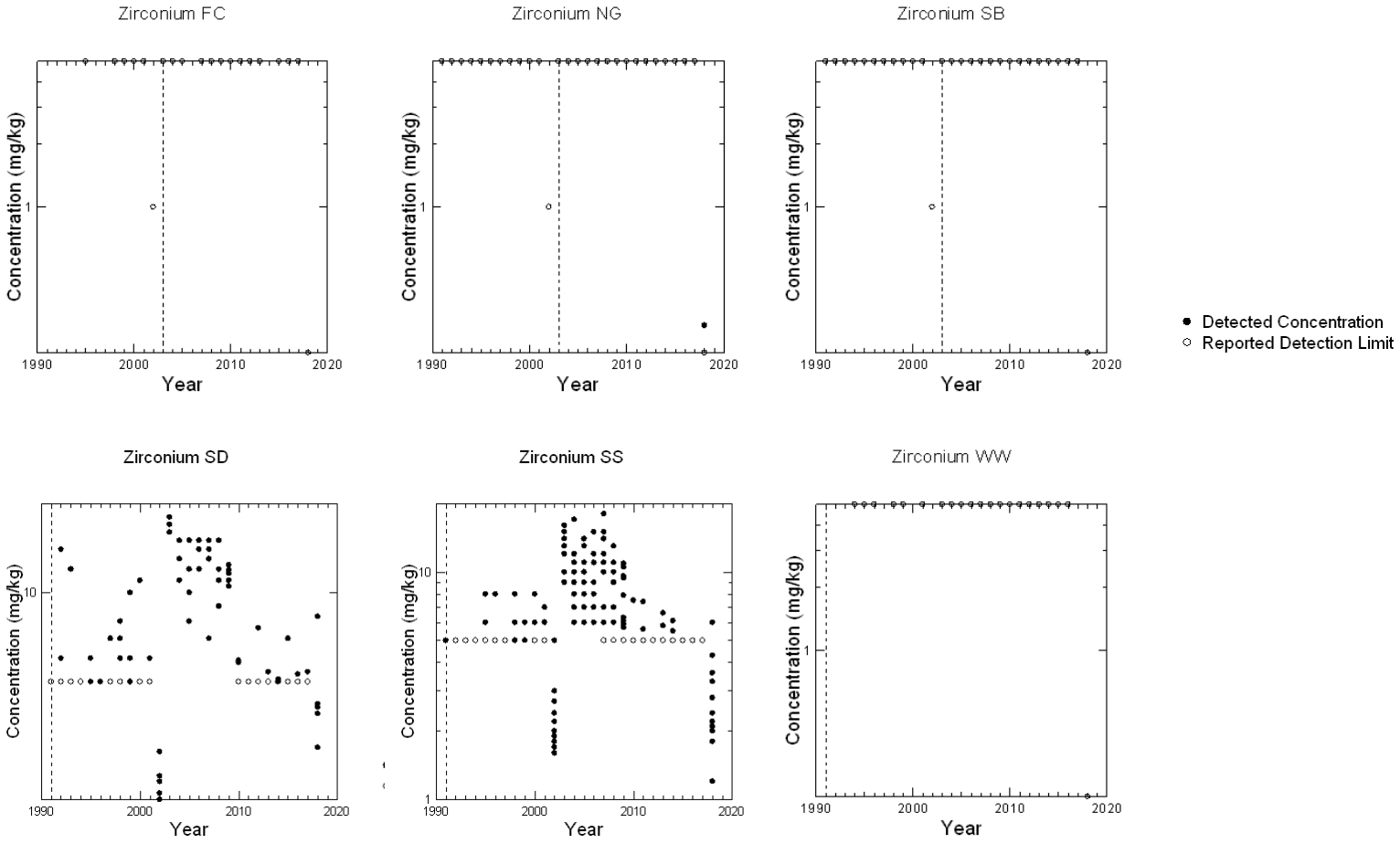
E.2.28 Vanadium



E.2.29 Zinc


Zinc FC
Zinc NG
Zinc SB
Zinc SD
Zinc SS
Zinc WW
Concentration (mg/kg)
Year
1990
2000
2010
2020
10
100
Detected Concentration
Reported Detection Limit

E.2.30 Zirconium



E.3 FINAL RECOMMENDED START DATES FOR EACH ANALYTE-MATRIX PAIR (INORGANIC)

Analyte	Matrix	Recommended Statistical Start Date
Aluminum	FC	2005
Aluminum	NG	2002
Aluminum	SB	2005
Aluminum	SD	1991
Aluminum	SS	1991
Aluminum	WW	2005
Arsenic	FC	2003
Arsenic	NG	2003
Arsenic	SB	2003
Arsenic	SD	1991
Arsenic	SS	1991
Arsenic	WW	2003
Barium	FC	2005
Barium	NG	1991
Barium	SB	1991
Barium	SD	1991
Barium	SS	1991
Barium	WW	1991
Beryllium	FC	2003
Beryllium	NG	2003
Beryllium	SB	2003
Beryllium	SD	1991
Beryllium	SS	1991
Beryllium	WW	2003
Boron	FC	2005
Boron	NG	1999
Boron	SB	1991
Boron	SD	1995
Boron	SS	1998
Boron	WW	2003
Cadmium	FC	2007
Cadmium	NG	2001

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
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Analyte	Matrix	Recommended Statistical Start Date
Cadmium	SB	2005
Cadmium	SD	1991
Cadmium	SS	1991
Cadmium	WW	2005
Calcium	FC	1991
Calcium	NG	1991
Calcium	SB	1991
Calcium	SD	1991
Calcium	SS	1991
Calcium	WW	1991
Chloride	FC	1991
Chloride	NG	1991
Chloride	SB	1991
Chloride	SD	1991
Chloride	SS	2009
Chloride	WW	1991
Chromium	FC	2003
Chromium	NG	2002
Chromium	SB	2002
Chromium	SD	1991
Chromium	SS	1991
Chromium	WW	2003
Cobalt	FC	2005
Cobalt	NG	2003
Cobalt	SB	2005
Cobalt	SD	1991
Cobalt	SS	1991
Cobalt	WW	2005
Copper	FC	2002
Copper	NG	2002
Copper	SB	1991
Copper	SD	1991
Copper	SS	1991
Copper	WW	2003
Fluoride	All Matrices	2018[A]

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
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Analyte	Matrix	Recommended Statistical Start Date
Iron	FC	1991
Iron	NG	1991
Iron	SB	1991
Iron	SD	1991
Iron	SS	1991
Iron	WW	1991
Lead	FC	2010
Lead	NG	2003
Lead	SB	2010
Lead	SD	1991
Lead	SS	1991
Lead	WW	2010
Magnesium	FC	1991
Magnesium	NG	1991
Magnesium	SB	1991
Magnesium	SD	1991
Magnesium	SS	1991
Magnesium	WW	1991
Manganese	FC	2002
Manganese	NG	1991
Manganese	SB	1991
Manganese	SD	1991
Manganese	SS	1991
Manganese	WW	1991
Mercury	FC	2005
Mercury	NG	2004
Mercury	SB	2005
Mercury	SD	2003
Mercury	SS	2002
Mercury	WW	2005
Molybdenum	FC	2003
Molybdenum	NG	2002
Molybdenum	SB	1991
Molybdenum	SD	2002
Molybdenum	SS	2002

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
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Analyte	Matrix	Recommended Statistical Start Date
Molybdenum	WW	1991
Nickel	FC	2005
Nickel	NG	2002
Nickel	SB	2002
Nickel	SD	1991
Nickel	SS	1991
Nickel	WW	2003
Phosphorus	FC	1991
Phosphorus	NG	1991
Phosphorus	SB	1991
Phosphorus	SD	1991
Phosphorus	SS	1991
Phosphorus	WW	1991
Potassium	FC	1991
Potassium	NG	1991
Potassium	SB	1991
Potassium	SD	1991
Potassium	SS	1991
Potassium	WW	1991
Silicon	FC	2006
Silicon	NG	2003
Silicon	SB	2003
Silicon	SD	2010
Silicon	SS	2010
Silicon	WW	2003
Silver	FC	2005
Silver	NG	2005
Silver	SB	2005
Silver	SD	2003
Silver	SS	2003
Silver	WW	2005
Sodium	FC	2005
Sodium	NG	2002
Sodium	SB	2005
Sodium	SD	1991

Appendix E Assessment of Appropriate Start Date for Statistical Analysis
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Analyte	Matrix	Recommended Statistical Start Date
Sodium	SS	2003
Sodium	WW	2005
Strontium	FC	1991
Strontium	NG	1991
Strontium	SB	1991
Strontium	SD	1991
Strontium	SS	1991
Strontium	WW	1991
Sulfur	FC	1991
Sulfur	NG	1991
Sulfur	SB	1991
Sulfur	SD	1991
Sulfur	SS	1991
Sulfur	WW	1991
Thallium	FC	2005
Thallium	NG	2005
Thallium	SB	2005
Thallium	SD	2002
Thallium	SS	2002
Thallium	WW	2005
Titanium	FC	2007
Titanium	NG	2002
Titanium	SB	2007
Titanium	SD	1991
Titanium	SS	1991
Titanium	WW	2010
Vanadium	FC	2010
Vanadium	NG	2010
Vanadium	SB	2010
Vanadium	SD	1991
Vanadium	SS	1991
Vanadium	WW	2010
Zinc	FC	1991
Zinc	NG	1991
Zinc	SB	1991

Analyte	Matrix	Recommended Statistical Start Date
Zinc	SD	1991
Zinc	SS	1991
Zinc	WW	1991
Zirconium	FC	2003
Zirconium	NG	2003
Zirconium	SB	2003
Zirconium	SD	1991
Zirconium	SS	1991
Zirconium	WW	1991

Note(s):

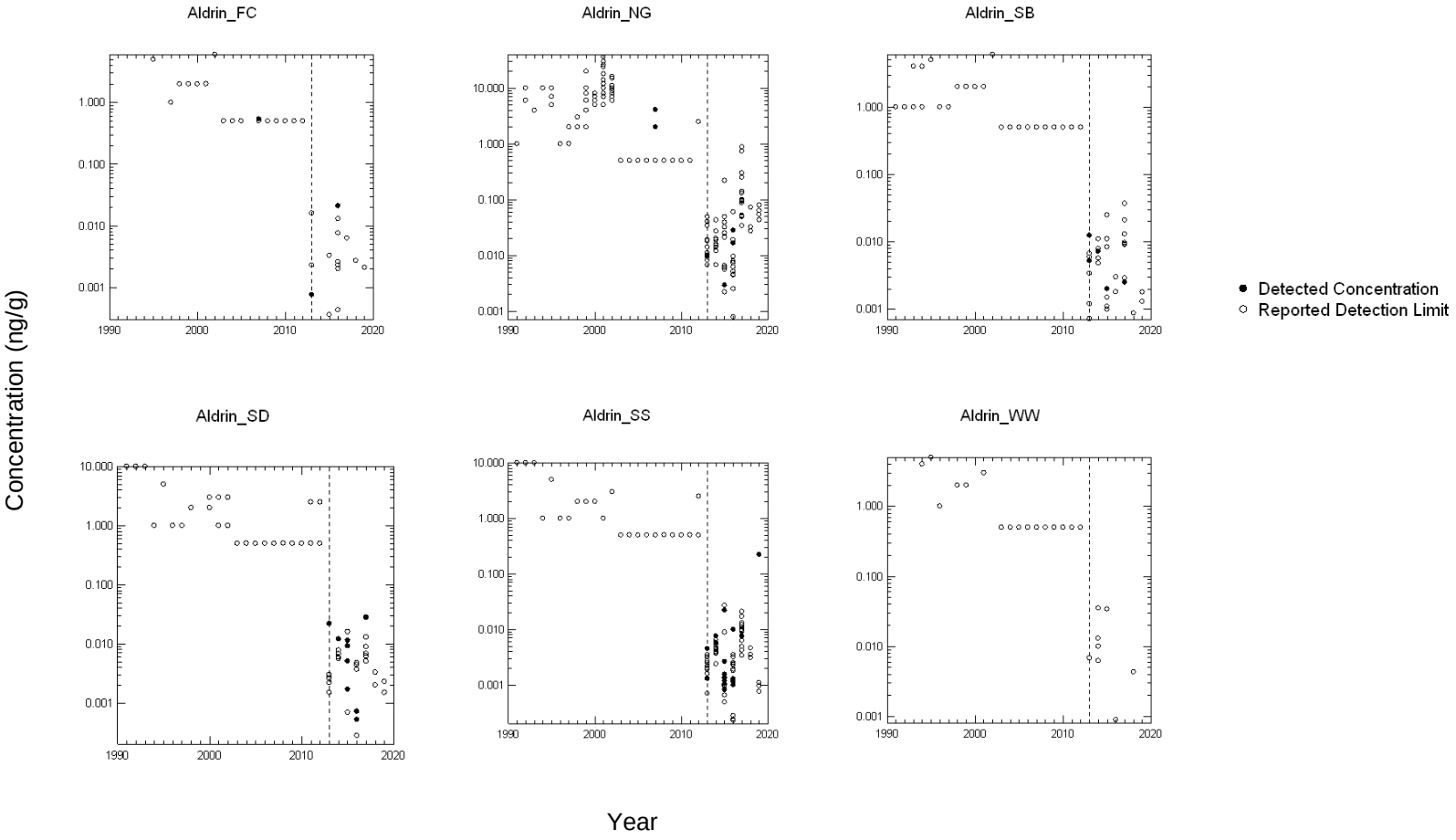
[A] Monitoring of fluoride was initiated in the 2018 Field Year as per the MECP approved changes. Therefore, fluoride has been exempted from the assessment of appropriate start date due to the limited amount of available data. A review of the appropriate start date for fluoride analysis will be considered when there are at least six years of available data, as this is the minimum data requirement set in this biomonitoring program for the calculation of an upper limit. In the interim, regression analyses for fluoride will be evaluated with a start date of 2018.

E.4 SCATTERPLOTS OF SITE-WIDE ANALYTICAL DATA AVAILABLE FOR EACH ANALYTE-MATRIX PAIR SINCE 1991 (ORGANIC)

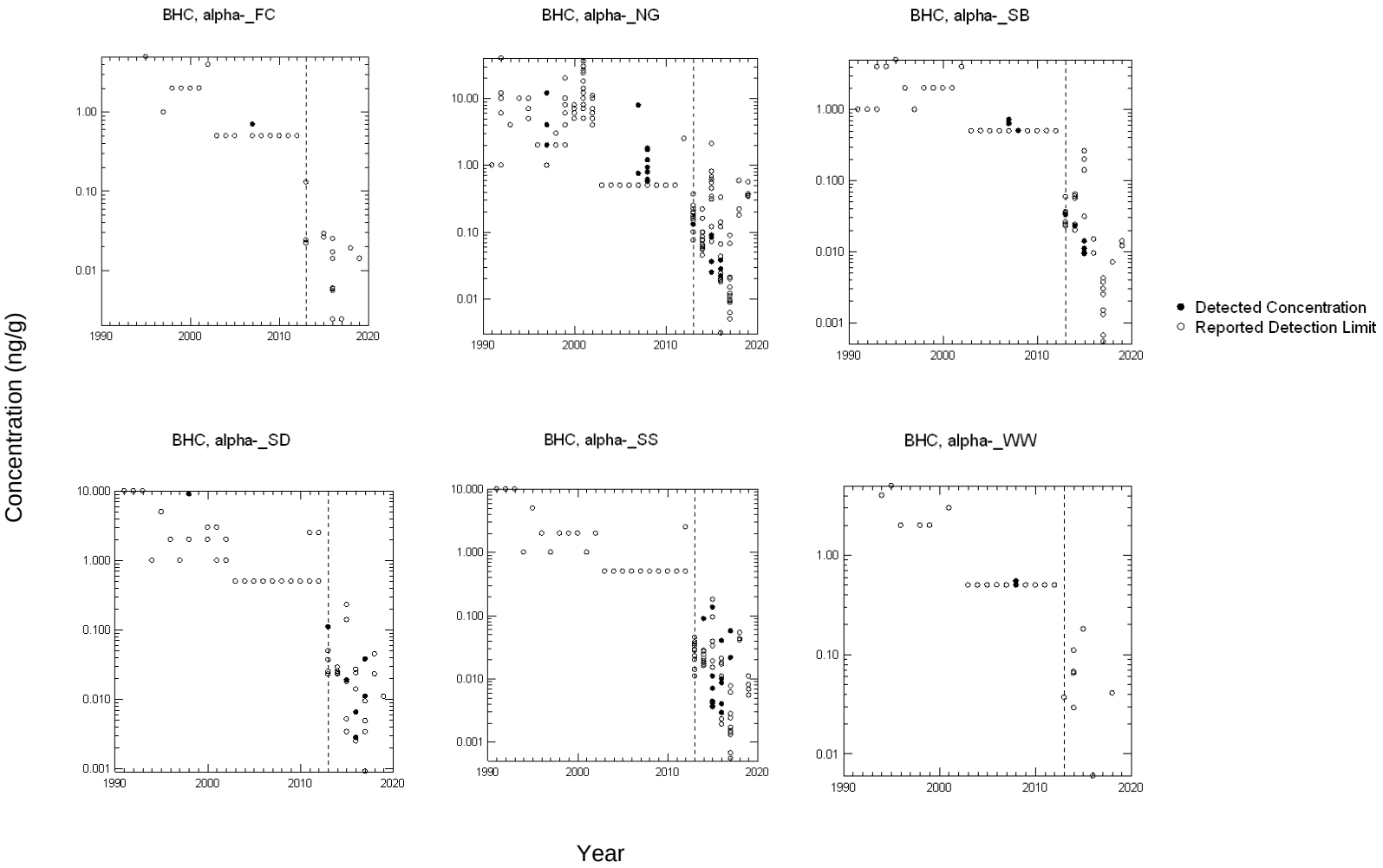
This appendix provides scatterplots of available analytical data for each analyte-matrix pair for organic analytes on a Site-wide basis. The assessed appropriate start dates for statistical analysis (control charts and linear regression) for each analyte-matrix pair on a Site-wide basis are indicated by a dashed vertical line on the figures.

E.4.1 OCPs

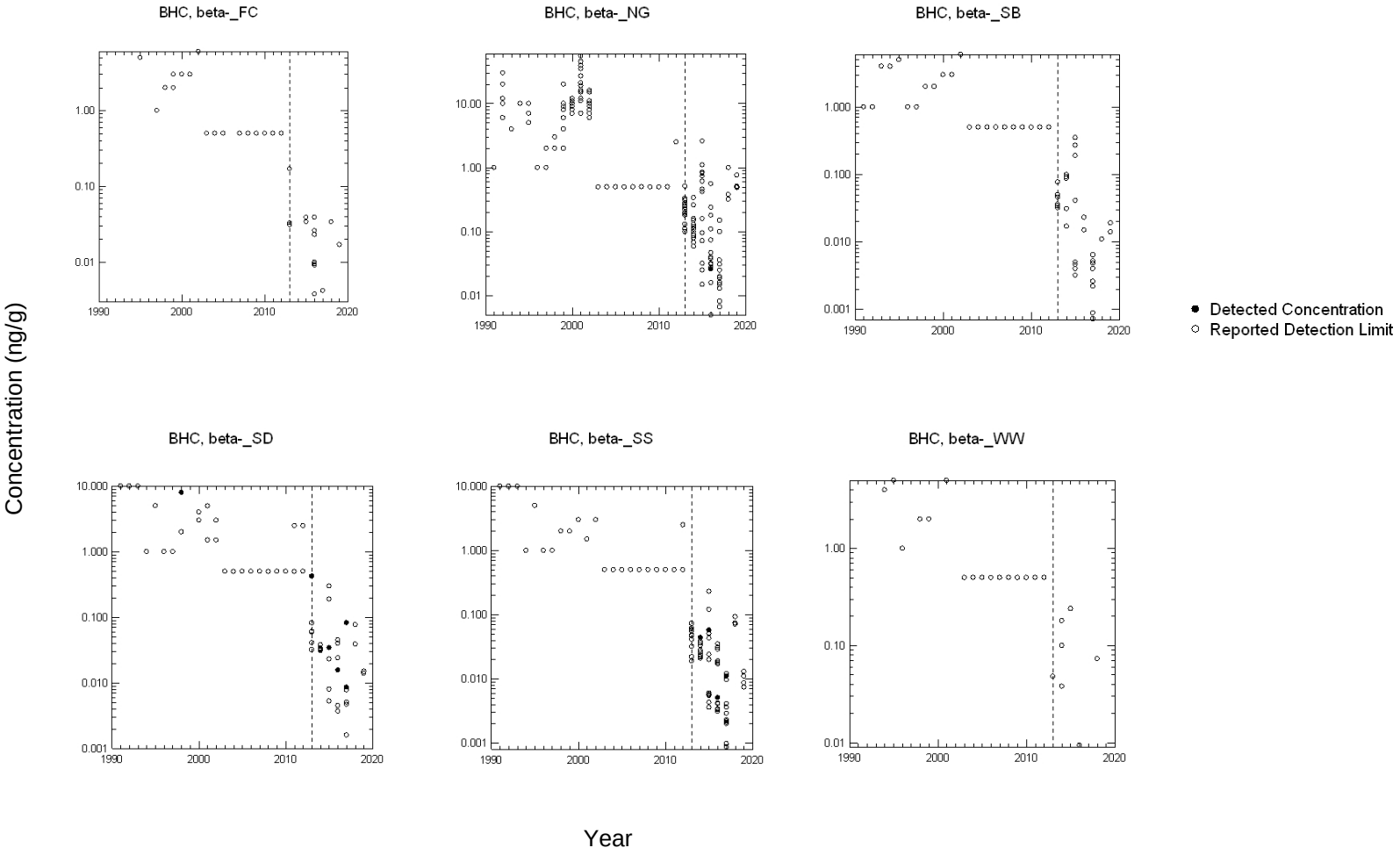
1. Aldrin



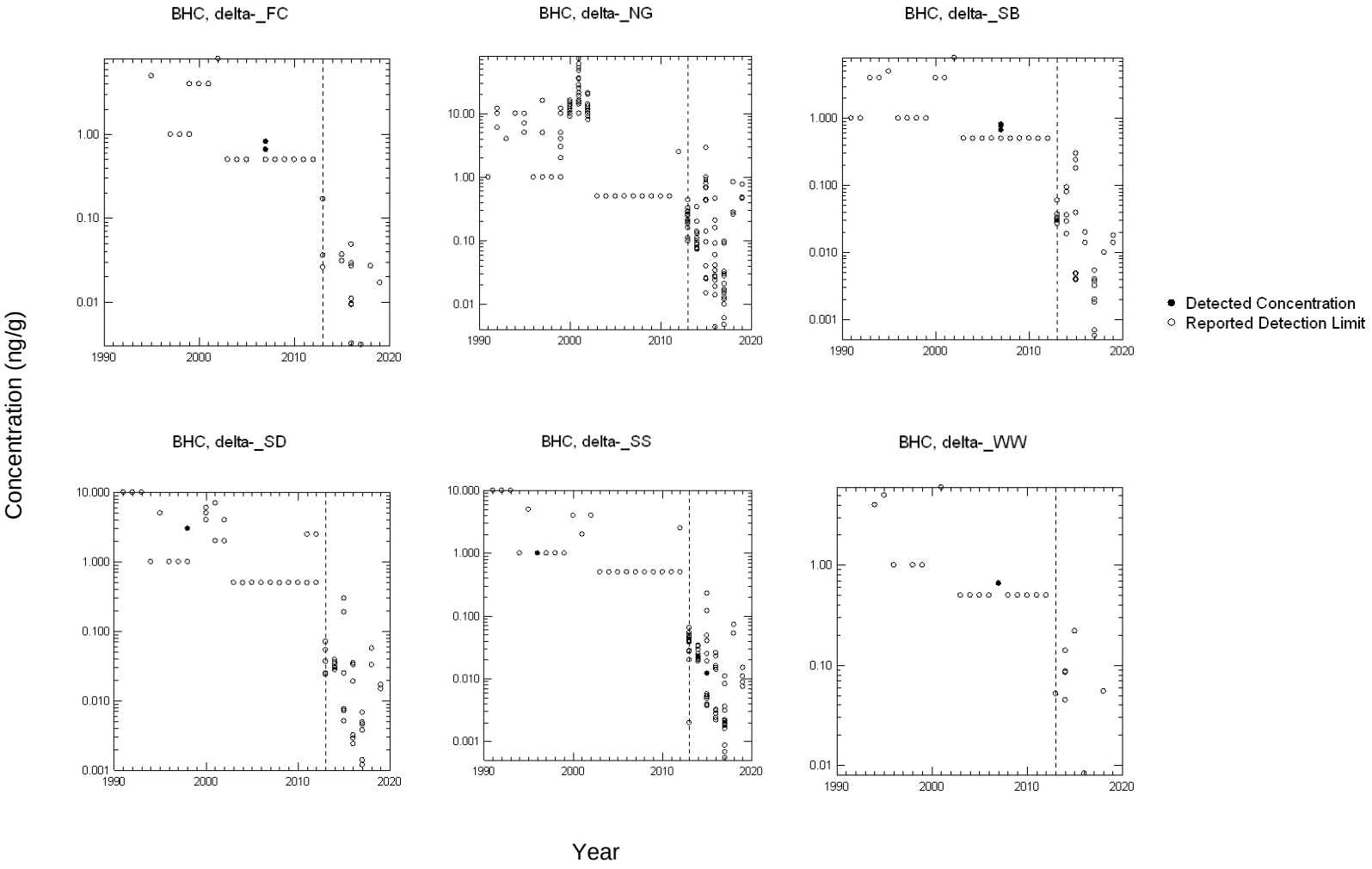
2. BHC, alpha-


BHC, alpha-_FC
BHC, alpha-_NG
BHC, alpha-_SB
BHC, alpha-_SD
BHC, alpha-_SS
BHC, alpha-_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

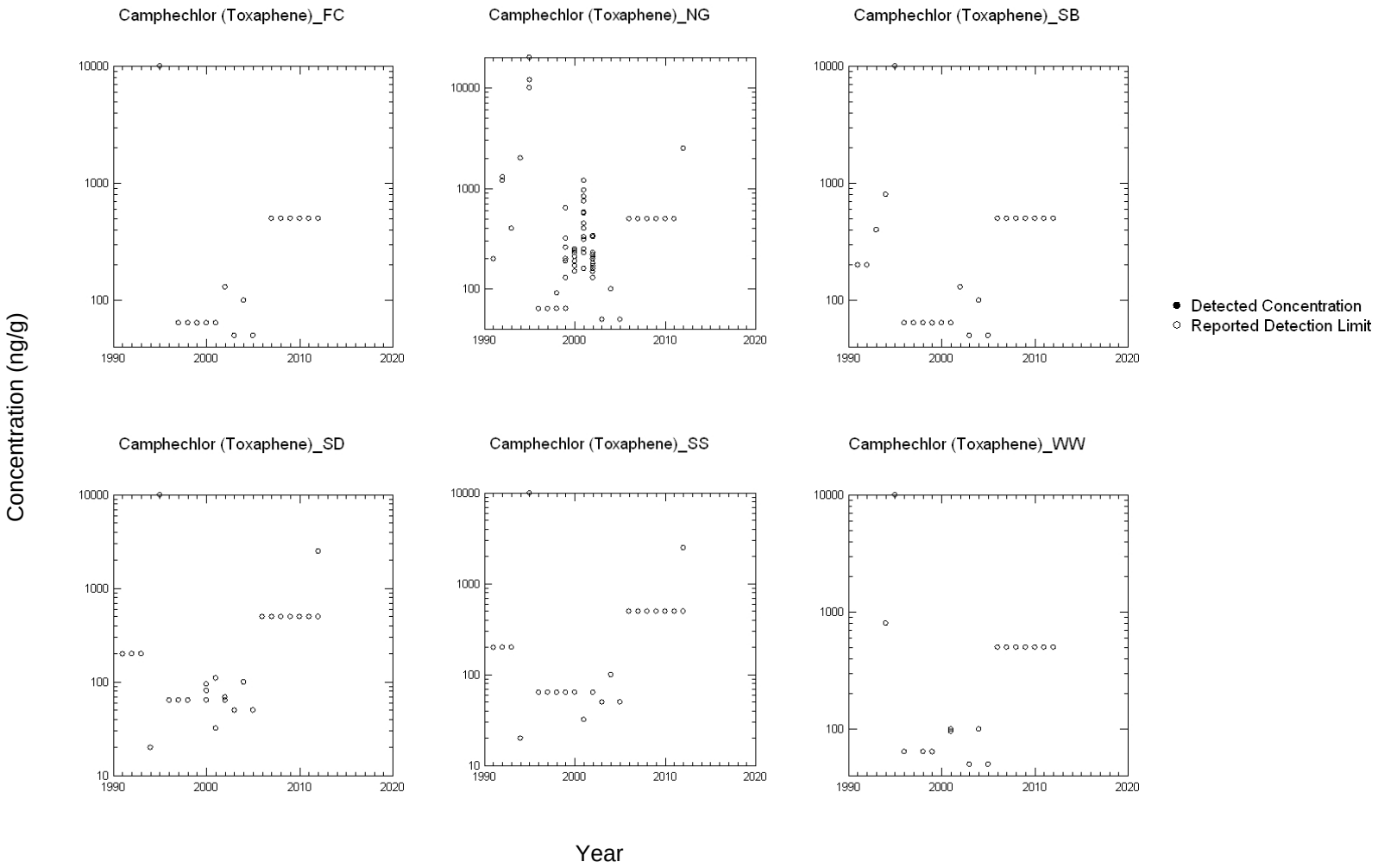
3. BHC, beta-


BHC, beta-_FC
BHC, beta-_NG
BHC, beta-_SB
BHC, beta-_SD
BHC, beta-_SS
BHC, beta-_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

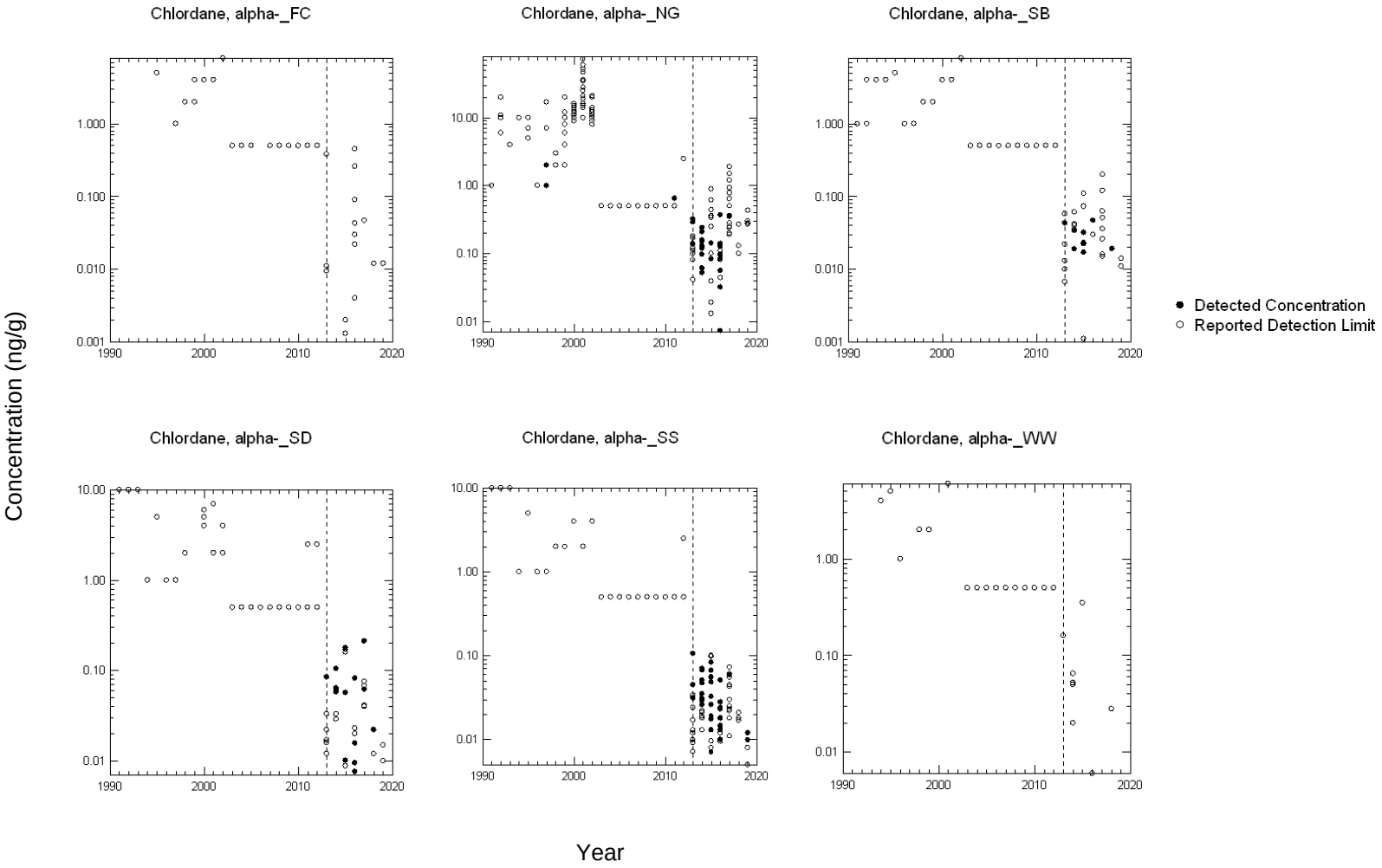
4. BHC, delta-


BHC, delta-_FC
BHC, delta-_NG
BHC, delta-_SB
BHC, delta-_SD
BHC, delta-_SS
BHC, delta-_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

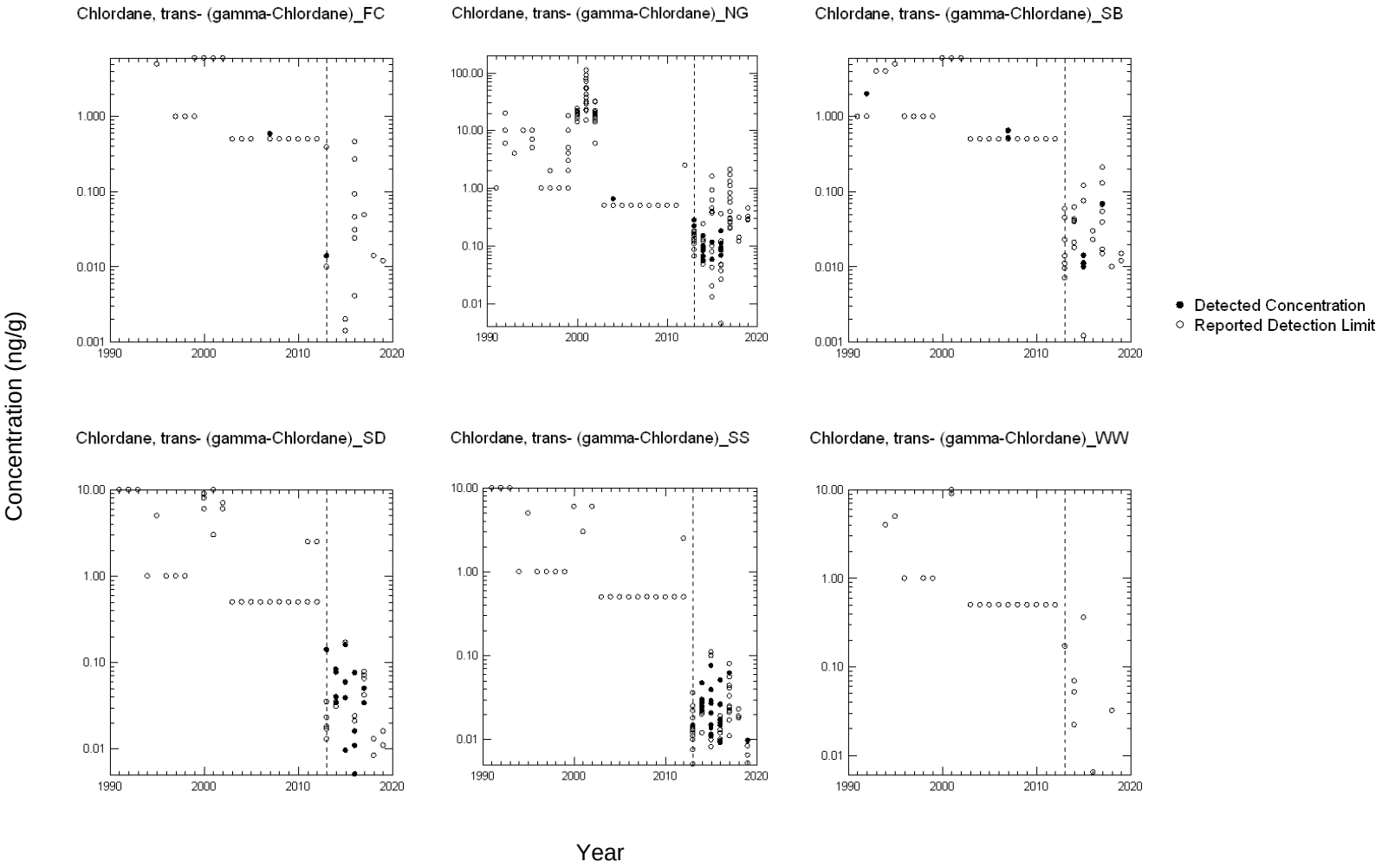
5. Camphechlor (Toxaphene)



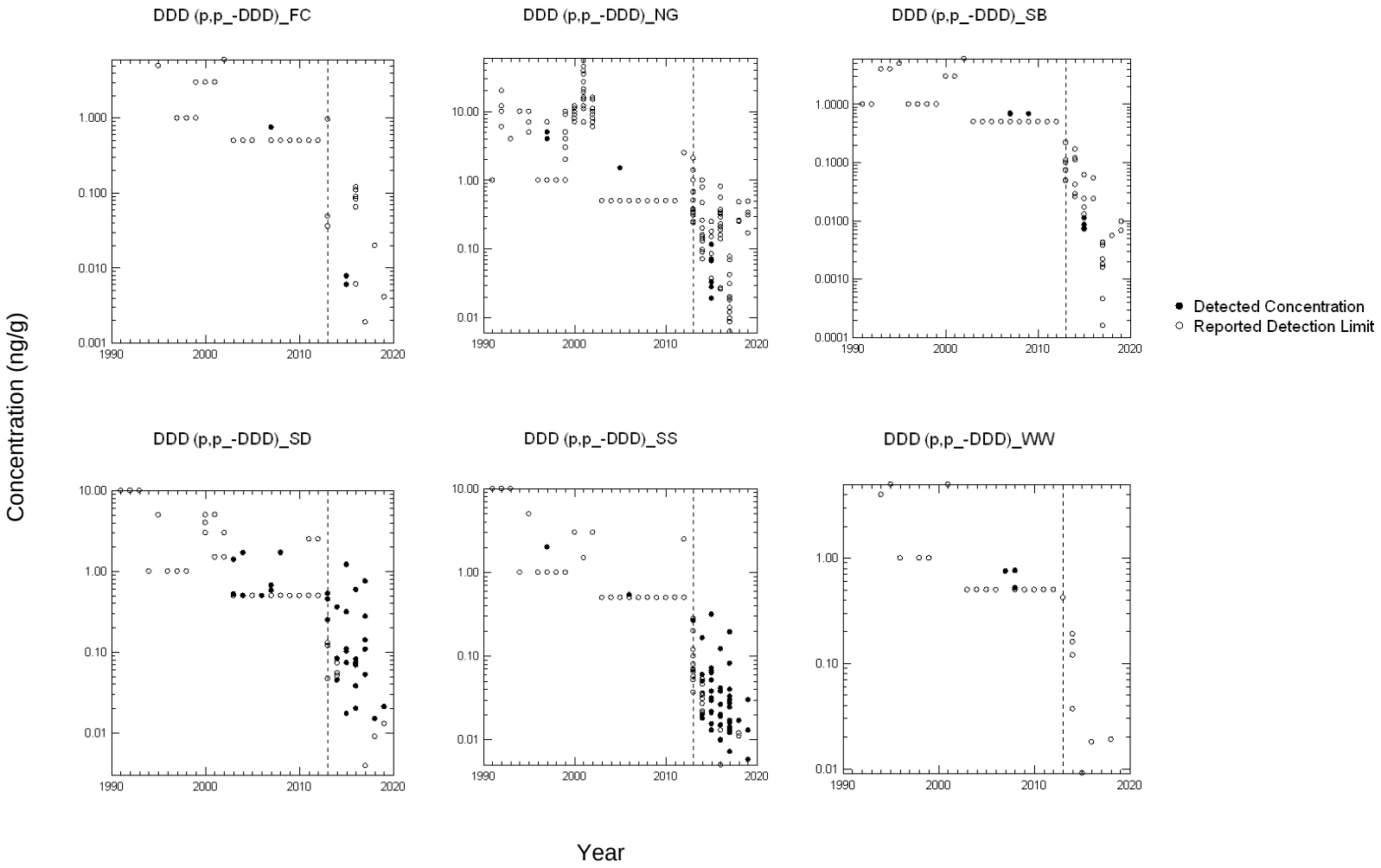
6. Chlordane, alpha-



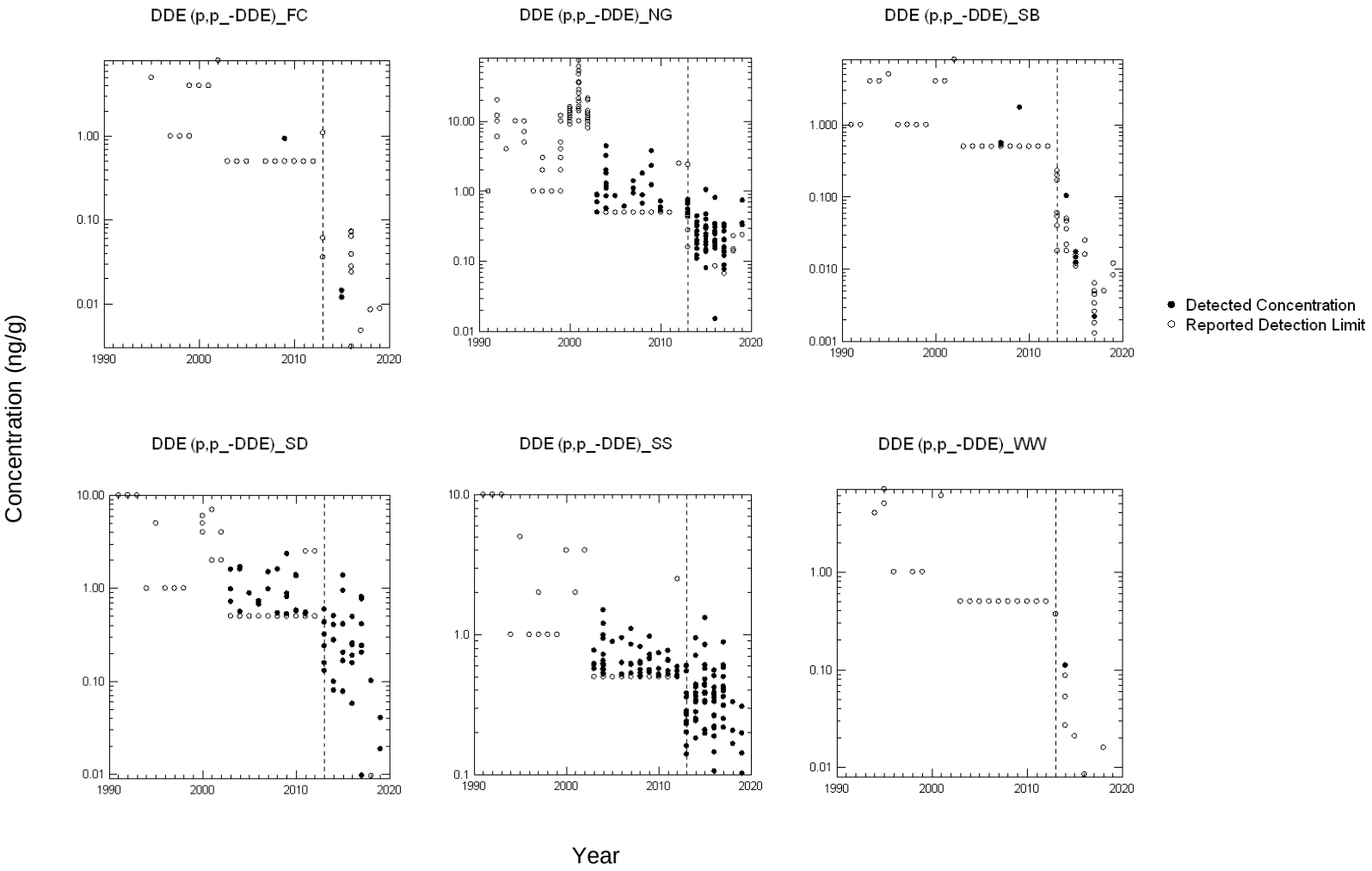
7. Chlordane, trans- (gamma-Chlordane)



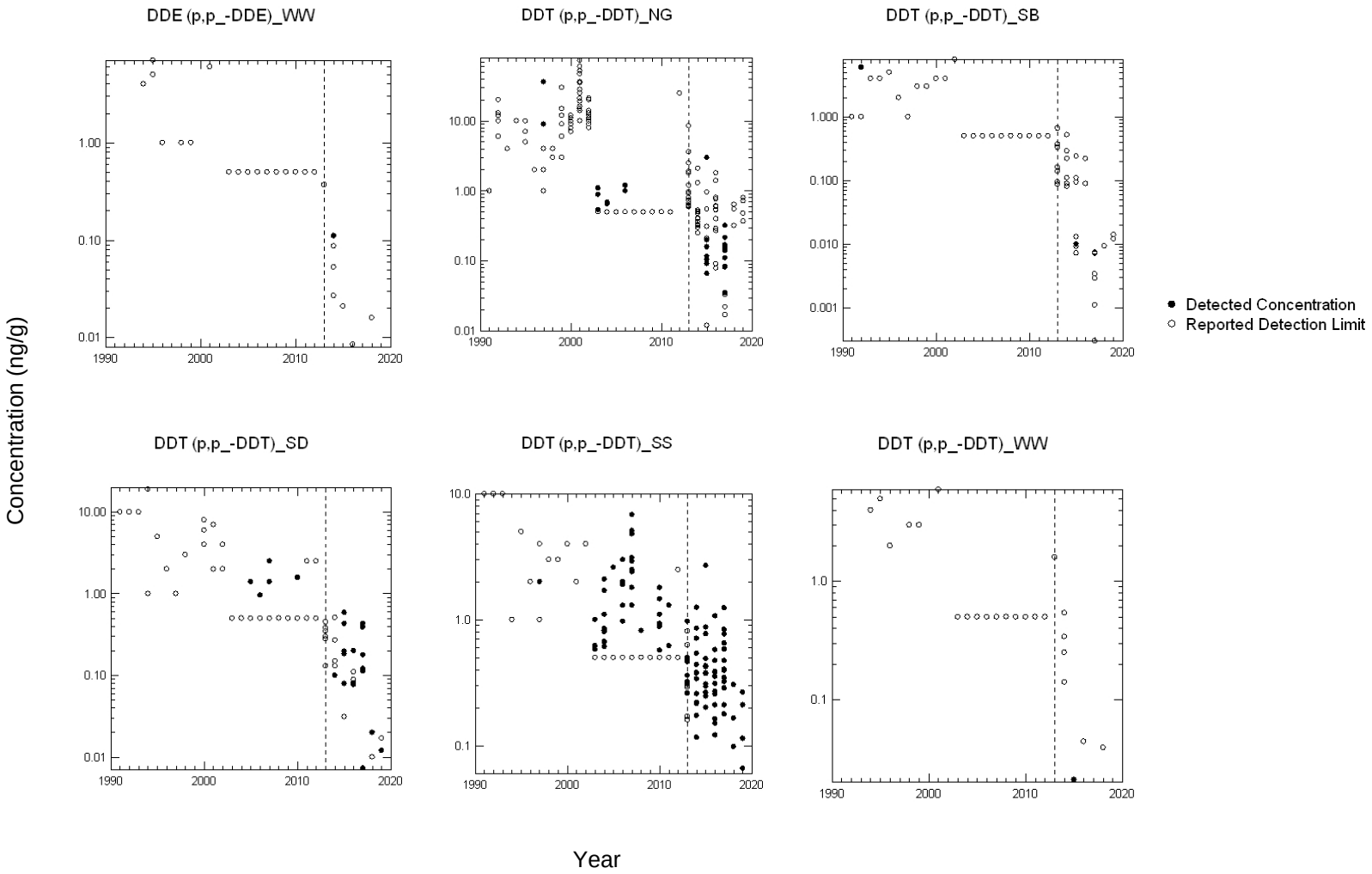
8. DDD (p,p'-DDD)


DDD (p,p_-DDD)_FC
DDD (p,p_-DDD)_NG
DDD (p,p_-DDD)_SB
DDD (p,p_-DDD)_SD
DDD (p,p_-DDD)_SS
DDD (p,p_-DDD)_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

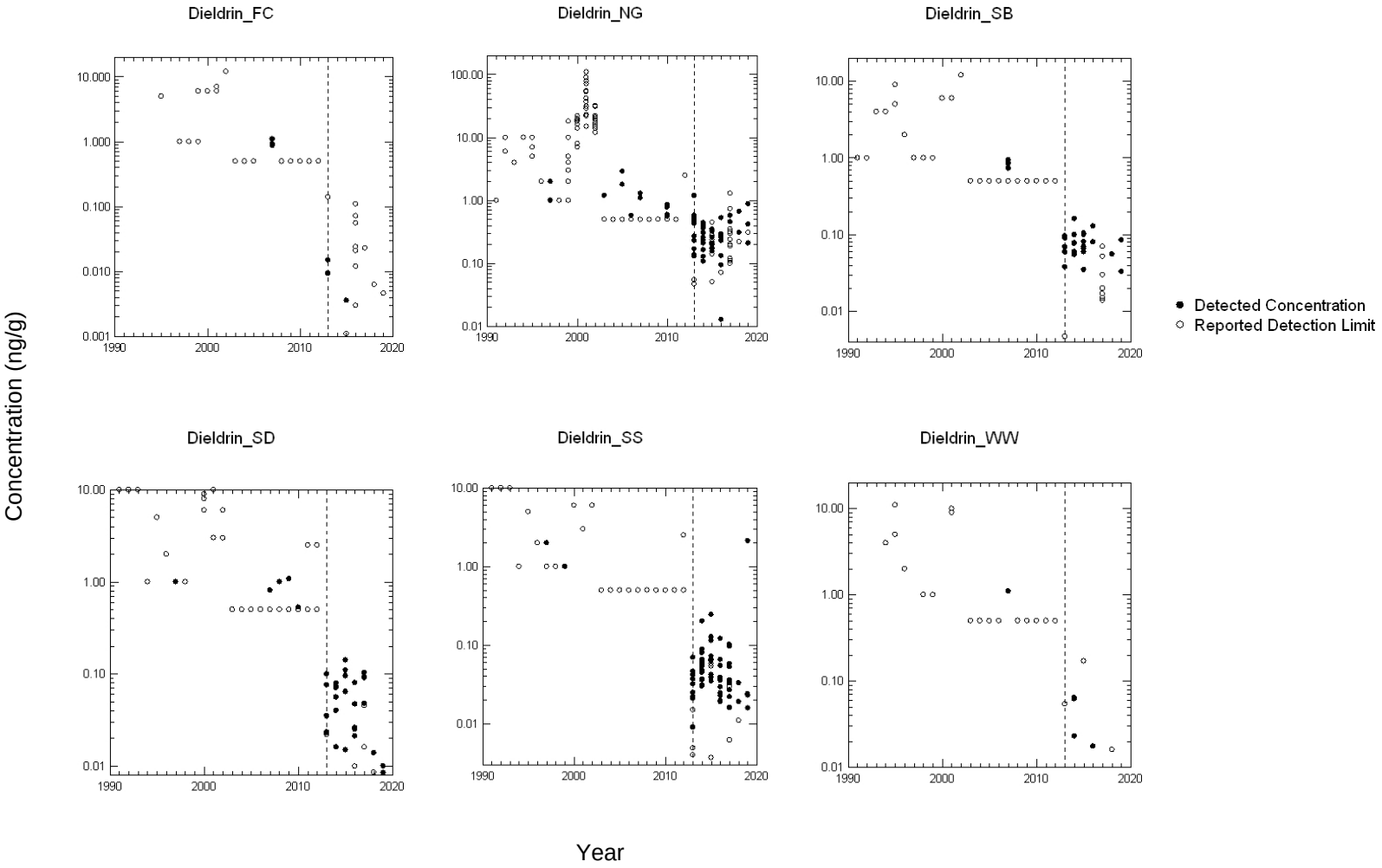
9. DDE (p,p'-DDE)


DDE (p,p_-DDE)_FC
DDE (p,p_-DDE)_NG
DDE (p,p_-DDE)_SB
DDE (p,p_-DDE)_SD
DDE (p,p_-DDE)_SS
DDE (p,p_-DDE)_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

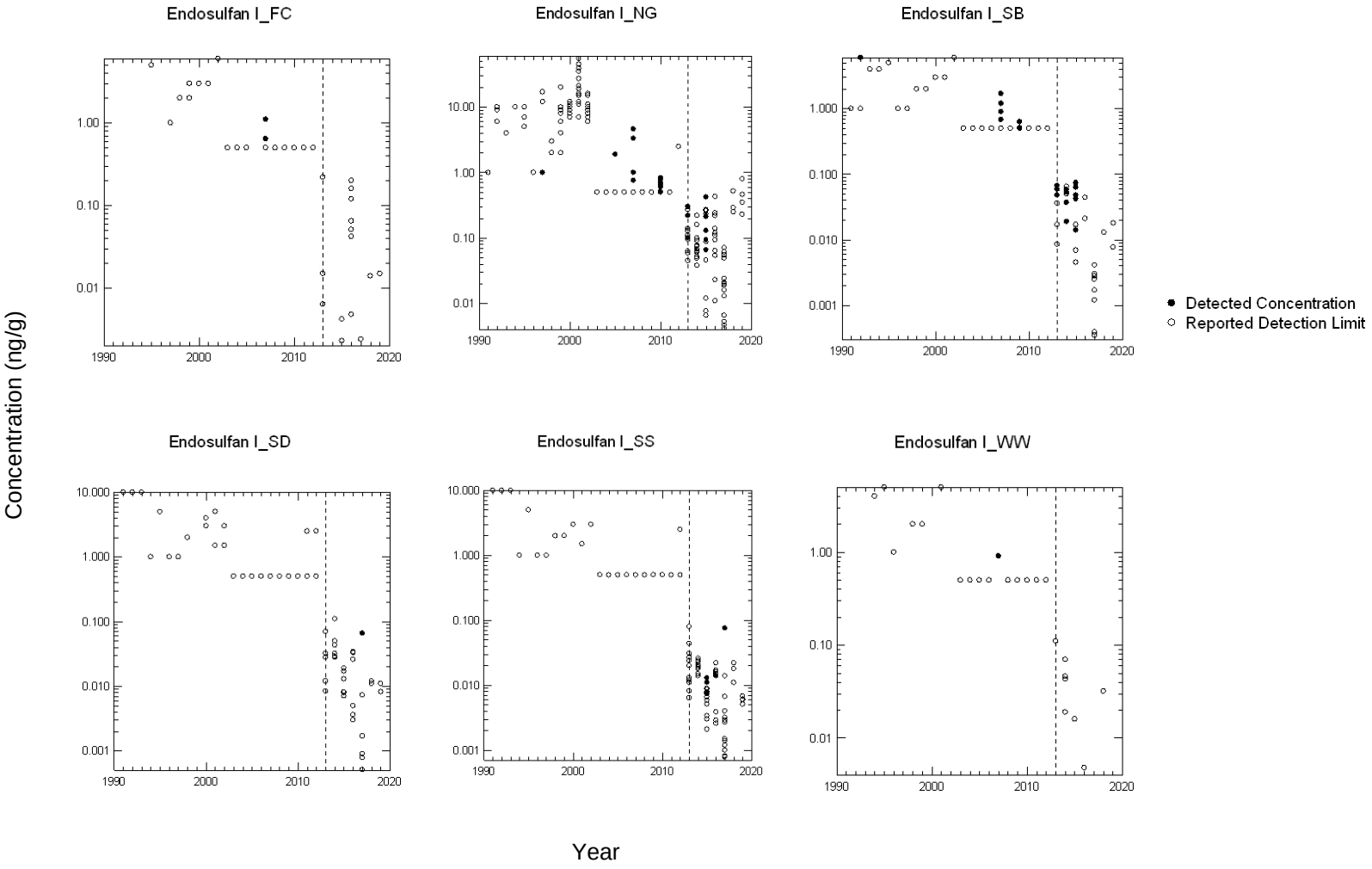
10. DDT (p,p'-DDT)


DDE (p,p_-DDE)_WW
DDT (p,p_-DDT)_NG
DDT (p,p_-DDT)_SB
DDT (p,p_-DDT)_SD
DDT (p,p_-DDT)_SS
DDT (p,p_-DDT)_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

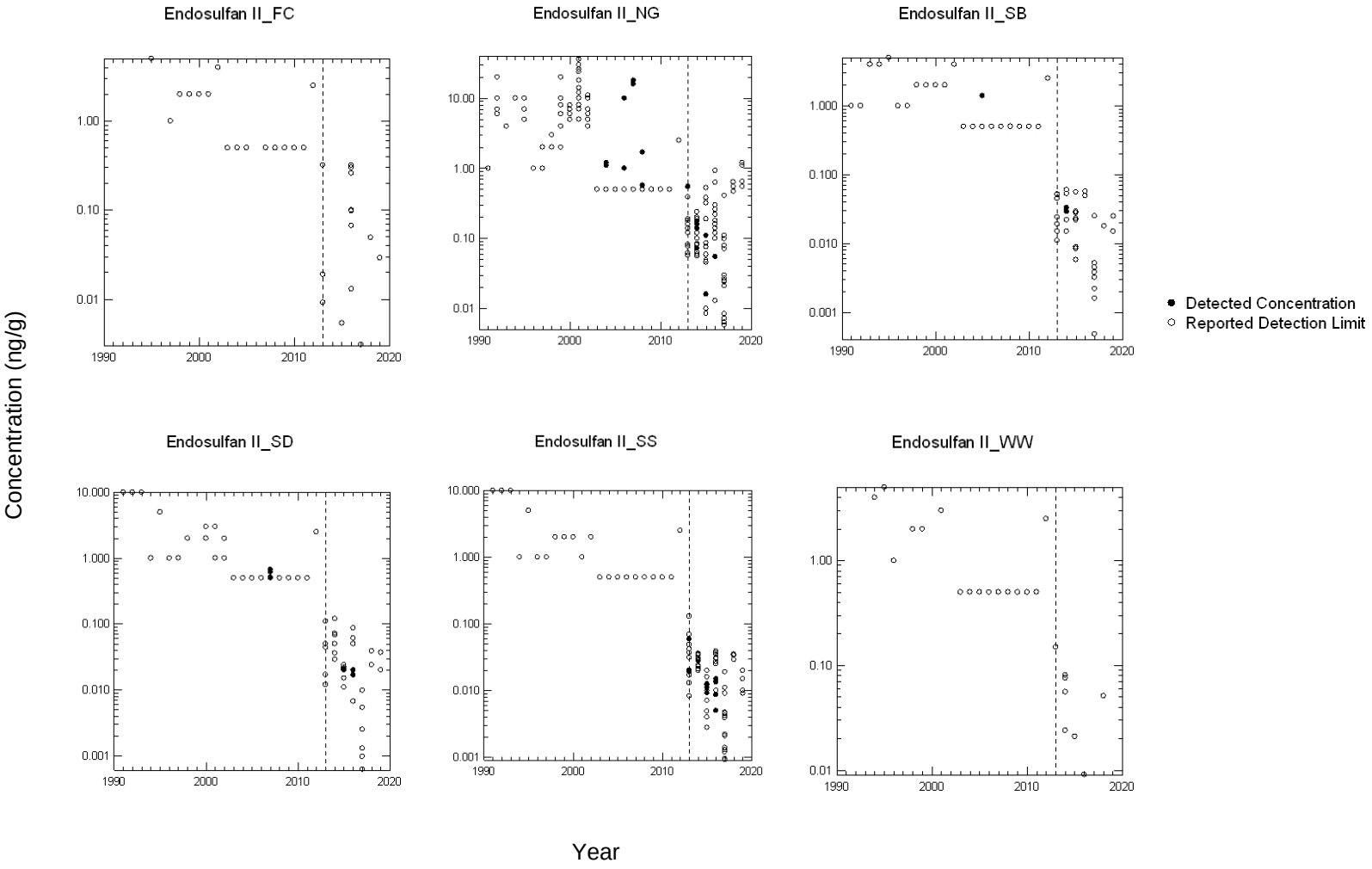
11. Dieldrin


Dieldrin_FC
Dieldrin_NG
Dieldrin_SB
Dieldrin_SD
Dieldrin_SS
Dieldrin_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

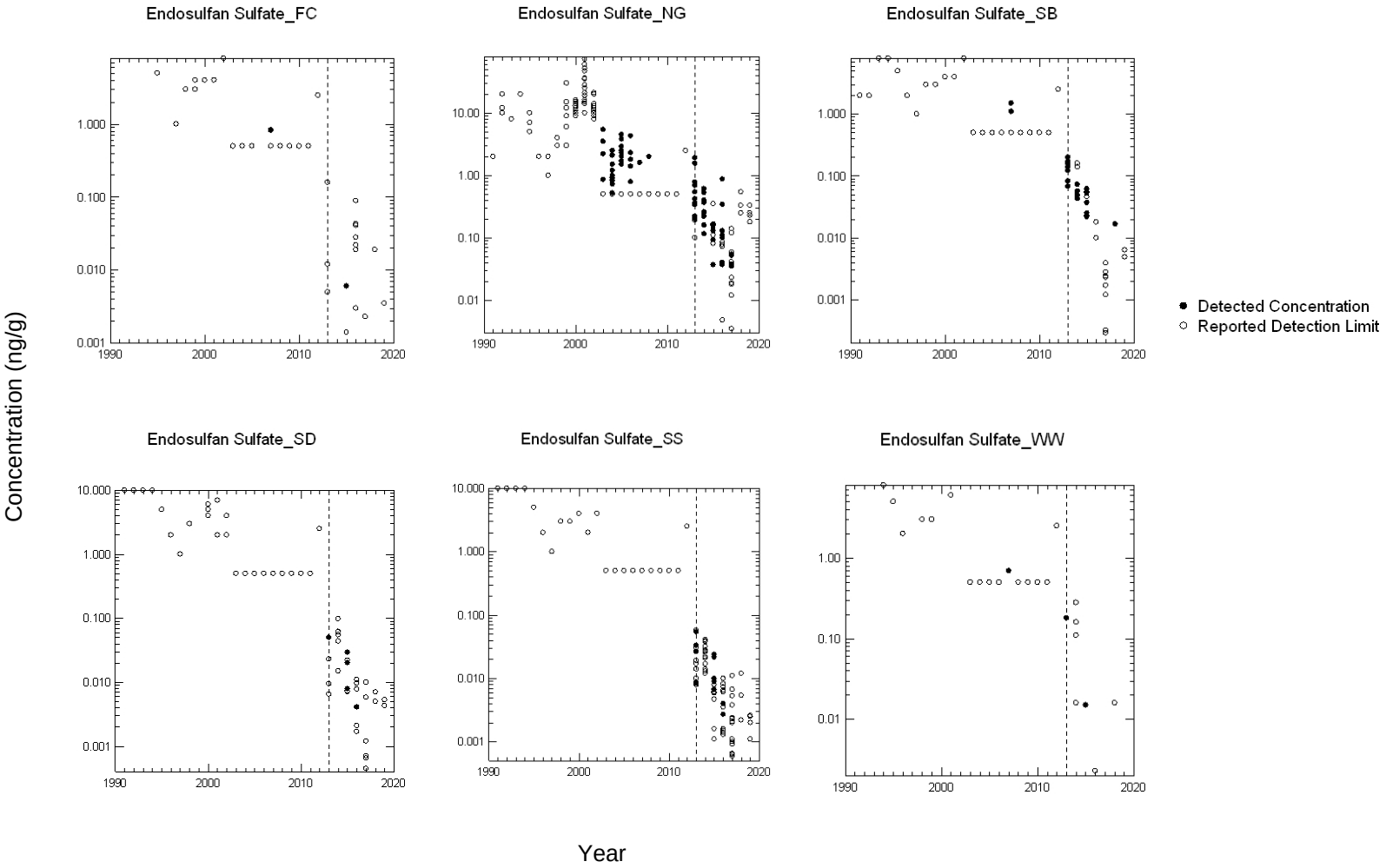
12. Endosulfan I



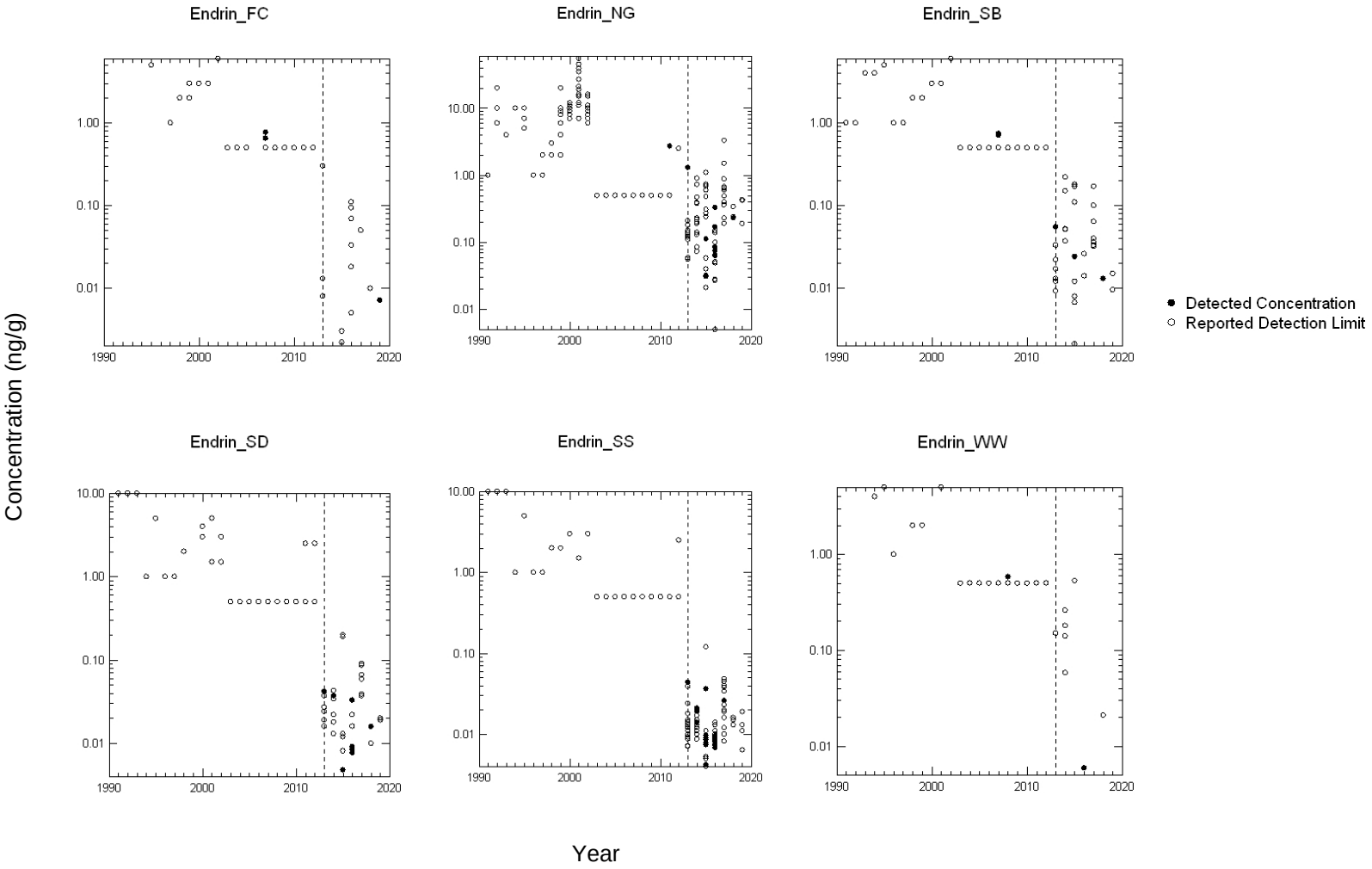
13. Endosulfan II



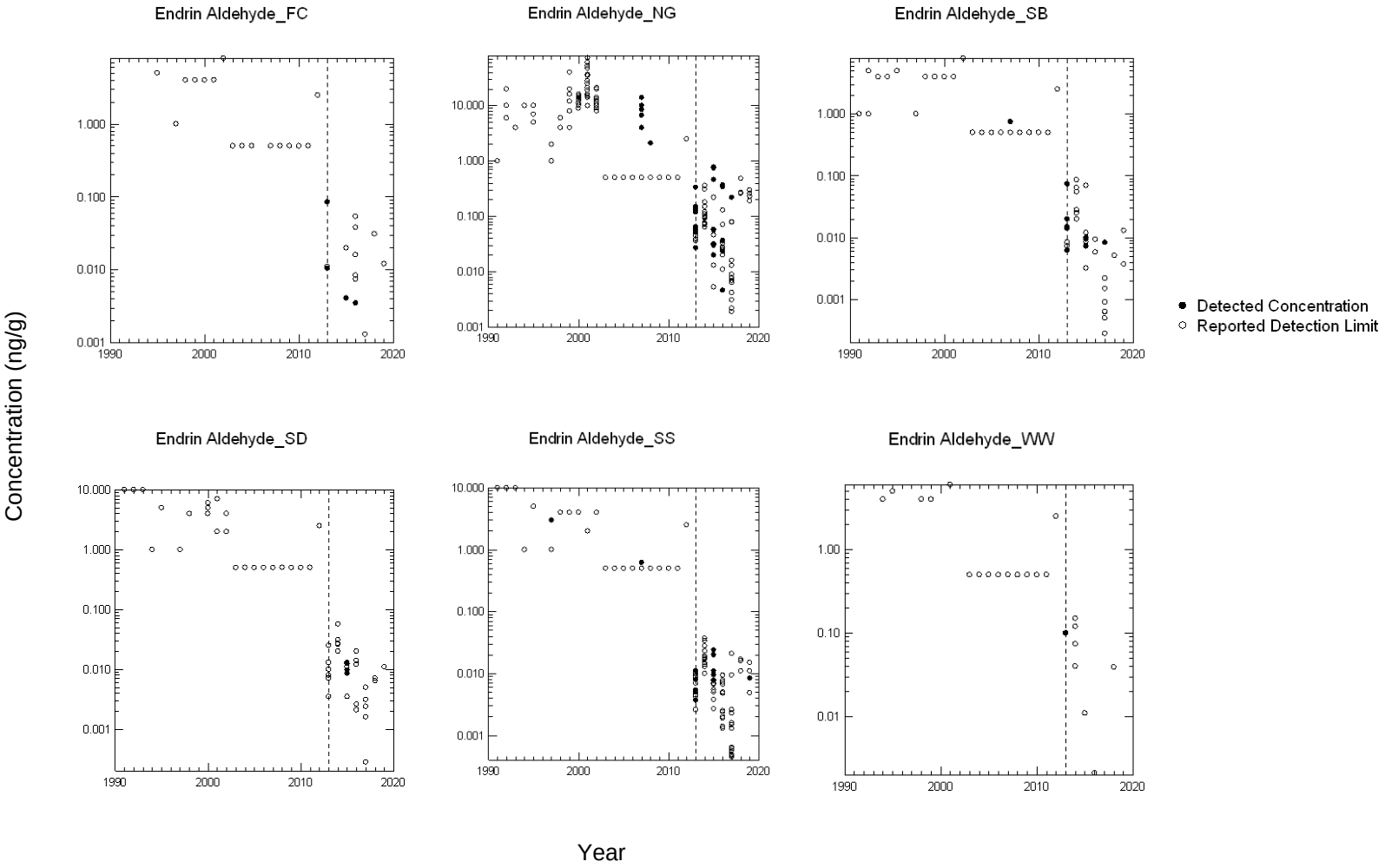
14. Endosulfan Sulfate



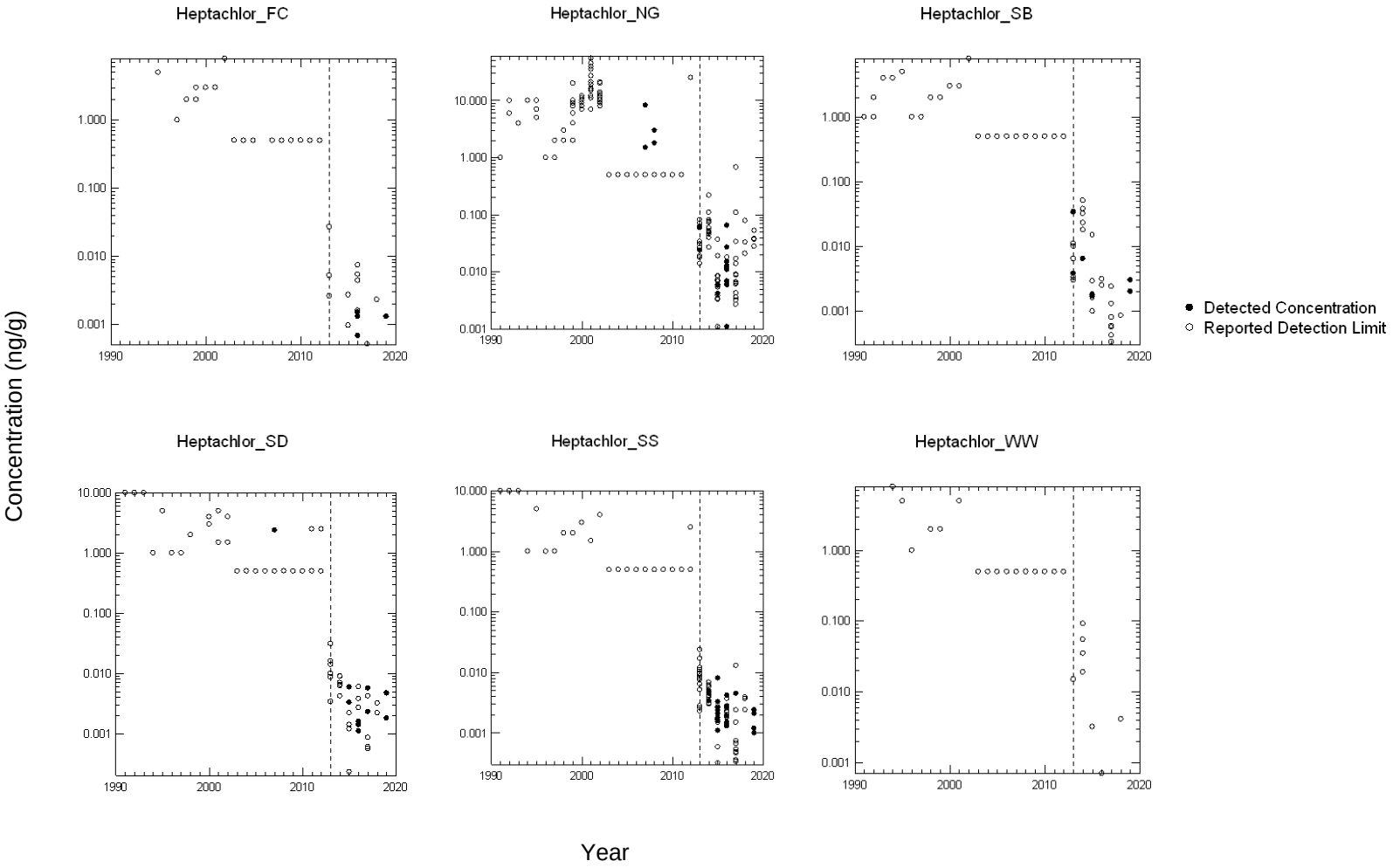
15. Endrin


Endrin_FC
Endrin_NG
Endrin_SB
Endrin_SD
Endrin_SS
Endrin_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

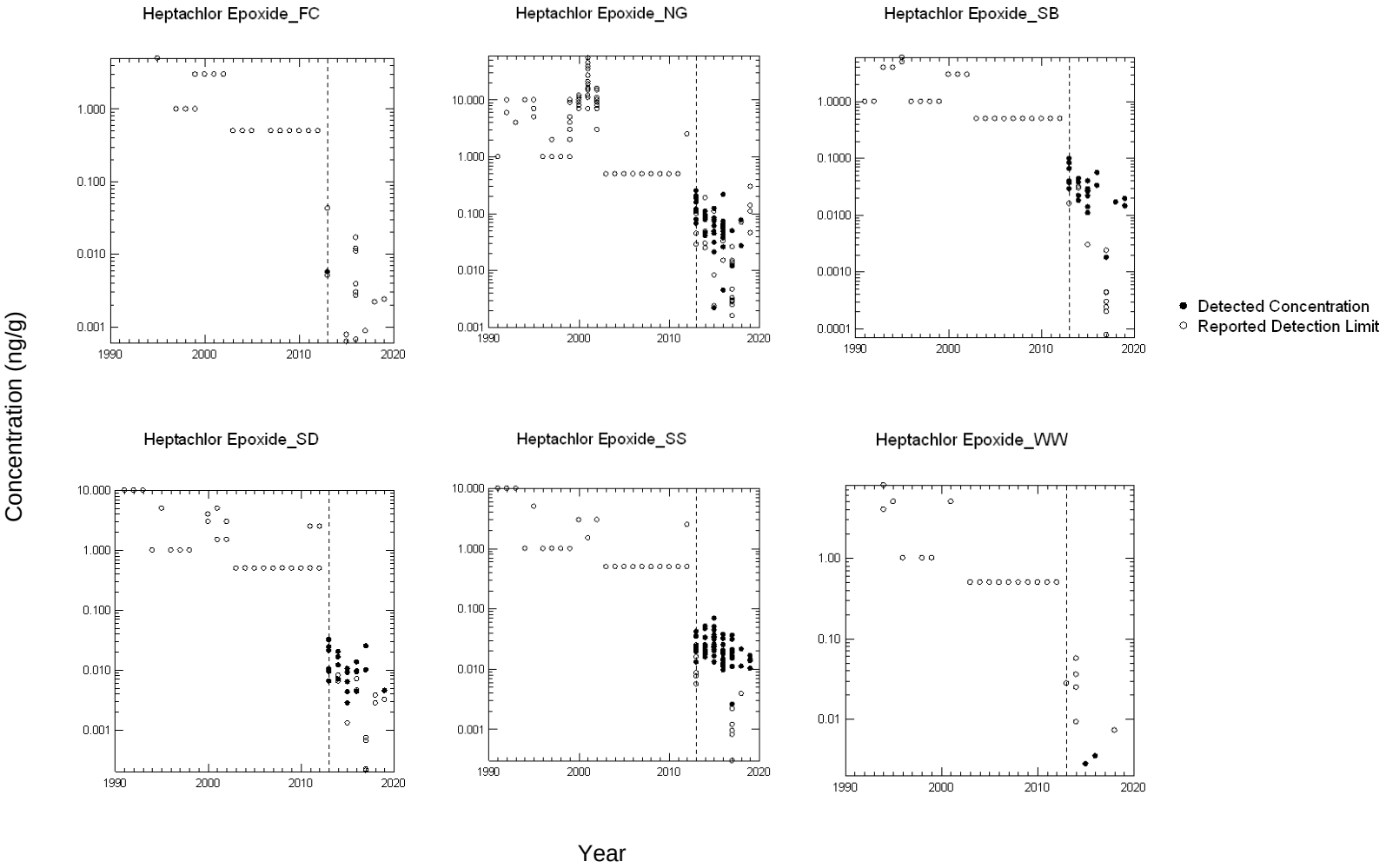
16. Endrin Aldehyde



17. Heptachlor



18. Heptachlor Epoxide



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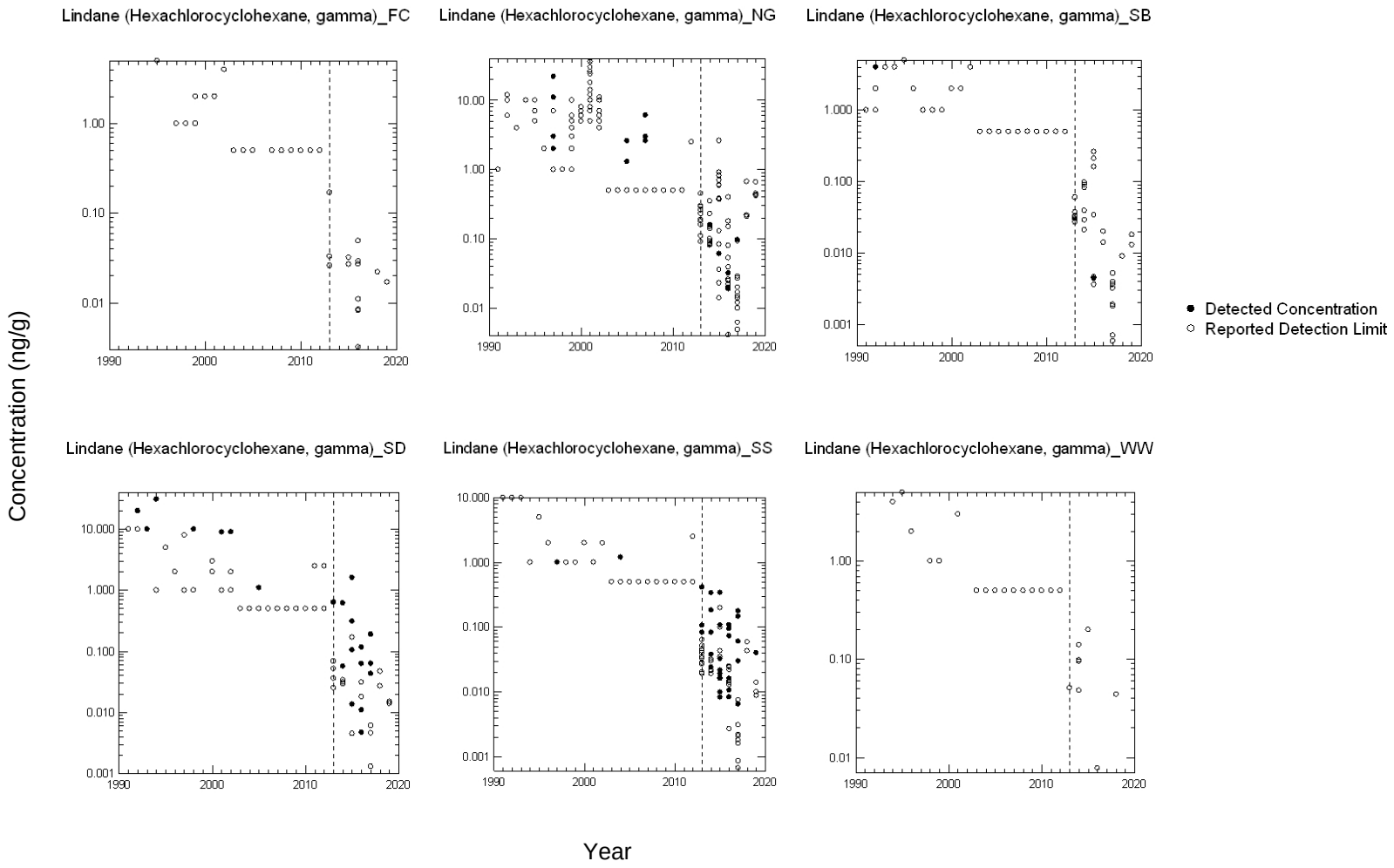
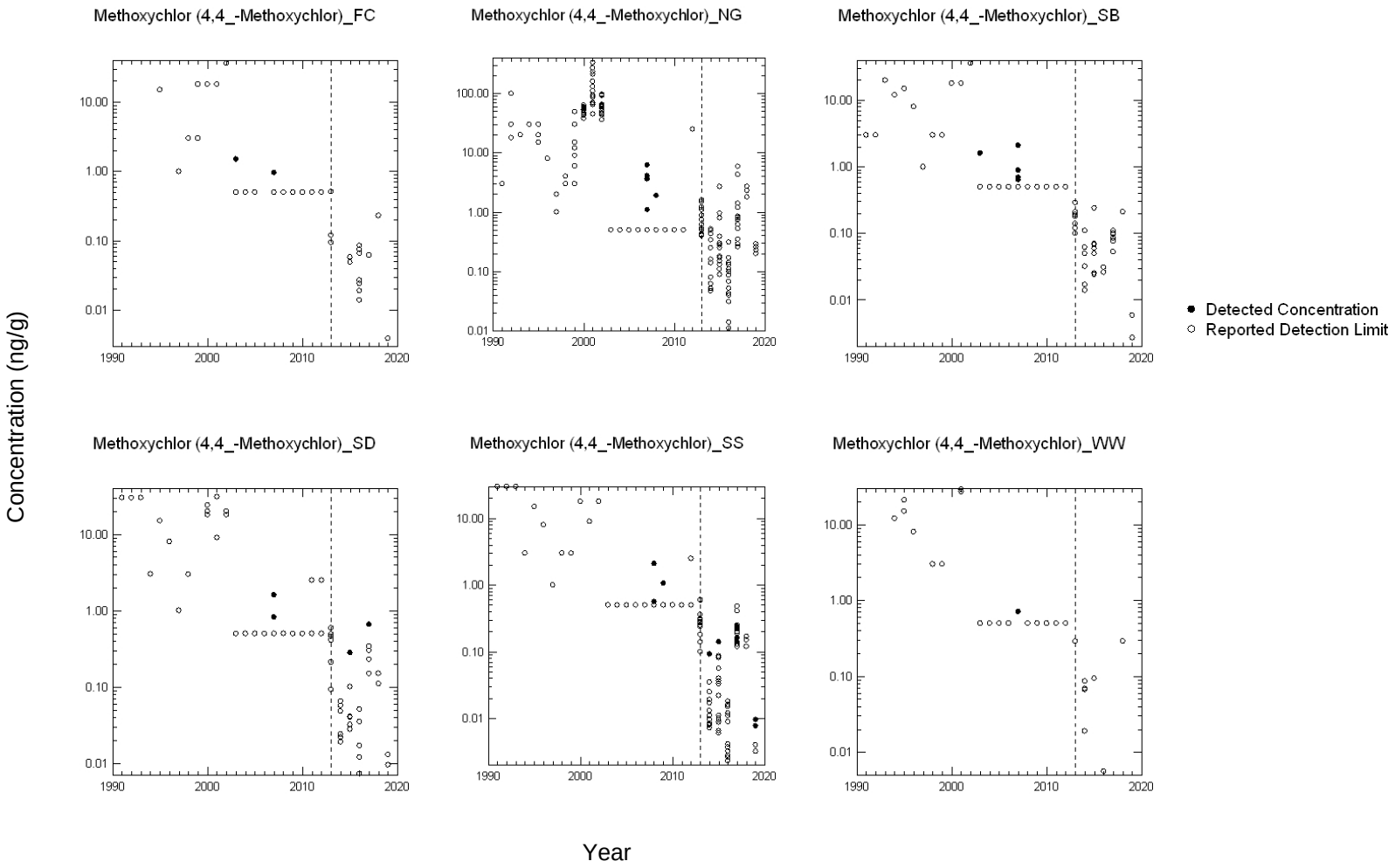
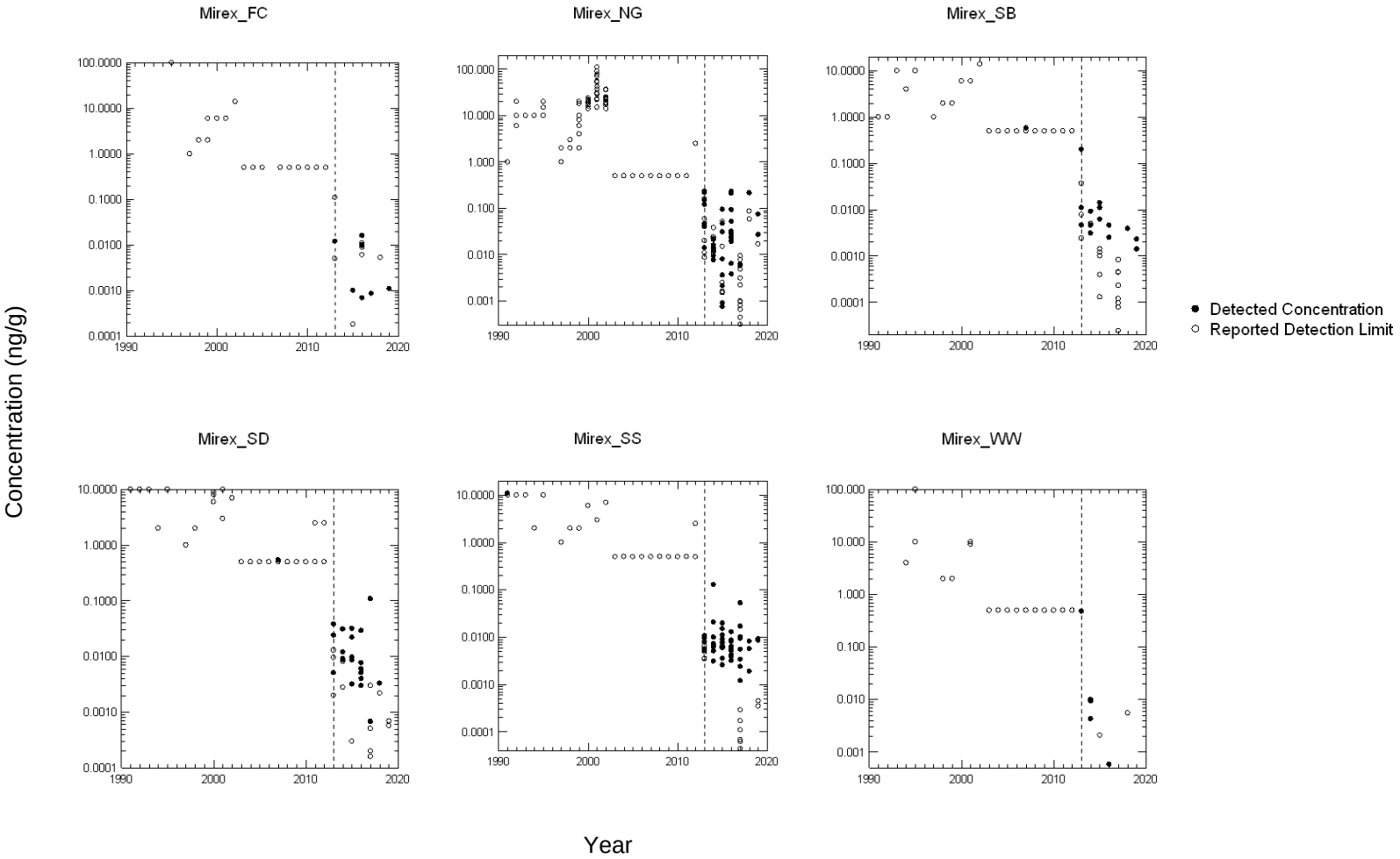
19. Lindane (Hexachlorocyclohexane, gamma)



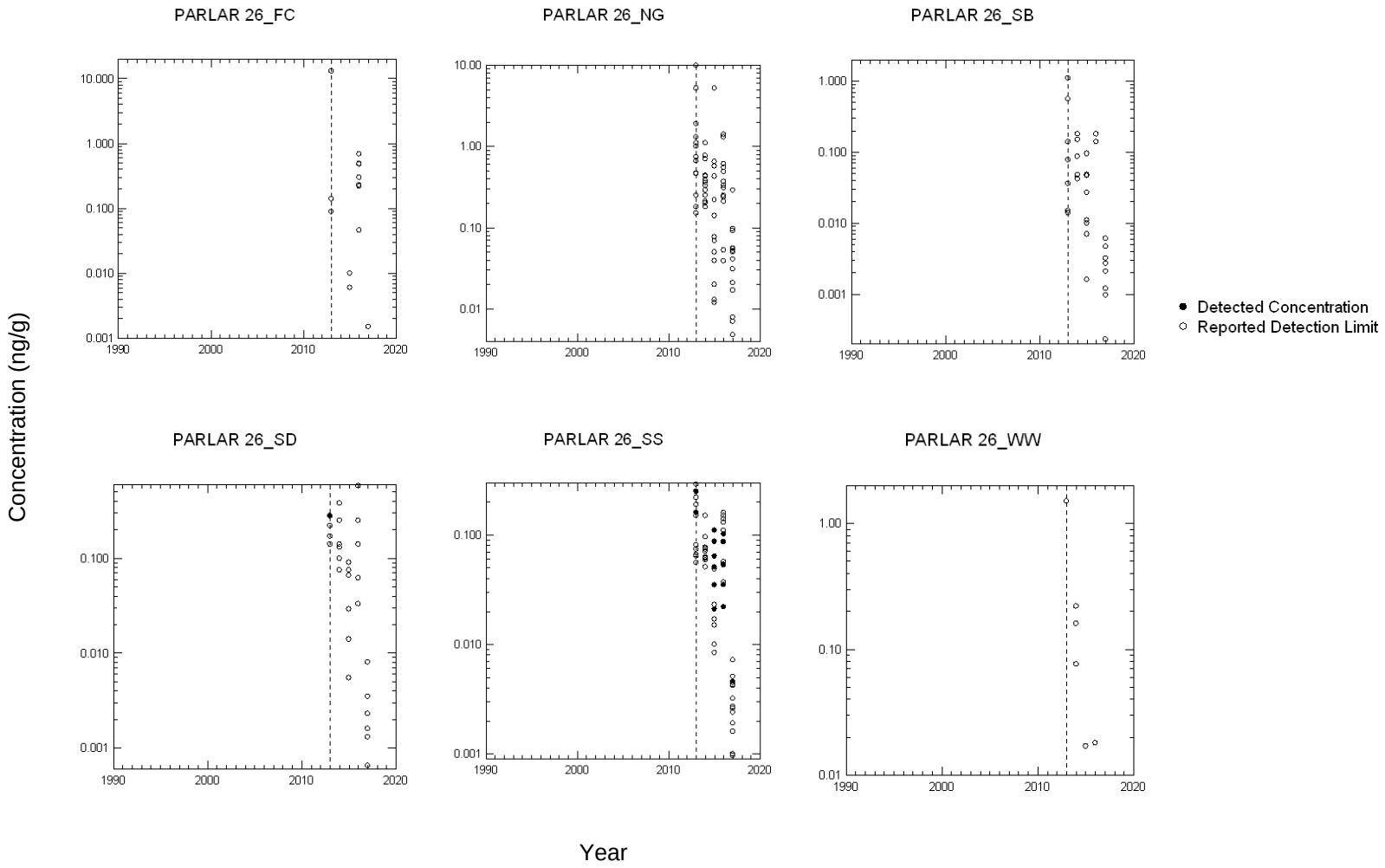
20. Methoxychlor (4,4'-Methoxychlor)



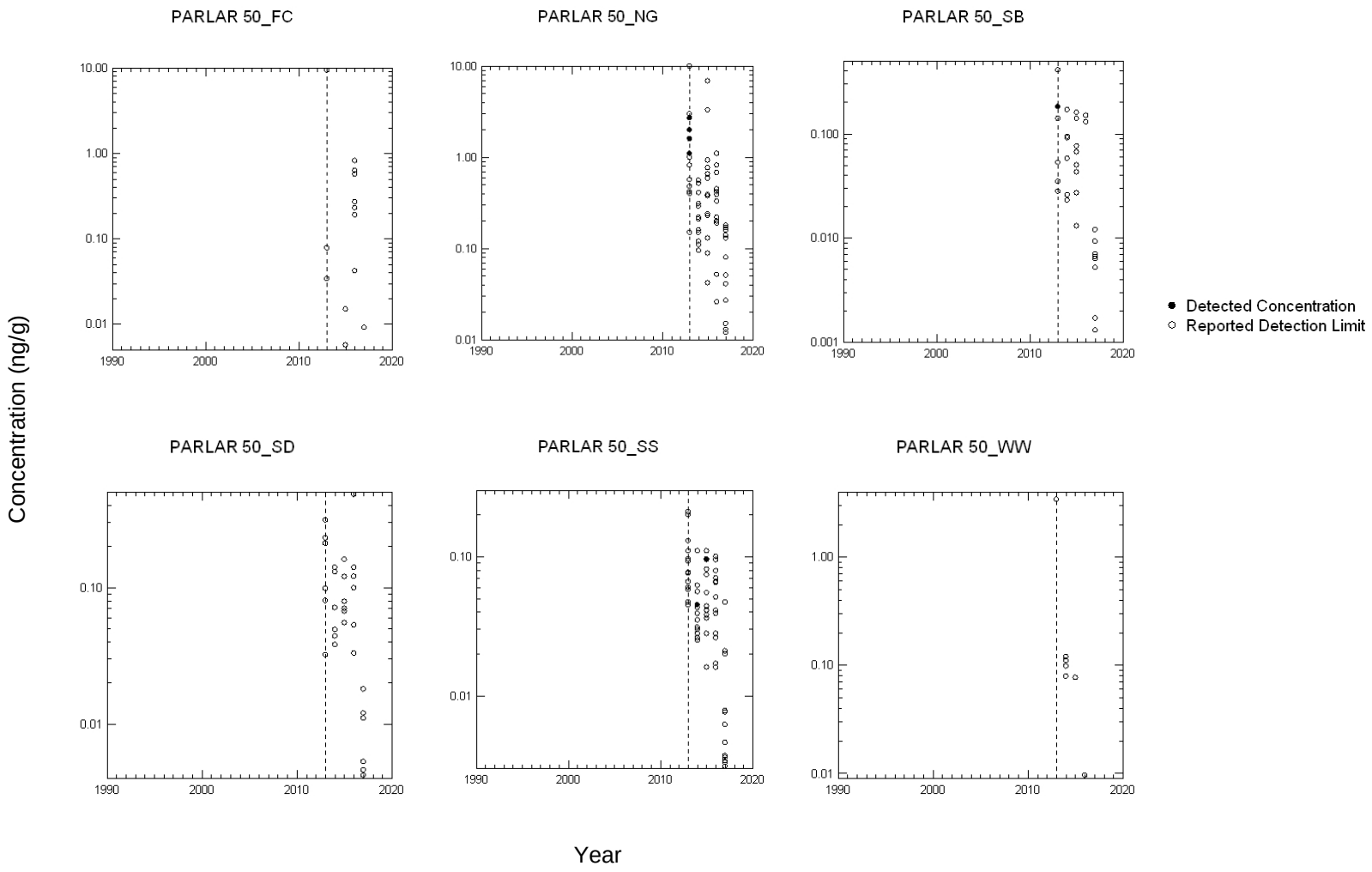
21. Mirex


Mirex_FC
Mirex_NG
Mirex_SB
Mirex_SD
Mirex_SS
Mirex_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

22. PARLAR 26


PARLAR 26_FC
PARLAR 26_NG
PARLAR 26_SB
PARLAR 26_SD
PARLAR 26_SS
PARLAR 26_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

23. PARLAR 50


PARLAR 50_FC
PARLAR 50_NG
PARLAR 50_SB
PARLAR 50_SD
PARLAR 50_SS
PARLAR 50_WW
Concentration (ng/g)
Year
Detected Concentration
Reported Detection Limit

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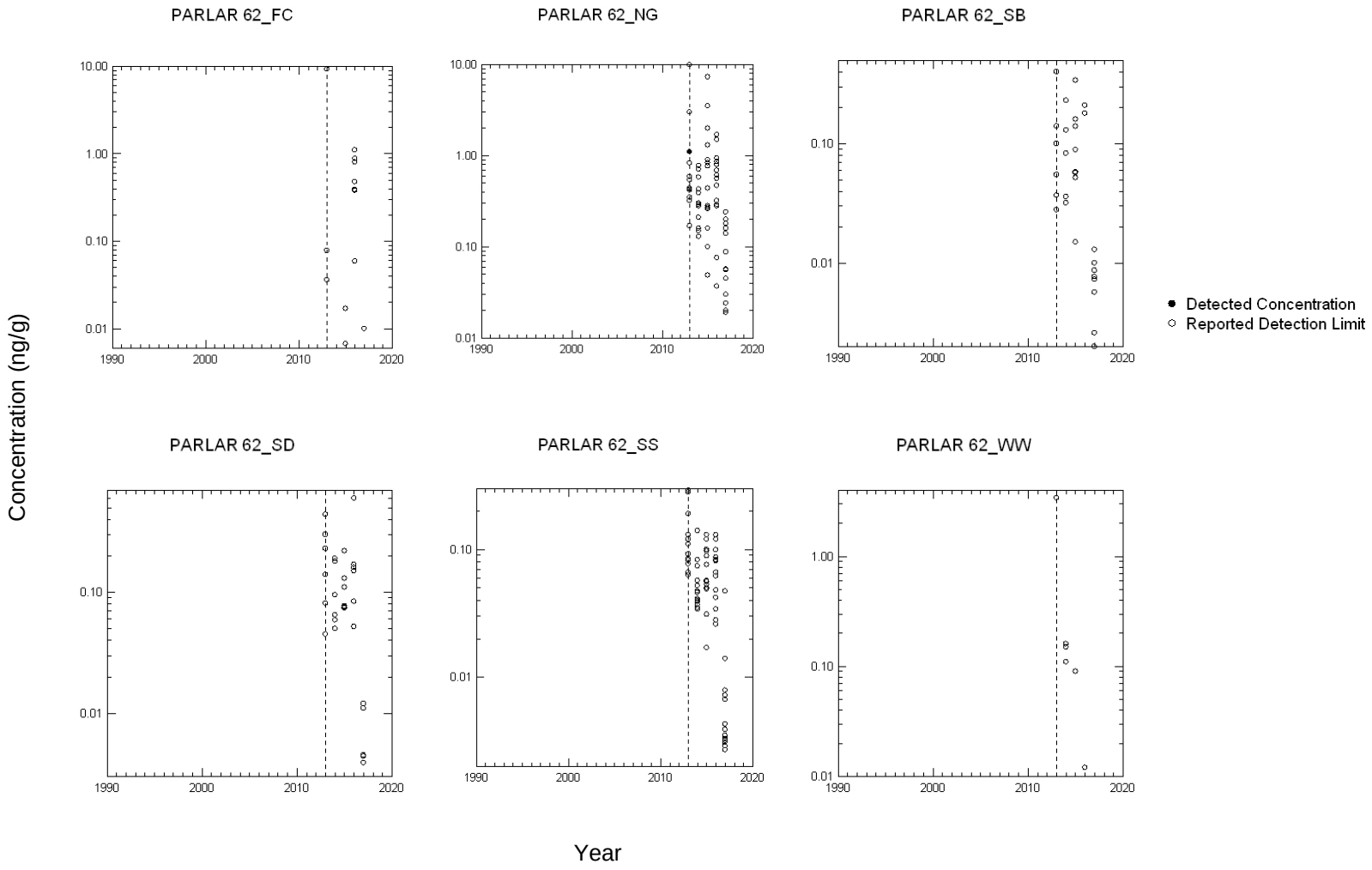
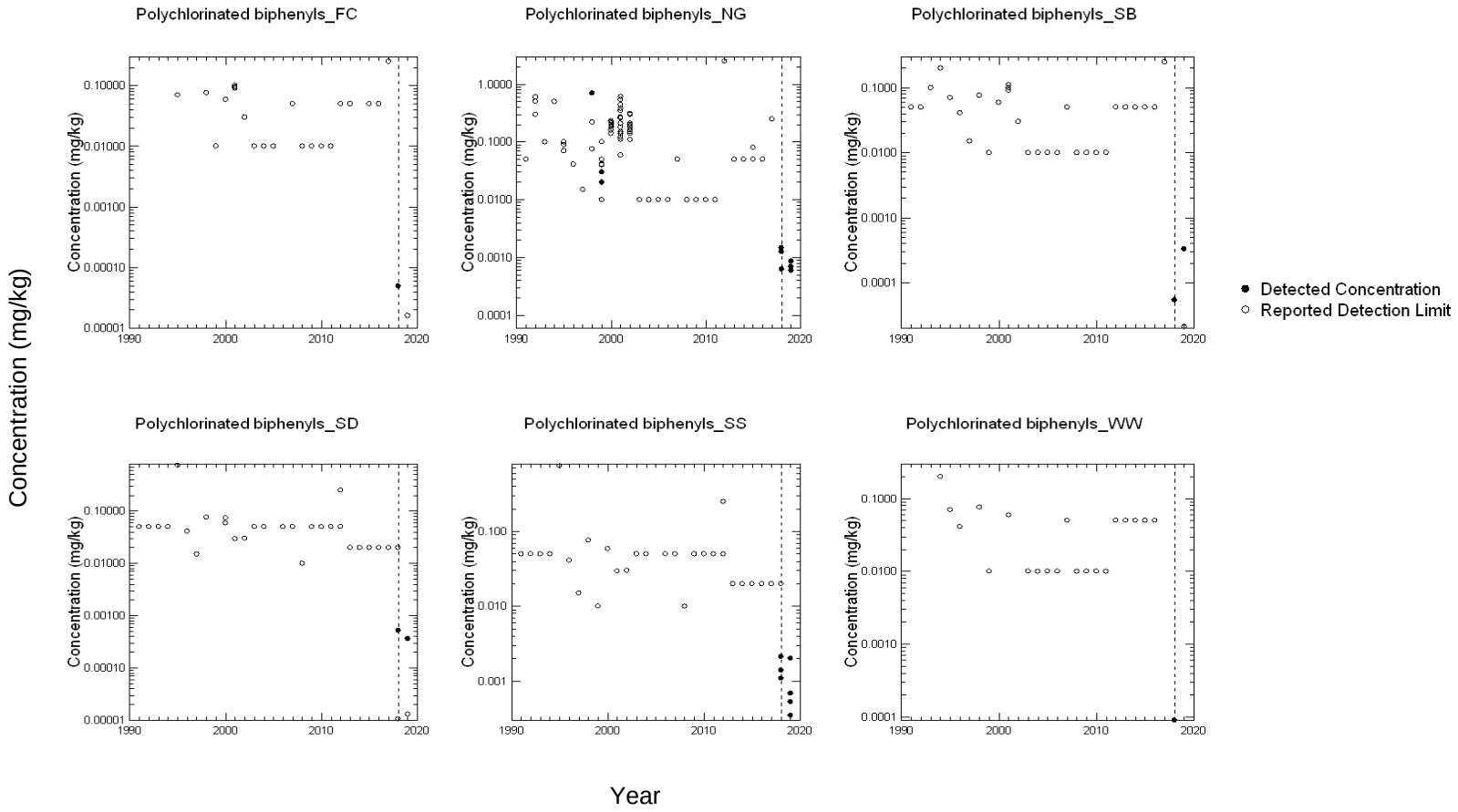
24. PARLAR 62



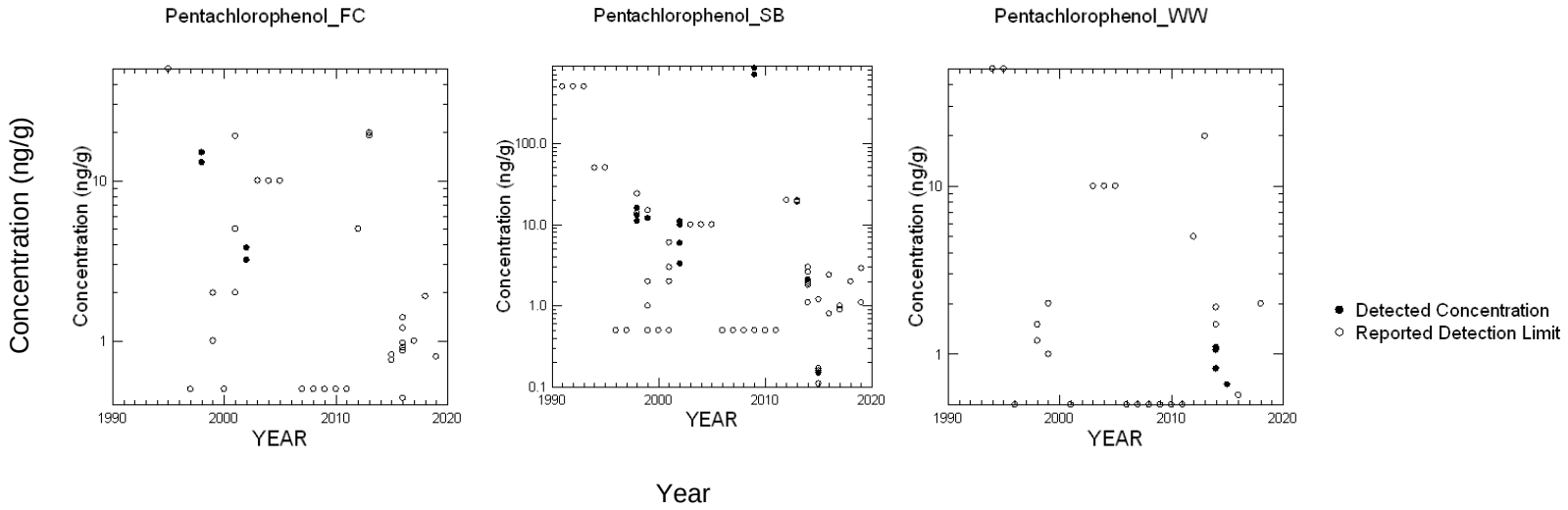
E.4.2 PCBs

1. Polychlorinated Biphenyls (PCBs)



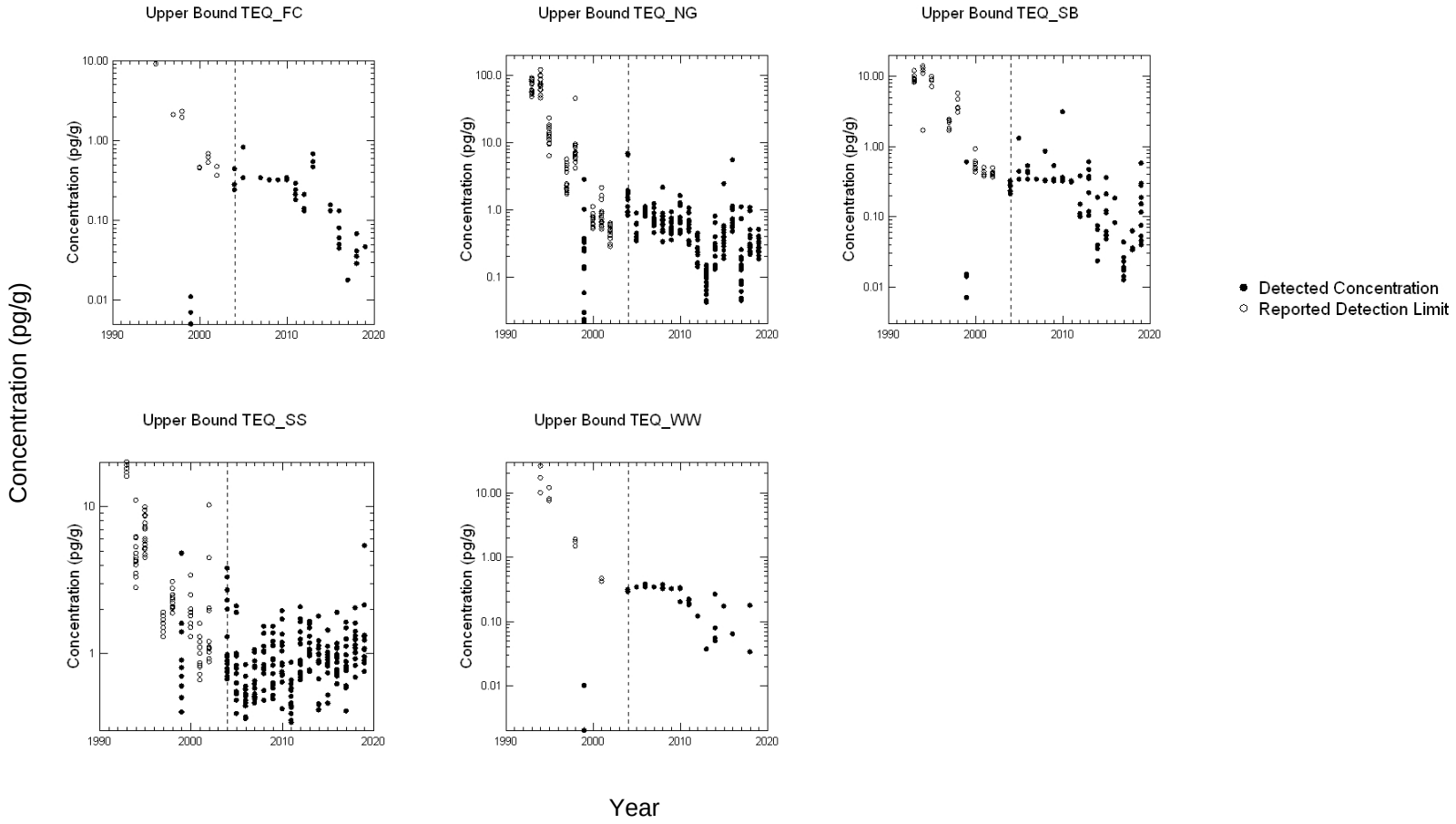
E.4.3 PCP

1. Pentachlorophenol



E.4.4 PCDD/DF

1. Upper Bound PCDD/F TEQ (WHO 2005)



E.5 FINAL RECOMMENDED START DATES FOR EACH ANALYTE-MATRIX PAIR (ORGANIC)

Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_OCPs	Aldrin	FC	2013
CH13_grp3_OCPs	Aldrin	NG	2013
CH13_grp3_OCPs	Aldrin	SB	2013
CH13_grp3_OCPs	Aldrin	SD	2013
CH13_grp3_OCPs	Aldrin	SS	2013
CH13_grp3_OCPs	Aldrin	SU	2013
CH13_grp3_OCPs	Aldrin	WW	2013
CH13_grp3_OCPs	BHC, alpha-	FC	2013
CH13_grp3_OCPs	BHC, alpha-	NG	2013
CH13_grp3_OCPs	BHC, alpha-	SB	2013
CH13_grp3_OCPs	BHC, alpha-	SD	2013
CH13_grp3_OCPs	BHC, alpha-	SS	2013
CH13_grp3_OCPs	BHC, alpha-	SU	2013
CH13_grp3_OCPs	BHC, alpha-	WW	2013
CH13_grp3_OCPs	BHC, beta-	FC	2013
CH13_grp3_OCPs	BHC, beta-	NG	2013
CH13_grp3_OCPs	BHC, beta-	SB	2013
CH13_grp3_OCPs	BHC, beta-	SD	2013
CH13_grp3_OCPs	BHC, beta-	SS	2013
CH13_grp3_OCPs	BHC, beta-	SU	2013
CH13_grp3_OCPs	BHC, beta-	WW	2013
CH13_grp3_OCPs	BHC, delta-	FC	2013
CH13_grp3_OCPs	BHC, delta-	NG	2013
CH13_grp3_OCPs	BHC, delta-	SB	2013
CH13_grp3_OCPs	BHC, delta-	SD	2013
CH13_grp3_OCPs	BHC, delta-	SS	2013
CH13_grp3_OCPs	BHC, delta-	SU	2013
CH13_grp3_OCPs	BHC, delta-	WW	2013
CH13_grp3_OCPs	Chlordane, alpha-	FC	2013
CH13_grp3_OCPs	Chlordane, alpha-	NG	2013
CH13_grp3_OCPs	Chlordane, alpha-	SB	2013

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Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_OCPs	Chlordane, alpha-	SD	2013
CH13_grp3_OCPs	Chlordane, alpha-	SS	2013
CH13_grp3_OCPs	Chlordane, alpha-	SU	2013
CH13_grp3_OCPs	Chlordane, alpha-	WW	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	FC	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	NG	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	SB	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	SD	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	SS	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	SU	2013
CH13_grp3_OCPs	Chlordane, trans- (gamma-chlordane)	WW	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	FC	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	NG	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	SB	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	SD	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	SS	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	SU	2013
CH13_grp3_OCPs	DDD (p,p'-DDD)	WW	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	FC	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	NG	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	SB	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	SD	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	SS	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	SU	2013
CH13_grp3_OCPs	DDE (p,p'-DDE)	WW	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	FC	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	NG	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	SB	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	SD	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	SS	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	SU	2013
CH13_grp3_OCPs	DDT (p,p'-DDT)	WW	2013
CH13_grp3_OCPs	Dieldrin	FC	2013
CH13_grp3_OCPs	Dieldrin	NG	2013

Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_OCPs	Dieldrin	SB	2013
CH13_grp3_OCPs	Dieldrin	SD	2013
CH13_grp3_OCPs	Dieldrin	SS	2013
CH13_grp3_OCPs	Dieldrin	SU	2013
CH13_grp3_OCPs	Dieldrin	WW	2013
CH13_grp3_OCPs	Endosulfan i	FC	2013
CH13_grp3_OCPs	Endosulfan i	NG	2013
CH13_grp3_OCPs	Endosulfan i	SB	2013
CH13_grp3_OCPs	Endosulfan i	SD	2013
CH13_grp3_OCPs	Endosulfan i	SS	2013
CH13_grp3_OCPs	Endosulfan i	SU	2013
CH13_grp3_OCPs	Endosulfan i	WW	2013
CH13_grp3_OCPs	Endosulfan ii	FC	2013
CH13_grp3_OCPs	Endosulfan ii	NG	2013
CH13_grp3_OCPs	Endosulfan ii	SB	2013
CH13_grp3_OCPs	Endosulfan ii	SD	2013
CH13_grp3_OCPs	Endosulfan ii	SS	2013
CH13_grp3_OCPs	Endosulfan ii	SU	2013
CH13_grp3_OCPs	Endosulfan ii	WW	2013
CH13_grp3_OCPs	Endosulfan sulfate	FC	2013
CH13_grp3_OCPs	Endosulfan sulfate	NG	2013
CH13_grp3_OCPs	Endosulfan sulfate	SB	2013
CH13_grp3_OCPs	Endosulfan sulfate	SD	2013
CH13_grp3_OCPs	Endosulfan sulfate	SS	2013
CH13_grp3_OCPs	Endosulfan sulfate	SU	2013
CH13_grp3_OCPs	Endosulfan sulfate	WW	2013
CH13_grp3_OCPs	Endrin aldehyde	FC	2013
CH13_grp3_OCPs	Endrin aldehyde	NG	2013
CH13_grp3_OCPs	Endrin aldehyde	SB	2013
CH13_grp3_OCPs	Endrin aldehyde	SD	2013
CH13_grp3_OCPs	Endrin aldehyde	SS	2013
CH13_grp3_OCPs	Endrin aldehyde	SU	2013
CH13_grp3_OCPs	Endrin aldehyde	WW	2013
CH13_grp3_OCPs	Endrin	FC	2013

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Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_OCPs	Endrin	NG	2013
CH13_grp3_OCPs	Endrin	SB	2013
CH13_grp3_OCPs	Endrin	SD	2013
CH13_grp3_OCPs	Endrin	SS	2013
CH13_grp3_OCPs	Endrin	SU	2013
CH13_grp3_OCPs	Endrin	WW	2013
CH13_grp3_OCPs	Heptachlor epoxide	FC	2013
CH13_grp3_OCPs	Heptachlor epoxide	NG	2013
CH13_grp3_OCPs	Heptachlor epoxide	SB	2013
CH13_grp3_OCPs	Heptachlor epoxide	SD	2013
CH13_grp3_OCPs	Heptachlor epoxide	SS	2013
CH13_grp3_OCPs	Heptachlor epoxide	SU	2013
CH13_grp3_OCPs	Heptachlor epoxide	WW	2013
CH13_grp3_OCPs	Heptachlor	FC	2013
CH13_grp3_OCPs	Heptachlor	NG	2013
CH13_grp3_OCPs	Heptachlor	SB	2013
CH13_grp3_OCPs	Heptachlor	SD	2013
CH13_grp3_OCPs	Heptachlor	SS	2013
CH13_grp3_OCPs	Heptachlor	SU	2013
CH13_grp3_OCPs	Heptachlor	WW	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	FC	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	NG	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	SB	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	SD	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	SS	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	SU	2013
CH13_grp3_OCPs	Lindane (hexachlorocyclohexane, gamma)	WW	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	FC	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	NG	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	SB	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	SD	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	SS	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	SU	2013
CH13_grp3_OCPs	Methoxychlor (4,4'-methoxychlor)	WW	2013

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Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_OCPs	Mirex	FC	2013
CH13_grp3_OCPs	Mirex	NG	2013
CH13_grp3_OCPs	Mirex	SB	2013
CH13_grp3_OCPs	Mirex	SD	2013
CH13_grp3_OCPs	Mirex	SS	2013
CH13_grp3_OCPs	Mirex	SU	2013
CH13_grp3_OCPs	Mirex	WW	2013
CH13_grp3_OCPs	Parlar 26	FC	2013
CH13_grp3_OCPs	Parlar 26	NG	2013
CH13_grp3_OCPs	Parlar 26	SB	2013
CH13_grp3_OCPs	Parlar 26	SD	2013
CH13_grp3_OCPs	Parlar 26	SS	2013
CH13_grp3_OCPs	Parlar 26	SU	2013
CH13_grp3_OCPs	Parlar 26	WW	2013
CH13_grp3_OCPs	Parlar 50	FC	2013
CH13_grp3_OCPs	Parlar 50	NG	2013
CH13_grp3_OCPs	Parlar 50	SB	2013
CH13_grp3_OCPs	Parlar 50	SD	2013
CH13_grp3_OCPs	Parlar 50	SS	2013
CH13_grp3_OCPs	Parlar 50	SU	2013
CH13_grp3_OCPs	Parlar 50	WW	2013
CH13_grp3_OCPs	Parlar 62	FC	2013
CH13_grp3_OCPs	Parlar 62	NG	2013
CH13_grp3_OCPs	Parlar 62	SB	2013
CH13_grp3_OCPs	Parlar 62	SD	2013
CH13_grp3_OCPs	Parlar 62	SS	2013
CH13_grp3_OCPs	Parlar 62	SU	2013
CH13_grp3_OCPs	Parlar 62	WW	2013
CH13_grp3_PCPs	Pentachlorophenol	FC	NA
CH13_grp3_PCPs	Pentachlorophenol	NG	NA
CH13_grp3_PCPs	Pentachlorophenol	SB	NA
CH13_grp3_PCPs	Pentachlorophenol	SD	NA
CH13_grp3_PCPs	Pentachlorophenol	SS	NA
CH13_grp3_PCPs	Pentachlorophenol	WW	NA

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Analyte Group	Analyte	Matrix	Recommended Statistical Start Date
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	FC	2018
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	NG	2018
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	SB	2018
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	SD	2018
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	SS	2018
CH13_grp3_PCBs	Polychlorinated Biphenyls (PCBs)	WW	2018
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	FC	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	NG	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	SB	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	SD	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	SS	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	SU	2004
CH13_grp3_DIOXIN-FURAN	Upper Bound PCDD/F TEQ (WHO 2005)	WW	2004

Note(s):

NA: Not Available.

PCP has only been detected in 24 samples since 1991, with the most recent detection occurring in 2015. As such, trend analysis was not conducted for PCPs due to the low number of concentrations above the reporting detection limit and start date was not determined.

APPENDIX F UPPER LIMITS

Appendix F Upper Limits
March 2, 2022

F.1 UL21 VALUES

Table F-1
Updated Site-Wide Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date
Aluminum	NG	SiteWide	mg/kg	317	15.4	2002

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Aluminum	NG	W4	mg/kg	568	27.7	2002
Aluminum	NG	N4	mg/kg	313	15.2	2002
Aluminum	NG	S3	mg/kg	112	5.44	2002
Aluminum	NG	N2	mg/kg	273	13.3	2002
Aluminum	NG	S2	mg/kg	504	24.5	2002
Aluminum	NG	E2	mg/kg	208	10.1	2002
Aluminum	NG	E6	mg/kg	323	15.7	2002
Aluminum	NG	S4	mg/kg	212	10.3	2002
Aluminum	NG	W2	mg/kg	443	21.6	2002
Aluminum	NG	S1	mg/kg	536	26.1	2002
Aluminum	NG	E5	mg/kg	321	15.6	2002
Aluminum	NG	S5	mg/kg	461	22.4	2002
Aluminum	NG	N5	mg/kg	416	20.3	2002
Aluminum	NG	E1	mg/kg	190	9.24	2002
Aluminum	SD	N5	mg/kg	35300	11900	1991
Aluminum	SD	E2	mg/kg	25600	8630	1991
Aluminum	SD	S3	mg/kg	24700	8310	1991
Aluminum	SD	S4	mg/kg	33400	11300	1991
Aluminum	SD	N2	mg/kg	29500	9940	1991
Aluminum	SD	S1	mg/kg	26500	8930	1991
Aluminum	SS	S2	mg/kg	30400	10700	1991
Aluminum	SS	W2	mg/kg	21800	7670	1991
Aluminum	SS	S1	mg/kg	29000	10200	1991
Aluminum	SS	N4	mg/kg	26100	9190	1991
Aluminum	SS	W4	mg/kg	34000	12000	1991
Aluminum	SS	N5	mg/kg	22800	8020	1991
Aluminum	SS	E5	mg/kg	23400	8220	1991
Aluminum	SS	E6	mg/kg	21600	7620	1991
Aluminum	SS	E2	mg/kg	19500	6870	1991
Aluminum	SS	E1	mg/kg	20100	7080	1991
Aluminum	SS	E3	mg/kg	25800	9080	1991
Aluminum	SS	S5	mg/kg	28800	10100	1991
Aluminum	SS	N2	mg/kg	35600	12500	1991
Aluminum	SS	S4	mg/kg	37500	13200	1991
Aluminum	SS	S3	mg/kg	22600	7960	1991
Aluminum	SS	N1	mg/kg	19500	6870	1991
Arsenic	NG	N5	mg/kg	0.988	0.057	2003
Arsenic	NG	E6	mg/kg	1.01	0.0583	2003
Arsenic	NG	W4	mg/kg	0.704	0.0406	2003
Arsenic	SD	S1	mg/kg	6.49	3	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Arsenic	SD	N2	mg/kg	7.14	3.3	1991
Arsenic	SD	S3	mg/kg	11.8	5.46	1991
Arsenic	SD	E2	mg/kg	7.09	3.28	1991
Arsenic	SD	S4	mg/kg	6.95	3.21	1991
Arsenic	SD	N5	mg/kg	8.97	4.14	1991
Arsenic	SS	S1	mg/kg	9.48	3.97	1991
Arsenic	SS	S2	mg/kg	8.86	3.71	1991
Arsenic	SS	W2	mg/kg	8.41	3.52	1991
Arsenic	SS	E1	mg/kg	5.92	2.48	1991
Arsenic	SS	E2	mg/kg	6.62	2.77	1991
Arsenic	SS	S5	mg/kg	8.48	3.55	1991
Arsenic	SS	E5	mg/kg	7.33	3.07	1991
Arsenic	SS	N4	mg/kg	7.69	3.22	1991
Arsenic	SS	E6	mg/kg	7.71	3.23	1991
Arsenic	SS	W4	mg/kg	7.41	3.1	1991
Arsenic	SS	N5	mg/kg	8.56	3.58	1991
Arsenic	SS	E3	mg/kg	6.89	2.89	1991
Arsenic	SS	N1	mg/kg	7.06	2.95	1991
Arsenic	SS	S4	mg/kg	7.38	3.09	1991
Arsenic	SS	N2	mg/kg	6.54	2.74	1991
Arsenic	SS	S3	mg/kg	7.95	3.33	1991
Barium	NG	W4	mg/kg	30.5	4.58	1991
Barium	NG	S3	mg/kg	38.1	5.71	1991
Barium	NG	N4	mg/kg	22.9	3.44	1991
Barium	NG	N2	mg/kg	30.6	4.59	1991
Barium	NG	S2	mg/kg	68.2	10.2	1991
Barium	NG	W2	mg/kg	18.7	2.81	1991
Barium	NG	S4	mg/kg	33.7	5.05	1991
Barium	NG	E2	mg/kg	40.3	6.04	1991
Barium	NG	E1	mg/kg	42	6.3	1991
Barium	NG	S5	mg/kg	28.2	4.23	1991
Barium	NG	E3	mg/kg	60.9	9.14	1991
Barium	NG	N5	mg/kg	31.6	4.74	1991
Barium	NG	S1	mg/kg	34.1	5.11	1991
Barium	NG	E5	mg/kg	41.9	6.29	1991
Barium	NG	N1	mg/kg	35.4	5.32	1991
Barium	NG	N3	mg/kg	58.4	8.76	1991
Barium	NG	E6	mg/kg	21.6	3.25	1991
Barium	SD	S1	mg/kg	129	54.4	1991
Barium	SD	S3	mg/kg	151	63.7	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Barium	SD	E2	mg/kg	119	50.2	1991
Barium	SD	S4	mg/kg	158	66.6	1991
Barium	SD	N2	mg/kg	133	56	1991
Barium	SD	N5	mg/kg	173	73.1	1991
Barium	SS	W2	mg/kg	93.9	42.5	1991
Barium	SS	S1	mg/kg	144	65.3	1991
Barium	SS	S2	mg/kg	140	63.2	1991
Barium	SS	N5	mg/kg	102	46.3	1991
Barium	SS	E1	mg/kg	94.7	42.9	1991
Barium	SS	N4	mg/kg	115	52.1	1991
Barium	SS	E5	mg/kg	104	47	1991
Barium	SS	E3	mg/kg	121	54.8	1991
Barium	SS	S5	mg/kg	145	65.5	1991
Barium	SS	E6	mg/kg	98.6	44.6	1991
Barium	SS	E2	mg/kg	97.6	44.2	1991
Barium	SS	W4	mg/kg	145	65.7	1991
Barium	SS	N2	mg/kg	156	70.7	1991
Barium	SS	S4	mg/kg	158	71.6	1991
Barium	SS	S3	mg/kg	100	45.3	1991
Barium	SS	N1	mg/kg	95.8	43.3	1991
Barium	SB	S2	mg/kg	2.94	0.195	1991
Barium	SB	E5	mg/kg	2.81	0.187	1991
Barium	SB	W4	mg/kg	3.54	0.235	1991
Barium	SB	N4	mg/kg	3.2	0.213	1991
Barium	SB	S5	mg/kg	3.09	0.205	1991
Barium	SB	S4	mg/kg	3.4	0.226	1991
Barium	SB	N2	mg/kg	3.35	0.222	1991
Barium	SB	S1	mg/kg	2.39	0.159	1991
Barium	SB	E1	mg/kg	2.49	0.165	1991
Barium	SB	W2	mg/kg	2.44	0.162	1991
Barium	SB	E2	mg/kg	4.59	0.304	1991
Barium	WW	N2	mg/kg	11.6	1.35	1991
Barium	WW	W2	mg/kg	11	1.29	1991
Barium	WW	S4	mg/kg	6.96	0.811	1991
Beryllium	SD	N5	mg/kg	1.58	0.49	1991
Beryllium	SD	E2	mg/kg	1.15	0.357	1991
Beryllium	SD	N2	mg/kg	1.36	0.422	1991
Beryllium	SD	S1	mg/kg	1.32	0.409	1991
Beryllium	SD	S3	mg/kg	1.52	0.472	1991
Beryllium	SD	S4	mg/kg	1.53	0.475	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Beryllium	SS	S2	mg/kg	1.34	0.517	1991
Beryllium	SS	W2	mg/kg	0.97	0.374	1991
Beryllium	SS	S1	mg/kg	1.37	0.528	1991
Beryllium	SS	S5	mg/kg	1.3	0.501	1991
Beryllium	SS	E2	mg/kg	0.813	0.313	1991
Beryllium	SS	E5	mg/kg	1.02	0.394	1991
Beryllium	SS	E1	mg/kg	0.947	0.365	1991
Beryllium	SS	W4	mg/kg	1.6	0.616	1991
Beryllium	SS	E3	mg/kg	1.15	0.445	1991
Beryllium	SS	N5	mg/kg	1.01	0.391	1991
Beryllium	SS	N4	mg/kg	1.21	0.465	1991
Beryllium	SS	E6	mg/kg	0.967	0.373	1991
Beryllium	SS	S4	mg/kg	1.52	0.587	1991
Beryllium	SS	N2	mg/kg	1.66	0.639	1991
Beryllium	SS	S3	mg/kg	1.06	0.408	1991
Beryllium	SS	N1	mg/kg	0.875	0.337	1991
Boron	NG	N2	mg/kg	54.1	1.29	1999
Boron	NG	E1	mg/kg	48.2	1.15	1999
Boron	NG	W2	mg/kg	68.9	1.65	1999
Boron	NG	S3	mg/kg	289	6.9	1999
Boron	NG	N5	mg/kg	70.3	1.68	1999
Boron	NG	S4	mg/kg	56.1	1.34	1999
Boron	NG	E2	mg/kg	41.7	0.996	1999
Boron	NG	S1	mg/kg	59.7	1.43	1999
Boron	NG	S5	mg/kg	82.3	1.97	1999
Boron	NG	S2	mg/kg	51.6	1.23	1999
Boron	NG	E5	mg/kg	51.1	1.22	1999
Boron	NG	N4	mg/kg	57.7	1.38	1999
Boron	NG	W4	mg/kg	39	0.932	1999
Boron	NG	E6	mg/kg	77.2	1.85	1999
Boron	SD	N5	mg/kg	43.6	6.65	1995
Boron	SD	S3	mg/kg	53.1	8.09	1995
Boron	SD	S4	mg/kg	44	6.7	1995
Boron	SD	E2	mg/kg	40.8	6.22	1995
Boron	SD	N2	mg/kg	38.6	5.89	1995
Boron	SD	S1	mg/kg	44	6.71	1995
Boron	SS	S1	mg/kg	30.1	4.6	1998
Boron	SS	S2	mg/kg	28	4.28	1998
Boron	SS	W2	mg/kg	16.4	2.52	1998
Boron	SS	N5	mg/kg	32.9	5.04	1998

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Boron	SS	E1	mg/kg	21	3.22	1998
Boron	SS	S5	mg/kg	23.8	3.64	1998
Boron	SS	N4	mg/kg	25.6	3.91	1998
Boron	SS	E6	mg/kg	26.2	4	1998
Boron	SS	W4	mg/kg	33.5	5.12	1998
Boron	SS	E5	mg/kg	20.1	3.08	1998
Boron	SS	E2	mg/kg	22.8	3.49	1998
Boron	SS	S4	mg/kg	32.5	4.98	1998
Boron	SS	N2	mg/kg	34.8	5.33	1998
Boron	SS	S3	mg/kg	56.1	8.59	1998
Boron	SB	S4	mg/kg	39.1	17.4	1991
Boron	SB	E5	mg/kg	39	17.4	1991
Boron	SB	N2	mg/kg	39.5	17.6	1991
Boron	SB	S5	mg/kg	40.8	18.2	1991
Boron	SB	S2	mg/kg	39.1	17.4	1991
Boron	SB	W4	mg/kg	41.1	18.3	1991
Boron	SB	S1	mg/kg	43.2	19.2	1991
Boron	SB	W2	mg/kg	41.2	18.4	1991
Boron	SB	E1	mg/kg	42.2	18.8	1991
Boron	SB	N4	mg/kg	30.3	13.5	1991
Boron	SB	E2	mg/kg	38.5	17.2	1991
Cadmium	NG	N4	mg/kg	0.225	0.019	2001
Cadmium	NG	W4	mg/kg	0.666	0.0563	2001
Cadmium	NG	S4	mg/kg	0.259	0.0219	2001
Cadmium	NG	N2	mg/kg	0.252	0.0213	2001
Cadmium	NG	S1	mg/kg	0.369	0.0312	2001
Cadmium	NG	E2	mg/kg	0.207	0.0175	2001
Cadmium	NG	E5	mg/kg	0.407	0.0344	2001
Cadmium	NG	W2	mg/kg	0.247	0.0209	2001
Cadmium	NG	E1	mg/kg	0.236	0.02	2001
Cadmium	NG	N5	mg/kg	0.452	0.0382	2001
Cadmium	NG	S2	mg/kg	0.385	0.0326	2001
Cadmium	NG	E6	mg/kg	0.764	0.0646	2001
Cadmium	SD	N5	mg/kg	2.01	0.329	1991
Cadmium	SD	E2	mg/kg	0.686	0.112	1991
Cadmium	SD	S3	mg/kg	2.26	0.369	1991
Cadmium	SD	S4	mg/kg	0.756	0.124	1991
Cadmium	SD	N2	mg/kg	1.05	0.172	1991
Cadmium	SD	S1	mg/kg	1.3	0.213	1991
Cadmium	SS	S1	mg/kg	0.985	0.247	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Cadmium	SS	S2	mg/kg	0.841	0.211	1991
Cadmium	SS	W2	mg/kg	0.95	0.238	1991
Cadmium	SS	N5	mg/kg	1.32	0.33	1991
Cadmium	SS	E1	mg/kg	0.77	0.193	1991
Cadmium	SS	E2	mg/kg	0.702	0.176	1991
Cadmium	SS	N2	mg/kg	0.973	0.244	1991
Cadmium	SS	E5	mg/kg	0.74	0.185	1991
Cadmium	SS	N4	mg/kg	0.76	0.19	1991
Cadmium	SS	E3	mg/kg	1	0.251	1991
Cadmium	SS	S5	mg/kg	0.683	0.171	1991
Cadmium	SS	E6	mg/kg	1.13	0.283	1991
Cadmium	SS	W4	mg/kg	0.987	0.247	1991
Cadmium	SS	S4	mg/kg	0.558	0.14	1991
Cadmium	SS	S3	mg/kg	0.95	0.238	1991
Cadmium	SS	N1	mg/kg	0.905	0.227	1991
Cadmium	SB	W4	mg/kg	0.22	0.0609	2005
Calcium	FC	E1	mg/kg	141	21.3	1991
Calcium	FC	E2	mg/kg	117	17.6	1991
Calcium	FC	E5	mg/kg	142	21.4	1991
Calcium	FC	S5	mg/kg	150	22.6	1991
Calcium	FC	W4	mg/kg	137	20.6	1991
Calcium	FC	N2	mg/kg	110	16.6	1991
Calcium	FC	N4	mg/kg	106	16	1991
Calcium	NG	E1	mg/kg	15000	2380	1991
Calcium	NG	W4	mg/kg	16000	2530	1991
Calcium	NG	N2	mg/kg	17700	2810	1991
Calcium	NG	E2	mg/kg	15300	2430	1991
Calcium	NG	S5	mg/kg	20400	3240	1991
Calcium	NG	W2	mg/kg	22100	3510	1991
Calcium	NG	S3	mg/kg	15600	2480	1991
Calcium	NG	E6	mg/kg	16100	2560	1991
Calcium	NG	S2	mg/kg	16500	2630	1991
Calcium	NG	S4	mg/kg	19100	3030	1991
Calcium	NG	S1	mg/kg	16400	2600	1991
Calcium	NG	E3	mg/kg	12600	2000	1991
Calcium	NG	E5	mg/kg	19400	3080	1991
Calcium	NG	N4	mg/kg	18800	2990	1991
Calcium	NG	N5	mg/kg	18100	2860	1991
Calcium	NG	N1	mg/kg	14300	2270	1991
Calcium	NG	N3	mg/kg	13100	2070	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Calcium	SD	N5	mg/kg	103000	23100	1991
Calcium	SD	N2	mg/kg	128000	28700	1991
Calcium	SD	E2	mg/kg	167000	37500	1991
Calcium	SD	S4	mg/kg	116000	26000	1991
Calcium	SD	S1	mg/kg	78600	17700	1991
Calcium	SD	S3	mg/kg	126000	28300	1991
Calcium	SS	S1	mg/kg	15500	7340	1991
Calcium	SS	S2	mg/kg	8920	4220	1991
Calcium	SS	W2	mg/kg	6790	3210	1991
Calcium	SS	E6	mg/kg	29100	13800	1991
Calcium	SS	E1	mg/kg	6210	2940	1991
Calcium	SS	N5	mg/kg	47100	22300	1991
Calcium	SS	E3	mg/kg	13600	6440	1991
Calcium	SS	E5	mg/kg	9270	4380	1991
Calcium	SS	S5	mg/kg	12600	5940	1991
Calcium	SS	N4	mg/kg	15500	7340	1991
Calcium	SS	E2	mg/kg	9940	4700	1991
Calcium	SS	N2	mg/kg	8360	3950	1991
Calcium	SS	S4	mg/kg	6510	3080	1991
Calcium	SS	W4	mg/kg	7600	3590	1991
Calcium	SS	S3	mg/kg	13600	6430	1991
Calcium	SS	N1	mg/kg	11500	5420	1991
Calcium	SB	N2	mg/kg	3200	1140	1991
Calcium	SB	S5	mg/kg	3780	1350	1991
Calcium	SB	W4	mg/kg	3170	1130	1991
Calcium	SB	W2	mg/kg	2870	1020	1991
Calcium	SB	E5	mg/kg	3820	1360	1991
Calcium	SB	S4	mg/kg	3800	1350	1991
Calcium	SB	E1	mg/kg	3280	1170	1991
Calcium	SB	S1	mg/kg	3470	1240	1991
Calcium	SB	S2	mg/kg	3300	1170	1991
Calcium	SB	E2	mg/kg	3150	1120	1991
Calcium	SB	N4	mg/kg	3790	1350	1991
Calcium	WW	W2	mg/kg	1450	305	1991
Calcium	WW	N2	mg/kg	1110	233	1991
Calcium	WW	S4	mg/kg	983	207	1991
Chloride	FC	E1	mg/kg	1130	150	1991
Chloride	FC	N2	mg/kg	998	133	1991
Chloride	FC	E2	mg/kg	1200	159	1991
Chloride	FC	S5	mg/kg	1290	171	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Chloride	FC	E5	mg/kg	1570	208	1991
Chloride	FC	N4	mg/kg	999	133	1991
Chloride	FC	W4	mg/kg	1020	135	1991
Chloride	NG	N4	mg/kg	33300	1290	1991
Chloride	NG	E1	mg/kg	31900	1230	1991
Chloride	NG	N5	mg/kg	28400	1100	1991
Chloride	NG	E2	mg/kg	23600	913	1991
Chloride	NG	W4	mg/kg	41100	1590	1991
Chloride	NG	S1	mg/kg	19200	741	1991
Chloride	NG	E6	mg/kg	34000	1320	1991
Chloride	NG	S4	mg/kg	26100	1010	1991
Chloride	NG	W2	mg/kg	19800	763	1991
Chloride	NG	E5	mg/kg	15300	592	1991
Chloride	NG	S5	mg/kg	22200	857	1991
Chloride	NG	S3	mg/kg	35000	1350	1991
Chloride	NG	N2	mg/kg	30500	1180	1991
Chloride	NG	S2	mg/kg	20400	789	1991
Chloride	NG	N1	mg/kg	26900	1040	1991
Chloride	SD	S3	mg/kg	503	19.2	1991
Chloride	SD	N5	mg/kg	1340	51.2	1991
Chloride	SD	E2	mg/kg	407	15.5	1991
Chloride	SD	N2	mg/kg	289	11	1991
Chloride	SD	S4	mg/kg	98.6	3.77	1991
Chloride	SD	S1	mg/kg	147	5.6	1991
Chloride	SS	N4	mg/kg	12	0.905	2009
Chloride	SS	N2	mg/kg	13.2	0.997	2009
Chloride	SS	S4	mg/kg	16.8	1.27	2009
Chloride	SS	E5	mg/kg	12.7	0.957	2009
Chloride	SS	E1	mg/kg	13	0.983	2009
Chloride	SS	S1	mg/kg	15.8	1.19	2009
Chloride	SS	W4	mg/kg	9.44	0.714	2009
Chloride	SS	E2	mg/kg	9.18	0.694	2009
Chloride	SS	N5	mg/kg	25.3	1.91	2009
Chloride	SS	S5	mg/kg	12.4	0.939	2009
Chloride	SS	E6	mg/kg	34	2.57	2009
Chloride	SS	S2	mg/kg	15.1	1.14	2009
Chloride	SS	W2	mg/kg	14	1.06	2009
Chloride	SS	S3	mg/kg	287	21.7	2009
Chloride	SB	E5	mg/kg	2140	0.325	1991
Chloride	SB	S4	mg/kg	4140	0.628	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Chloride	SB	E1	mg/kg	2050	0.311	1991
Chloride	SB	N2	mg/kg	2210	0.336	1991
Chloride	SB	W2	mg/kg	3190	0.485	1991
Chloride	SB	S1	mg/kg	3660	0.555	1991
Chloride	SB	S2	mg/kg	4110	0.624	1991
Chloride	SB	S5	mg/kg	5580	0.848	1991
Chloride	SB	W4	mg/kg	2440	0.37	1991
Chloride	SB	E2	mg/kg	2840	0.431	1991
Chloride	SB	N4	mg/kg	5360	0.814	1991
Chloride	WW	N2	mg/kg	1570	220	1991
Chloride	WW	W2	mg/kg	1350	190	1991
Chloride	WW	S4	mg/kg	2490	349	1991
Chromium	NG	N4	mg/kg	16.1	0.176	2002
Chromium	NG	S3	mg/kg	30.4	0.333	2002
Chromium	NG	W2	mg/kg	16.4	0.179	2002
Chromium	NG	W4	mg/kg	20	0.219	2002
Chromium	NG	E6	mg/kg	18	0.196	2002
Chromium	NG	N2	mg/kg	14.8	0.161	2002
Chromium	NG	S4	mg/kg	14.4	0.158	2002
Chromium	NG	S5	mg/kg	19.3	0.211	2002
Chromium	NG	E2	mg/kg	15	0.164	2002
Chromium	NG	E5	mg/kg	19.6	0.215	2002
Chromium	NG	S1	mg/kg	17.8	0.195	2002
Chromium	NG	S2	mg/kg	16.1	0.176	2002
Chromium	NG	E1	mg/kg	15	0.164	2002
Chromium	NG	N5	mg/kg	19	0.208	2002
Chromium	SD	N5	mg/kg	51	22.2	1991
Chromium	SD	S4	mg/kg	48.7	21.2	1991
Chromium	SD	N2	mg/kg	41.9	18.2	1991
Chromium	SD	S3	mg/kg	71.6	31.1	1991
Chromium	SD	E2	mg/kg	38.6	16.8	1991
Chromium	SD	S1	mg/kg	52.3	22.7	1991
Chromium	SS	S1	mg/kg	40.6	18.9	1991
Chromium	SS	S2	mg/kg	41.2	19.2	1991
Chromium	SS	W2	mg/kg	28.9	13.4	1991
Chromium	SS	N5	mg/kg	34.4	16	1991
Chromium	SS	E1	mg/kg	28.8	13.4	1991
Chromium	SS	E6	mg/kg	34	15.8	1991
Chromium	SS	E5	mg/kg	32.2	15	1991
Chromium	SS	N4	mg/kg	35.6	16.6	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Chromium	SS	E2	mg/kg	26.2	12.2	1991
Chromium	SS	N1	mg/kg	29.8	13.9	1991
Chromium	SS	S5	mg/kg	38.6	18	1991
Chromium	SS	W4	mg/kg	46.3	21.6	1991
Chromium	SS	E3	mg/kg	40	18.6	1991
Chromium	SS	S4	mg/kg	49.5	23.1	1991
Chromium	SS	N2	mg/kg	50.5	23.5	1991
Chromium	SS	S3	mg/kg	34.1	15.9	1991
Chromium	SB	W4	mg/kg	4.32	0.0275	2002
Chromium	SB	W2	mg/kg	3	0.019	2002
Cobalt	NG	W4	mg/kg	0.421	0.0388	2003
Cobalt	NG	N4	mg/kg	0.345	0.0318	2003
Cobalt	NG	N2	mg/kg	0.314	0.0289	2003
Cobalt	NG	W2	mg/kg	0.348	0.032	2003
Cobalt	NG	E5	mg/kg	0.417	0.0384	2003
Cobalt	NG	S1	mg/kg	0.521	0.0479	2003
Cobalt	NG	S4	mg/kg	0.315	0.0291	2003
Cobalt	NG	S5	mg/kg	0.409	0.0377	2003
Cobalt	NG	N5	mg/kg	0.382	0.0352	2003
Cobalt	NG	E2	mg/kg	0.284	0.0262	2003
Cobalt	NG	E1	mg/kg	0.276	0.0254	2003
Cobalt	NG	S2	mg/kg	0.351	0.0323	2003
Cobalt	NG	E6	mg/kg	0.47	0.0433	2003
Cobalt	SD	N5	mg/kg	13.4	7.34	1991
Cobalt	SD	S1	mg/kg	13.1	7.17	1991
Cobalt	SD	S4	mg/kg	15.9	8.71	1991
Cobalt	SD	S3	mg/kg	13.9	7.65	1991
Cobalt	SD	E2	mg/kg	12	6.58	1991
Cobalt	SD	N2	mg/kg	11.7	6.43	1991
Cobalt	SS	S1	mg/kg	16.2	6.96	1991
Cobalt	SS	W2	mg/kg	10.2	4.38	1991
Cobalt	SS	S2	mg/kg	17.1	7.35	1991
Cobalt	SS	E5	mg/kg	11.5	4.93	1991
Cobalt	SS	N1	mg/kg	10.8	4.63	1991
Cobalt	SS	N5	mg/kg	12.6	5.43	1991
Cobalt	SS	E1	mg/kg	9.87	4.24	1991
Cobalt	SS	S5	mg/kg	15.1	6.5	1991
Cobalt	SS	N4	mg/kg	12.7	5.45	1991
Cobalt	SS	E6	mg/kg	11.2	4.8	1991
Cobalt	SS	E2	mg/kg	10.4	4.48	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Cobalt	SS	W4	mg/kg	14.1	6.07	1991
Cobalt	SS	E3	mg/kg	13.1	5.61	1991
Cobalt	SS	S4	mg/kg	18.7	8.04	1991
Cobalt	SS	N2	mg/kg	15.9	6.85	1991
Cobalt	SS	S3	mg/kg	12.9	5.52	1991
Copper	FC	N4	mg/kg	2.43	0.588	2002
Copper	FC	W4	mg/kg	2.79	0.675	2002
Copper	NG	W4	mg/kg	9.84	3.92	2002
Copper	NG	S3	mg/kg	8.07	3.22	2002
Copper	NG	N4	mg/kg	10.2	4.08	2002
Copper	NG	E2	mg/kg	8.99	3.59	2002
Copper	NG	S4	mg/kg	9.7	3.87	2002
Copper	NG	N5	mg/kg	9.37	3.74	2002
Copper	NG	N2	mg/kg	10.4	4.16	2002
Copper	NG	E1	mg/kg	8.61	3.43	2002
Copper	NG	S5	mg/kg	10.3	4.11	2002
Copper	NG	W2	mg/kg	14.2	5.66	2002
Copper	NG	S1	mg/kg	9.92	3.96	2002
Copper	NG	E5	mg/kg	10.7	4.26	2002
Copper	NG	S2	mg/kg	10.8	4.32	2002
Copper	NG	E6	mg/kg	12	4.78	2002
Copper	SD	N5	mg/kg	38	17.1	1991
Copper	SD	E2	mg/kg	29.6	13.4	1991
Copper	SD	N2	mg/kg	33.8	15.3	1991
Copper	SD	S4	mg/kg	32.3	14.6	1991
Copper	SD	S1	mg/kg	36.8	16.6	1991
Copper	SD	S3	mg/kg	42.9	19.4	1991
Copper	SS	W2	mg/kg	18.6	9.13	1991
Copper	SS	S1	mg/kg	23.3	11.5	1991
Copper	SS	S2	mg/kg	22.2	10.9	1991
Copper	SS	E1	mg/kg	20.3	9.98	1991
Copper	SS	N1	mg/kg	29.4	14.4	1991
Copper	SS	E5	mg/kg	17.4	8.55	1991
Copper	SS	N5	mg/kg	24	11.8	1991
Copper	SS	E6	mg/kg	22.2	10.9	1991
Copper	SS	W4	mg/kg	32.7	16.1	1991
Copper	SS	E3	mg/kg	30.3	14.9	1991
Copper	SS	N4	mg/kg	23.8	11.7	1991
Copper	SS	E2	mg/kg	21.2	10.4	1991
Copper	SS	S5	mg/kg	19.3	9.48	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Copper	SS	S4	mg/kg	24.4	12	1991
Copper	SS	N2	mg/kg	39	19.1	1991
Copper	SS	S3	mg/kg	23.8	11.7	1991
Copper	SB	S2	mg/kg	20.7	4.85	1991
Copper	SB	S1	mg/kg	22.7	5.31	1991
Copper	SB	E5	mg/kg	21.8	5.1	1991
Copper	SB	S4	mg/kg	19.4	4.53	1991
Copper	SB	W4	mg/kg	22.7	5.31	1991
Copper	SB	W2	mg/kg	19.7	4.6	1991
Copper	SB	S5	mg/kg	22.8	5.33	1991
Copper	SB	N2	mg/kg	26.4	6.18	1991
Copper	SB	N4	mg/kg	28.1	6.57	1991
Copper	SB	E1	mg/kg	21.1	4.93	1991
Copper	SB	E2	mg/kg	26.5	6.21	1991
Copper	WW	W2	mg/kg	6.35	2.31	2003
Iron	FC	E1	mg/kg	32	7.51	1991
Iron	FC	E2	mg/kg	34.3	8.04	1991
Iron	FC	W4	mg/kg	38.9	9.14	1991
Iron	FC	S5	mg/kg	32.5	7.63	1991
Iron	FC	N2	mg/kg	39.4	9.26	1991
Iron	FC	E5	mg/kg	26.8	6.29	1991
Iron	FC	N4	mg/kg	30.8	7.23	1991
Iron	NG	N2	mg/kg	279	49.3	1991
Iron	NG	E1	mg/kg	271	47.9	1991
Iron	NG	S2	mg/kg	356	62.9	1991
Iron	NG	E3	mg/kg	196	34.6	1991
Iron	NG	W4	mg/kg	425	75.1	1991
Iron	NG	E6	mg/kg	299	52.7	1991
Iron	NG	S5	mg/kg	338	59.7	1991
Iron	NG	S3	mg/kg	222	39.3	1991
Iron	NG	W2	mg/kg	326	57.6	1991
Iron	NG	E2	mg/kg	245	43.3	1991
Iron	NG	S4	mg/kg	268	47.3	1991
Iron	NG	S1	mg/kg	313	55.2	1991
Iron	NG	N5	mg/kg	381	67.4	1991
Iron	NG	N4	mg/kg	310	54.7	1991
Iron	NG	E5	mg/kg	387	68.3	1991
Iron	NG	N1	mg/kg	315	55.6	1991
Iron	NG	N3	mg/kg	321	56.8	1991
Iron	SD	N5	mg/kg	36500	17500	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Iron	SD	S1	mg/kg	30000	14400	1991
Iron	SD	N2	mg/kg	31100	15000	1991
Iron	SD	E2	mg/kg	28700	13800	1991
Iron	SD	S4	mg/kg	36000	17300	1991
Iron	SD	S3	mg/kg	32000	15400	1991
Iron	SS	W2	mg/kg	25100	11400	1991
Iron	SS	S1	mg/kg	32700	14900	1991
Iron	SS	S2	mg/kg	34300	15600	1991
Iron	SS	N5	mg/kg	26100	11900	1991
Iron	SS	E1	mg/kg	22400	10200	1991
Iron	SS	S5	mg/kg	33000	15000	1991
Iron	SS	N1	mg/kg	24400	11100	1991
Iron	SS	E5	mg/kg	26800	12200	1991
Iron	SS	W4	mg/kg	34300	15600	1991
Iron	SS	E3	mg/kg	29900	13600	1991
Iron	SS	S3	mg/kg	27300	12400	1991
Iron	SS	E2	mg/kg	23000	10500	1991
Iron	SS	N4	mg/kg	28200	12800	1991
Iron	SS	E6	mg/kg	25200	11500	1991
Iron	SS	S4	mg/kg	38400	17500	1991
Iron	SS	N2	mg/kg	34200	15600	1991
Iron	SB	S2	mg/kg	98.3	34.8	1991
Iron	SB	E1	mg/kg	93.9	33.3	1991
Iron	SB	E5	mg/kg	101	35.9	1991
Iron	SB	S5	mg/kg	111	39.2	1991
Iron	SB	N2	mg/kg	107	37.8	1991
Iron	SB	S4	mg/kg	100	35.6	1991
Iron	SB	S1	mg/kg	98.3	34.8	1991
Iron	SB	W2	mg/kg	105	37.2	1991
Iron	SB	W4	mg/kg	113	40.2	1991
Iron	SB	E2	mg/kg	108	38.2	1991
Iron	SB	N4	mg/kg	151	53.7	1991
Iron	WW	W2	mg/kg	86.2	19.2	1991
Iron	WW	N2	mg/kg	72.8	16.2	1991
Iron	WW	S4	mg/kg	81.9	18.3	1991
Lead	NG	N4	mg/kg	0.666	0.0876	2003
Lead	NG	S3	mg/kg	0.784	0.103	2003
Lead	NG	W4	mg/kg	0.83	0.109	2003
Lead	NG	S4	mg/kg	0.416	0.0547	2003
Lead	NG	E2	mg/kg	0.455	0.0599	2003

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Lead	NG	S5	mg/kg	0.774	0.102	2003
Lead	NG	W2	mg/kg	1.02	0.135	2003
Lead	NG	N2	mg/kg	0.577	0.0759	2003
Lead	NG	N5	mg/kg	3.39	0.445	2003
Lead	NG	S1	mg/kg	0.979	0.129	2003
Lead	NG	E5	mg/kg	0.921	0.121	2003
Lead	NG	E1	mg/kg	0.825	0.109	2003
Lead	NG	S2	mg/kg	0.896	0.118	2003
Lead	NG	E6	mg/kg	3.58	0.471	2003
Lead	SD	N5	mg/kg	36.8	12.1	1991
Lead	SD	S3	mg/kg	39	12.8	1991
Lead	SD	S4	mg/kg	22.7	7.46	1991
Lead	SD	E2	mg/kg	18.6	6.1	1991
Lead	SD	N2	mg/kg	23.1	7.59	1991
Lead	SD	S1	mg/kg	29.2	9.6	1991
Lead	SS	S1	mg/kg	25.4	8.81	1991
Lead	SS	W2	mg/kg	26	9.02	1991
Lead	SS	S2	mg/kg	26	9.02	1991
Lead	SS	S5	mg/kg	23	7.96	1991
Lead	SS	E1	mg/kg	22.2	7.71	1991
Lead	SS	E5	mg/kg	23.1	8.02	1991
Lead	SS	E2	mg/kg	41.2	14.3	1991
Lead	SS	N5	mg/kg	34.1	11.8	1991
Lead	SS	S3	mg/kg	27.3	9.48	1991
Lead	SS	E3	mg/kg	28.6	9.91	1991
Lead	SS	N4	mg/kg	23.4	8.1	1991
Lead	SS	E6	mg/kg	26.3	9.12	1991
Lead	SS	W4	mg/kg	27.9	9.67	1991
Lead	SS	N1	mg/kg	29.3	10.2	1991
Lead	SS	N2	mg/kg	26.6	9.22	1991
Lead	SS	S4	mg/kg	25.6	8.89	1991
Magnesium	FC	E1	mg/kg	1790	428	1991
Magnesium	FC	E2	mg/kg	1750	419	1991
Magnesium	FC	S5	mg/kg	1940	466	1991
Magnesium	FC	N4	mg/kg	2100	503	1991
Magnesium	FC	N2	mg/kg	2060	493	1991
Magnesium	FC	W4	mg/kg	2020	484	1991
Magnesium	FC	E5	mg/kg	1580	379	1991
Magnesium	NG	E1	mg/kg	4000	1360	1991
Magnesium	NG	N2	mg/kg	4410	1500	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Magnesium	NG	E3	mg/kg	2890	984	1991
Magnesium	NG	W2	mg/kg	4470	1520	1991
Magnesium	NG	N5	mg/kg	3790	1290	1991
Magnesium	NG	S2	mg/kg	4270	1460	1991
Magnesium	NG	S4	mg/kg	3900	1330	1991
Magnesium	NG	S1	mg/kg	4210	1430	1991
Magnesium	NG	W4	mg/kg	5210	1770	1991
Magnesium	NG	S3	mg/kg	2750	936	1991
Magnesium	NG	S5	mg/kg	4150	1410	1991
Magnesium	NG	E2	mg/kg	4250	1450	1991
Magnesium	NG	E5	mg/kg	5220	1780	1991
Magnesium	NG	N4	mg/kg	4500	1530	1991
Magnesium	NG	N3	mg/kg	3670	1250	1991
Magnesium	NG	N1	mg/kg	3470	1180	1991
Magnesium	NG	E6	mg/kg	3880	1320	1991
Magnesium	SD	S4	mg/kg	35000	13200	1991
Magnesium	SD	E2	mg/kg	48100	18200	1991
Magnesium	SD	S1	mg/kg	29900	11300	1991
Magnesium	SD	S3	mg/kg	35300	13300	1991
Magnesium	SD	N2	mg/kg	38700	14600	1991
Magnesium	SD	N5	mg/kg	31200	11800	1991
Magnesium	SS	S2	mg/kg	9390	4580	1991
Magnesium	SS	S1	mg/kg	11200	5450	1991
Magnesium	SS	W2	mg/kg	5450	2660	1991
Magnesium	SS	E1	mg/kg	5300	2590	1991
Magnesium	SS	W4	mg/kg	8670	4240	1991
Magnesium	SS	N4	mg/kg	10700	5230	1991
Magnesium	SS	N5	mg/kg	19400	9480	1991
Magnesium	SS	E5	mg/kg	7400	3610	1991
Magnesium	SS	S3	mg/kg	8840	4320	1991
Magnesium	SS	S5	mg/kg	10900	5330	1991
Magnesium	SS	E3	mg/kg	9500	4640	1991
Magnesium	SS	E2	mg/kg	6180	3020	1991
Magnesium	SS	N1	mg/kg	6880	3360	1991
Magnesium	SS	E6	mg/kg	13300	6490	1991
Magnesium	SS	N2	mg/kg	9280	4530	1991
Magnesium	SS	S4	mg/kg	9910	4840	1991
Magnesium	SB	W4	mg/kg	3670	1680	1991
Magnesium	SB	S1	mg/kg	3240	1480	1991
Magnesium	SB	E5	mg/kg	3160	1450	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Magnesium	SB	S2	mg/kg	3120	1430	1991
Magnesium	SB	N2	mg/kg	3290	1510	1991
Magnesium	SB	S5	mg/kg	3330	1520	1991
Magnesium	SB	S4	mg/kg	3190	1460	1991
Magnesium	SB	W2	mg/kg	3040	1390	1991
Magnesium	SB	N4	mg/kg	3490	1600	1991
Magnesium	SB	E1	mg/kg	3080	1410	1991
Magnesium	SB	E2	mg/kg	3390	1550	1991
Magnesium	WW	W2	mg/kg	1460	897	1991
Magnesium	WW	N2	mg/kg	1450	890	1991
Magnesium	WW	S4	mg/kg	1510	928	1991
Manganese	FC	N4	mg/kg	8.56	1.28	2002
Manganese	FC	W4	mg/kg	9.51	1.43	2002
Manganese	NG	E1	mg/kg	36.8	11	1991
Manganese	NG	N2	mg/kg	82	24.4	1991
Manganese	NG	W2	mg/kg	55.6	16.6	1991
Manganese	NG	S4	mg/kg	50.9	15.2	1991
Manganese	NG	E2	mg/kg	39.4	11.8	1991
Manganese	NG	W4	mg/kg	74.2	22.1	1991
Manganese	NG	S1	mg/kg	41.1	12.2	1991
Manganese	NG	N5	mg/kg	43	12.8	1991
Manganese	NG	S3	mg/kg	147	43.9	1991
Manganese	NG	E3	mg/kg	66.1	19.7	1991
Manganese	NG	S2	mg/kg	40.5	12.1	1991
Manganese	NG	S5	mg/kg	59	17.6	1991
Manganese	NG	E5	mg/kg	59.8	17.8	1991
Manganese	NG	N4	mg/kg	73.2	21.8	1991
Manganese	NG	N1	mg/kg	46.3	13.8	1991
Manganese	NG	E6	mg/kg	67.7	20.2	1991
Manganese	NG	N3	mg/kg	54.4	16.2	1991
Manganese	SD	N2	mg/kg	416	195	1991
Manganese	SD	S3	mg/kg	558	262	1991
Manganese	SD	E2	mg/kg	456	214	1991
Manganese	SD	S4	mg/kg	592	278	1991
Manganese	SD	S1	mg/kg	381	179	1991
Manganese	SD	N5	mg/kg	547	257	1991
Manganese	SS	S2	mg/kg	727	235	1991
Manganese	SS	W2	mg/kg	601	194	1991
Manganese	SS	S1	mg/kg	875	283	1991
Manganese	SS	E3	mg/kg	518	167	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Manganese	SS	N4	mg/kg	544	175	1991
Manganese	SS	S5	mg/kg	620	200	1991
Manganese	SS	N5	mg/kg	619	200	1991
Manganese	SS	E2	mg/kg	491	158	1991
Manganese	SS	N1	mg/kg	531	172	1991
Manganese	SS	E5	mg/kg	546	176	1991
Manganese	SS	E1	mg/kg	581	187	1991
Manganese	SS	E6	mg/kg	641	207	1991
Manganese	SS	S3	mg/kg	794	256	1991
Manganese	SS	W4	mg/kg	496	160	1991
Manganese	SS	S4	mg/kg	477	154	1991
Manganese	SS	N2	mg/kg	570	184	1991
Manganese	SB	S5	mg/kg	33.7	12.2	1991
Manganese	SB	N2	mg/kg	30	10.9	1991
Manganese	SB	S4	mg/kg	26.7	9.68	1991
Manganese	SB	E5	mg/kg	32	11.6	1991
Manganese	SB	S1	mg/kg	33.8	12.3	1991
Manganese	SB	W4	mg/kg	33.2	12	1991
Manganese	SB	S2	mg/kg	33.2	12	1991
Manganese	SB	W2	mg/kg	33.2	12	1991
Manganese	SB	E1	mg/kg	32.6	11.8	1991
Manganese	SB	N4	mg/kg	36.9	13.4	1991
Manganese	SB	E2	mg/kg	28.4	10.3	1991
Manganese	WW	W2	mg/kg	46	13	1991
Manganese	WW	N2	mg/kg	38.5	10.9	1991
Manganese	WW	S4	mg/kg	29.9	8.46	1991
Mercury	NG	S3	mg/kg	0.0752	0.00751	2004
Mercury	NG	W4	mg/kg	0.0683	0.00682	2004
Mercury	NG	E5	mg/kg	0.0917	0.00916	2004
Mercury	NG	E1	mg/kg	0.0929	0.00928	2004
Mercury	NG	S4	mg/kg	0.0729	0.00728	2004
Mercury	NG	N2	mg/kg	0.0738	0.00737	2004
Mercury	NG	E2	mg/kg	0.0691	0.0069	2004
Mercury	NG	W2	mg/kg	0.0949	0.00948	2004
Mercury	NG	E6	mg/kg	0.189	0.0189	2004
Mercury	NG	N4	mg/kg	0.0789	0.00788	2004
Mercury	NG	S1	mg/kg	0.0944	0.00943	2004
Mercury	NG	S5	mg/kg	0.115	0.0115	2004
Mercury	NG	N5	mg/kg	0.184	0.0184	2004
Mercury	NG	S2	mg/kg	0.0823	0.00821	2004

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Mercury	SD	S3	mg/kg	0.218	0.0406	2003
Mercury	SD	N5	mg/kg	0.211	0.0392	2003
Mercury	SD	N2	mg/kg	0.118	0.0219	2003
Mercury	SD	S1	mg/kg	0.14	0.0261	2003
Mercury	SS	W2	mg/kg	0.0626	0.0415	2002
Mercury	SS	W4	mg/kg	0.0633	0.042	2002
Mercury	SS	E2	mg/kg	0.0782	0.0519	2002
Mercury	SS	N4	mg/kg	0.0616	0.0409	2002
Mercury	SS	S4	mg/kg	0.0616	0.0409	2002
Mercury	SS	N5	mg/kg	0.0868	0.0577	2002
Mercury	SS	E6	mg/kg	0.0748	0.0497	2002
Mercury	SS	N2	mg/kg	0.0691	0.0459	2002
Mercury	SS	S3	mg/kg	0.064	0.0425	2002
Molybdenum	FC	N4	mg/kg	1.11	0.207	2003
Molybdenum	FC	W4	mg/kg	0.86	0.16	2003
Molybdenum	NG	W4	mg/kg	13.6	1.62	2002
Molybdenum	NG	S3	mg/kg	8.72	1.04	2002
Molybdenum	NG	N4	mg/kg	10.6	1.27	2002
Molybdenum	NG	W2	mg/kg	12.8	1.53	2002
Molybdenum	NG	N2	mg/kg	10.3	1.23	2002
Molybdenum	NG	S5	mg/kg	9.5	1.13	2002
Molybdenum	NG	E2	mg/kg	7.96	0.95	2002
Molybdenum	NG	S4	mg/kg	8.57	1.02	2002
Molybdenum	NG	E1	mg/kg	7.76	0.925	2002
Molybdenum	NG	N5	mg/kg	5.72	0.682	2002
Molybdenum	NG	E5	mg/kg	10.5	1.25	2002
Molybdenum	NG	S1	mg/kg	6.58	0.785	2002
Molybdenum	NG	S2	mg/kg	5.75	0.685	2002
Molybdenum	NG	E6	mg/kg	17.4	2.07	2002
Molybdenum	SD	E2	mg/kg	4.02	0.853	2002
Molybdenum	SD	S4	mg/kg	2.43	0.516	2002
Molybdenum	SD	S1	mg/kg	6.3	1.34	2002
Molybdenum	SD	N2	mg/kg	3.61	0.767	2002
Molybdenum	SD	N5	mg/kg	4.93	1.05	2002
Molybdenum	SD	S3	mg/kg	13.3	2.83	2002
Molybdenum	SS	S1	mg/kg	2.04	0.604	2002
Molybdenum	SS	S2	mg/kg	2.78	0.824	2002
Molybdenum	SS	W2	mg/kg	3.16	0.937	2002
Molybdenum	SS	N4	mg/kg	2.8	0.829	2002
Molybdenum	SS	N5	mg/kg	3.57	1.06	2002

Table F-2
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Molybdenum	SS	W4	mg/kg	2.52	0.747	2002
Molybdenum	SS	S5	mg/kg	2.16	0.64	2002
Molybdenum	SS	E5	mg/kg	2.62	0.776	2002
Molybdenum	SS	E2	mg/kg	2.76	0.82	2002
Molybdenum	SS	E1	mg/kg	1.94	0.575	2002
Molybdenum	SS	N2	mg/kg	1.97	0.584	2002
Molybdenum	SS	S4	mg/kg	1.35	0.399	2002
Molybdenum	SS	E6	mg/kg	3.5	1.04	2002
Molybdenum	SS	S3	mg/kg	8.33	2.47	2002
Molybdenum	SB	S1	mg/kg	18.6	3.21	1991
Molybdenum	SB	N2	mg/kg	16.5	2.85	1991
Molybdenum	SB	E5	mg/kg	20.5	3.54	1991
Molybdenum	SB	W4	mg/kg	15.8	2.72	1991
Molybdenum	SB	N4	mg/kg	25.2	4.34	1991
Molybdenum	SB	S2	mg/kg	18	3.11	1991
Molybdenum	SB	S4	mg/kg	10.1	1.75	1991
Molybdenum	SB	S5	mg/kg	29.6	5.1	1991
Molybdenum	SB	W2	mg/kg	18.6	3.21	1991
Molybdenum	SB	E2	mg/kg	25.5	4.4	1991
Molybdenum	SB	E1	mg/kg	8.87	1.53	1991
Molybdenum	WW	N2	mg/kg	3.67	0.671	1991
Molybdenum	WW	W2	mg/kg	3.71	0.678	1991
Nickel	NG	S3	mg/kg	10.8	0.454	2002
Nickel	NG	W4	mg/kg	10.8	0.455	2002
Nickel	NG	N4	mg/kg	7.18	0.302	2002
Nickel	NG	E2	mg/kg	5.26	0.222	2002
Nickel	NG	N5	mg/kg	6.64	0.28	2002
Nickel	NG	S5	mg/kg	5.22	0.22	2002
Nickel	NG	S4	mg/kg	6.83	0.288	2002
Nickel	NG	E5	mg/kg	5.75	0.242	2002
Nickel	NG	W2	mg/kg	5.23	0.22	2002
Nickel	NG	N2	mg/kg	6.51	0.274	2002
Nickel	NG	S1	mg/kg	6.18	0.26	2002
Nickel	NG	E1	mg/kg	4.97	0.209	2002
Nickel	NG	S2	mg/kg	5.23	0.22	2002
Nickel	NG	E6	mg/kg	7.86	0.331	2002
Nickel	SD	S4	mg/kg	43.6	22.6	1991
Nickel	SD	N2	mg/kg	39.4	20.4	1991
Nickel	SD	S1	mg/kg	41.9	21.7	1991
Nickel	SD	E2	mg/kg	37	19.2	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Nickel	SD	S3	mg/kg	50.5	26.1	1991
Nickel	SD	N5	mg/kg	44.4	23	1991
Nickel	SS	W2	mg/kg	23.8	12.4	1991
Nickel	SS	S2	mg/kg	35.9	18.7	1991
Nickel	SS	S1	mg/kg	37.8	19.7	1991
Nickel	SS	E1	mg/kg	24.8	12.9	1991
Nickel	SS	N1	mg/kg	27.5	14.3	1991
Nickel	SS	S5	mg/kg	34.9	18.2	1991
Nickel	SS	E3	mg/kg	35.9	18.7	1991
Nickel	SS	N4	mg/kg	31.6	16.4	1991
Nickel	SS	E6	mg/kg	28.8	15	1991
Nickel	SS	N5	mg/kg	30.3	15.8	1991
Nickel	SS	E5	mg/kg	26.9	14	1991
Nickel	SS	E2	mg/kg	21.7	11.3	1991
Nickel	SS	W4	mg/kg	40.4	21	1991
Nickel	SS	N2	mg/kg	44.8	23.3	1991
Nickel	SS	S4	mg/kg	40.2	20.9	1991
Nickel	SS	S3	mg/kg	31.7	16.5	1991
Nickel	SB	S5	mg/kg	2.79	0.868	2002
Nickel	SB	S2	mg/kg	2.37	0.738	2002
Nickel	SB	S1	mg/kg	2.85	0.886	2002
Nickel	SB	N2	mg/kg	4.39	1.37	2002
Nickel	SB	W4	mg/kg	6.14	1.91	2002
Nickel	SB	E5	mg/kg	2.14	0.664	2002
Nickel	SB	N4	mg/kg	4.06	1.26	2002
Nickel	SB	W2	mg/kg	1.53	0.477	2002
Nickel	SB	E2	mg/kg	2.04	0.635	2002
Nickel	SB	E1	mg/kg	3.2	0.996	2002
Nickel	SB	S4	mg/kg	3.36	1.05	2002
Phosphorus	FC	E1	mg/kg	4370	1220	1991
Phosphorus	FC	E5	mg/kg	3980	1110	1991
Phosphorus	FC	E2	mg/kg	4630	1290	1991
Phosphorus	FC	S5	mg/kg	4490	1260	1991
Phosphorus	FC	N2	mg/kg	5040	1410	1991
Phosphorus	FC	W4	mg/kg	5000	1400	1991
Phosphorus	FC	N4	mg/kg	5150	1440	1991
Phosphorus	NG	W4	mg/kg	5540	1940	1991
Phosphorus	NG	N2	mg/kg	4420	1550	1991
Phosphorus	NG	E1	mg/kg	5860	2050	1991
Phosphorus	NG	E2	mg/kg	5690	1990	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Phosphorus	NG	W2	mg/kg	5050	1770	1991
Phosphorus	NG	S1	mg/kg	3820	1340	1991
Phosphorus	NG	E6	mg/kg	2360	825	1991
Phosphorus	NG	E3	mg/kg	4110	1440	1991
Phosphorus	NG	S4	mg/kg	4530	1590	1991
Phosphorus	NG	S3	mg/kg	2740	961	1991
Phosphorus	NG	S5	mg/kg	4670	1640	1991
Phosphorus	NG	S2	mg/kg	4030	1410	1991
Phosphorus	NG	N4	mg/kg	4450	1560	1991
Phosphorus	NG	E5	mg/kg	3710	1300	1991
Phosphorus	NG	N5	mg/kg	2810	985	1991
Phosphorus	NG	N3	mg/kg	5040	1760	1991
Phosphorus	NG	N1	mg/kg	5880	2060	1991
Phosphorus	SD	S1	mg/kg	1170	447	1991
Phosphorus	SD	E2	mg/kg	849	324	1991
Phosphorus	SD	N2	mg/kg	1050	401	1991
Phosphorus	SD	S4	mg/kg	1080	411	1991
Phosphorus	SD	N5	mg/kg	1390	531	1991
Phosphorus	SD	S3	mg/kg	825	314	1991
Phosphorus	SS	E2	mg/kg	866	463	1991
Phosphorus	SS	E5	mg/kg	641	343	1991
Phosphorus	SS	E6	mg/kg	694	371	1991
Phosphorus	SS	N5	mg/kg	710	379	1991
Phosphorus	SS	E1	mg/kg	844	451	1991
Phosphorus	SS	S3	mg/kg	713	381	1991
Phosphorus	SS	N1	mg/kg	1260	671	1991
Phosphorus	SS	E3	mg/kg	815	435	1991
Phosphorus	SS	S2	mg/kg	717	383	1991
Phosphorus	SS	S1	mg/kg	818	437	1991
Phosphorus	SS	S5	mg/kg	735	392	1991
Phosphorus	SS	N2	mg/kg	1160	618	1991
Phosphorus	SS	N4	mg/kg	799	427	1991
Phosphorus	SS	W4	mg/kg	1440	769	1991
Phosphorus	SS	S4	mg/kg	773	413	1991
Phosphorus	SS	W2	mg/kg	715	382	1991
Phosphorus	SB	W4	mg/kg	10000	3080	1991
Phosphorus	SB	S5	mg/kg	9890	3040	1991
Phosphorus	SB	E5	mg/kg	8890	2730	1991
Phosphorus	SB	S1	mg/kg	9460	2910	1991
Phosphorus	SB	S2	mg/kg	9150	2810	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Phosphorus	SB	S4	mg/kg	8770	2690	1991
Phosphorus	SB	N2	mg/kg	8900	2730	1991
Phosphorus	SB	E1	mg/kg	8370	2570	1991
Phosphorus	SB	W2	mg/kg	8810	2710	1991
Phosphorus	SB	E2	mg/kg	9630	2960	1991
Phosphorus	SB	N4	mg/kg	9400	2890	1991
Phosphorus	WW	N2	mg/kg	4300	2110	1991
Phosphorus	WW	W2	mg/kg	4550	2230	1991
Phosphorus	WW	S4	mg/kg	4610	2260	1991
Potassium	FC	E1	mg/kg	5000	1790	1991
Potassium	FC	E2	mg/kg	5490	1960	1991
Potassium	FC	S5	mg/kg	5570	1990	1991
Potassium	FC	N2	mg/kg	5760	2060	1991
Potassium	FC	W4	mg/kg	5730	2050	1991
Potassium	FC	E5	mg/kg	5140	1840	1991
Potassium	FC	N4	mg/kg	5950	2130	1991
Potassium	NG	N2	mg/kg	39600	9020	1991
Potassium	NG	E1	mg/kg	39100	8910	1991
Potassium	NG	E3	mg/kg	27300	6230	1991
Potassium	NG	W4	mg/kg	51900	11800	1991
Potassium	NG	E2	mg/kg	40400	9210	1991
Potassium	NG	S2	mg/kg	34900	7940	1991
Potassium	NG	W2	mg/kg	43600	9920	1991
Potassium	NG	E6	mg/kg	35600	8100	1991
Potassium	NG	S5	mg/kg	38300	8720	1991
Potassium	NG	S4	mg/kg	39700	9050	1991
Potassium	NG	S3	mg/kg	26700	6080	1991
Potassium	NG	S1	mg/kg	37600	8560	1991
Potassium	NG	N4	mg/kg	39200	8910	1991
Potassium	NG	N5	mg/kg	27500	6270	1991
Potassium	NG	E5	mg/kg	37000	8430	1991
Potassium	NG	N1	mg/kg	60000	13700	1991
Potassium	NG	N3	mg/kg	45000	10200	1991
Potassium	SD	S4	mg/kg	7050	1540	1991
Potassium	SD	S3	mg/kg	5500	1200	1991
Potassium	SD	N2	mg/kg	5980	1310	1991
Potassium	SD	E2	mg/kg	5850	1280	1991
Potassium	SD	S1	mg/kg	5880	1290	1991
Potassium	SD	N5	mg/kg	7530	1650	1991
Potassium	SS	W2	mg/kg	2750	584	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Potassium	SS	S2	mg/kg	5060	1070	1991
Potassium	SS	S1	mg/kg	4850	1030	1991
Potassium	SS	E6	mg/kg	4170	887	1991
Potassium	SS	W4	mg/kg	7500	1590	1991
Potassium	SS	N4	mg/kg	4640	986	1991
Potassium	SS	E1	mg/kg	3420	728	1991
Potassium	SS	E5	mg/kg	3650	777	1991
Potassium	SS	N5	mg/kg	4810	1020	1991
Potassium	SS	S5	mg/kg	4960	1050	1991
Potassium	SS	E3	mg/kg	4210	896	1991
Potassium	SS	N1	mg/kg	5140	1090	1991
Potassium	SS	E2	mg/kg	4220	897	1991
Potassium	SS	S4	mg/kg	6450	1370	1991
Potassium	SS	N2	mg/kg	6800	1450	1991
Potassium	SS	S3	mg/kg	4630	984	1991
Potassium	SB	S4	mg/kg	25600	11700	1991
Potassium	SB	E1	mg/kg	24200	11100	1991
Potassium	SB	E5	mg/kg	23900	10900	1991
Potassium	SB	N2	mg/kg	26000	11900	1991
Potassium	SB	S1	mg/kg	24800	11300	1991
Potassium	SB	W4	mg/kg	26700	12200	1991
Potassium	SB	W2	mg/kg	23300	10600	1991
Potassium	SB	S2	mg/kg	24600	11200	1991
Potassium	SB	S5	mg/kg	26100	11900	1991
Potassium	SB	E2	mg/kg	26800	12200	1991
Potassium	SB	N4	mg/kg	27400	12500	1991
Potassium	WW	W2	mg/kg	7520	2670	1991
Potassium	WW	N2	mg/kg	7480	2660	1991
Potassium	WW	S4	mg/kg	8210	2910	1991
Silicon	NG	N2	mg/kg	94700	2330	2003
Silicon	NG	E1	mg/kg	75500	1860	2003
Silicon	NG	S4	mg/kg	77800	1910	2003
Silicon	NG	W2	mg/kg	68500	1690	2003
Silicon	NG	W4	mg/kg	63800	1570	2003
Silicon	NG	S1	mg/kg	55500	1370	2003
Silicon	NG	S5	mg/kg	73900	1820	2003
Silicon	NG	N4	mg/kg	65500	1610	2003
Silicon	NG	S3	mg/kg	87000	2140	2003
Silicon	NG	S2	mg/kg	55900	1380	2003
Silicon	NG	E6	mg/kg	33300	819	2003

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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Silicon	NG	E2	mg/kg	77200	1900	2003
Silicon	NG	E5	mg/kg	56300	1390	2003
Silicon	NG	N5	mg/kg	79400	1950	2003
Silicon	SD	N5	mg/kg	215000	159000	2010
Silicon	SD	S1	mg/kg	285000	211000	2010
Silicon	SD	N2	mg/kg	231000	171000	2010
Silicon	SD	S4	mg/kg	250000	185000	2010
Silicon	SD	E2	mg/kg	222000	164000	2010
Silicon	SD	S3	mg/kg	267000	197000	2010
Silicon	SS	S3	mg/kg	363000	278000	2010
Silicon	SS	S1	mg/kg	347000	265000	2010
Silicon	SS	S2	mg/kg	357000	273000	2010
Silicon	SS	N5	mg/kg	304000	232000	2010
Silicon	SS	W4	mg/kg	339000	260000	2010
Silicon	SS	E2	mg/kg	366000	280000	2010
Silicon	SS	W2	mg/kg	380000	290000	2010
Silicon	SS	N2	mg/kg	336000	257000	2010
Silicon	SS	N4	mg/kg	331000	253000	2010
Silicon	SS	S5	mg/kg	360000	275000	2010
Silicon	SS	E5	mg/kg	369000	282000	2010
Silicon	SS	E6	mg/kg	347000	266000	2010
Silicon	SS	S4	mg/kg	310000	237000	2010
Silicon	SS	E1	mg/kg	386000	295000	2010
Silicon	SB	S4	mg/kg	3770	1.5	2003
Silicon	SB	S5	mg/kg	3350	1.33	2003
Silicon	SB	S1	mg/kg	1750	0.695	2003
Silicon	SB	N2	mg/kg	3730	1.48	2003
Silicon	SB	W2	mg/kg	1660	0.66	2003
Silicon	SB	S2	mg/kg	2610	1.04	2003
Silicon	SB	E5	mg/kg	2960	1.17	2003
Silicon	SB	W4	mg/kg	3260	1.29	2003
Silicon	SB	E1	mg/kg	2470	0.979	2003
Silicon	WW	W2	mg/kg	90300	482	2003
Sodium	NG	E1	mg/kg	70.9	13.8	2002
Sodium	NG	N2	mg/kg	76.6	14.9	2002
Sodium	NG	W2	mg/kg	67.5	13.2	2002
Sodium	NG	S5	mg/kg	61.3	11.9	2002
Sodium	NG	S1	mg/kg	85.4	16.6	2002
Sodium	NG	W4	mg/kg	135	26.3	2002
Sodium	NG	S2	mg/kg	85.1	16.6	2002

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2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Sodium	NG	S3	mg/kg	512	99.7	2002
Sodium	NG	E6	mg/kg	159	31	2002
Sodium	NG	S4	mg/kg	70.7	13.8	2002
Sodium	NG	E2	mg/kg	64.3	12.5	2002
Sodium	NG	N4	mg/kg	106	20.6	2002
Sodium	NG	E5	mg/kg	89.4	17.4	2002
Sodium	NG	N5	mg/kg	131	25.4	2002
Sodium	SD	S4	mg/kg	406	64.7	1991
Sodium	SD	S3	mg/kg	843	134	1991
Sodium	SD	E2	mg/kg	500	79.7	1991
Sodium	SD	N2	mg/kg	427	68.1	1991
Sodium	SD	S1	mg/kg	413	65.9	1991
Sodium	SD	N5	mg/kg	1100	176	1991
Sodium	SS	S1	mg/kg	317	45	2003
Sodium	SS	S2	mg/kg	317	45	2003
Sodium	SS	W2	mg/kg	256	36.3	2003
Sodium	SS	W4	mg/kg	284	40.2	2003
Sodium	SS	S5	mg/kg	310	44	2003
Sodium	SS	N4	mg/kg	282	40	2003
Sodium	SS	E1	mg/kg	247	35	2003
Sodium	SS	N5	mg/kg	400	56.7	2003
Sodium	SS	E2	mg/kg	284	40.3	2003
Sodium	SS	E5	mg/kg	272	38.6	2003
Sodium	SS	S4	mg/kg	289	41	2003
Sodium	SS	E6	mg/kg	325	46.1	2003
Sodium	SS	N2	mg/kg	281	39.8	2003
Sodium	SS	S3	mg/kg	1310	186	2003
Strontium	NG	S3	mg/kg	104	27.7	1991
Strontium	NG	W4	mg/kg	19.3	5.15	1991
Strontium	NG	N4	mg/kg	21	5.62	1991
Strontium	NG	N2	mg/kg	24.2	6.47	1991
Strontium	NG	W2	mg/kg	25.4	6.8	1991
Strontium	NG	N5	mg/kg	71.6	19.1	1991
Strontium	NG	S4	mg/kg	41.8	11.2	1991
Strontium	NG	E5	mg/kg	27.9	7.46	1991
Strontium	NG	E2	mg/kg	27.8	7.44	1991
Strontium	NG	S5	mg/kg	32.9	8.78	1991
Strontium	NG	E1	mg/kg	27.6	7.39	1991
Strontium	NG	E3	mg/kg	37.4	10	1991
Strontium	NG	S2	mg/kg	34.5	9.23	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Strontium	NG	S1	mg/kg	24.4	6.53	1991
Strontium	NG	N3	mg/kg	32.9	8.8	1991
Strontium	NG	N1	mg/kg	22.2	5.94	1991
Strontium	NG	E6	mg/kg	75.4	20.2	1991
Strontium	SD	E2	mg/kg	141	42.4	1991
Strontium	SD	N2	mg/kg	106	32	1991
Strontium	SD	S3	mg/kg	155	46.8	1991
Strontium	SD	S1	mg/kg	75.3	22.7	1991
Strontium	SD	S4	mg/kg	122	36.8	1991
Strontium	SD	N5	mg/kg	115	34.6	1991
Strontium	SS	S1	mg/kg	30.7	13.1	1991
Strontium	SS	W2	mg/kg	19.3	8.24	1991
Strontium	SS	S2	mg/kg	29.4	12.5	1991
Strontium	SS	E1	mg/kg	18.9	8.07	1991
Strontium	SS	N4	mg/kg	32.3	13.8	1991
Strontium	SS	E5	mg/kg	23.5	10.1	1991
Strontium	SS	N5	mg/kg	97.2	41.5	1991
Strontium	SS	E2	mg/kg	29.1	12.4	1991
Strontium	SS	N1	mg/kg	24.9	10.7	1991
Strontium	SS	S5	mg/kg	29.4	12.6	1991
Strontium	SS	E3	mg/kg	31.2	13.3	1991
Strontium	SS	E6	mg/kg	53.6	22.9	1991
Strontium	SS	W4	mg/kg	27.5	11.7	1991
Strontium	SS	N2	mg/kg	30.4	13	1991
Strontium	SS	S4	mg/kg	31.7	13.5	1991
Strontium	SS	S3	mg/kg	62.3	26.6	1991
Strontium	SB	S2	mg/kg	5.85	1.1	1991
Strontium	SB	S5	mg/kg	7.41	1.39	1991
Strontium	SB	N2	mg/kg	3.61	0.679	1991
Strontium	SB	E5	mg/kg	5.41	1.02	1991
Strontium	SB	W4	mg/kg	3.2	0.602	1991
Strontium	SB	N4	mg/kg	4.42	0.832	1991
Strontium	SB	S4	mg/kg	6.5	1.22	1991
Strontium	SB	S1	mg/kg	4.19	0.787	1991
Strontium	SB	W2	mg/kg	3.78	0.711	1991
Strontium	SB	E2	mg/kg	4.68	0.879	1991
Strontium	SB	E1	mg/kg	3.4	0.64	1991
Strontium	WW	N2	mg/kg	3.25	0.707	1991
Strontium	WW	W2	mg/kg	4.37	0.953	1991
Strontium	WW	S4	mg/kg	3.34	0.728	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Sulfur	FC	E1	mg/kg	1420	461	1991
Sulfur	FC	E2	mg/kg	1660	542	1991
Sulfur	FC	W4	mg/kg	1700	552	1991
Sulfur	FC	S5	mg/kg	1400	454	1991
Sulfur	FC	N2	mg/kg	1620	528	1991
Sulfur	FC	E5	mg/kg	1440	468	1991
Sulfur	FC	N4	mg/kg	1660	540	1991
Sulfur	NG	W4	mg/kg	5800	1680	1991
Sulfur	NG	N2	mg/kg	5530	1600	1991
Sulfur	NG	E1	mg/kg	6710	1950	1991
Sulfur	NG	W2	mg/kg	5230	1520	1991
Sulfur	NG	E3	mg/kg	4420	1280	1991
Sulfur	NG	S3	mg/kg	4790	1390	1991
Sulfur	NG	S2	mg/kg	4250	1230	1991
Sulfur	NG	E2	mg/kg	6890	2000	1991
Sulfur	NG	S5	mg/kg	5290	1530	1991
Sulfur	NG	S1	mg/kg	4560	1320	1991
Sulfur	NG	S4	mg/kg	5520	1600	1991
Sulfur	NG	E6	mg/kg	5550	1610	1991
Sulfur	NG	N4	mg/kg	6220	1800	1991
Sulfur	NG	N5	mg/kg	7000	2030	1991
Sulfur	NG	E5	mg/kg	4970	1440	1991
Sulfur	NG	N1	mg/kg	5530	1600	1991
Sulfur	NG	N3	mg/kg	5330	1540	1991
Sulfur	SD	E2	mg/kg	2220	153	1991
Sulfur	SD	S1	mg/kg	2810	193	1991
Sulfur	SD	N2	mg/kg	2710	187	1991
Sulfur	SD	S4	mg/kg	1830	126	1991
Sulfur	SD	S3	mg/kg	4460	307	1991
Sulfur	SD	N5	mg/kg	4010	276	1991
Sulfur	SS	E6	mg/kg	1500	115	1991
Sulfur	SS	E5	mg/kg	1050	80.1	1991
Sulfur	SS	N5	mg/kg	2440	187	1991
Sulfur	SS	E2	mg/kg	1540	118	1991
Sulfur	SS	E1	mg/kg	1200	92.1	1991
Sulfur	SS	N2	mg/kg	1310	99.9	1991
Sulfur	SS	S5	mg/kg	669	51.2	1991
Sulfur	SS	S2	mg/kg	944	72.2	1991
Sulfur	SS	N1	mg/kg	1650	126	1991
Sulfur	SS	E3	mg/kg	1430	109	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Sulfur	SS	W2	mg/kg	1120	85.7	1991
Sulfur	SS	S4	mg/kg	852	65.2	1991
Sulfur	SS	N4	mg/kg	1160	89	1991
Sulfur	SS	S1	mg/kg	1050	80.6	1991
Sulfur	SS	W4	mg/kg	1400	107	1991
Sulfur	SS	S3	mg/kg	1990	152	1991
Sulfur	SB	N2	mg/kg	6400	1400	1991
Sulfur	SB	S4	mg/kg	6540	1430	1991
Sulfur	SB	S2	mg/kg	6410	1400	1991
Sulfur	SB	E5	mg/kg	6460	1410	1991
Sulfur	SB	W2	mg/kg	6340	1390	1991
Sulfur	SB	S1	mg/kg	6720	1470	1991
Sulfur	SB	E1	mg/kg	4720	1030	1991
Sulfur	SB	S5	mg/kg	6990	1530	1991
Sulfur	SB	W4	mg/kg	7020	1530	1991
Sulfur	SB	E2	mg/kg	6510	1420	1991
Sulfur	SB	N4	mg/kg	7290	1590	1991
Sulfur	WW	W2	mg/kg	1810	752	1991
Sulfur	WW	N2	mg/kg	1550	645	1991
Sulfur	WW	S4	mg/kg	1800	746	1991
Thallium	NG	N5	mg/kg	1.17	0.00168	2005
Thallium	NG	E6	mg/kg	1.31	0.00187	2005
Thallium	SD	E2	mg/kg	0.997	0.0713	2002
Thallium	SD	N2	mg/kg	1.18	0.0845	2002
Thallium	SD	S1	mg/kg	1.29	0.0922	2002
Thallium	SD	S4	mg/kg	0.828	0.0593	2002
Thallium	SD	N5	mg/kg	1.47	0.105	2002
Thallium	SD	S3	mg/kg	1.8	0.129	2002
Thallium	SS	S2	mg/kg	1.12	0.0518	2002
Thallium	SS	S1	mg/kg	0.994	0.0461	2002
Thallium	SS	W2	mg/kg	0.961	0.0446	2002
Thallium	SS	E5	mg/kg	0.946	0.0439	2002
Thallium	SS	W4	mg/kg	1.28	0.0595	2002
Thallium	SS	N5	mg/kg	1.21	0.0562	2002
Thallium	SS	E1	mg/kg	0.833	0.0386	2002
Thallium	SS	N4	mg/kg	1.02	0.0471	2002
Thallium	SS	S5	mg/kg	0.981	0.0455	2002
Thallium	SS	E2	mg/kg	0.896	0.0416	2002
Thallium	SS	N2	mg/kg	1.03	0.0479	2002
Thallium	SS	E6	mg/kg	1.06	0.0491	2002

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Thallium	SS	S4	mg/kg	0.927	0.043	2002
Thallium	SS	S3	mg/kg	1.12	0.0517	2002
Titanium	NG	N2	mg/kg	13.4	0.32	2002
Titanium	NG	S4	mg/kg	9.14	0.218	2002
Titanium	NG	W2	mg/kg	20.6	0.491	2002
Titanium	NG	E6	mg/kg	20	0.478	2002
Titanium	NG	E2	mg/kg	9.97	0.238	2002
Titanium	NG	W4	mg/kg	24.2	0.578	2002
Titanium	NG	S2	mg/kg	24.4	0.583	2002
Titanium	NG	S3	mg/kg	7.47	0.178	2002
Titanium	NG	S5	mg/kg	22.6	0.541	2002
Titanium	NG	N4	mg/kg	14.5	0.345	2002
Titanium	NG	N5	mg/kg	22.2	0.531	2002
Titanium	NG	E5	mg/kg	15.1	0.361	2002
Titanium	NG	S1	mg/kg	24.3	0.581	2002
Titanium	NG	E1	mg/kg	10.1	0.241	2002
Titanium	SD	S3	mg/kg	672	47.2	1991
Titanium	SD	E2	mg/kg	646	45.4	1991
Titanium	SD	S4	mg/kg	602	42.3	1991
Titanium	SD	N2	mg/kg	474	33.3	1991
Titanium	SD	S1	mg/kg	528	37.1	1991
Titanium	SD	N5	mg/kg	396	27.8	1991
Titanium	SS	S1	mg/kg	352	40.7	1991
Titanium	SS	W2	mg/kg	314	36.4	1991
Titanium	SS	S2	mg/kg	370	42.9	1991
Titanium	SS	E1	mg/kg	276	31.9	1991
Titanium	SS	N5	mg/kg	357	41.4	1991
Titanium	SS	S5	mg/kg	405	46.9	1991
Titanium	SS	E3	mg/kg	335	38.8	1991
Titanium	SS	E5	mg/kg	334	38.7	1991
Titanium	SS	E2	mg/kg	322	37.2	1991
Titanium	SS	W4	mg/kg	314	36.3	1991
Titanium	SS	E6	mg/kg	359	41.5	1991
Titanium	SS	N4	mg/kg	358	41.5	1991
Titanium	SS	N2	mg/kg	373	43.2	1991
Titanium	SS	S4	mg/kg	376	43.6	1991
Titanium	SS	S3	mg/kg	326	37.7	1991
Titanium	SS	N1	mg/kg	396	45.9	1991
Vanadium	NG	W2	mg/kg	2.49	0.0853	2010
Vanadium	NG	E5	mg/kg	3.07	0.105	2010

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Vanadium	NG	W4	mg/kg	3	0.103	2010
Vanadium	SD	N5	mg/kg	67.7	24.8	1991
Vanadium	SD	S4	mg/kg	62.2	22.8	1991
Vanadium	SD	S3	mg/kg	57.3	21	1991
Vanadium	SD	E2	mg/kg	49.9	18.3	1991
Vanadium	SD	S1	mg/kg	55.2	20.2	1991
Vanadium	SD	N2	mg/kg	55.8	20.5	1991
Vanadium	SS	S1	mg/kg	62.9	22.4	1991
Vanadium	SS	W2	mg/kg	51.2	18.2	1991
Vanadium	SS	S2	mg/kg	63.4	22.6	1991
Vanadium	SS	E1	mg/kg	46.3	16.5	1991
Vanadium	SS	N5	mg/kg	49.8	17.7	1991
Vanadium	SS	W4	mg/kg	64.7	23	1991
Vanadium	SS	N4	mg/kg	54.6	19.5	1991
Vanadium	SS	E6	mg/kg	49.9	17.8	1991
Vanadium	SS	E5	mg/kg	53.1	18.9	1991
Vanadium	SS	S5	mg/kg	60.2	21.4	1991
Vanadium	SS	E2	mg/kg	44.2	15.7	1991
Vanadium	SS	E3	mg/kg	51.1	18.2	1991
Vanadium	SS	N2	mg/kg	62.7	22.3	1991
Vanadium	SS	S4	mg/kg	69	24.6	1991
Vanadium	SS	S3	mg/kg	50.9	18.1	1991
Vanadium	SS	N1	mg/kg	43.9	15.6	1991
Zinc	FC	E2	mg/kg	28.3	7.49	1991
Zinc	FC	S5	mg/kg	26.8	7.1	1991
Zinc	FC	E5	mg/kg	25	6.63	1991
Zinc	FC	W4	mg/kg	33.3	8.83	1991
Zinc	FC	E1	mg/kg	28.7	7.61	1991
Zinc	FC	N2	mg/kg	28	7.41	1991
Zinc	FC	N4	mg/kg	27.9	7.39	1991
Zinc	NG	N4	mg/kg	45.6	15.1	1991
Zinc	NG	S3	mg/kg	59.6	19.8	1991
Zinc	NG	W4	mg/kg	45.3	15	1991
Zinc	NG	S1	mg/kg	39.8	13.2	1991
Zinc	NG	N2	mg/kg	46.7	15.5	1991
Zinc	NG	S5	mg/kg	38.2	12.7	1991
Zinc	NG	S4	mg/kg	37.2	12.3	1991
Zinc	NG	W2	mg/kg	44.3	14.7	1991
Zinc	NG	E2	mg/kg	41.4	13.7	1991
Zinc	NG	S2	mg/kg	42.5	14.1	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Zinc	NG	E5	mg/kg	49.1	16.3	1991
Zinc	NG	E3	mg/kg	43.2	14.3	1991
Zinc	NG	E6	mg/kg	63.9	21.2	1991
Zinc	NG	N5	mg/kg	52.2	17.3	1991
Zinc	NG	E1	mg/kg	59.5	19.7	1991
Zinc	NG	N1	mg/kg	65.7	21.8	1991
Zinc	NG	N3	mg/kg	45.1	15	1991
Zinc	SD	N5	mg/kg	231	73.3	1991
Zinc	SD	N2	mg/kg	147	46.5	1991
Zinc	SD	E2	mg/kg	106	33.6	1991
Zinc	SD	S1	mg/kg	135	42.7	1991
Zinc	SD	S4	mg/kg	117	37.2	1991
Zinc	SD	S3	mg/kg	162	51.5	1991
Zinc	SS	S1	mg/kg	90.9	40.6	1991
Zinc	SS	W2	mg/kg	75.5	33.7	1991
Zinc	SS	S2	mg/kg	91.1	40.7	1991
Zinc	SS	E1	mg/kg	80.5	36	1991
Zinc	SS	E5	mg/kg	80.9	36.1	1991
Zinc	SS	S5	mg/kg	84.6	37.8	1991
Zinc	SS	E2	mg/kg	85.6	38.3	1991
Zinc	SS	N5	mg/kg	121	54.1	1991
Zinc	SS	E6	mg/kg	104	46.4	1991
Zinc	SS	E3	mg/kg	98.2	43.9	1991
Zinc	SS	N4	mg/kg	85.6	38.2	1991
Zinc	SS	N1	mg/kg	111	49.4	1991
Zinc	SS	S4	mg/kg	102	45.5	1991
Zinc	SS	N2	mg/kg	118	52.9	1991
Zinc	SS	W4	mg/kg	132	58.9	1991
Zinc	SS	S3	mg/kg	93.8	41.9	1991
Zinc	SB	S1	mg/kg	52.7	17.5	1991
Zinc	SB	S4	mg/kg	53.8	17.9	1991
Zinc	SB	E1	mg/kg	55.9	18.6	1991
Zinc	SB	E5	mg/kg	51.8	17.2	1991
Zinc	SB	S5	mg/kg	54.2	18	1991
Zinc	SB	N2	mg/kg	60.3	20	1991
Zinc	SB	W2	mg/kg	45.4	15.1	1991
Zinc	SB	N4	mg/kg	57.6	19.1	1991
Zinc	SB	W4	mg/kg	64.1	21.3	1991
Zinc	SB	S2	mg/kg	50.8	16.9	1991
Zinc	SB	E2	mg/kg	62.9	20.9	1991

Table F-2
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Inorganics
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Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date (2021)
Zinc	WW	W2	mg/kg	32.8	10.5	1991
Zinc	WW	S4	mg/kg	38.2	12.2	1991
Zinc	WW	N2	mg/kg	33.2	10.6	1991
Zirconium	SD	N5	mg/kg	25.8	1.78	1991
Zirconium	SD	N2	mg/kg	23.8	1.64	1991
Zirconium	SD	E2	mg/kg	27.2	1.88	1991
Zirconium	SD	S4	mg/kg	25.3	1.74	1991
Zirconium	SD	S3	mg/kg	27.6	1.9	1991
Zirconium	SD	S1	mg/kg	22.4	1.54	1991
Zirconium	SS	N5	mg/kg	16.9	1.35	1991
Zirconium	SS	E2	mg/kg	16.4	1.31	1991
Zirconium	SS	E6	mg/kg	17.4	1.39	1991
Zirconium	SS	E1	mg/kg	16.5	1.32	1991
Zirconium	SS	S5	mg/kg	22.4	1.79	1991
Zirconium	SS	E5	mg/kg	16	1.28	1991
Zirconium	SS	S2	mg/kg	19.2	1.53	1991
Zirconium	SS	W2	mg/kg	15.8	1.26	1991
Zirconium	SS	N4	mg/kg	18.6	1.49	1991
Zirconium	SS	S1	mg/kg	20.6	1.65	1991
Zirconium	SS	N2	mg/kg	26.1	2.08	1991
Zirconium	SS	S4	mg/kg	21.8	1.74	1991
Zirconium	SS	W4	mg/kg	21.9	1.75	1991
Zirconium	SS	S3	mg/kg	20.6	1.65	1991

Table F-3
Stability of Site-Wide Upper and Lower Limits, Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL18 (log-normal)	LL18 (log-normal)	UL21 (log-normal)	LL21 (log-normal)	RPD UL21-UL18	RPD LL21 - LL18	Analysis Start Date (2021)

Table F-4
Stability of Site-Specific Upper and Lower Limits, Inorganics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL18 (log-normal)	LL18 (log-normal)	UL21 (log-normal)	LL21 (log-normal)	RPD UL21-UL18	RPD LL21 - LL18	Analysis Start Date (2021)

Table F-5
Updated Site-Wide Upper and Lower Limits (UL21 and LL21), Organics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date
Aldrin	SD	SiteWide	ng/g	0.0252	0.000467	2013
Aldrin	SS	SiteWide	ng/g	0.0237	0.000438	2013
BHC, alpha-	NG	SiteWide	ng/g	3.5	0.00419	2013
BHC, alpha-	SB	SiteWide	ng/g	0.961	0.000188	2013
BHC, alpha-	SD	SiteWide	ng/g	0.121	0.00276	2013
BHC, alpha-	SS	SiteWide	ng/g	0.176	0.00109	2013
Chlordane, alpha-	NG	SiteWide	ng/g	1.29	0.026	2013
Chlordane, alpha-	SB	SiteWide	ng/g	0.133	0.00521	2013
Chlordane, alpha-	SD	SiteWide	ng/g	0.159	0.00517	2013
Chlordane, alpha-	SS	SiteWide	ng/g	0.0522	0.0077	2013
Chlordane, trans- (gamma-Chlordane)	NG	SiteWide	ng/g	1.78	0.0186	2013
Chlordane, trans- (gamma-Chlordane)	SB	SiteWide	ng/g	0.171	0.0028	2013
Chlordane, trans- (gamma-Chlordane)	SD	SiteWide	ng/g	0.127	0.00582	2013
Chlordane, trans- (gamma-Chlordane)	SS	SiteWide	ng/g	0.0477	0.00672	2013
DDD (p,p'-DDD)	NG	SiteWide	ng/g	4.72	0.00438	2013
DDD (p,p'-DDD)	SD	SiteWide	ng/g	0.52	0.00474	2013
DDD (p,p'-DDD)	SS	SiteWide	ng/g	0.159	0.00391	2013
DDE (p,p'-DDE)	NG	SiteWide	ng/g	0.78	0.0814	2013
DDE (p,p'-DDE)	SD	SiteWide	ng/g	1.38	0.00842	2013
DDE (p,p'-DDE)	SS	SiteWide	ng/g	0.613	0.145	2013
DDT (p,p'-DDT)	NG	SiteWide	ng/g	5.76	0.0208	2013
DDT (p,p'-DDT)	SD	SiteWide	ng/g	1.3	0.00326	2013
DDT (p,p'-DDT)	SS	SiteWide	ng/g	0.671	0.14	2013
Dieldrin	NG	SiteWide	ng/g	0.586	0.124	2013
Dieldrin	SB	SiteWide	ng/g	0.321	0.0108	2013
Dieldrin	SD	SiteWide	ng/g	0.149	0.00479	2013
Dieldrin	SS	SiteWide	ng/g	0.131	0.0113	2013
Dieldrin	WW	SiteWide	ng/g	2.04	0.000596	2013
Endosulfan I	NG	SiteWide	ng/g	2.45	0.00624	2013
Endosulfan I	SB	SiteWide	ng/g	1.06	0.00026	2013
Endosulfan II	NG	SiteWide	ng/g	4.45	0.0081	2013
Endosulfan II	SS	SiteWide	ng/g	0.213	0.00122	2013
Endosulfan Sulfate	NG	SiteWide	ng/g	2.43	0.0104	2013
Endosulfan Sulfate	SB	SiteWide	ng/g	4.82	0.0000629	2013
Endosulfan Sulfate	SS	SiteWide	ng/g	0.0847	0.00039	2013
Endrin	NG	SiteWide	ng/g	1.74	0.0254	2013
Endrin	SD	SiteWide	ng/g	0.112	0.00386	2013
Endrin	SS	SiteWide	ng/g	0.0327	0.00544	2013
Endrin Aldehyde	NG	SiteWide	ng/g	1.33	0.00506	2013
Endrin Aldehyde	SB	SiteWide	ng/g	0.537	0.000119	2013
Endrin Aldehyde	SS	SiteWide	ng/g	0.0836	0.000541	2013
Heptachlor	NG	SiteWide	ng/g	0.318	0.00166	2013
Heptachlor	SB	SiteWide	ng/g	0.155	0.0000467	2013
Heptachlor	SD	SiteWide	ng/g	0.0333	0.000283	2013
Heptachlor	SS	SiteWide	ng/g	0.0233	0.000251	2013
Heptachlor Epoxide	NG	SiteWide	ng/g	0.953	0.00234	2013
Heptachlor Epoxide	SB	SiteWide	ng/g	3.83	0.000061	2013
Heptachlor Epoxide	SD	SiteWide	ng/g	0.0541	0.000421	2013
Heptachlor Epoxide	SS	SiteWide	ng/g	0.0776	0.00296	2013
Lindane (Hexachlorocyclohexane, gamma)	NG	SiteWide	ng/g	3.46	0.00639	2013
Lindane (Hexachlorocyclohexane, gamma)	SD	SiteWide	ng/g	0.168	0.00723	2013
Lindane (Hexachlorocyclohexane, gamma)	SS	SiteWide	ng/g	0.253	0.00272	2013
Methoxychlor (4,4'-Methoxychlor)	SS	SiteWide	ng/g	4.41	0.000197	2013
Mirex	FC	SiteWide	ng/g	0.799	0.00000568	2013
Mirex	NG	SiteWide	ng/g	0.818	0.000453	2013
Mirex	SB	SiteWide	ng/g	0.315	0.0000174	2013
Mirex	SD	SiteWide	ng/g	0.0421	0.000252	2013
Mirex	SS	SiteWide	ng/g	0.0449	0.000413	2013
Mirex	WW	SiteWide	ng/g	0.183	0.000134	2013
PARLAR 26	SS	SiteWide	ng/g	3.49	0.000374	2013
Polychlorinated Biphenyls (PCBs)	NG	SiteWide	mg/kg	6.15	0.0332	2018
Polychlorinated Biphenyls (PCBs)	SD	SiteWide	mg/kg	1.03	0.00359	2018
Polychlorinated Biphenyls (PCBs)	SS	SiteWide	mg/kg	12.2	0.0393	2018
Upper Bound PCDD/F TEQ (WHO 2005)	FC	SiteWide	pg/g	3.31	0.00685	2004
Upper Bound PCDD/F TEQ (WHO 2005)	NG	SiteWide	pg/g	3.71	0.048	2004
Upper Bound PCDD/F TEQ (WHO 2005)	SB	SiteWide	pg/g	3.57	0.00747	2004
Upper Bound PCDD/F TEQ (WHO 2005)	SS	SiteWide	pg/g	2.07	0.384	2004
Upper Bound PCDD/F TEQ (WHO 2005)	WW	SiteWide	pg/g	1.44	0.0175	2004

Table F-6
Updated Site-Specific Upper and Lower Limits (UL21 and LL21), Organics
Lambton Facility 2021 Annual Landfill Report Biomonitoring Program
2020 FIeld Year

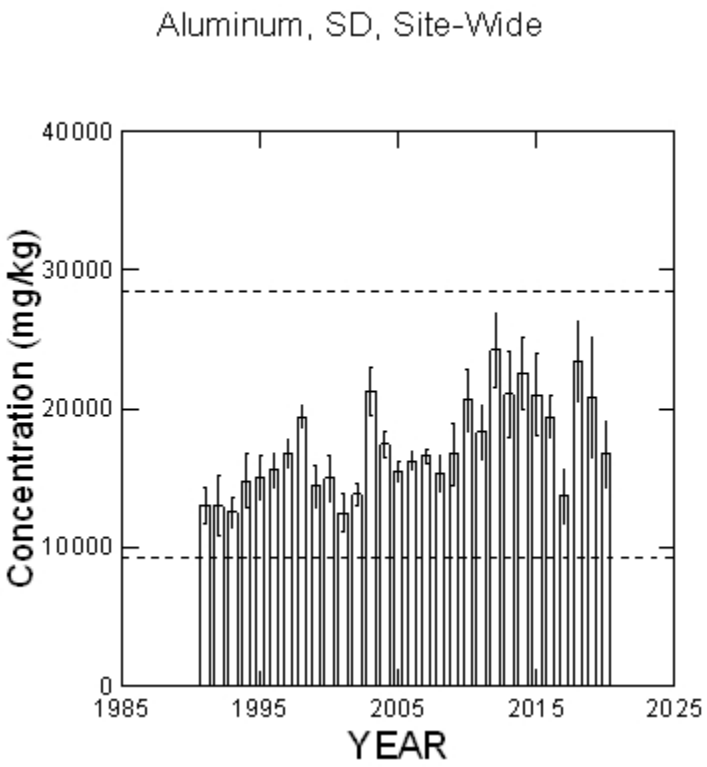
Analyte	Matrix	Site	Units	UL21 (log-normal)	LL21 (log-normal)	Analysis Start Date
Aldrin	SD	E2	ng/g	0.0209	0.000388	2013
Aldrin	SD	N2	ng/g	0.0231	0.000428	2013
Aldrin	SD	N5	ng/g	0.0528	0.000979	2013
Aldrin	SD	S1	ng/g	0.022	0.000408	2013
Aldrin	SD	S3	ng/g	0.0921	0.00171	2013

F.2 UL18 EXCEEDANCES CONTROL CHART GRAPHS

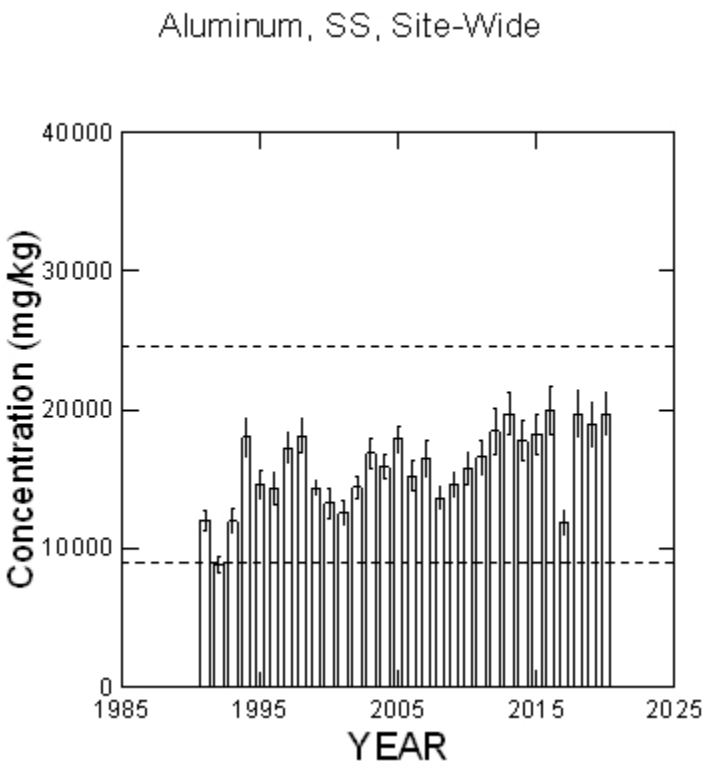
This appendix provides control charts for all analytes and matrices for which either the Site-Wide (**Section F.2.1**) or Site-Specific (**Section F.2.2**) upper limits (ULs) calculated in 2018 were exceeded in at least one sample from 2018, 2019, or 2020. In all control charts, the height of the bar indicates the average reported analyte concentration for that year. If more than one sample was collected in that year, an error bar is also shown that indicates the standard error of the mean. Dashed lines on the graphs indicate the lower limit (LL) and upper limit (UL) calculated for that analyte, matrix, and site (or site-wide) in 2018. Note, non-detect values have been assigned the value of the full reported detection limit.

F.2.1 Site-Wide 2018 Upper Limit Exceeded

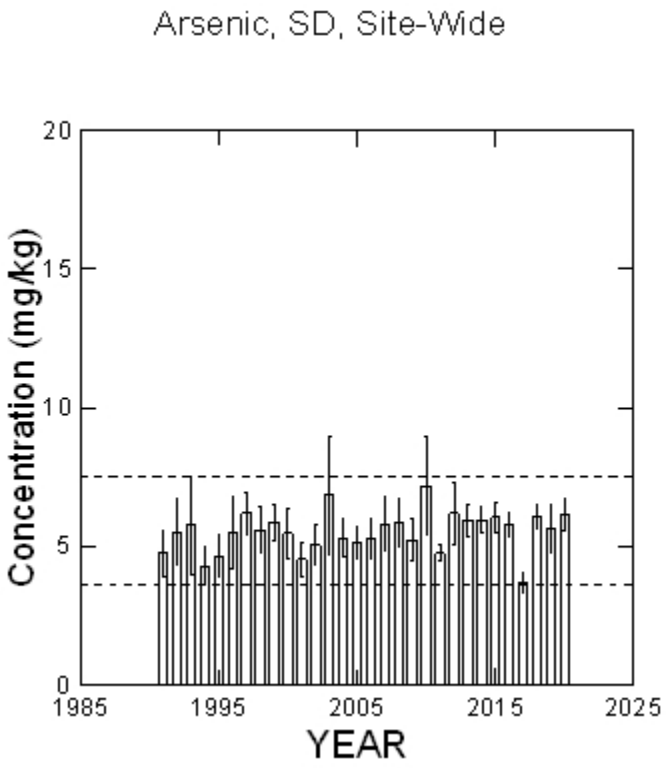
1. Aluminum, SD



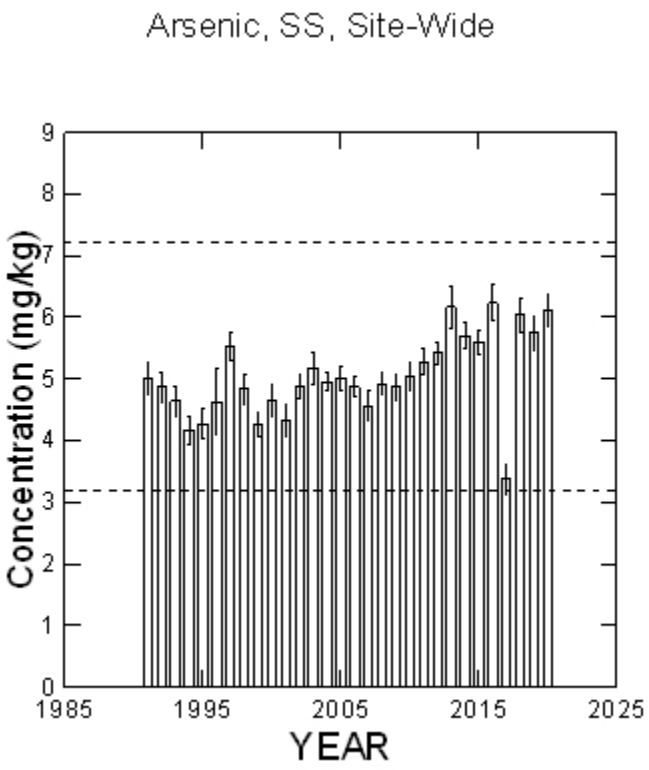
2. Aluminum, SS



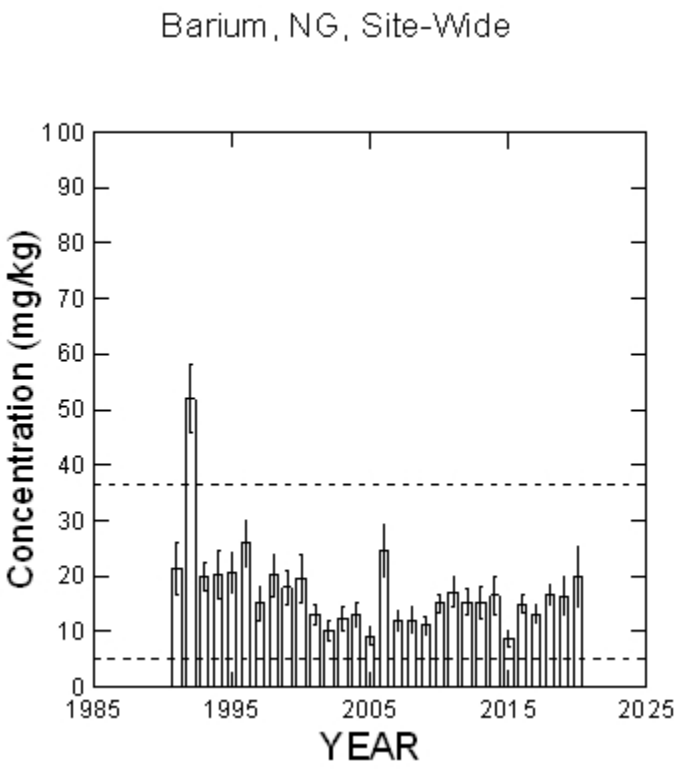
3. Arsenic, SD


Arsenic, SD, Site-Wide
Concentration (mg/kg)
0
5
10
15
20
1985
1995
2005
2015
2025
YEAR

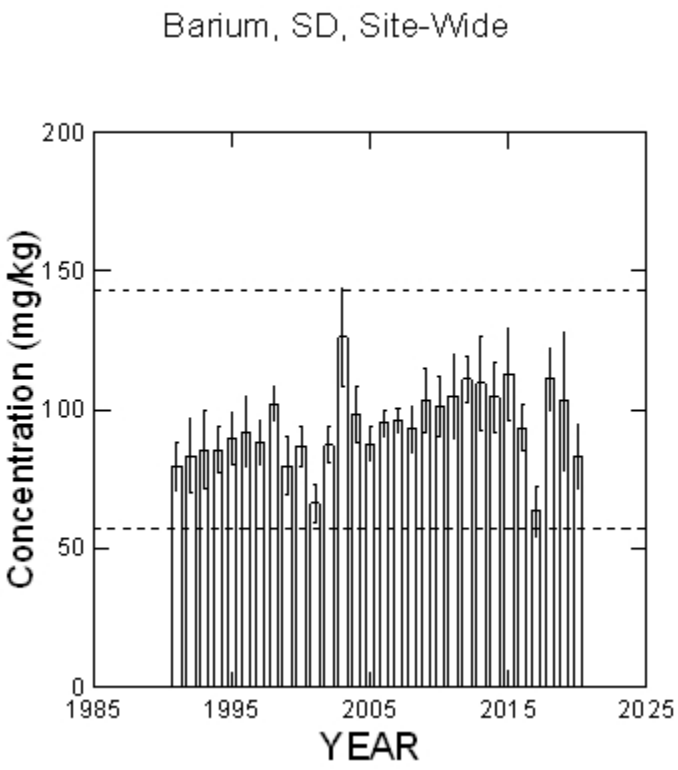
4. Arsenic, SS


Arsenic, SS, Site-Wide
Concentration (mg/kg)
0
1
2
3
4
5
6
7
8
9
1985
1995
2005
2015
2025
YEAR

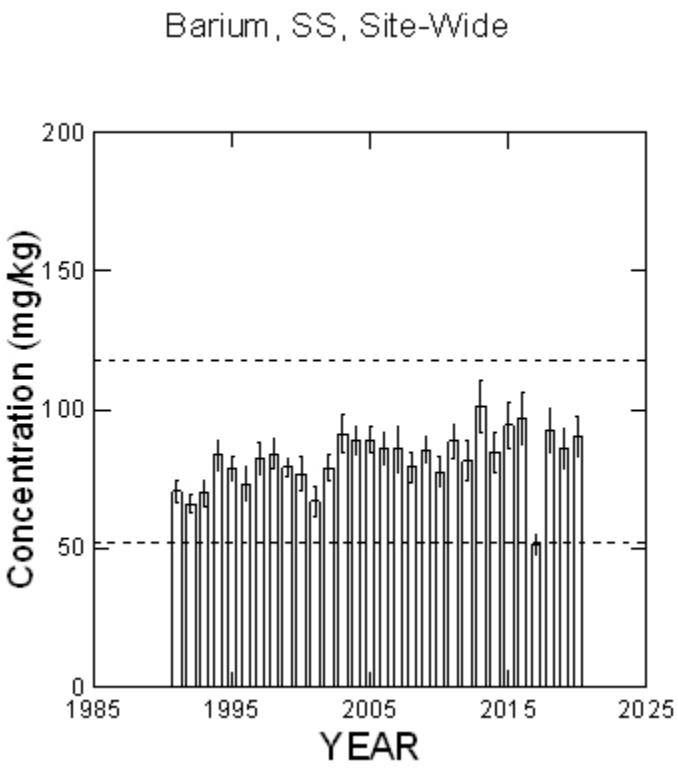
5. Barium, NG


Barium, NG, Site-Wide
Concentration (mg/kg)
100
90
80
70
60
50
40
30
20
10
0
1985
1995
2005
2015
2025
YEAR

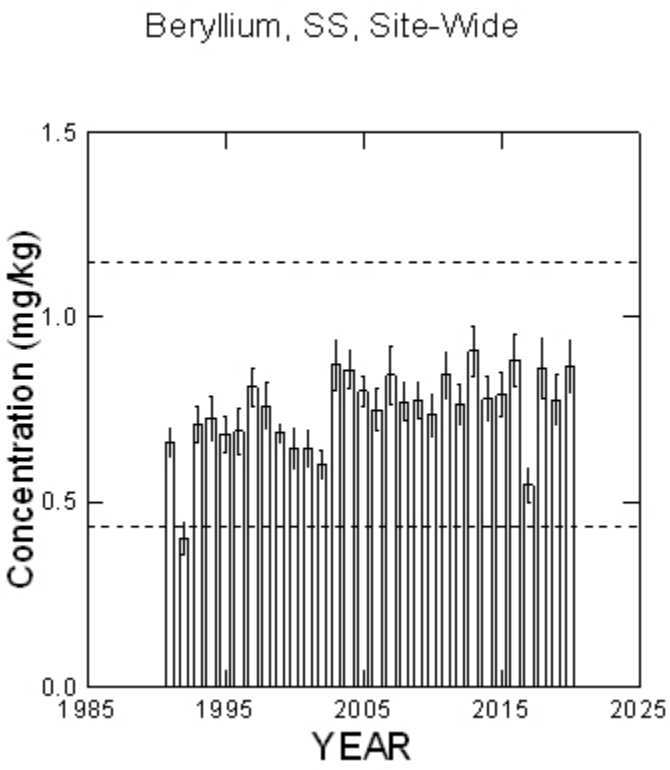
6. Barium, SD


Barium, SD, Site-Wide
Concentration (mg/kg)
200
150
100
50
0
1985
1995
2005
2015
2025
YEAR

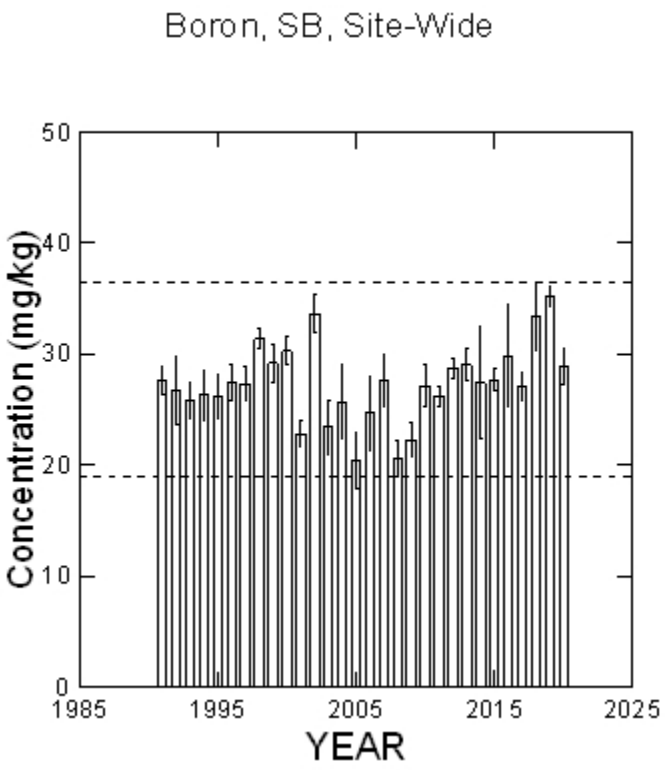
7. Barium, SS


Barium, SS, Site-Wide
Concentration (mg/kg)
200
150
100
50
0
1985
1995
2005
2015
2025
YEAR

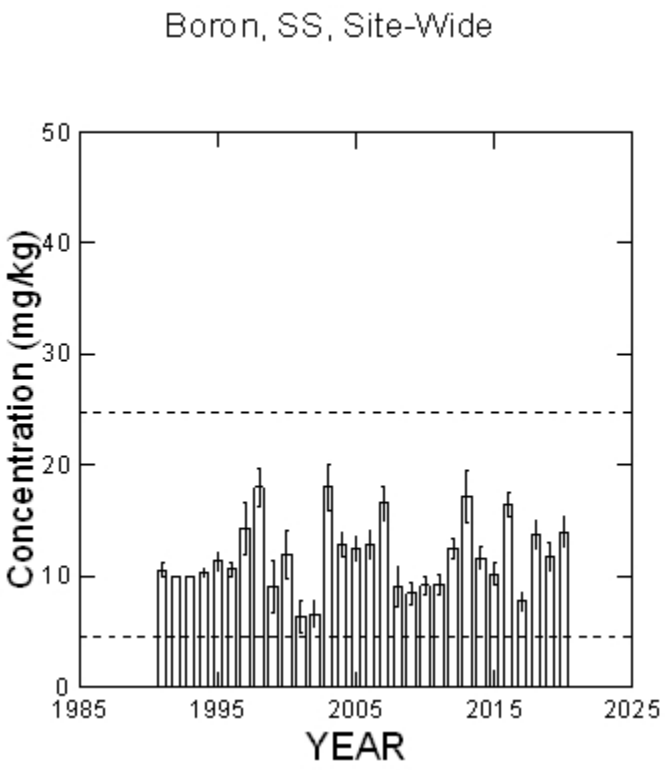
8. Beryllium, SS



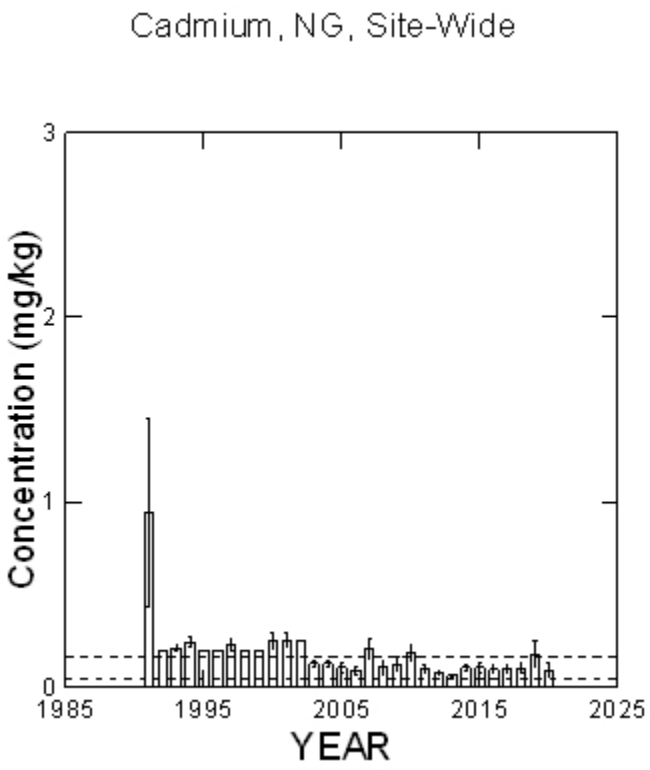
9. Boron, SB


Boron, SB, Site-Wide
Concentration (mg/kg)
0
10
20
30
40
50
1985
1995
2005
2015
2025
YEAR

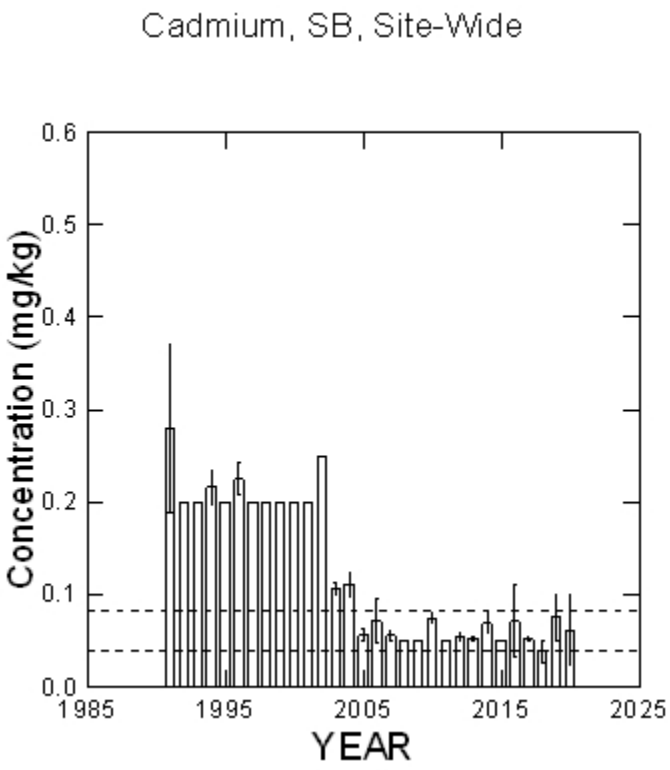
10. Boron, SS


Boron, SS, Site-Wide
Concentration (mg/kg)
0
10
20
30
40
50
1985
1995
2005
2015
2025
YEAR

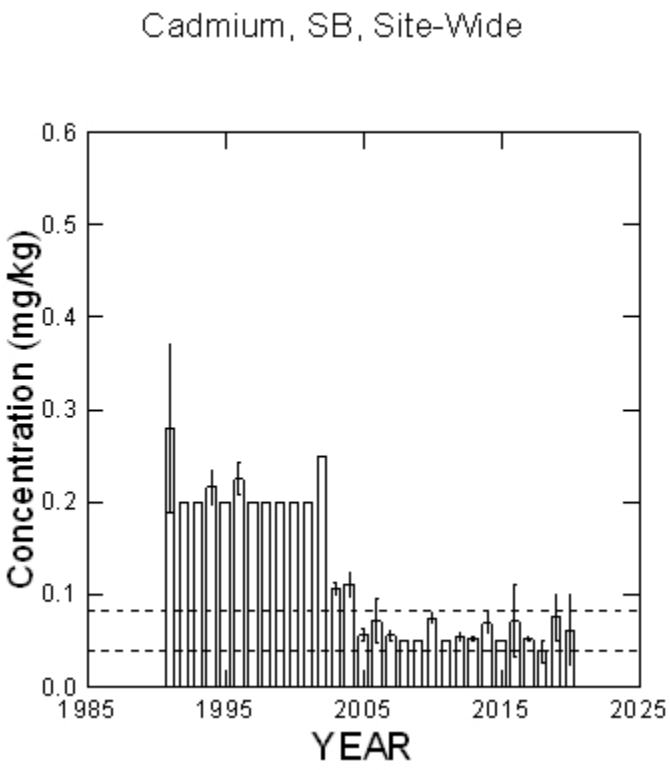
11. Cadmium, NG



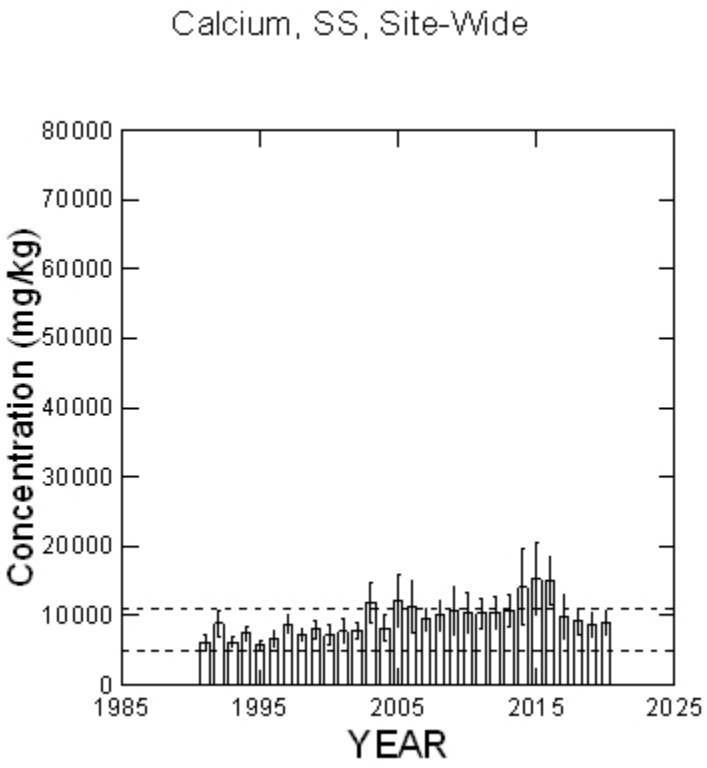
12. Cadmium, SB



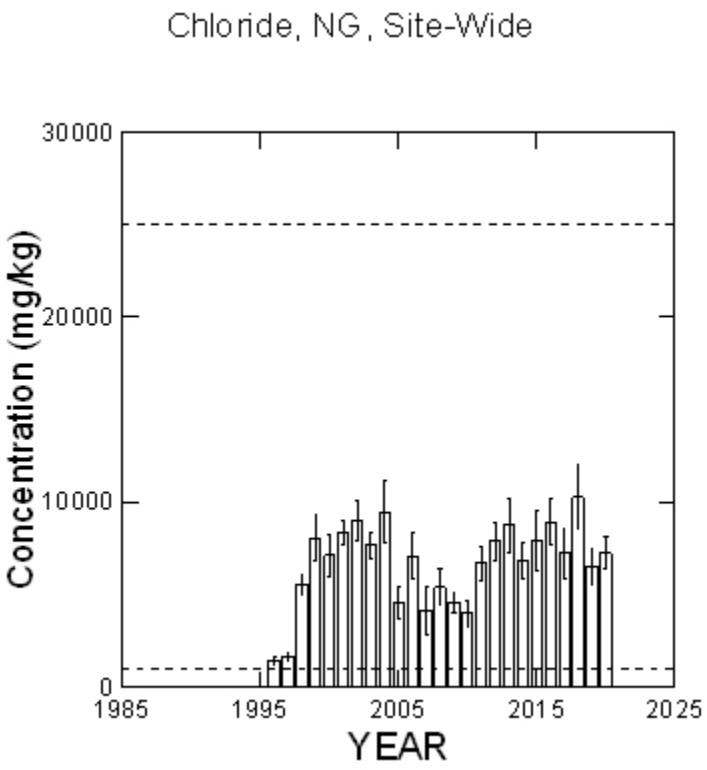
13. Calcium, SB



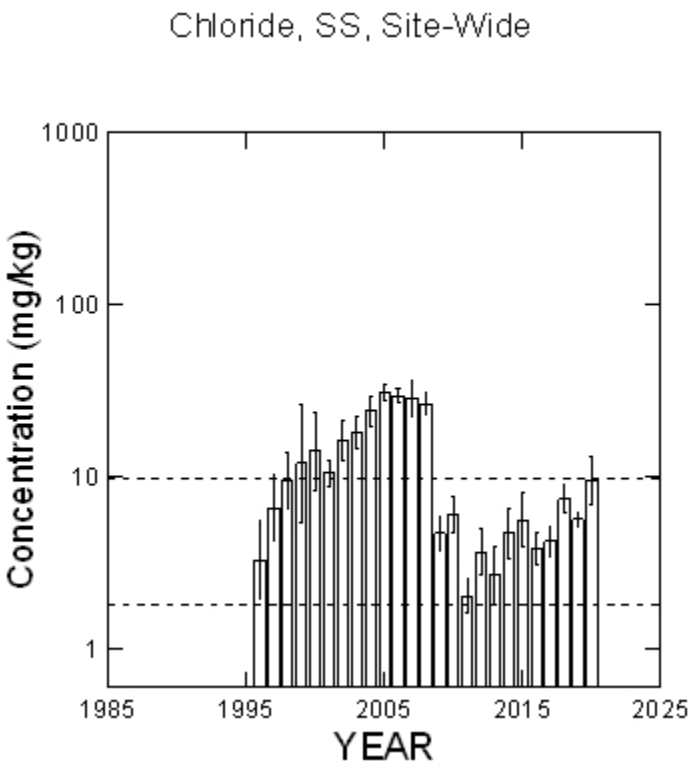
14. Calcium, SS



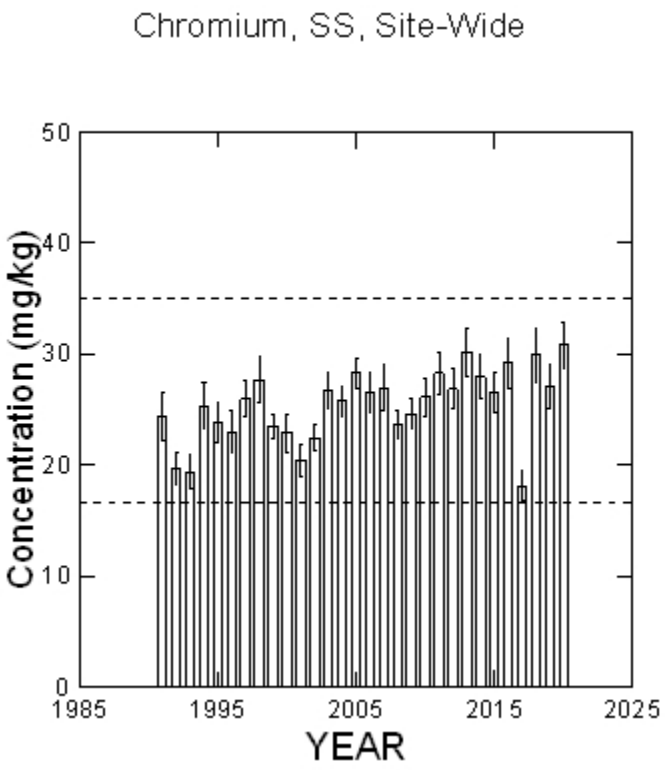
15. Chloride, NG



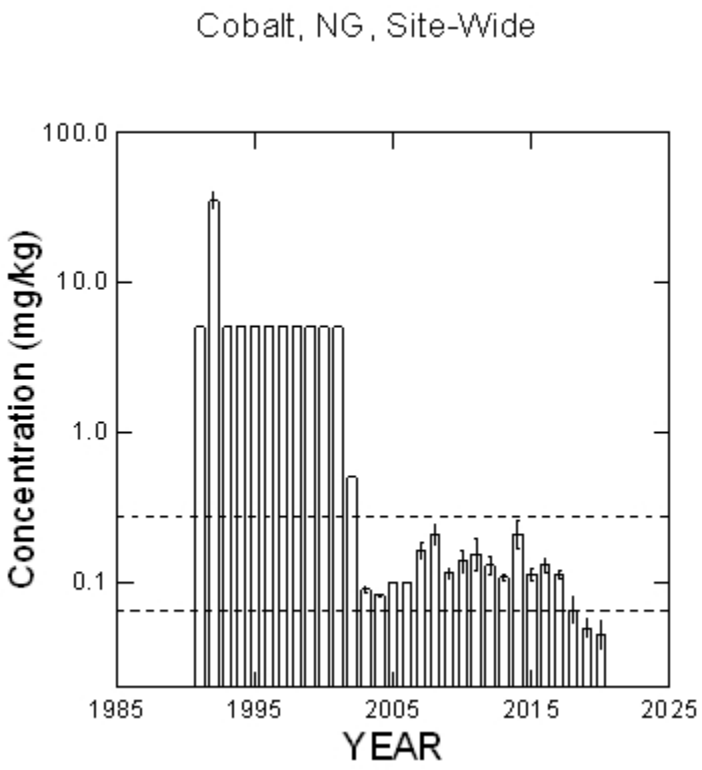
16. Chloride, SS



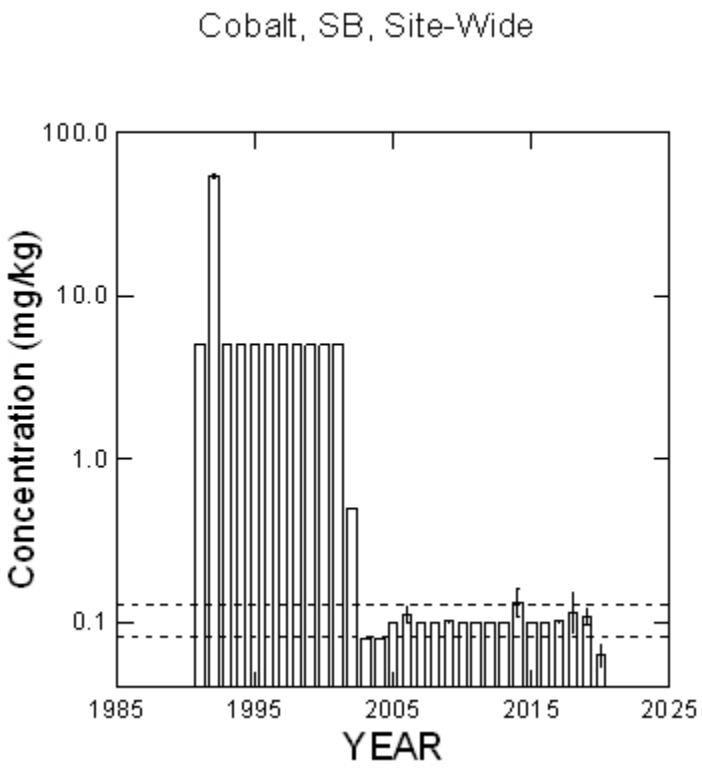
17. Chromium, SS



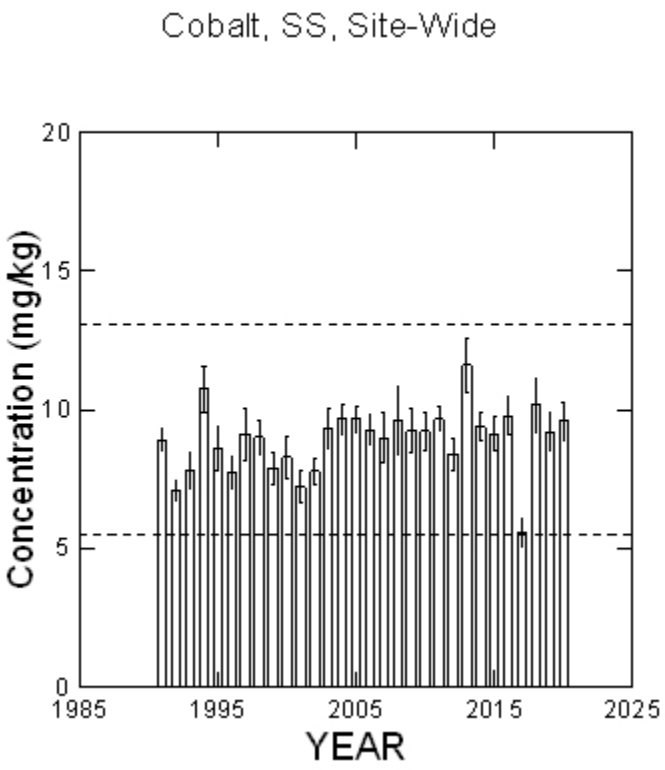
18. Cobalt, NG


Cobalt, NG, Site-Wide
100.0
10.0
1.0
0.1
Concentration (mg/kg)
1985
1995
2005
2015
2025
YEAR

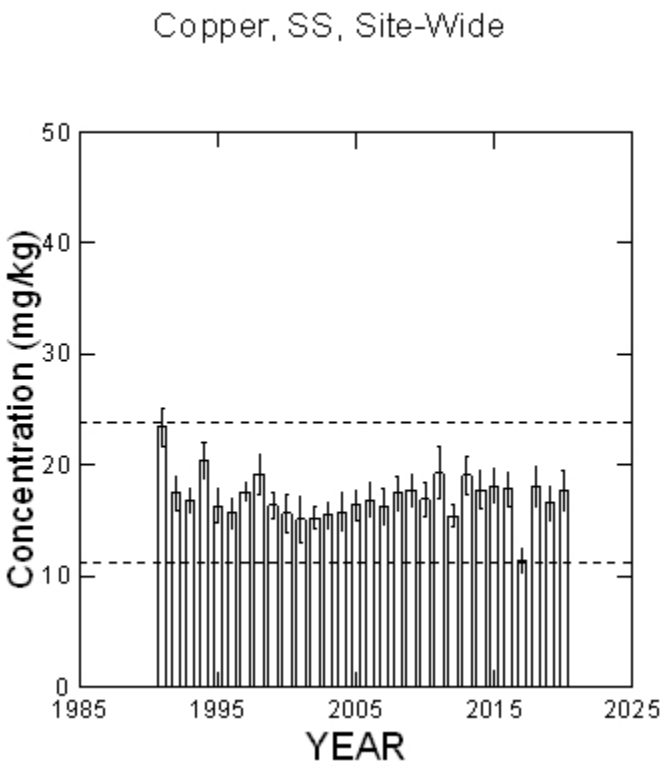
19. Cobalt, SB


Cobalt, SB, Site-Wide
100.0
10.0
1.0
0.1
Concentration (mg/kg)
1985
1995
2005
2015
2025
YEAR

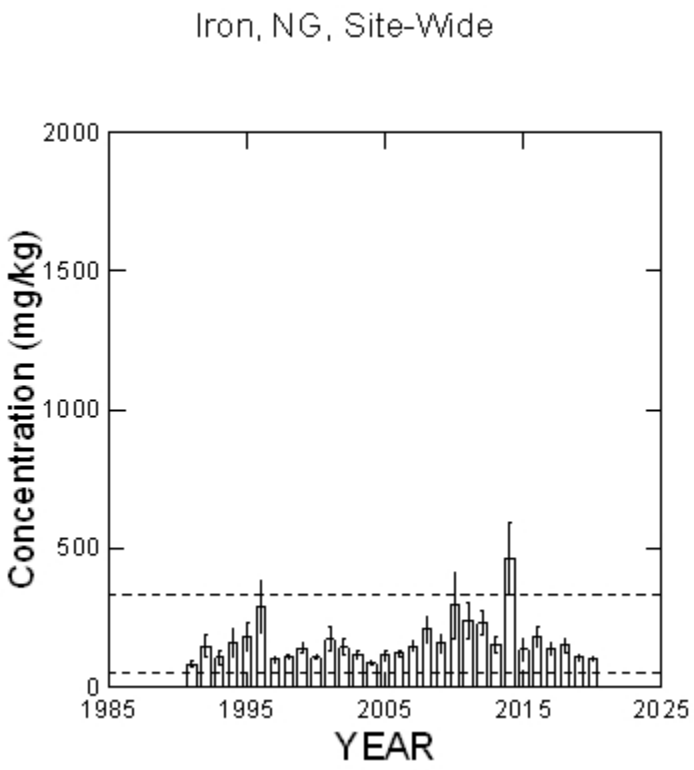
20. Cobalt, SS


Cobalt, SS, Site-Wide
Concentration (mg/kg)
0
5
10
15
20
1985
1995
2005
2015
2025
YEAR

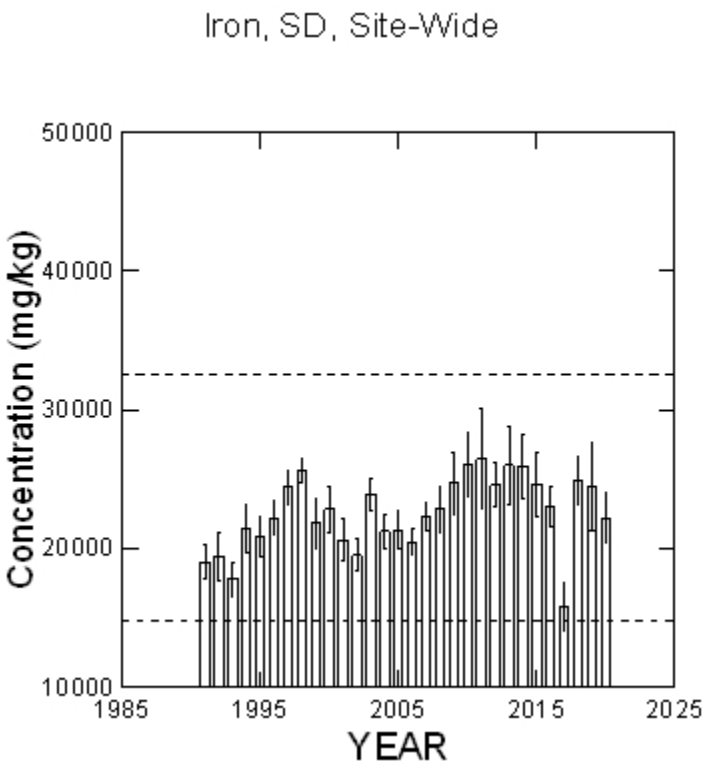
21. Copper, SS


Copper, SS, Site-Wide
Concentration (mg/kg)
0
10
20
30
40
50
1985
1995
2005
2015
2025
YEAR

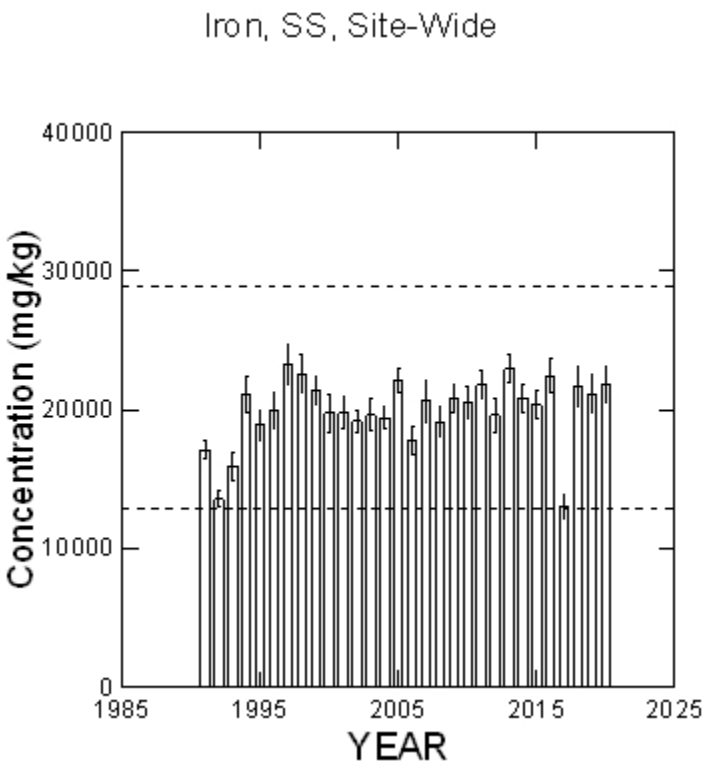
22. Iron, NG


Iron, NG, Site-Wide
Concentration (mg/kg)
2000
1500
1000
500
0
1985
1995
2005
2015
2025
YEAR

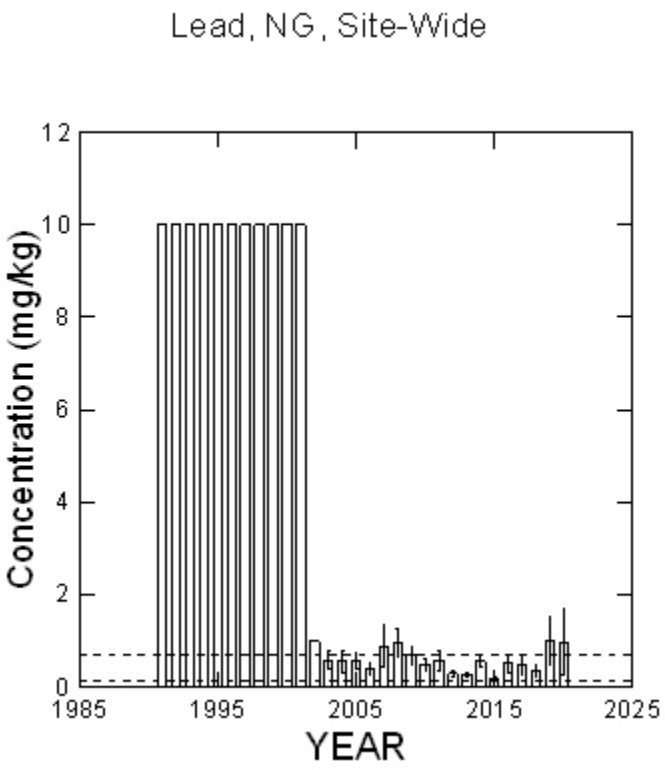
23. Iron, SD


Iron, SD, Site-Wide
Concentration (mg/kg)
50000
40000
30000
20000
10000
1985
1995
2005
2015
2025
YEAR

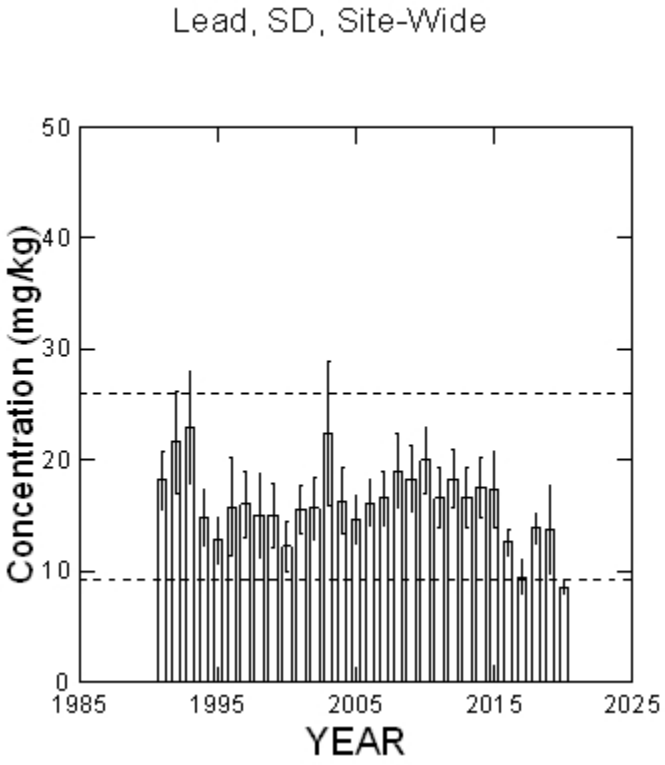
24. Iron, SS


Iron, SS, Site-Wide
Concentration (mg/kg)
40000
30000
20000
10000
0
1985
1995
2005
2015
2025
YEAR

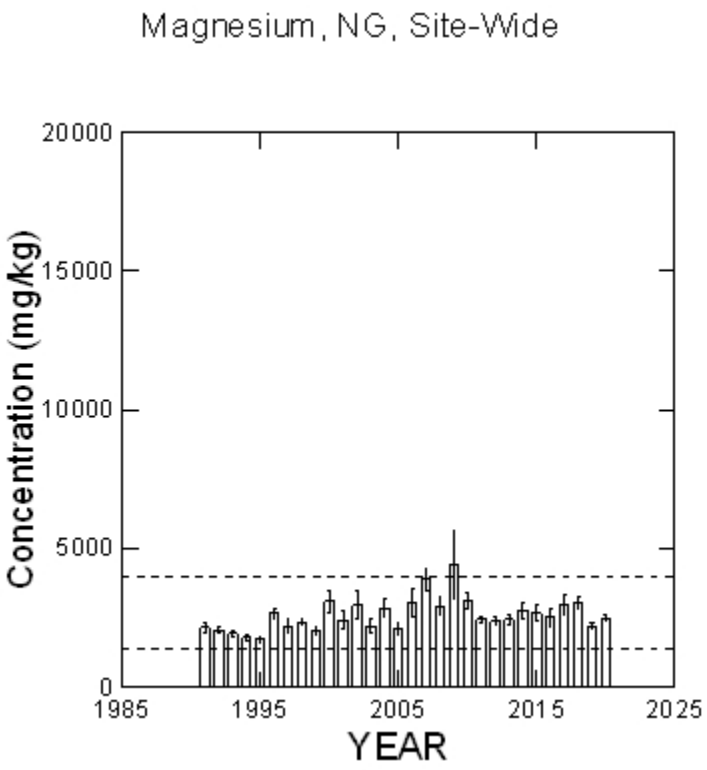
25.Lead, NG


Lead, NG, Site-Wide
Concentration (mg/kg)
0
2
4
6
8
10
12
1985
1995
2005
2015
2025
YEAR

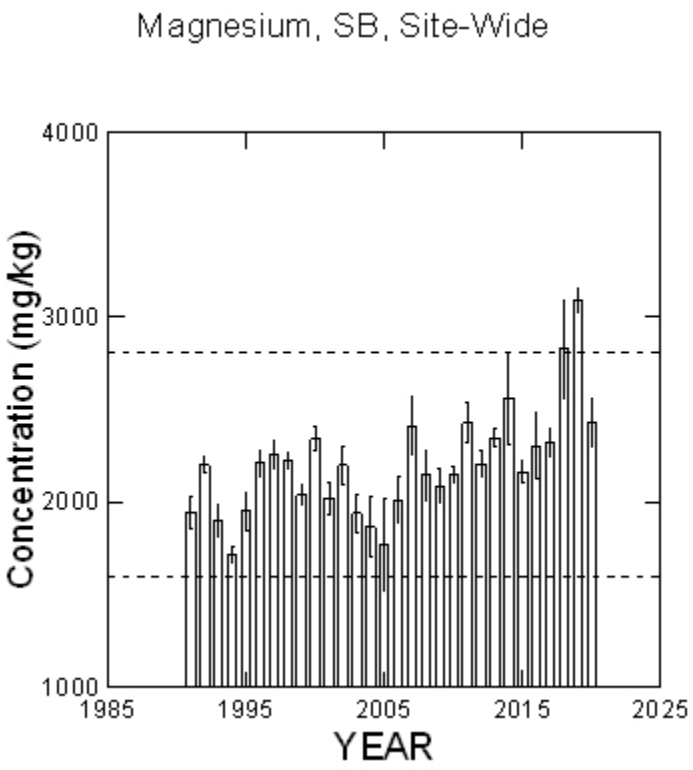
26.Lead, SD


Lead, SD, Site-Wide
Concentration (mg/kg)
0
10
20
30
40
50
1985
1995
2005
2015
2025
YEAR

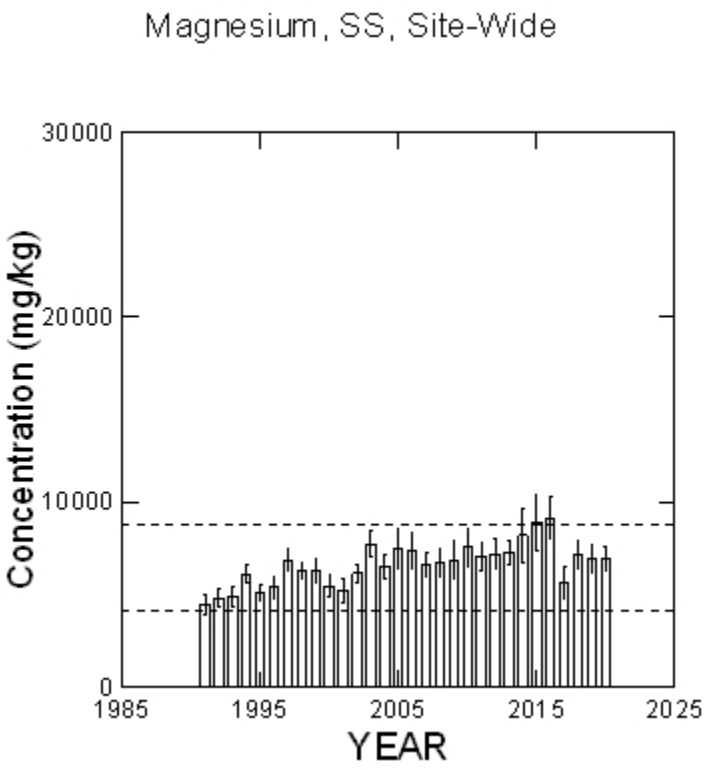
27. Magnesium, NG



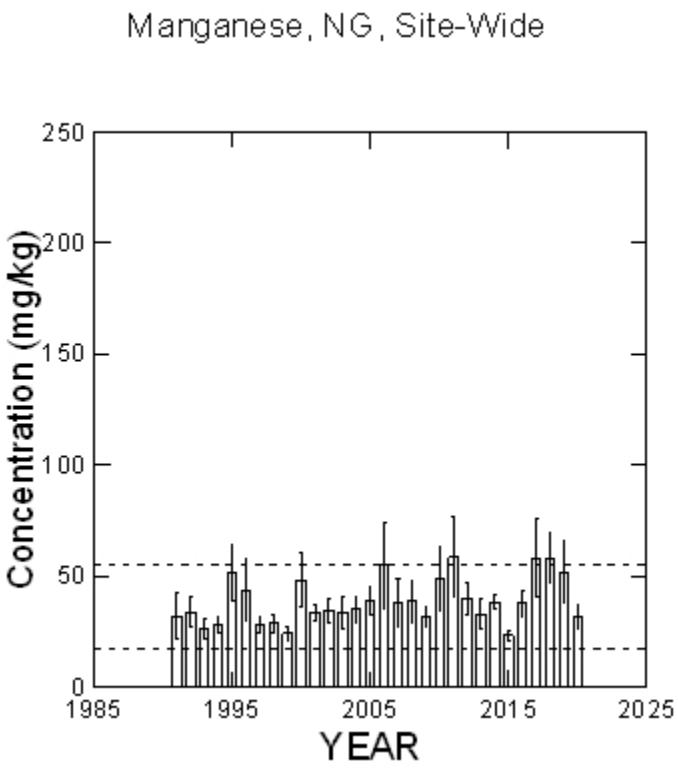
28. Magnesium, SB



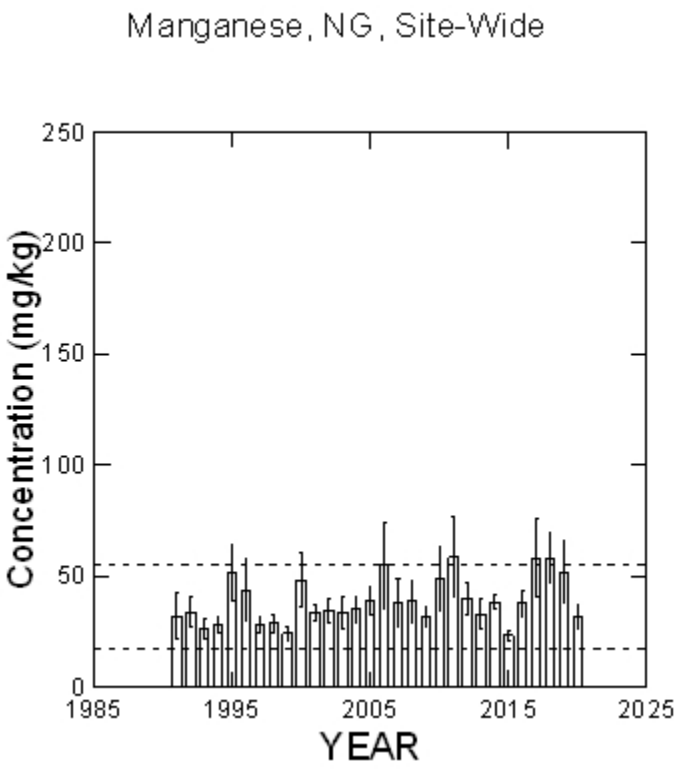
29. Magnesium, SS



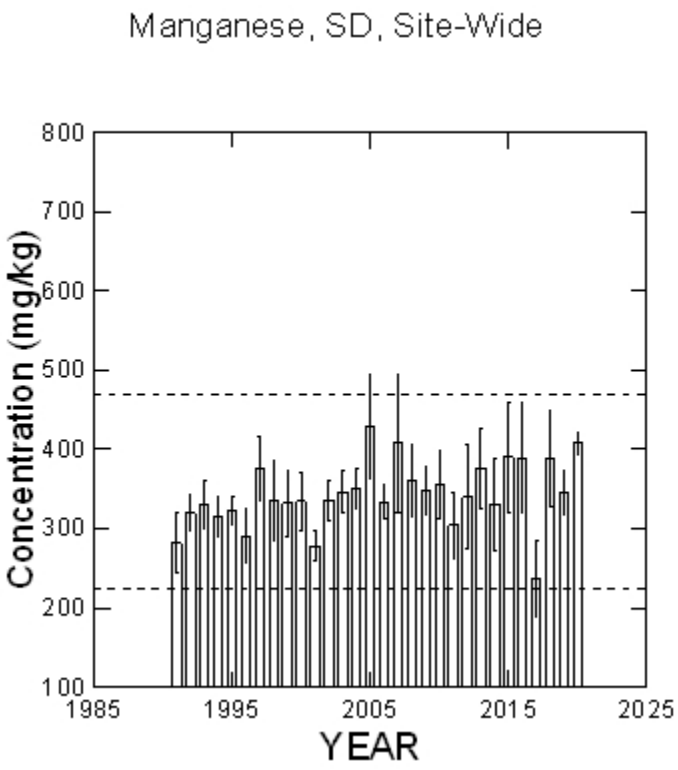
30. Manganese, NG



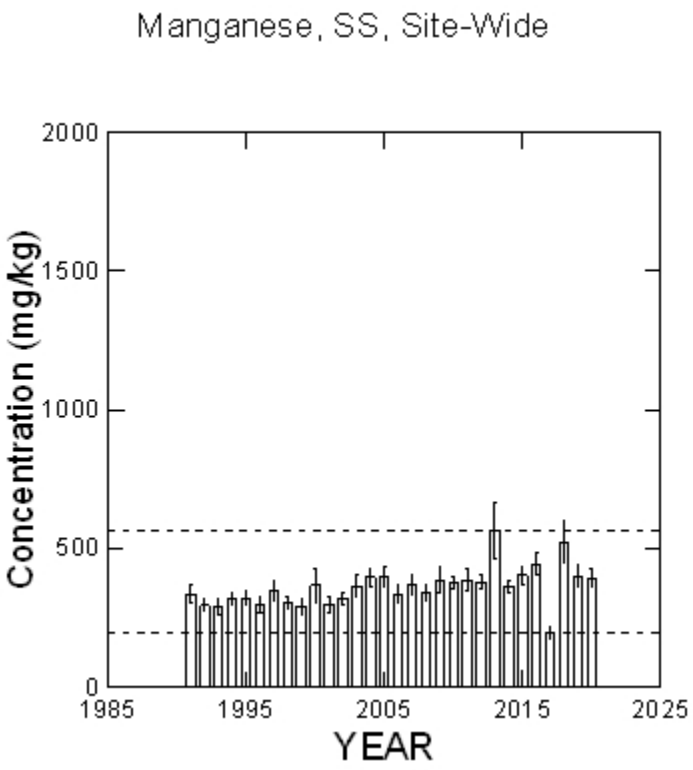
31. Manganese, SB



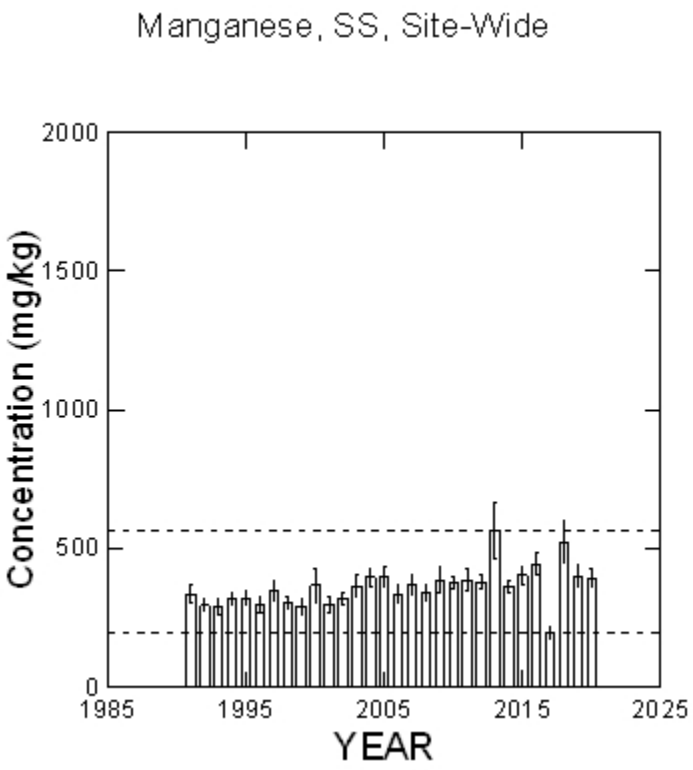
32. Manganese, SD



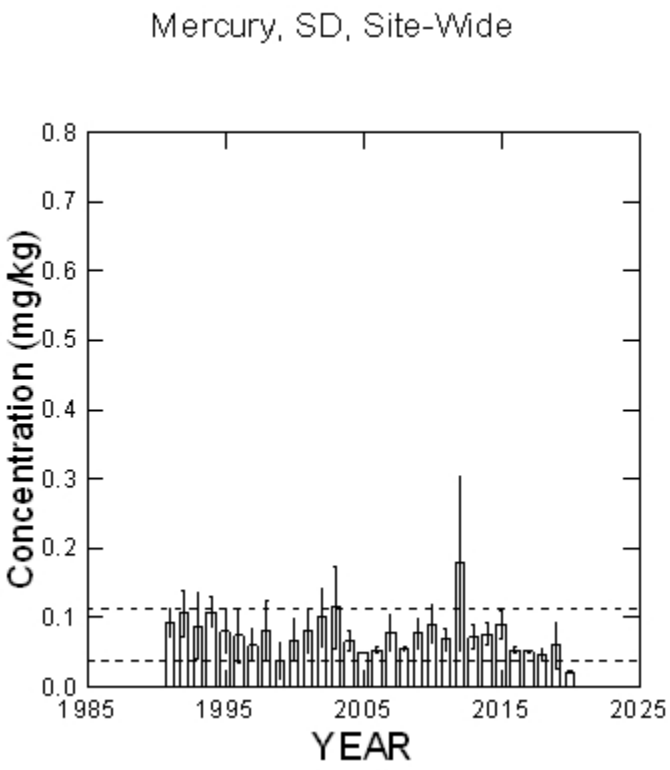
33. Manganese, SS



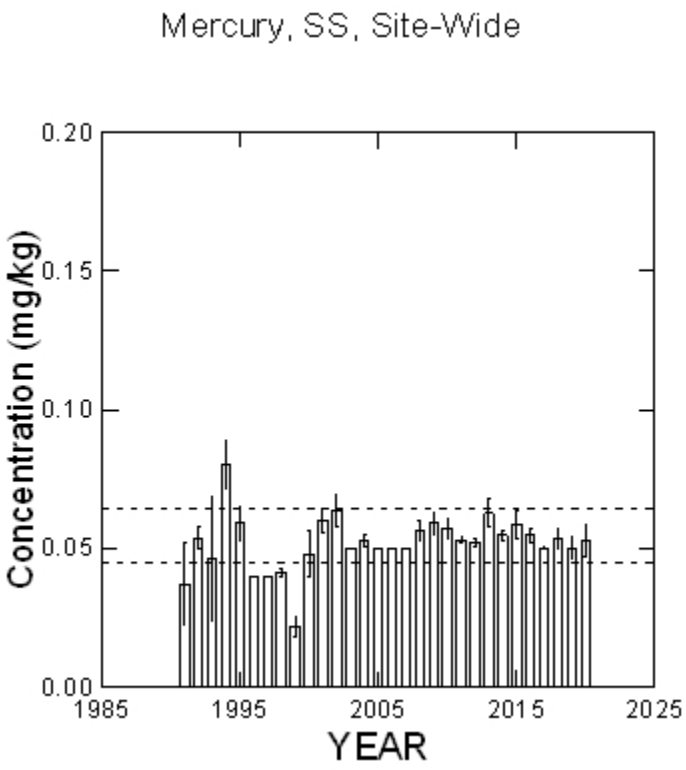
34. Mercury, NG



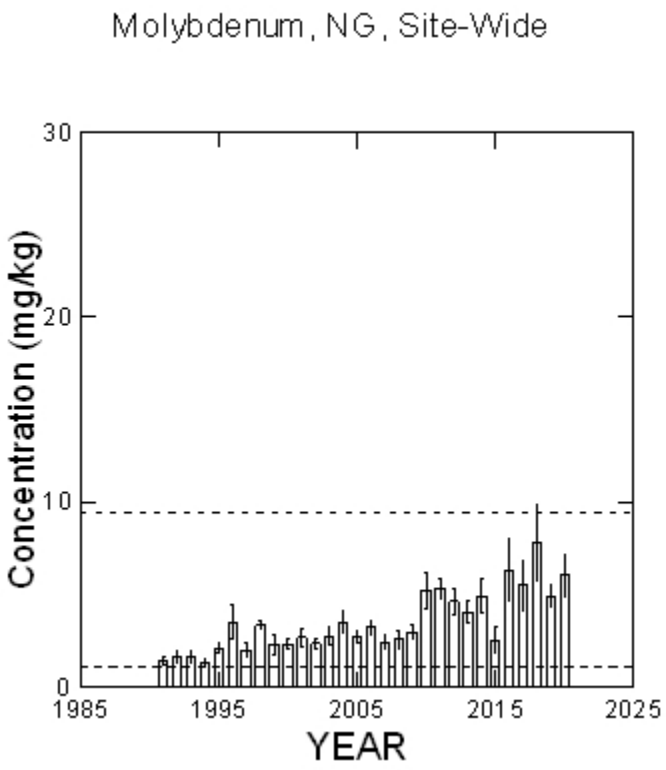
35. Mercury, SD



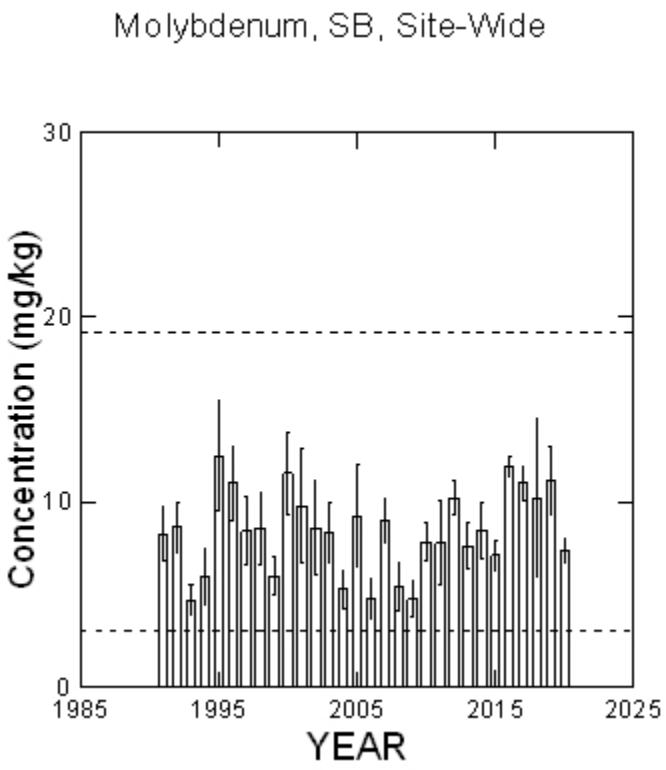
36. Mercury, SS



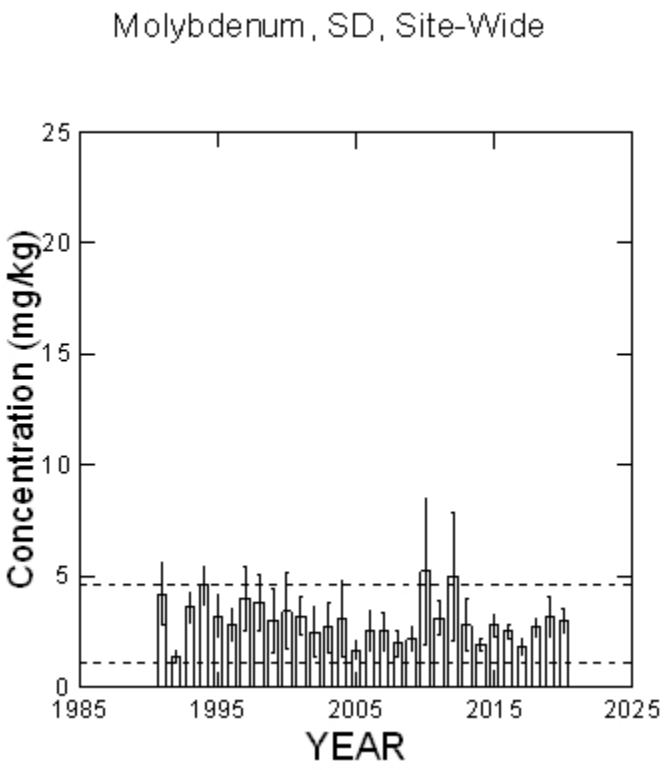
37. Molybdenum, NG



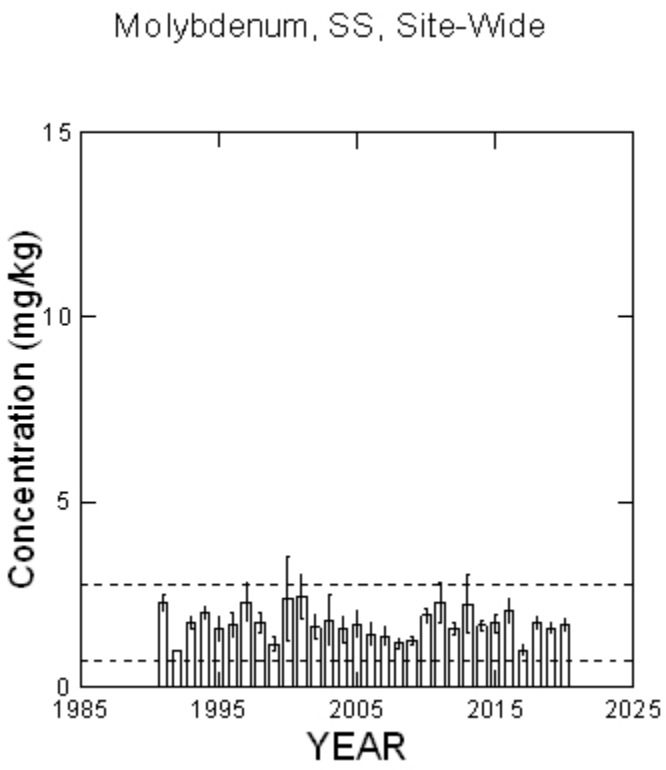
38. Molybdenum, SB



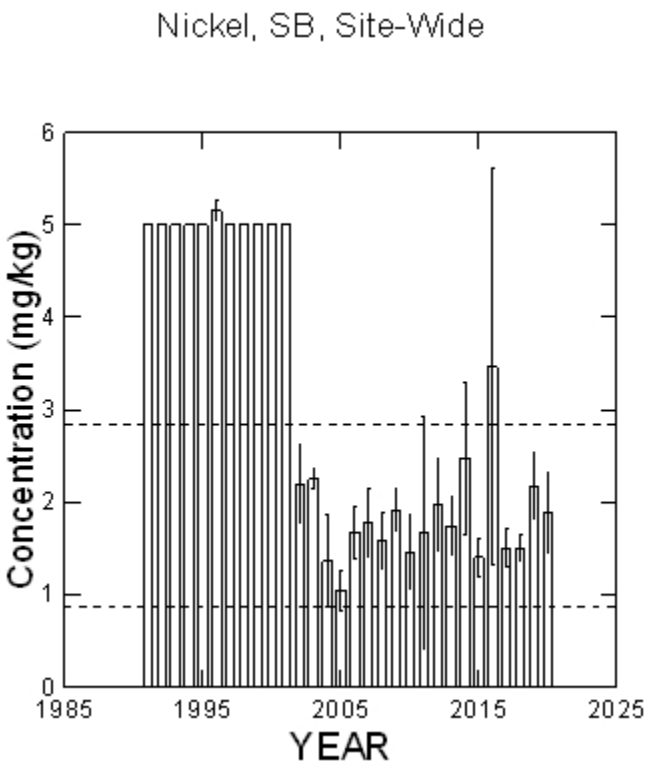
39. Molybdenum, SD



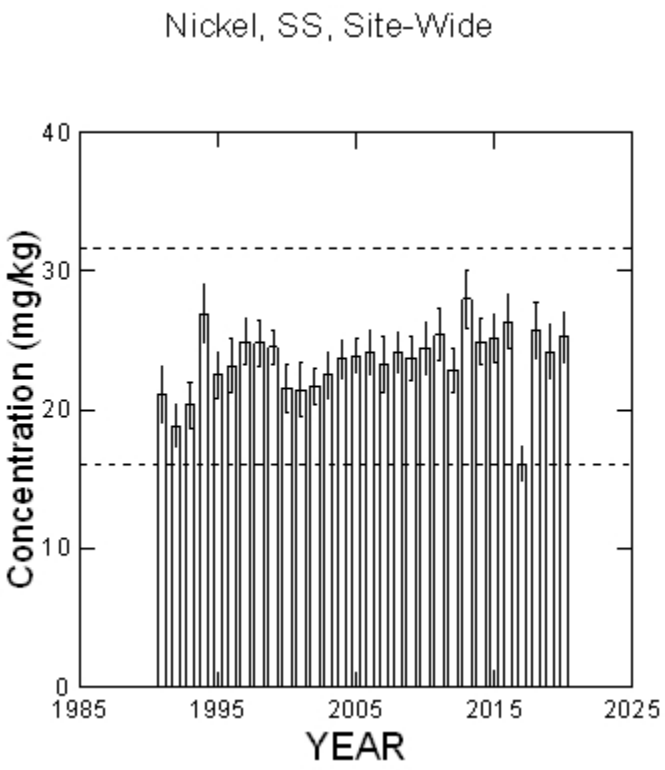
40. Molybdenum, SS



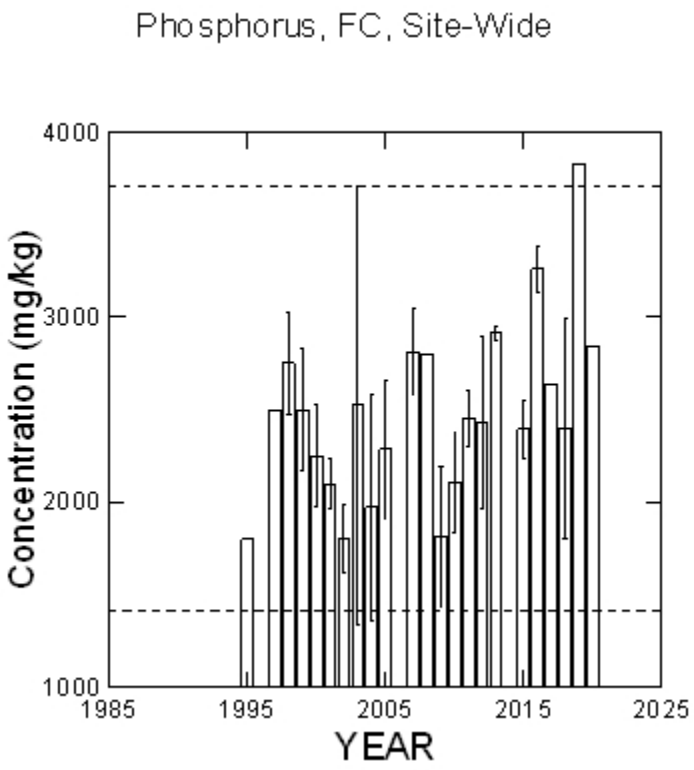
41. Nickel, SB


Nickel, SB, Site-Wide
Concentration (mg/kg)
0
1
2
3
4
5
6
1985
1995
2005
2015
2025
YEAR

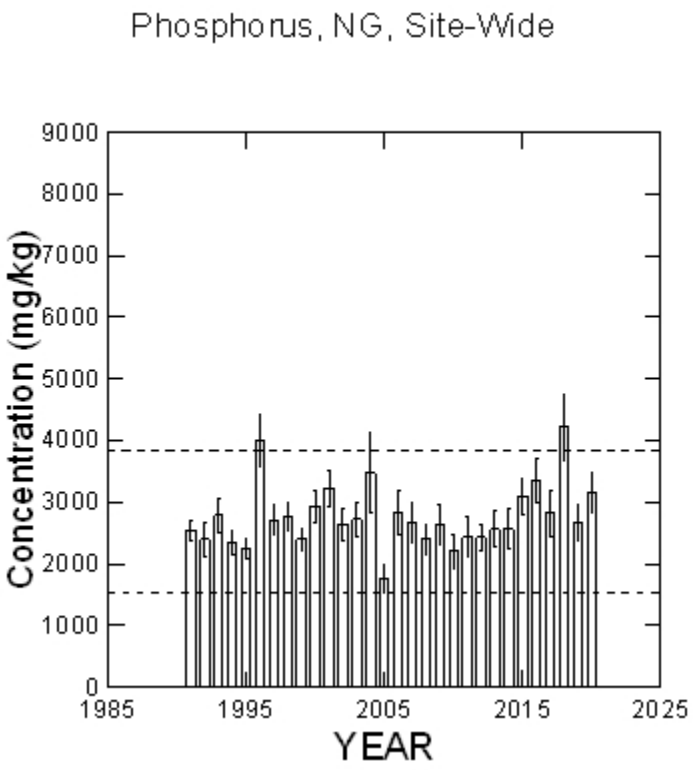
42. Nickel, SS


Nickel, SS, Site-Wide
Concentration (mg/kg)
0
10
20
30
40
1985
1995
2005
2015
2025
YEAR

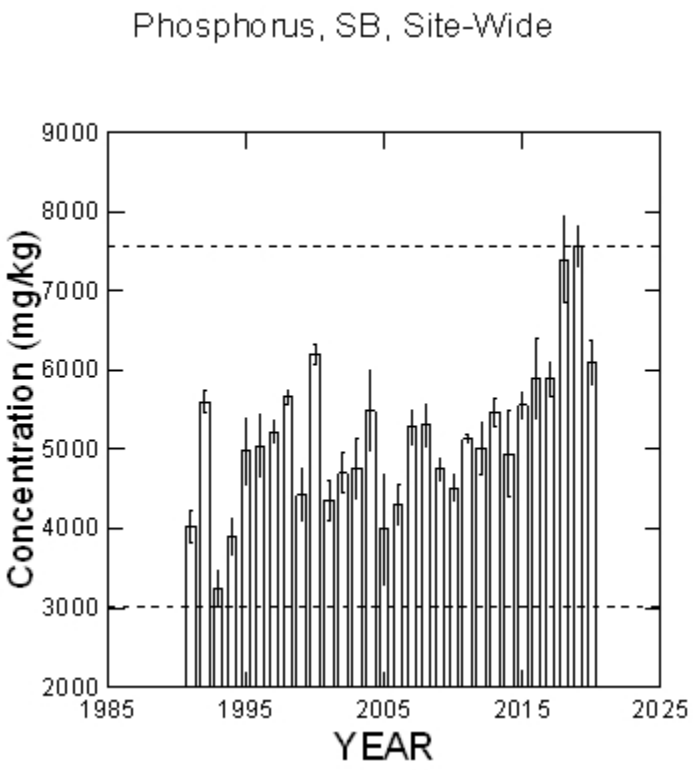
43. Phosphorus, FC



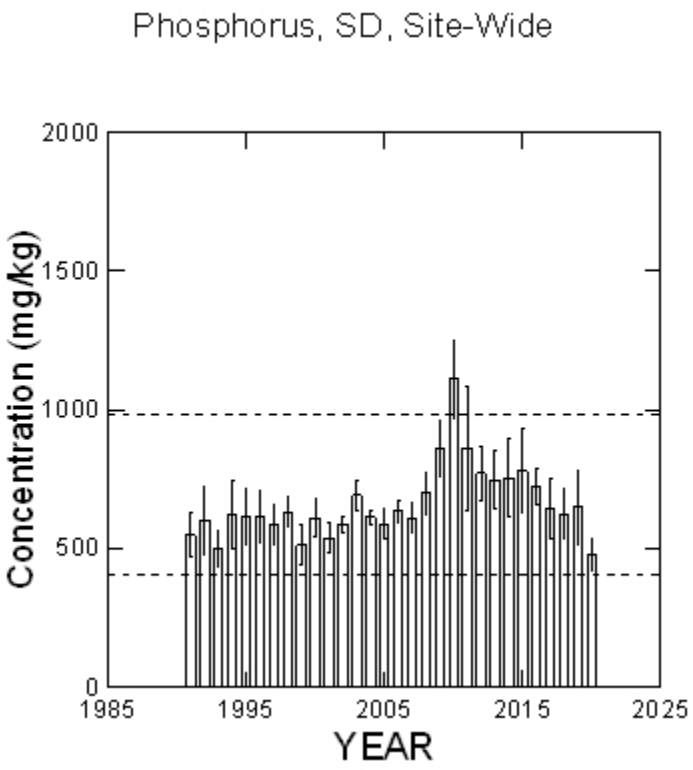
44. Phosphorus, NG



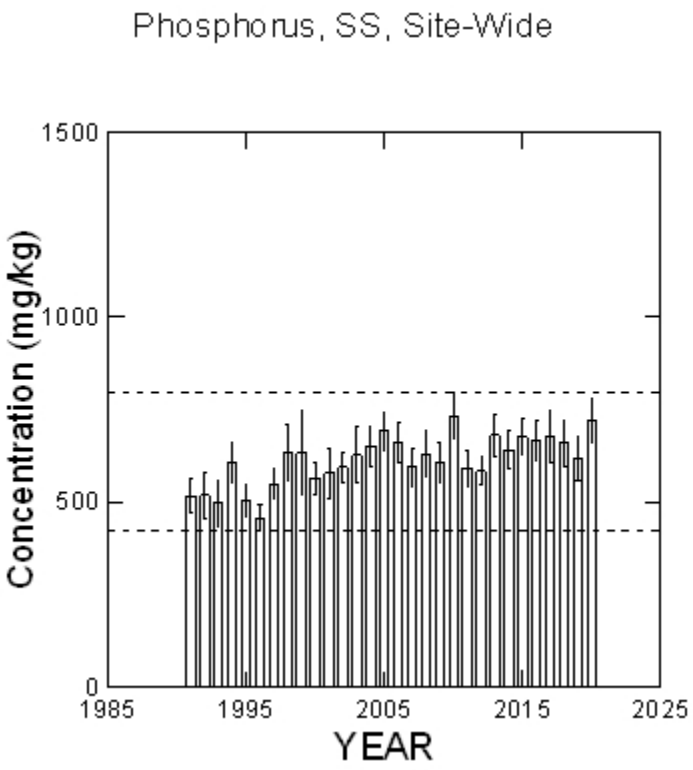
45. Phosphorus, SB



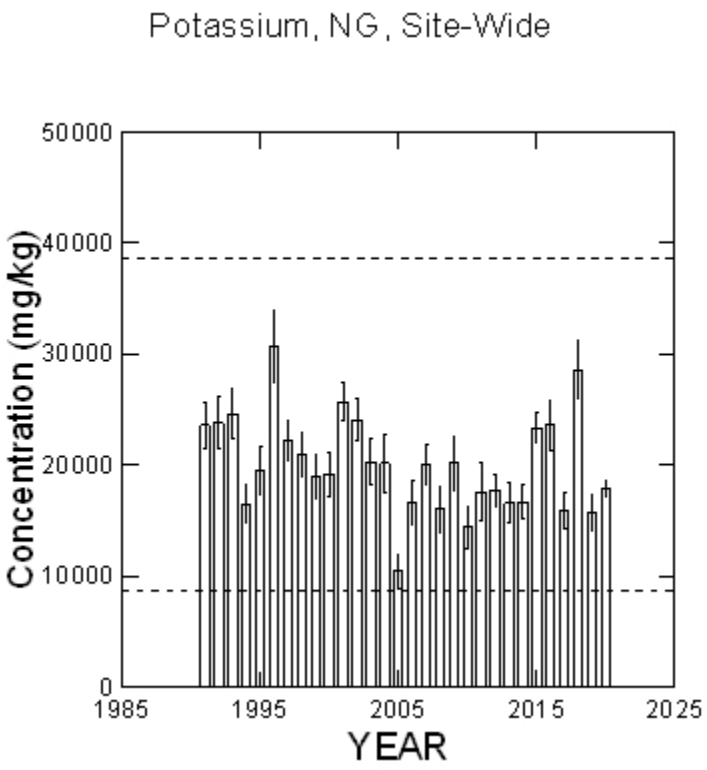
46. Phosphorus, SD



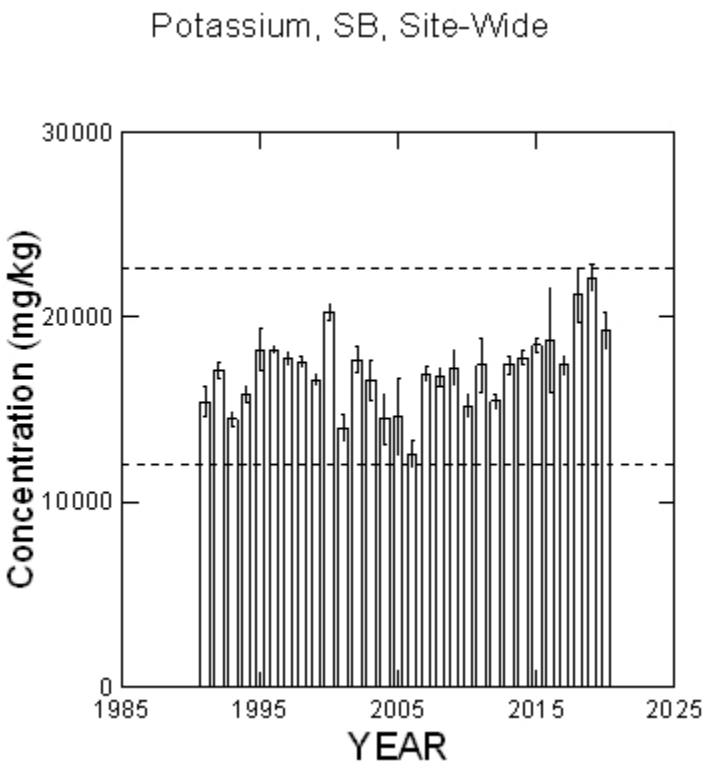
47. Phosphorus, SS



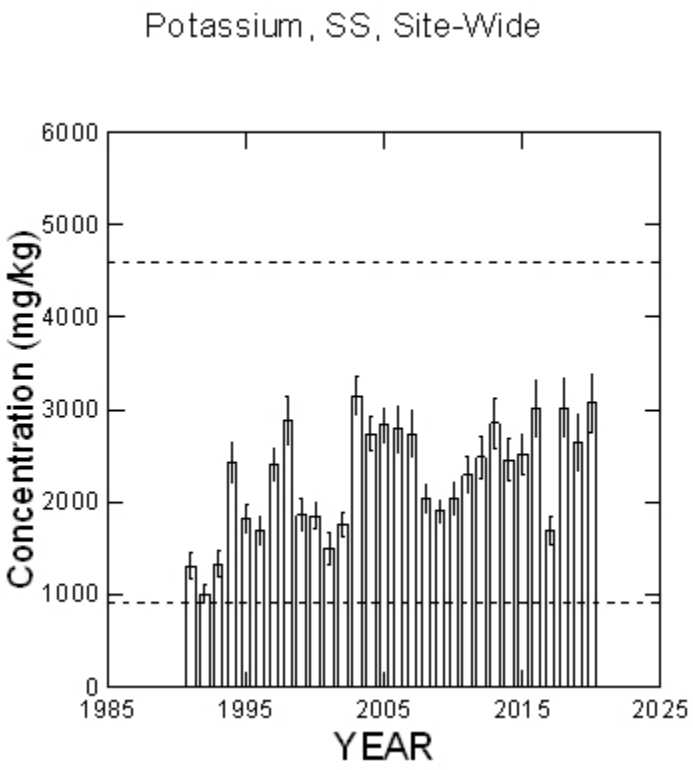
48. Potassium, NG



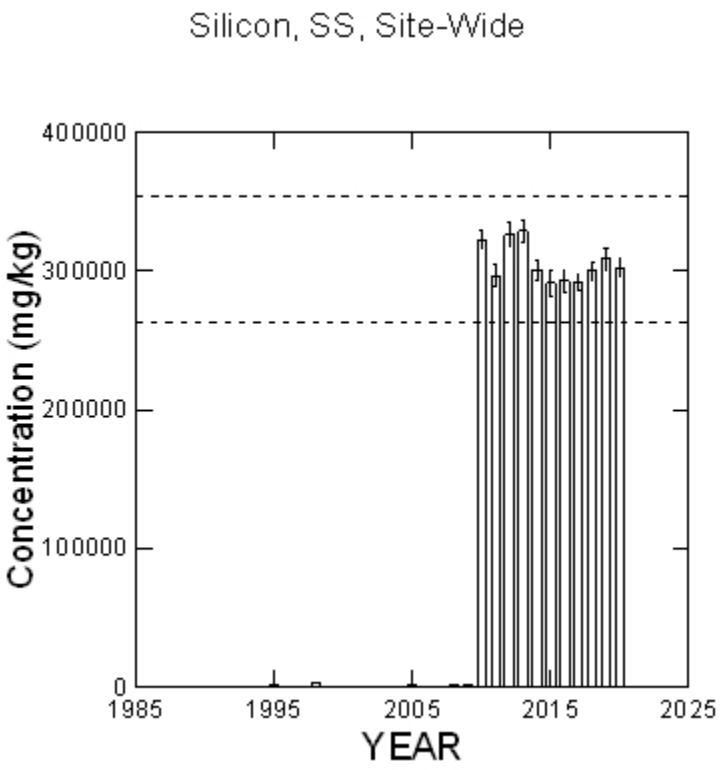
49. Potassium, SB



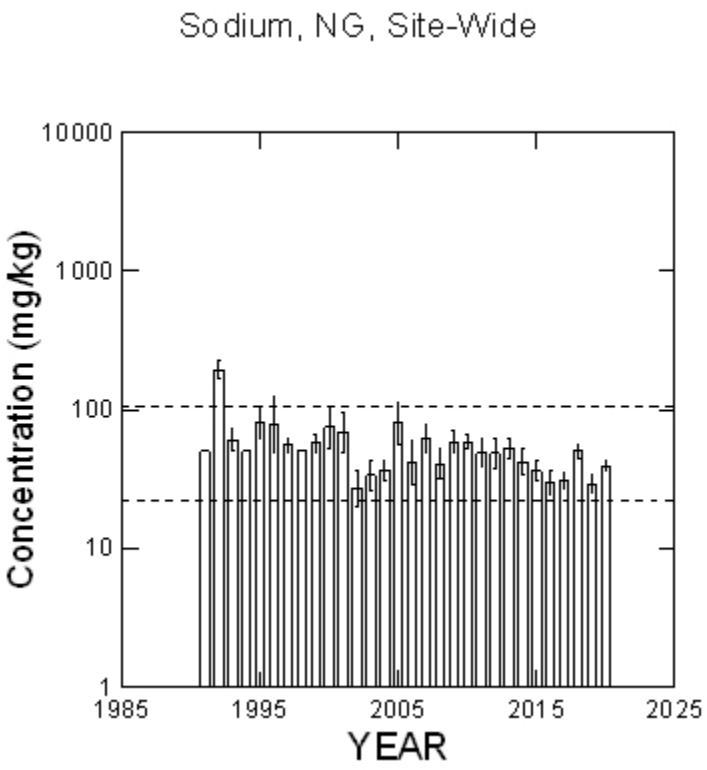
50. Potassium, SS



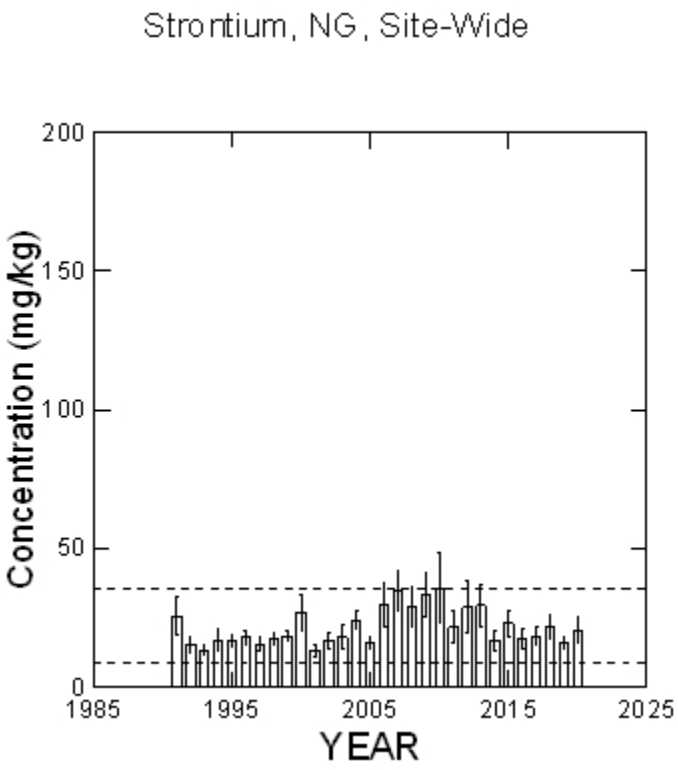
51. Silicon, SS



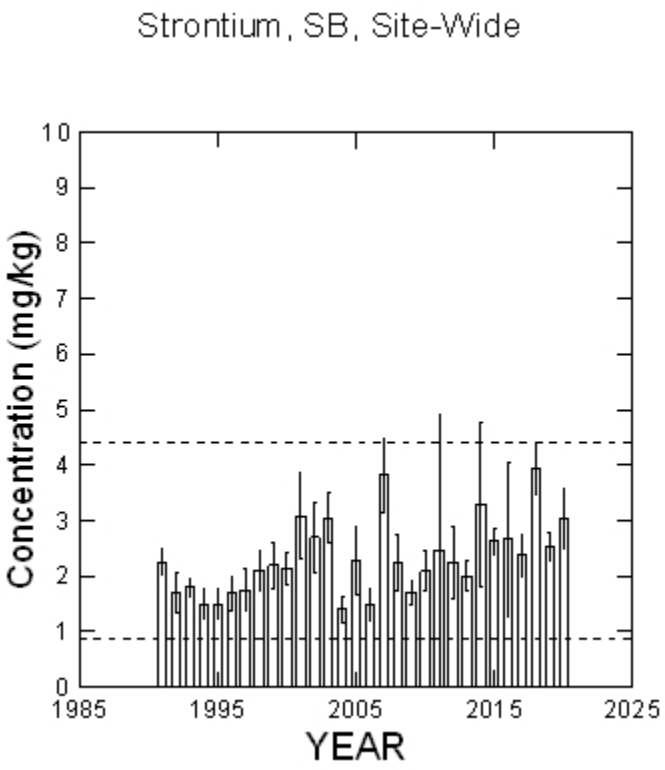
52. Sodium, NG


Sodium, NG, Site-Wide
10000
1000
100
10
1
Concentration (mg/kg)
1985
1995
2005
2015
2025
YEAR

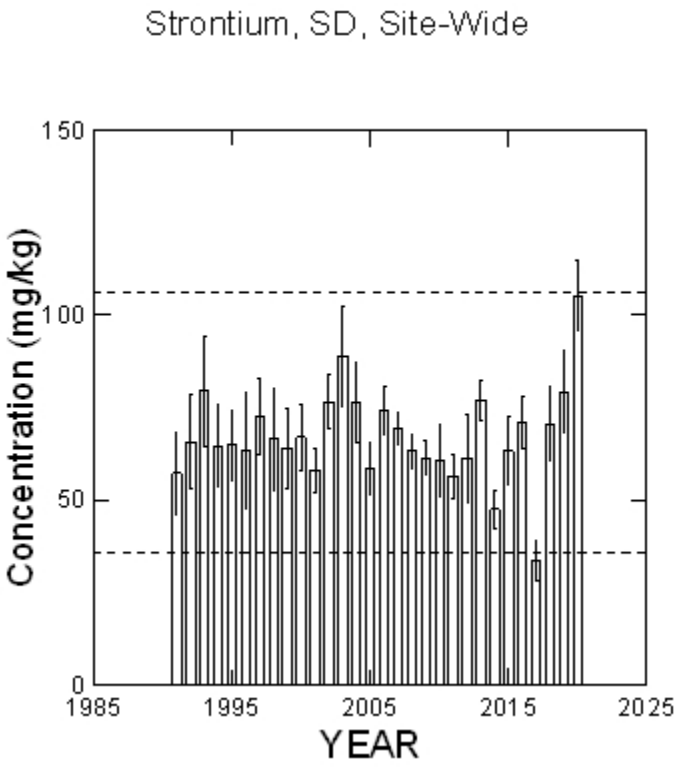
53. Strontium, NG



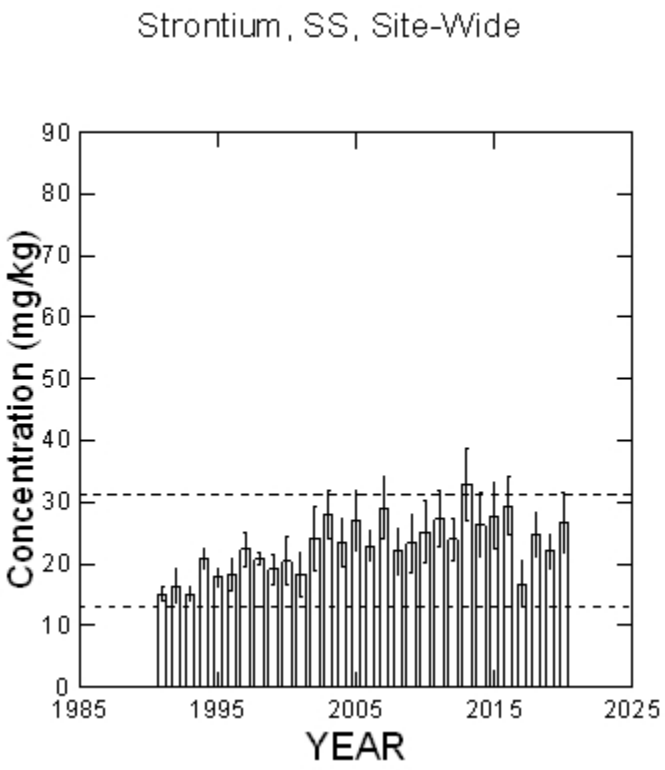
54. Strontium, SB



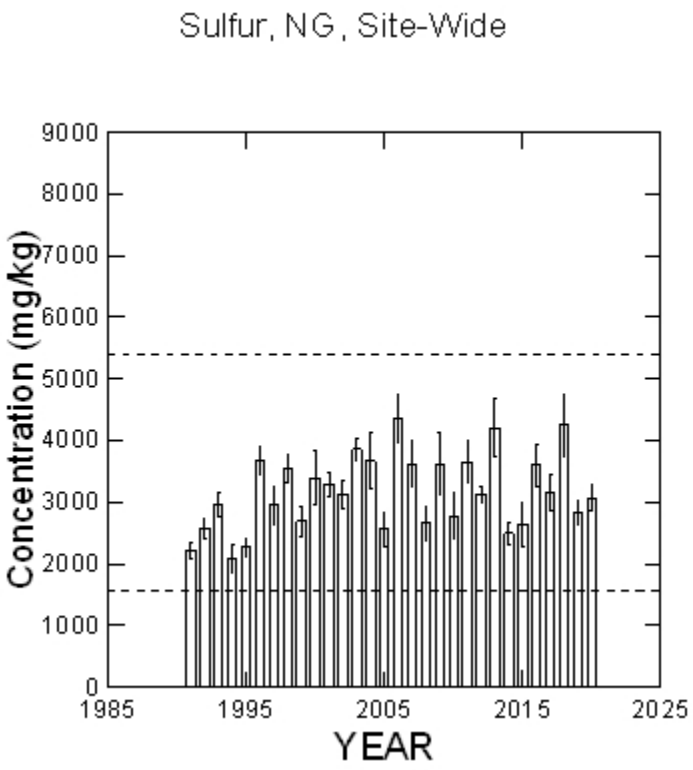
55. Strontium, SD



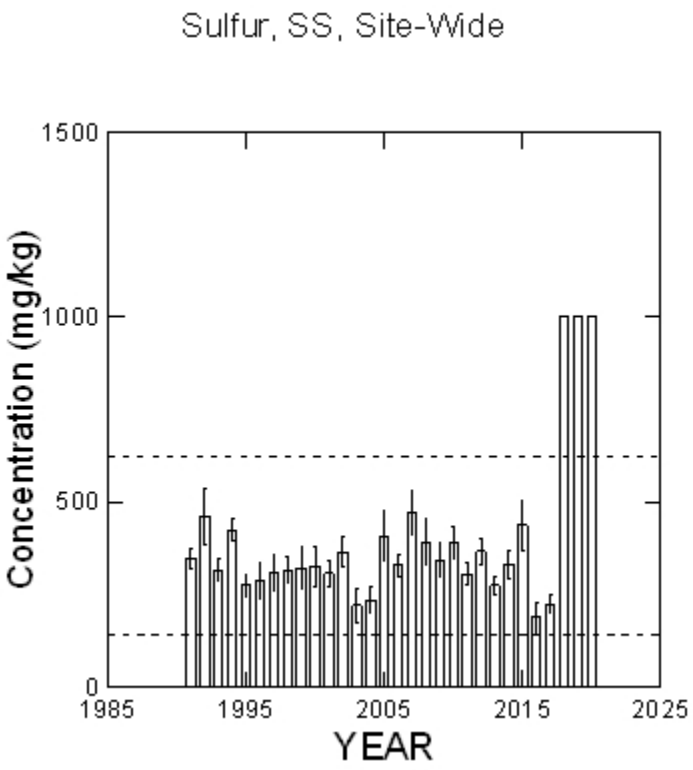
56. Strontium, SS



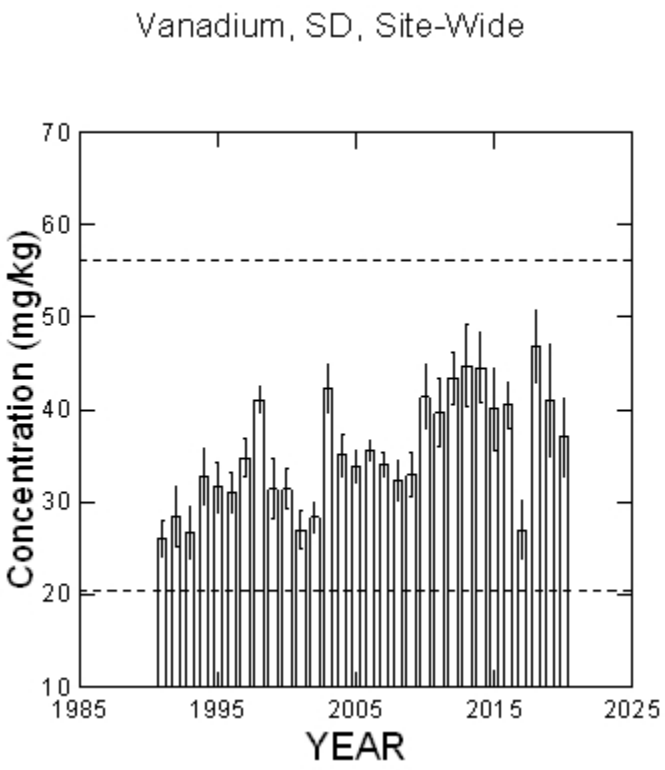
57. Sulfur, NG


Sulfur, NG, Site-Wide
Concentration (mg/kg)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1985
1995
2005
2015
2025
YEAR

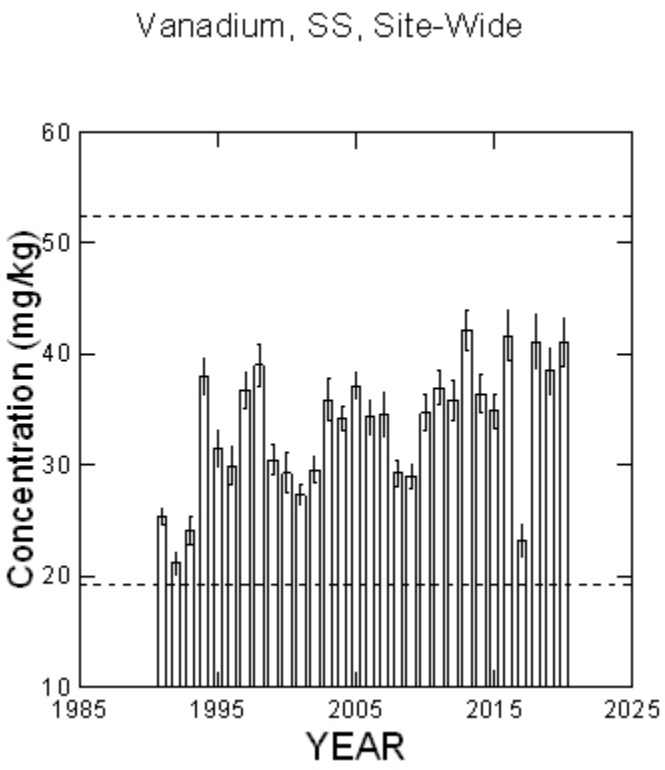
58. Sulfur, SS


Sulfur, SS, Site-Wide
Concentration (mg/kg)
1500
1000
500
0
1985
1995
2005
2015
2025
YEAR

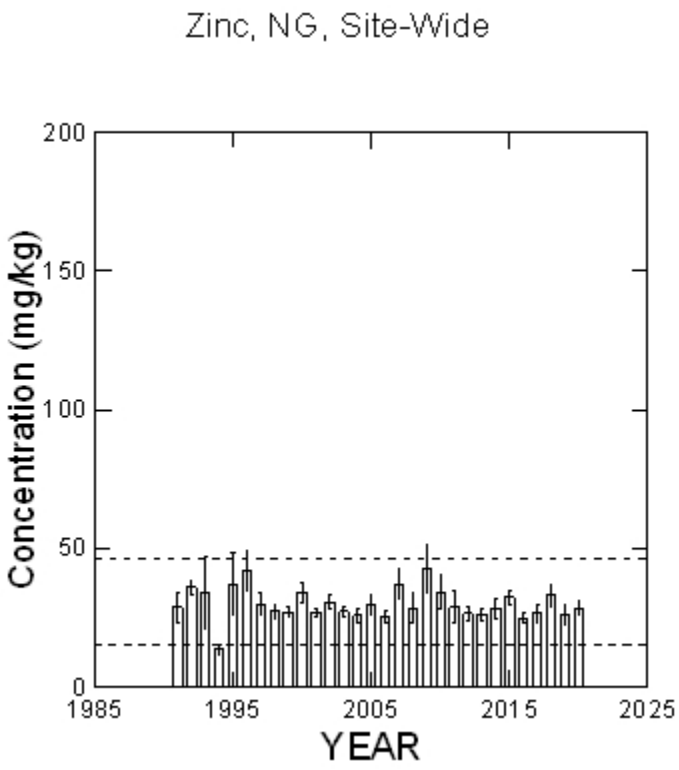
59. Vanadium, SD



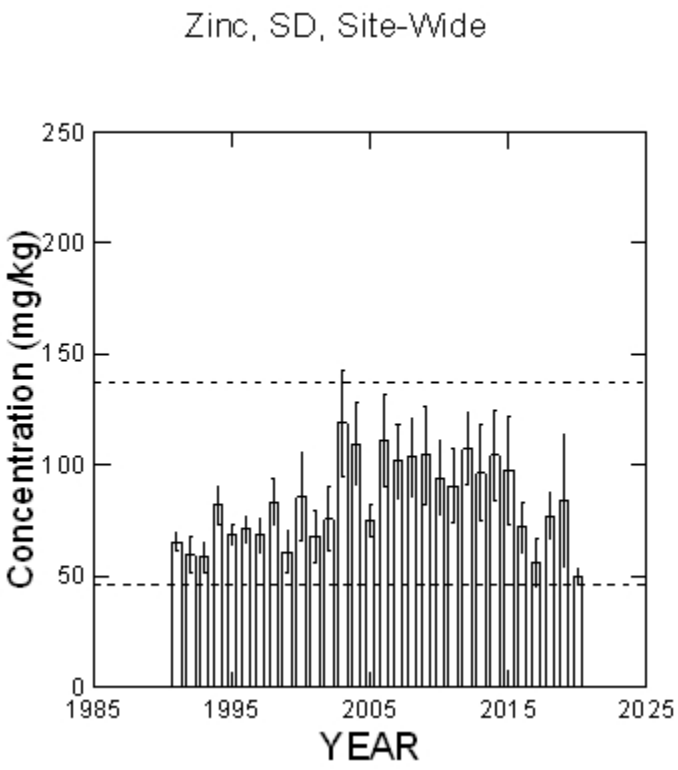
60. Vanadium, SS



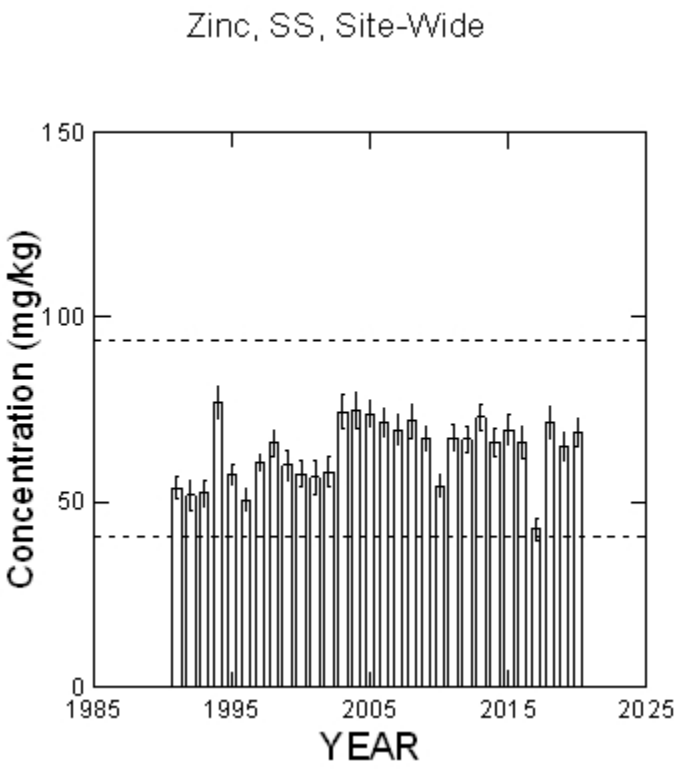
61. Zinc, NG


Zinc, NG, Site-Wide
Concentration (mg/kg)
200
150
100
50
0
1985
1995
2005
2015
2025
YEAR

62. Zinc, SD

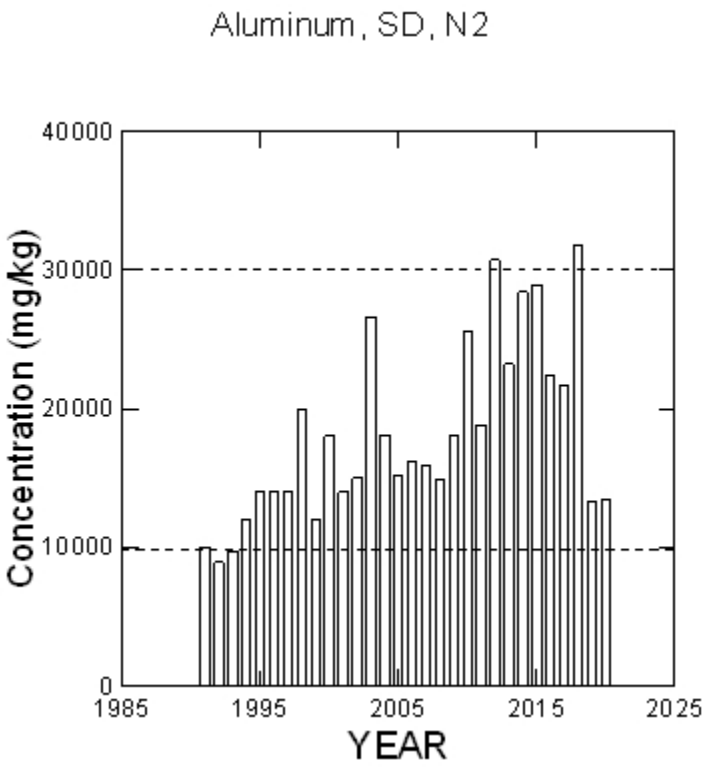

Zinc, SD, Site-Wide
Concentration (mg/kg)
250
200
150
100
50
0
1985
1995
2005
2015
2025
YEAR

63. Zinc, SS

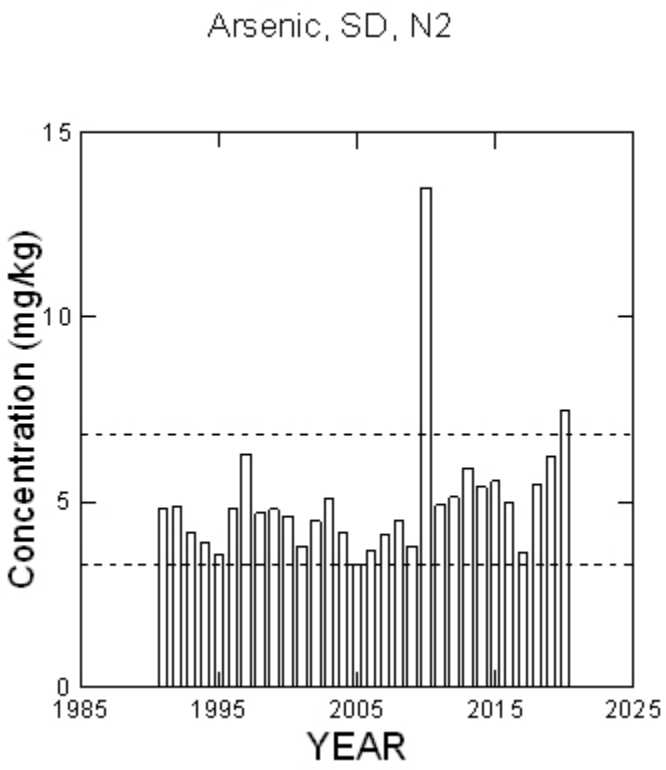

Zinc, SS, Site-Wide
Concentration (mg/kg)
150
100
50
0
1985
1995
2005
2015
2025
YEAR

F.2.2 Site-Specific 2018 Upper Limit Exceeded

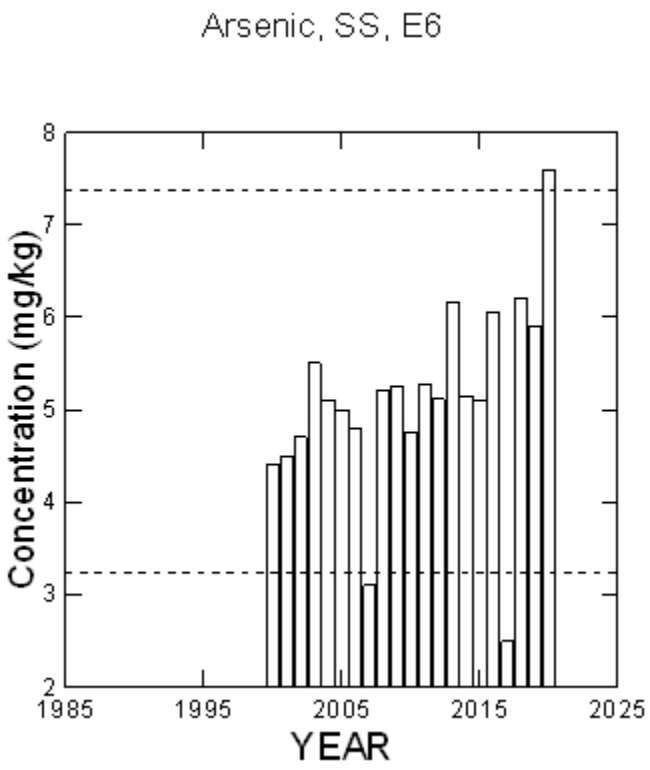
1. Aluminum_SD_N2



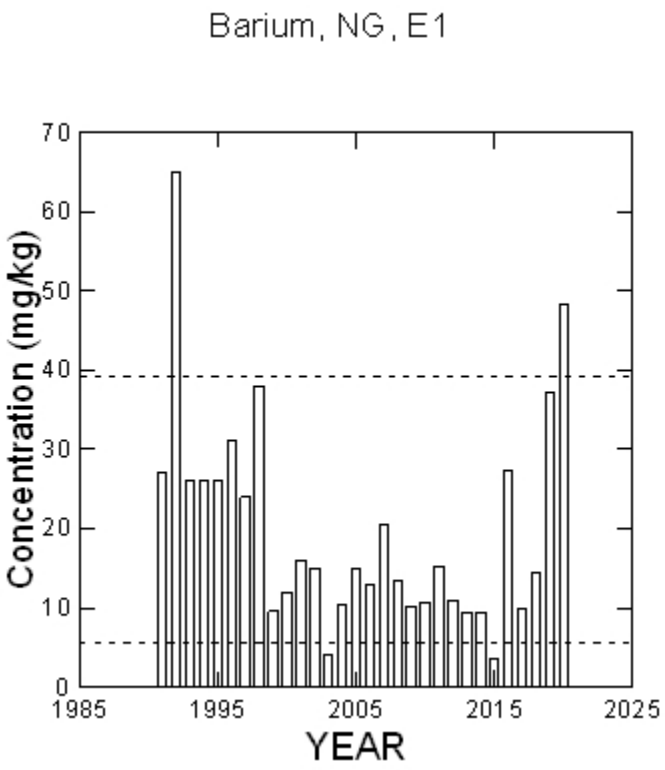
2. Arsenic_SD_N2



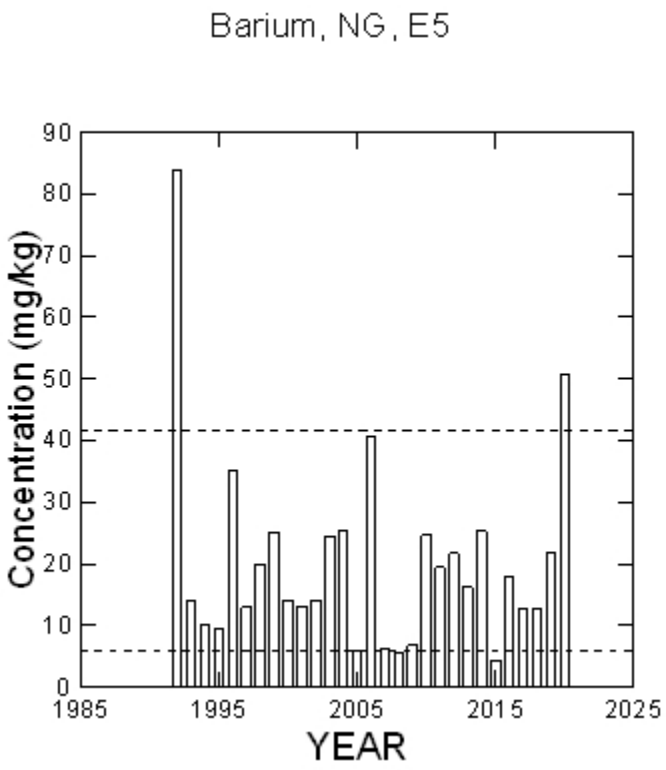
3. Arsenic_SS_E6



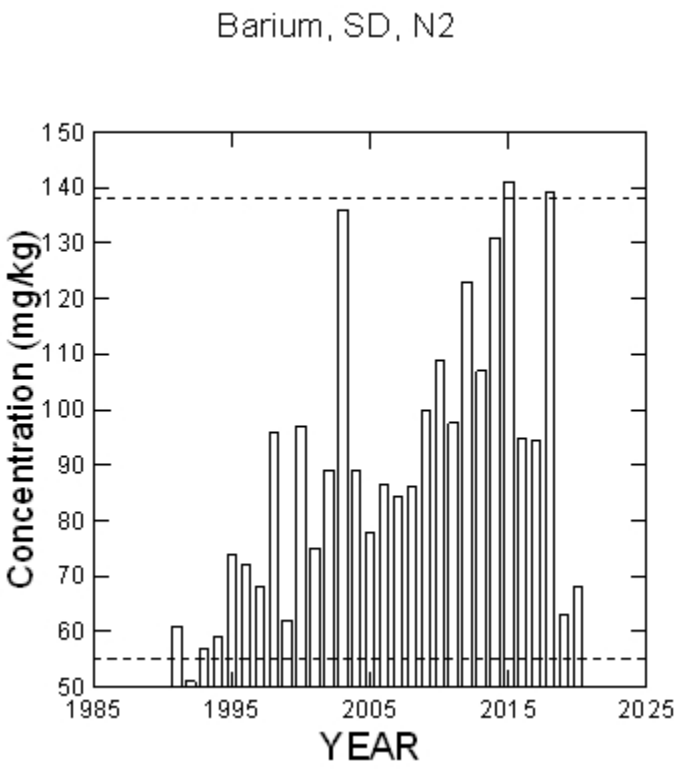
4. Barium_NG_E1



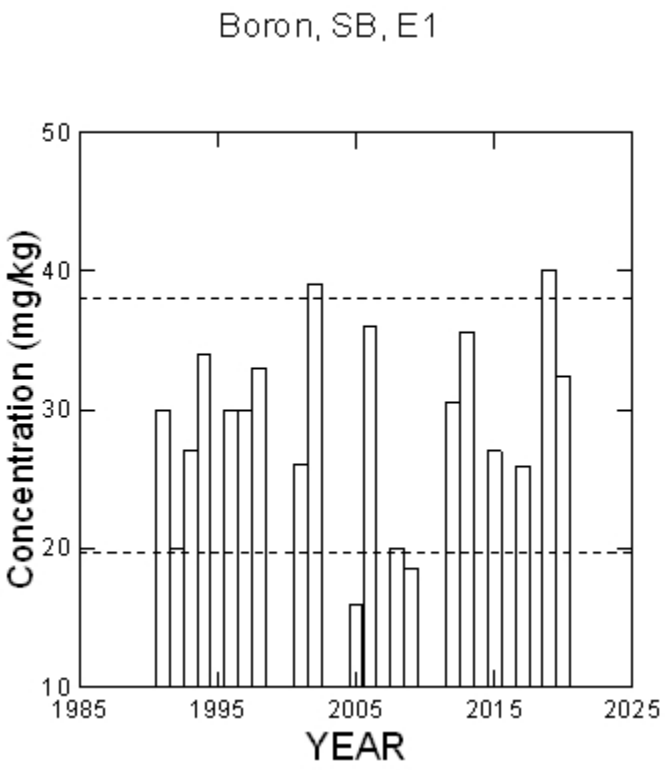
5. Barium_NG_E5



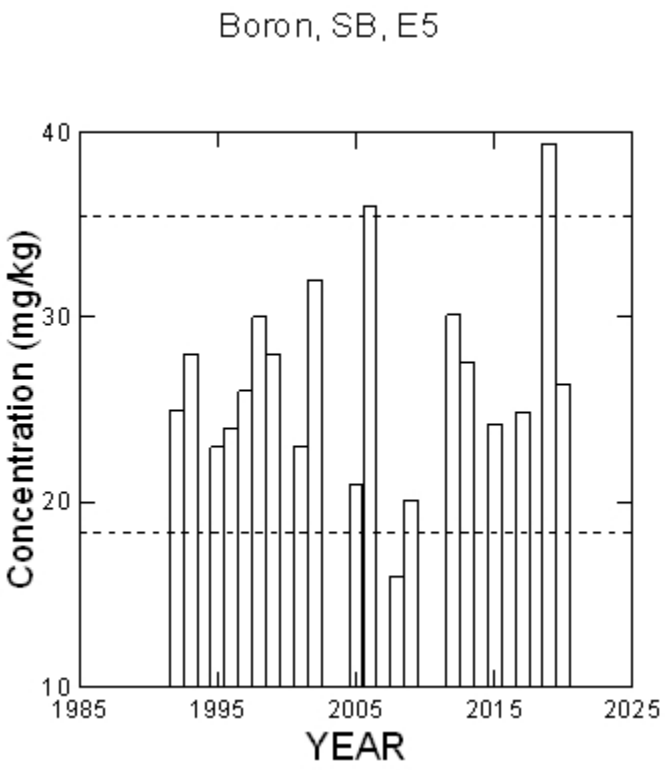
6. Barium_SD_N2



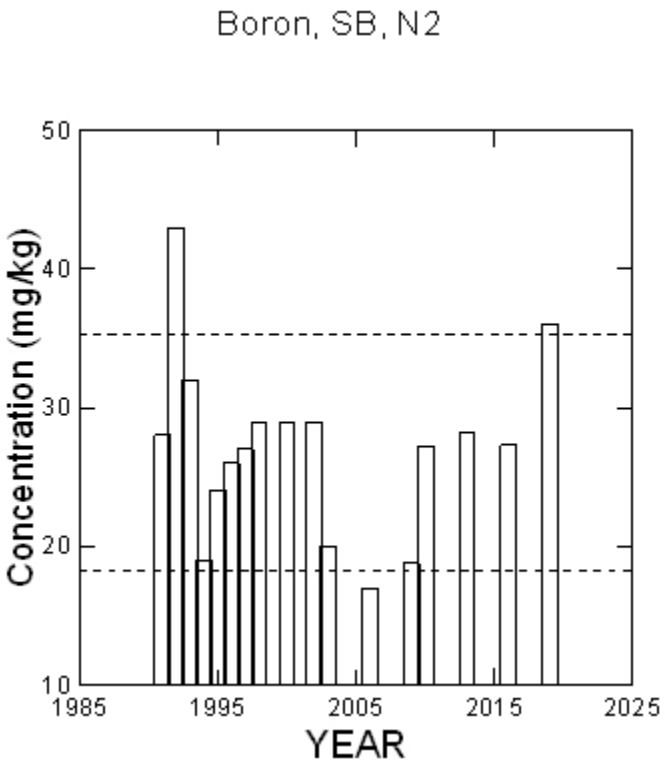
7. Boron_SB_E1


Boron, SB, E1
Concentration (mg/kg)
50
40
30
20
10
1985
1995
2005
2015
2025
YEAR

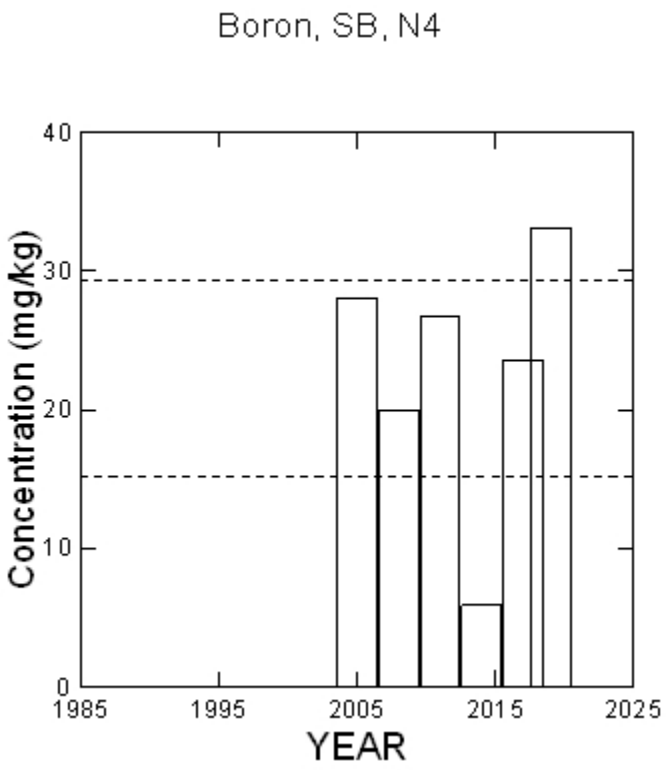
8. Boron_SB_E5


Boron, SB, E5
Concentration (mg/kg)
40
30
20
10
1985
1995
2005
2015
2025
YEAR

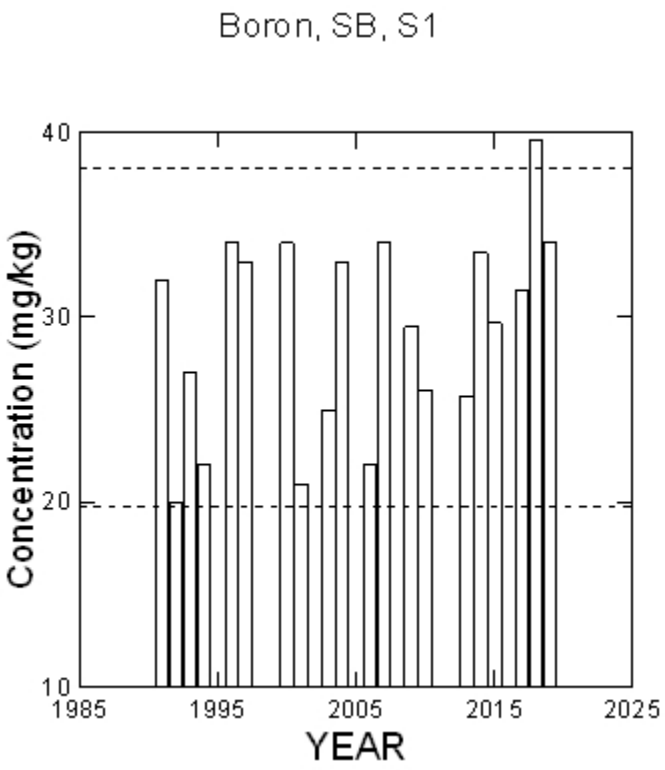
9. Boron_SB_N2


Boron, SB, N2
Concentration (mg/kg)
50
40
30
20
10
1985
1995
2005
2015
2025
YEAR

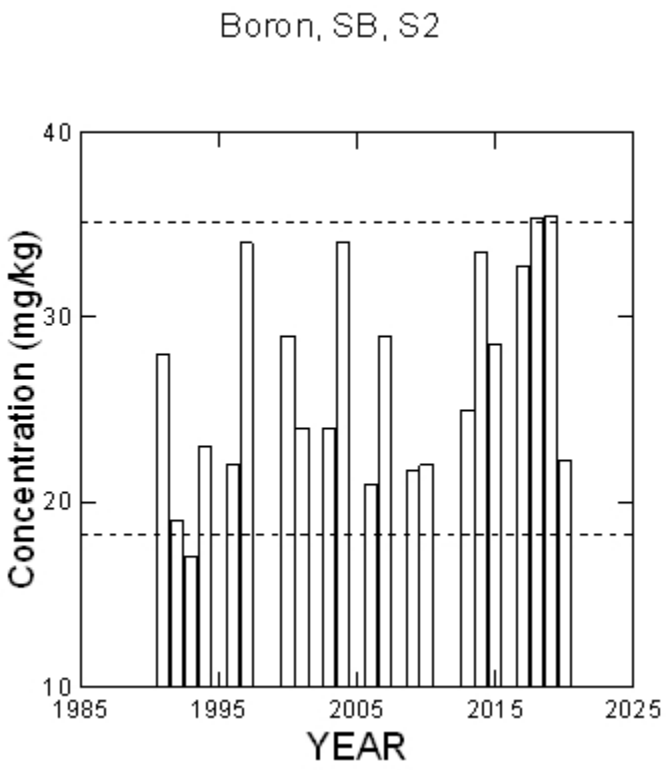
10. Boron_SB_N4



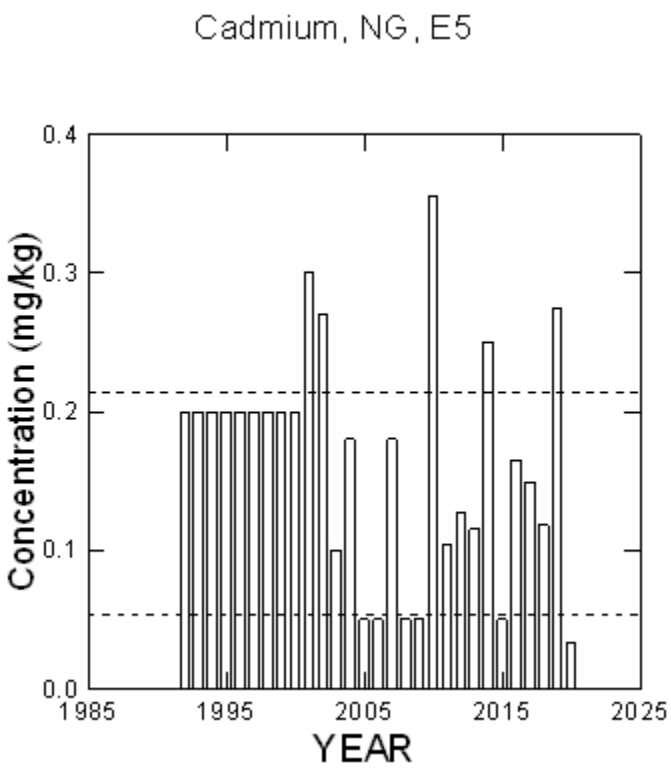
11. Boron_SB_S1



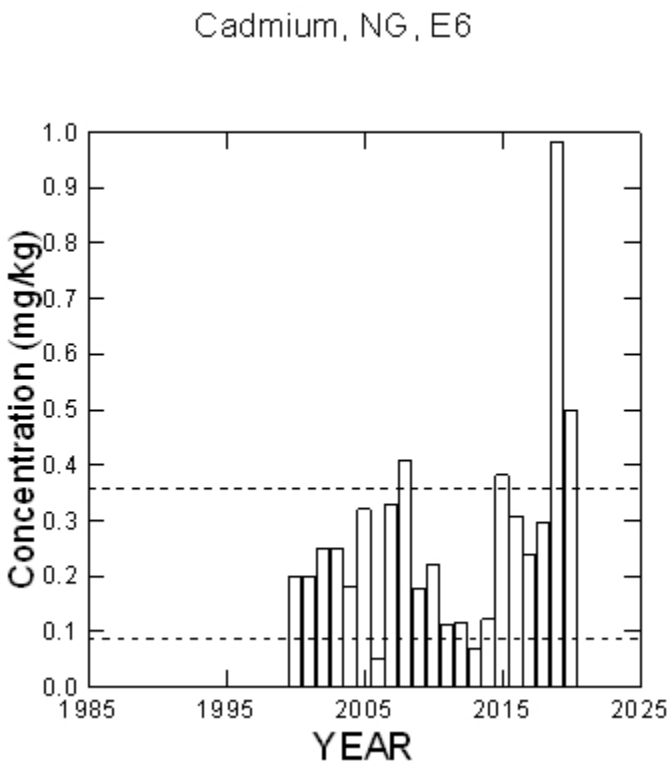
12. Boron_SB_S2



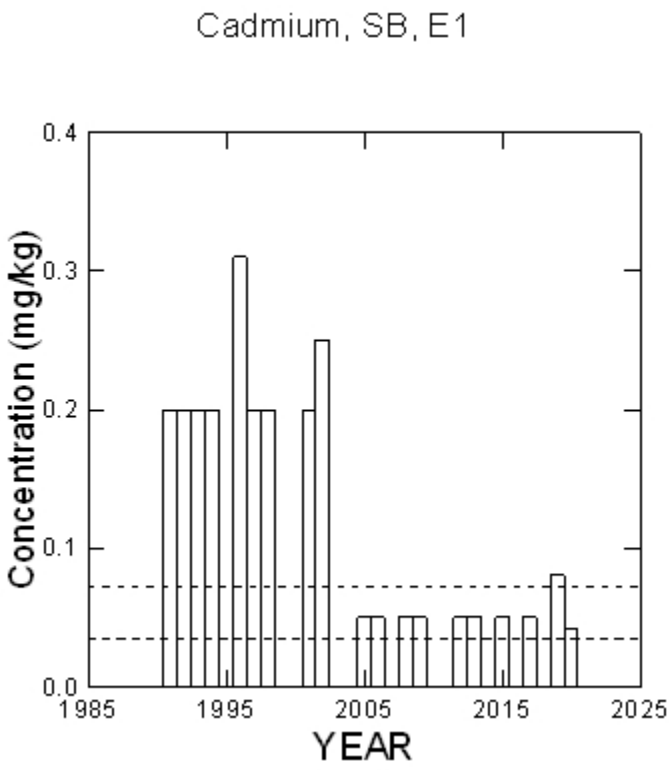
13. Cadmium_NG_E5



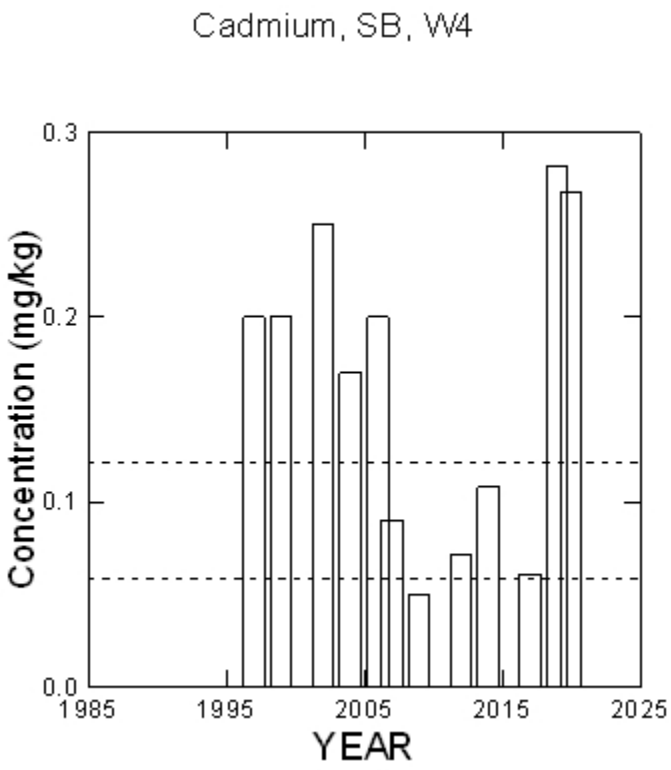
14. Cadmium_NG_E6



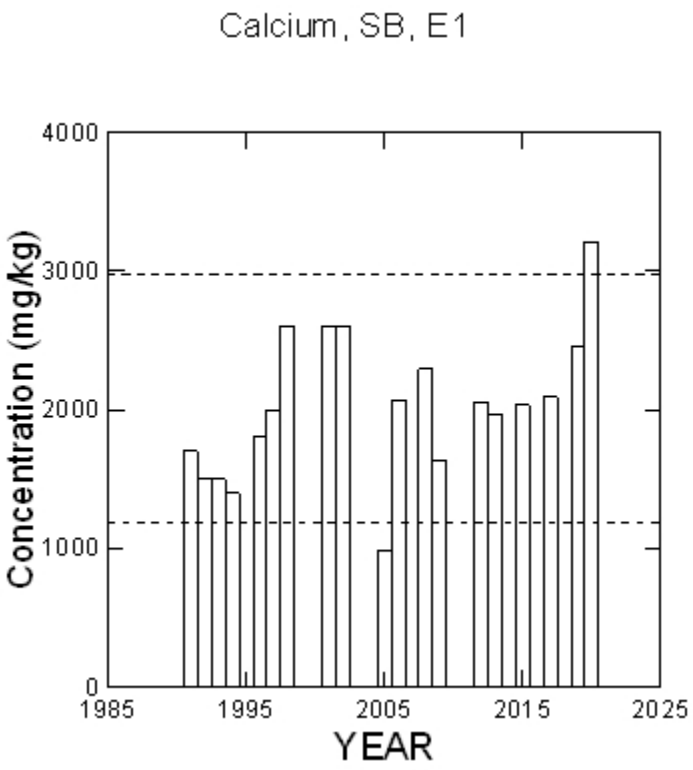
15. Cadmium_SB_E1



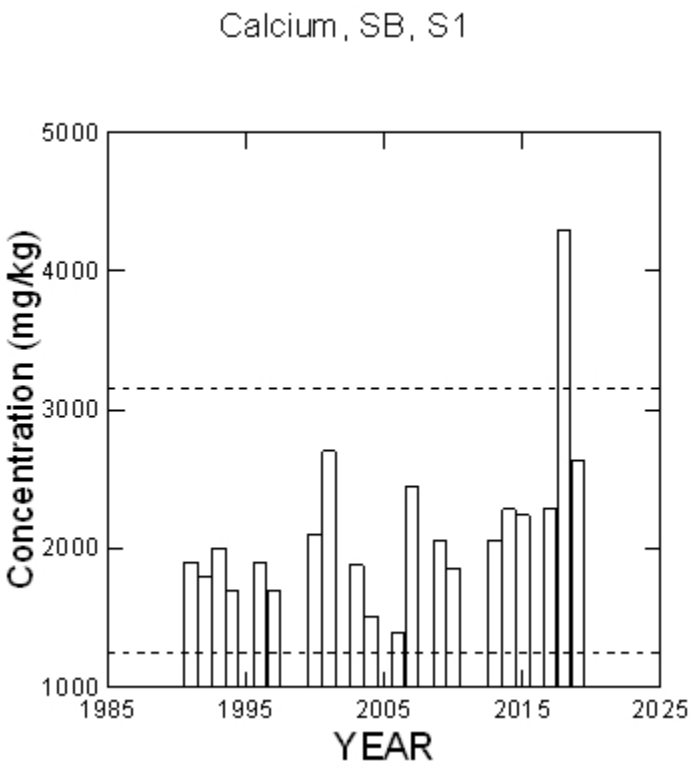
16. Cadmium_SB_W4



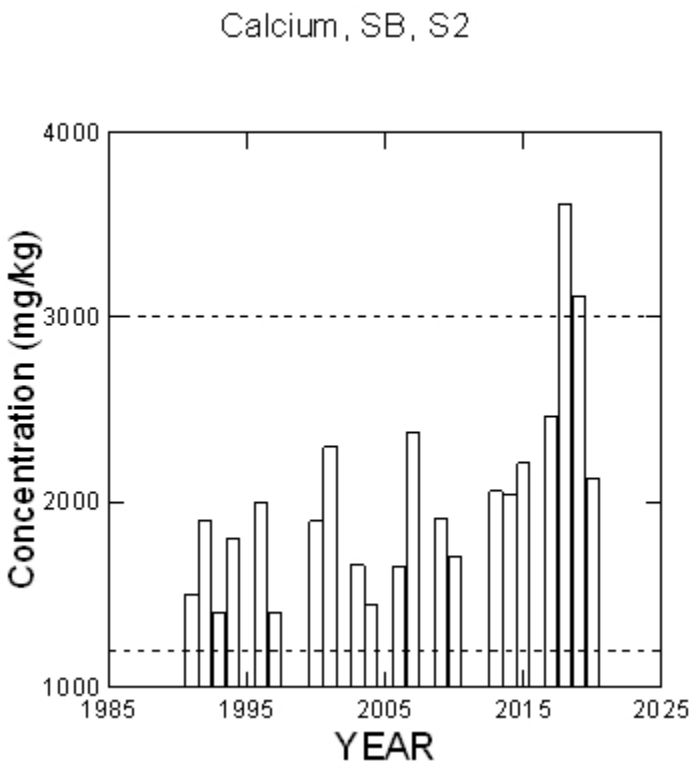
17. Calcium_SB_E1



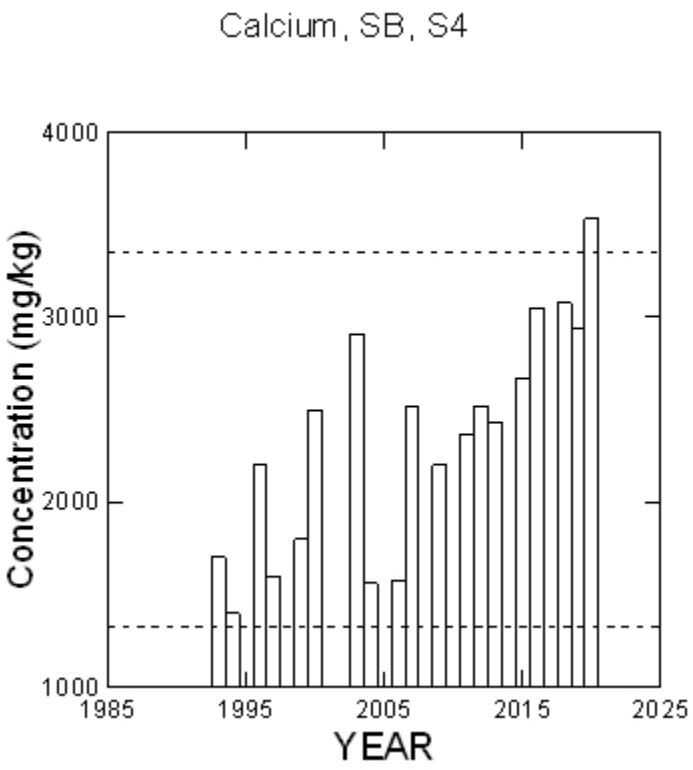
18. Calcium_SB_S1



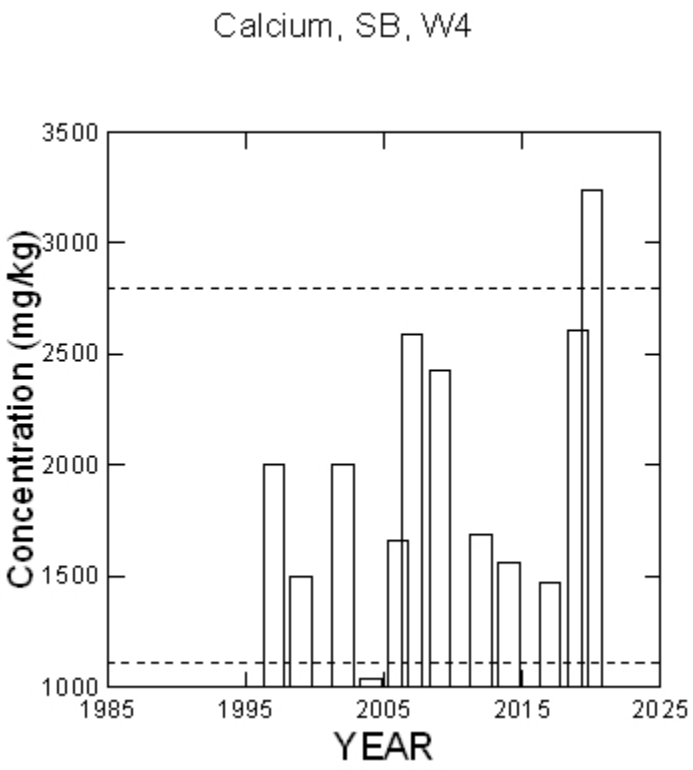
19. Calcium_SB_S2



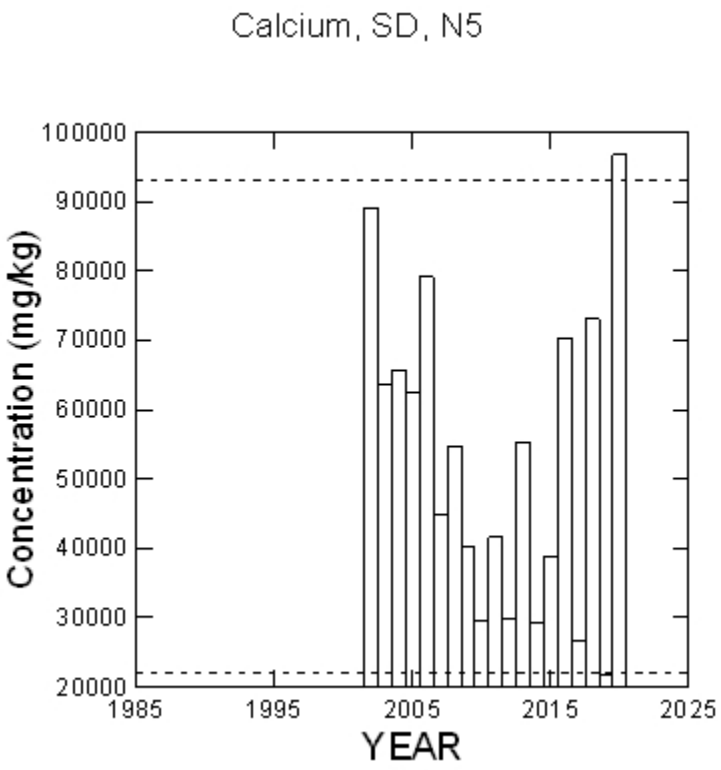
20. Calcium_SB_S4



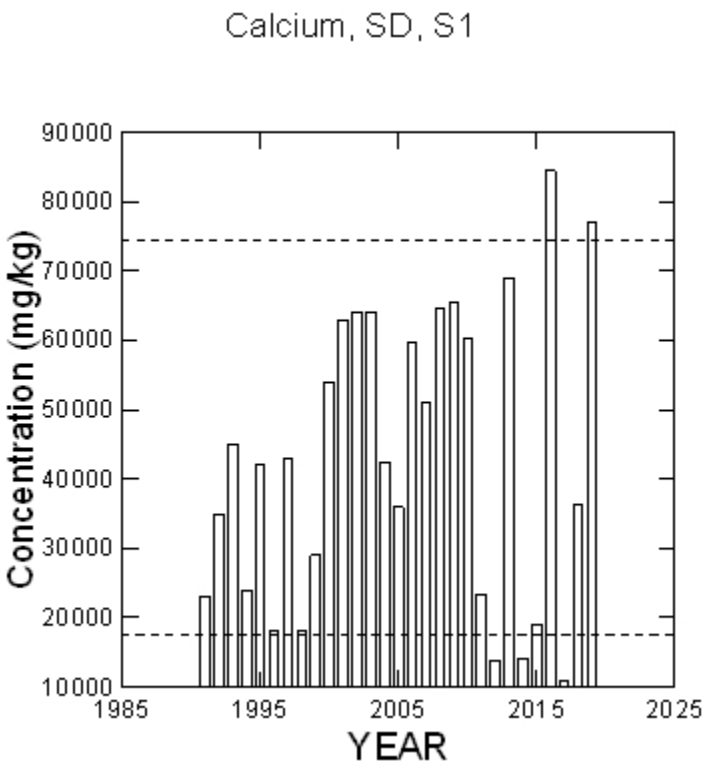
21. Calcium_SB_W4



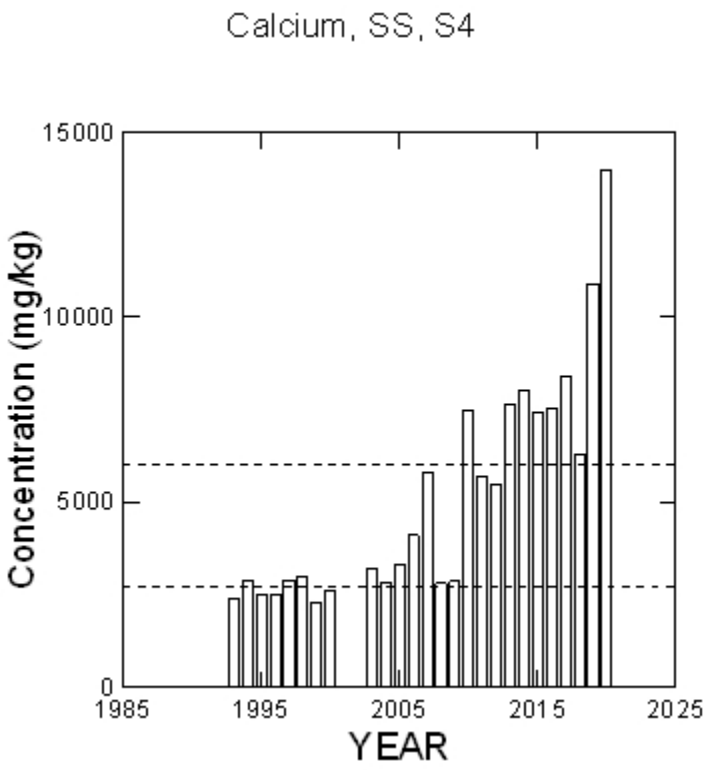
22. Calcium_SD_N5



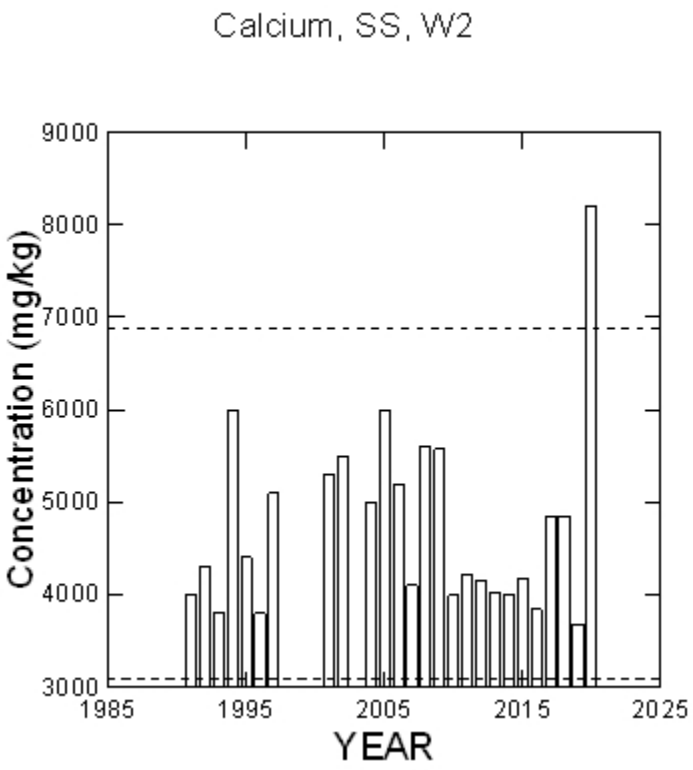
23. Calcium_SD_S1



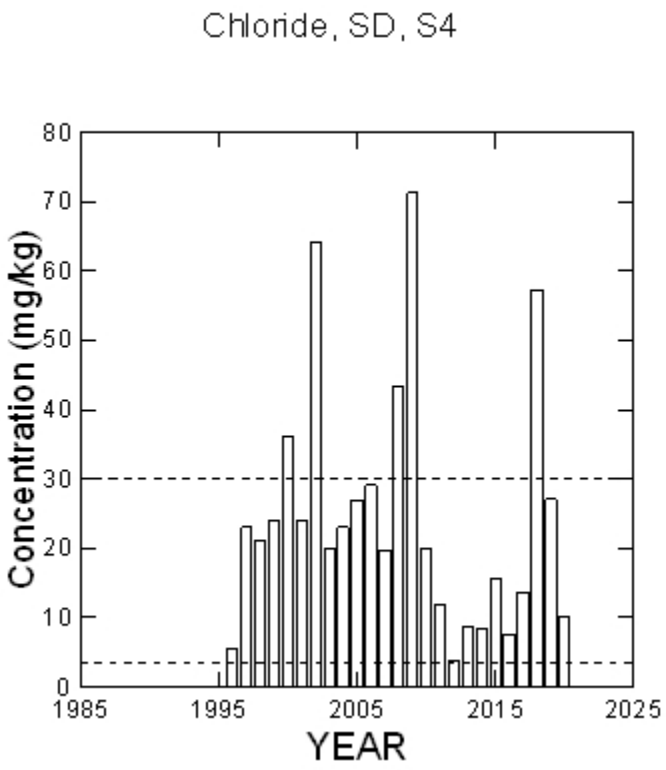
24. Calcium_SS_S4



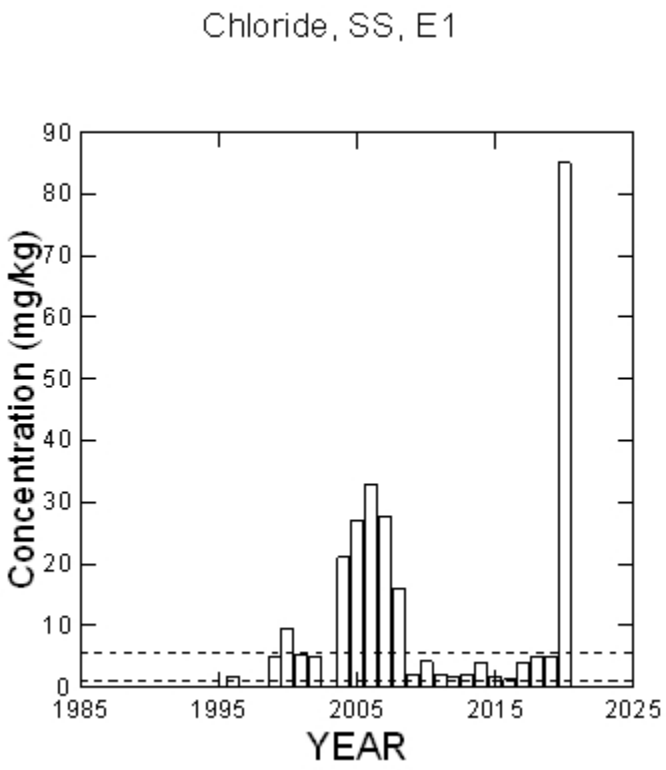
25. Calcium_SS_W2



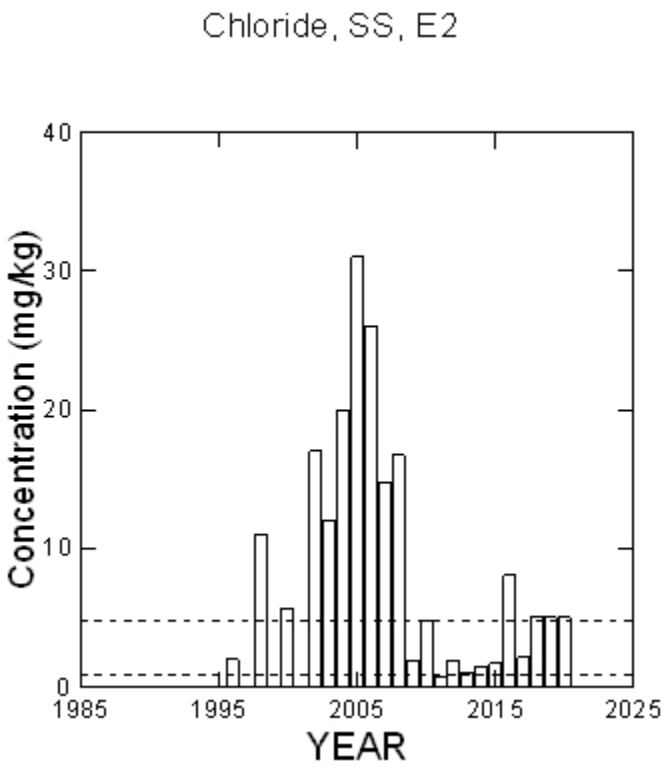
26. Chloride_SD_S4



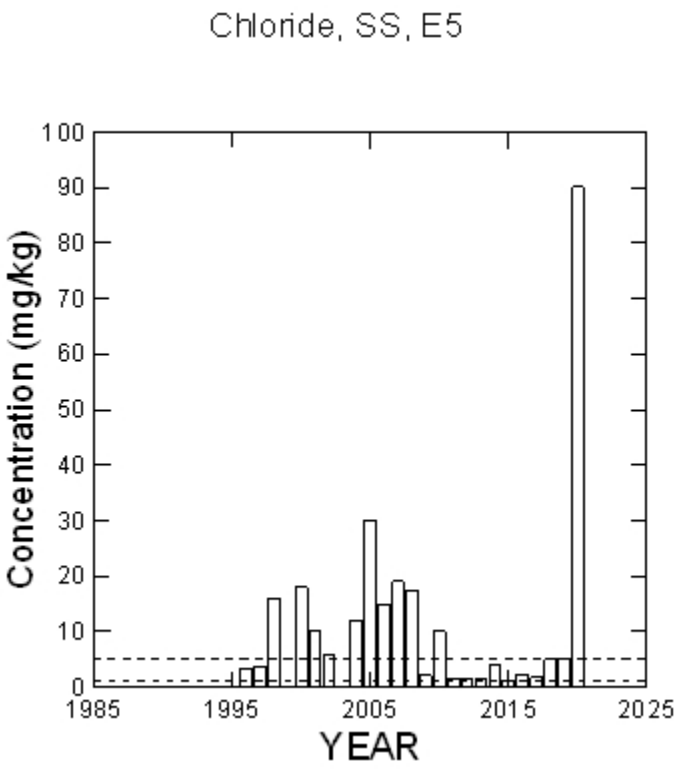
27. Chloride_SS_E1



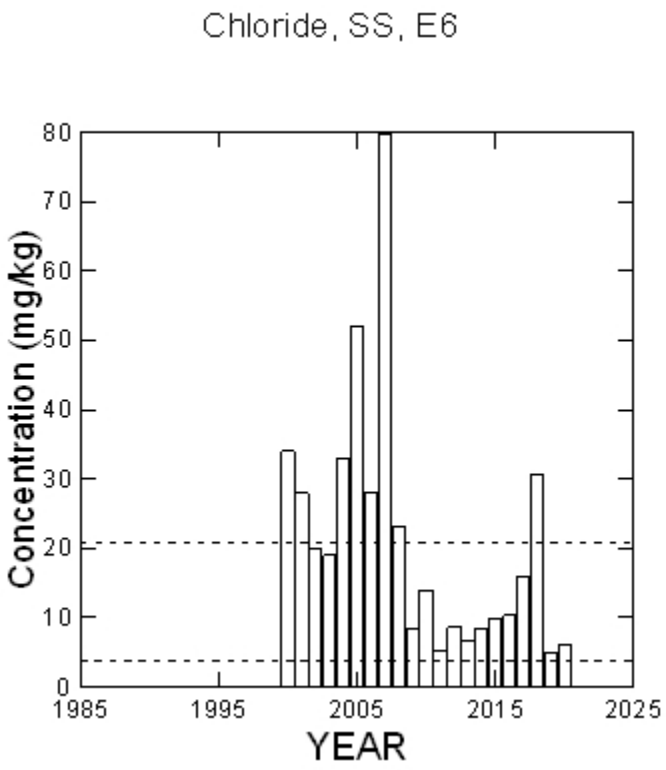
28. Chloride_SS_E2



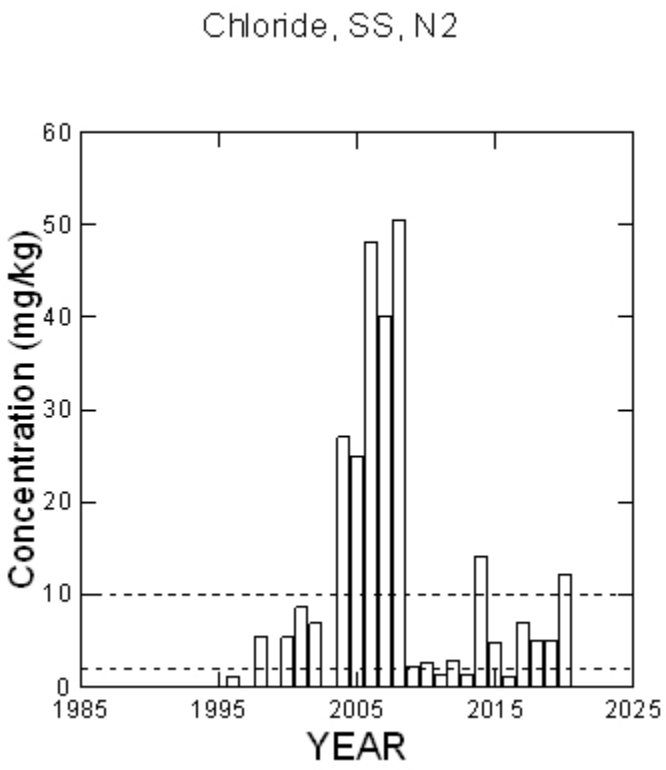
29. Chloride_SS_E5



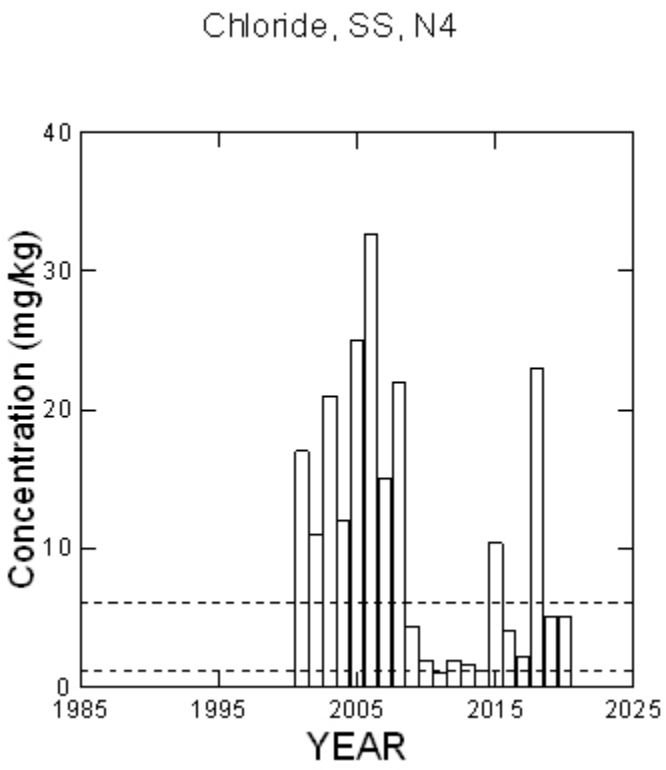
30. Chloride_SS_E6



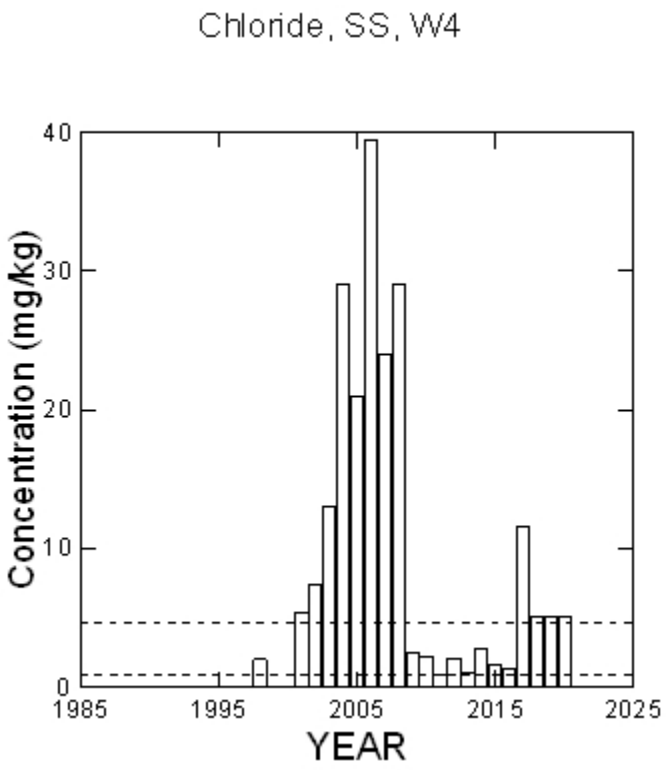
31. Chloride_SS_N2



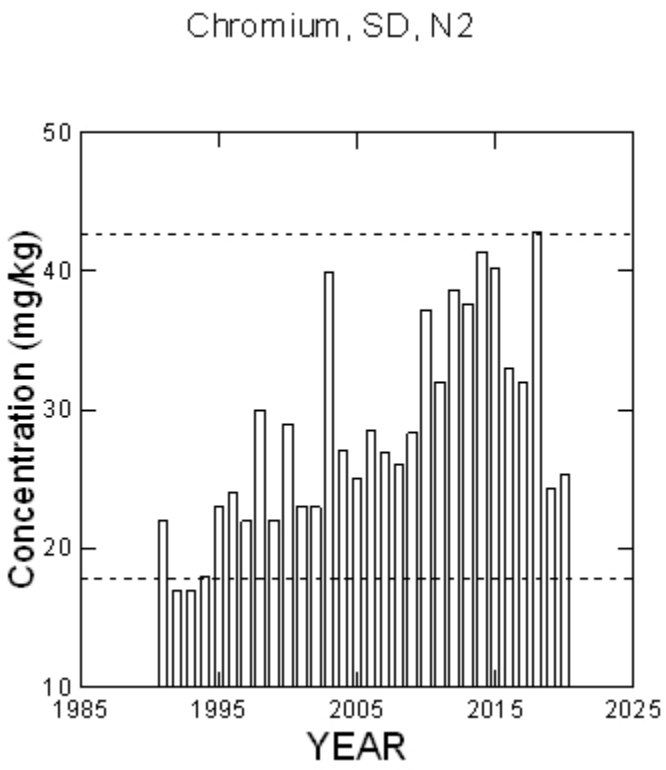
32. Chloride_SS_N4



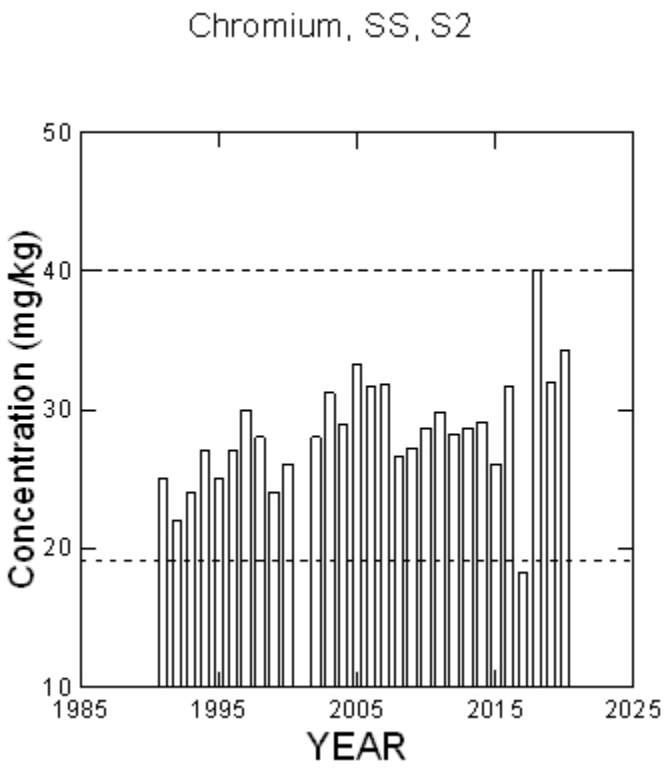
33. Chloride_SS_W4



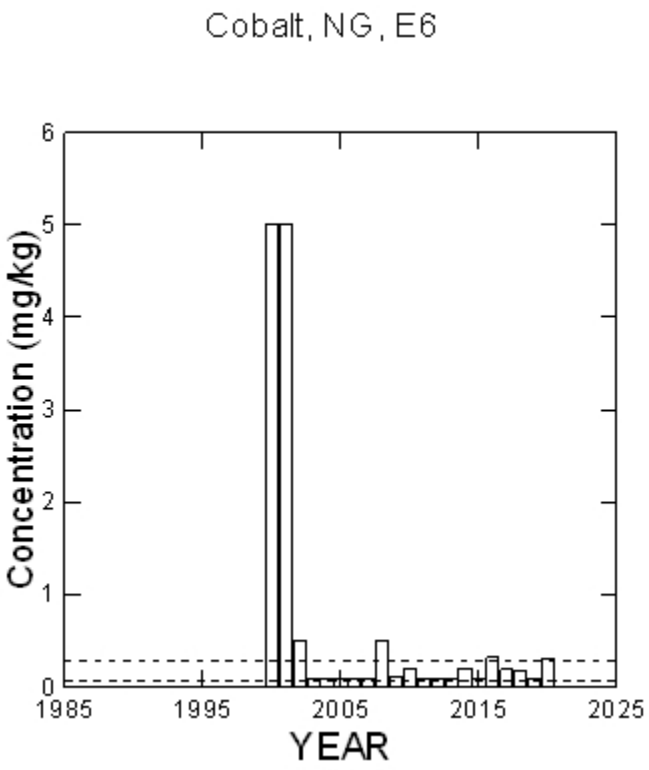
34. Chromium_SD_N2



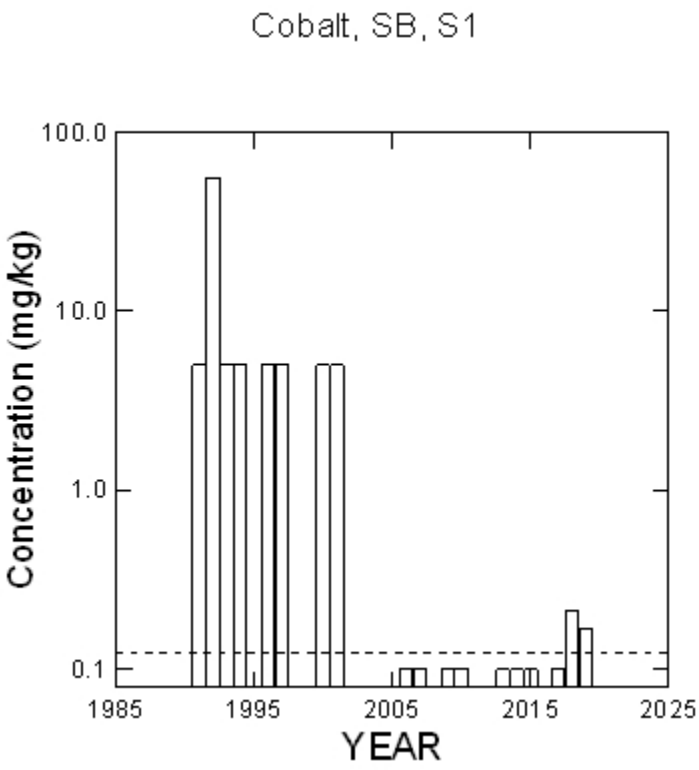
35. Chromium_SS_S2



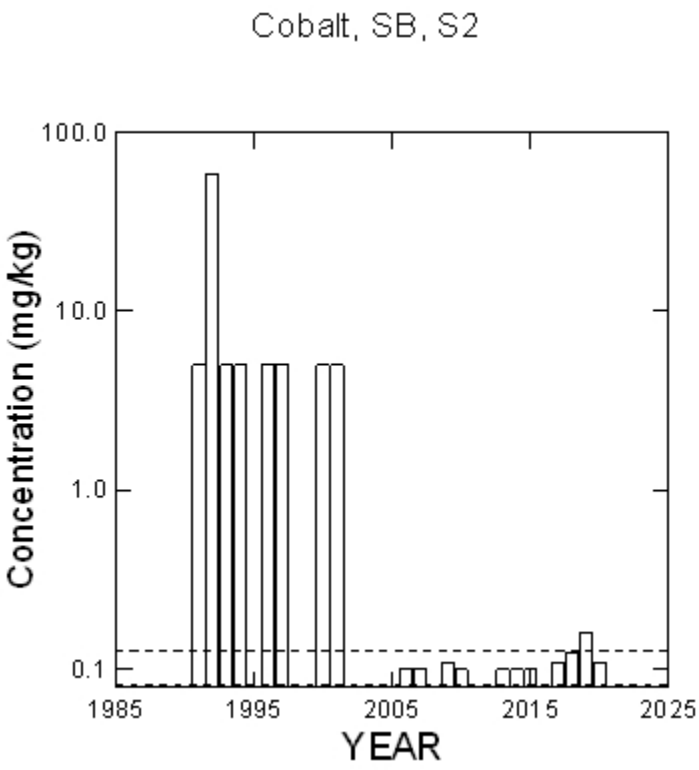
36. Cobalt_NG_E6



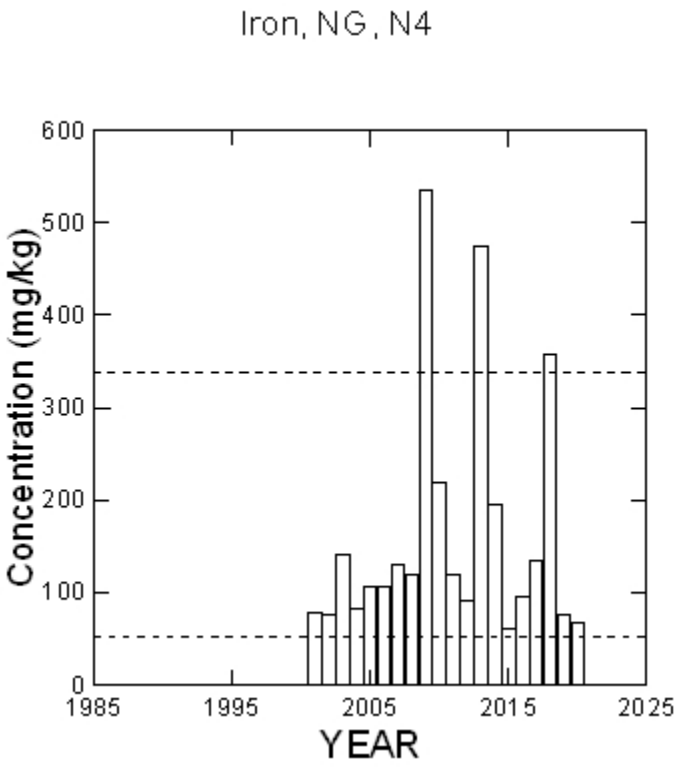
37. Cobalt_SB_S1



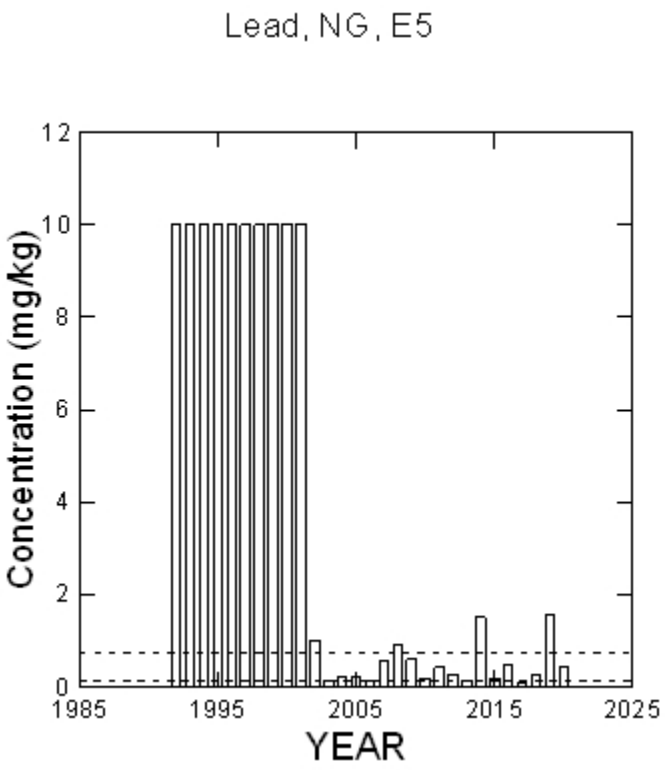
38. Cobalt_SB_S2



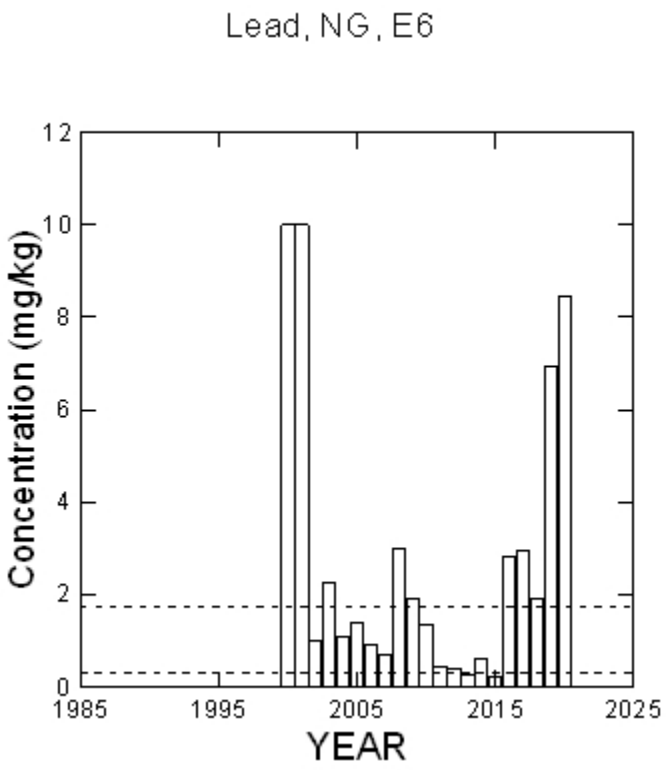
39. Iron_NG_N4


Iron, NG, N4
Concentration (mg/kg)
600
500
400
300
200
100
0
1985
1995
2005
2015
2025
YEAR

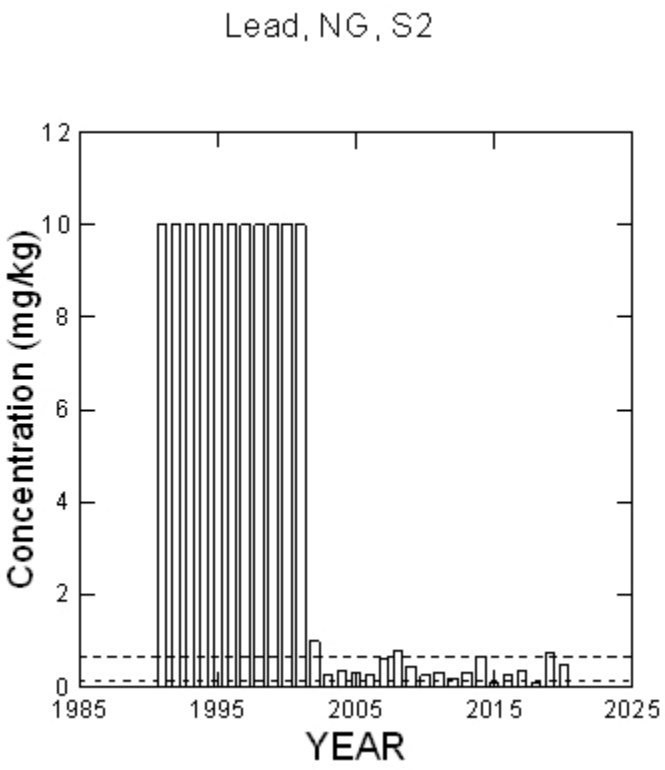
40.Lead_NG_E5


Lead, NG, E5
Concentration (mg/kg)
0
2
4
6
8
10
12
1985
1995
2005
2015
2025
YEAR

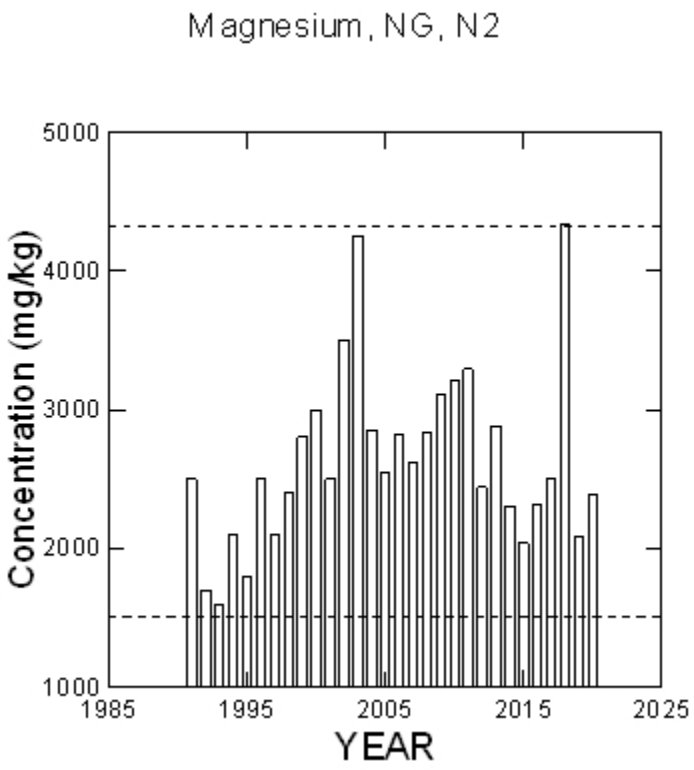
41.Lead_NG_E6


Lead, NG, E6
Concentration (mg/kg)
0
2
4
6
8
10
12
1985
1995
2005
2015
2025
YEAR

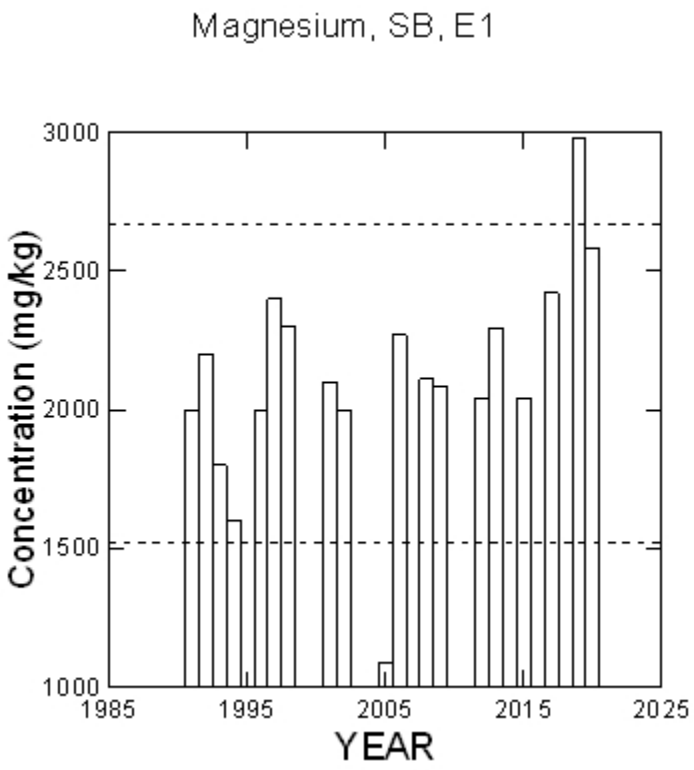
42.Lead_NG_S2


Lead, NG, S2
Concentration (mg/kg)
0
2
4
6
8
10
12
1985
1995
2005
2015
2025
YEAR

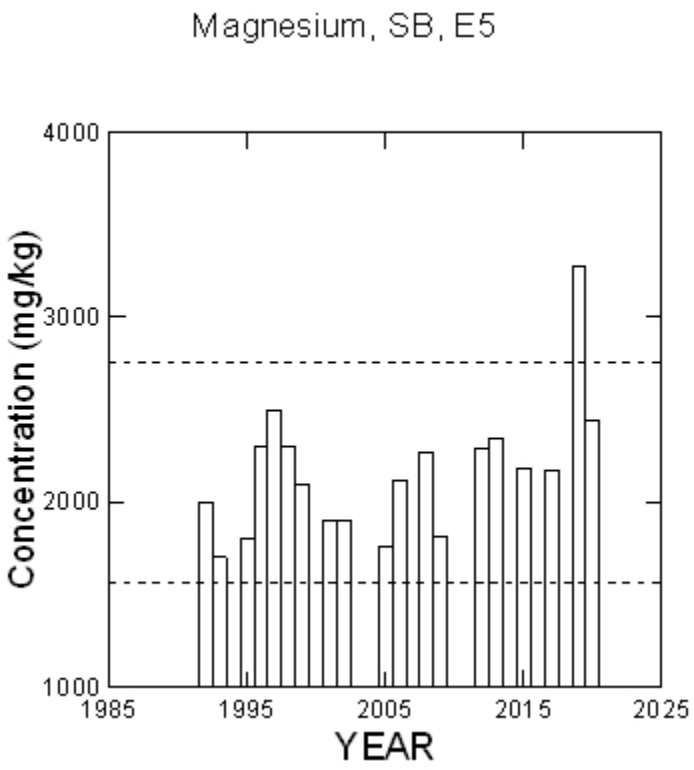
43. Magnesium_NG_N2



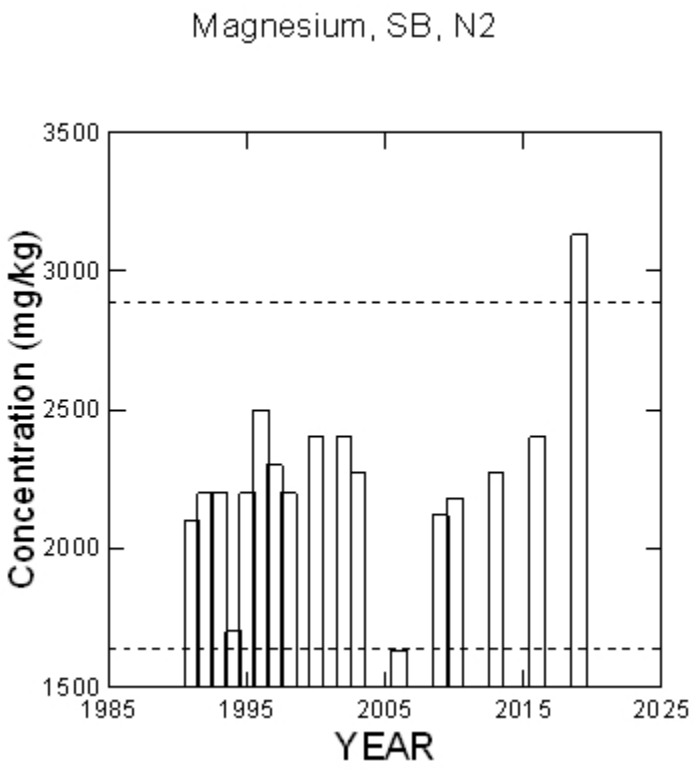
44. Magnesium_SB_E1



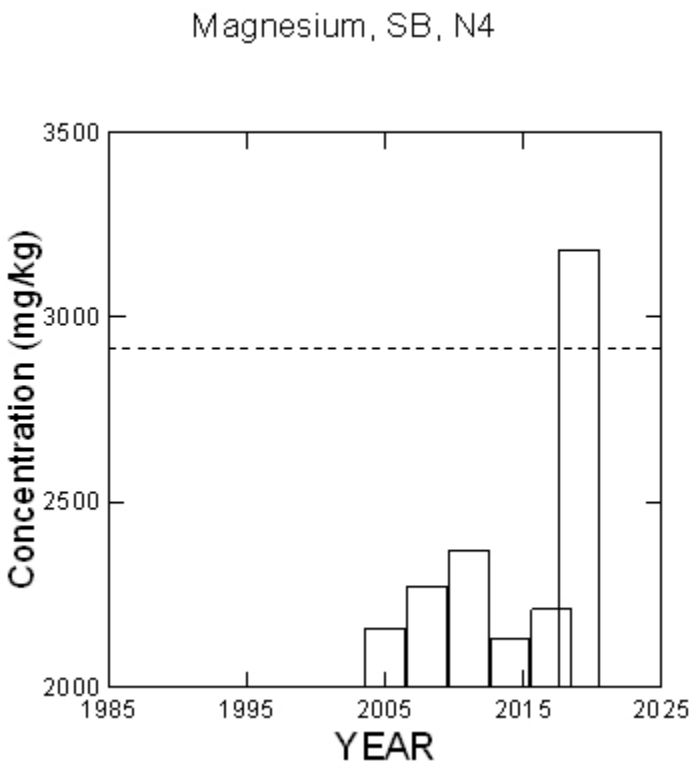
45. Magnesium_SB_E5



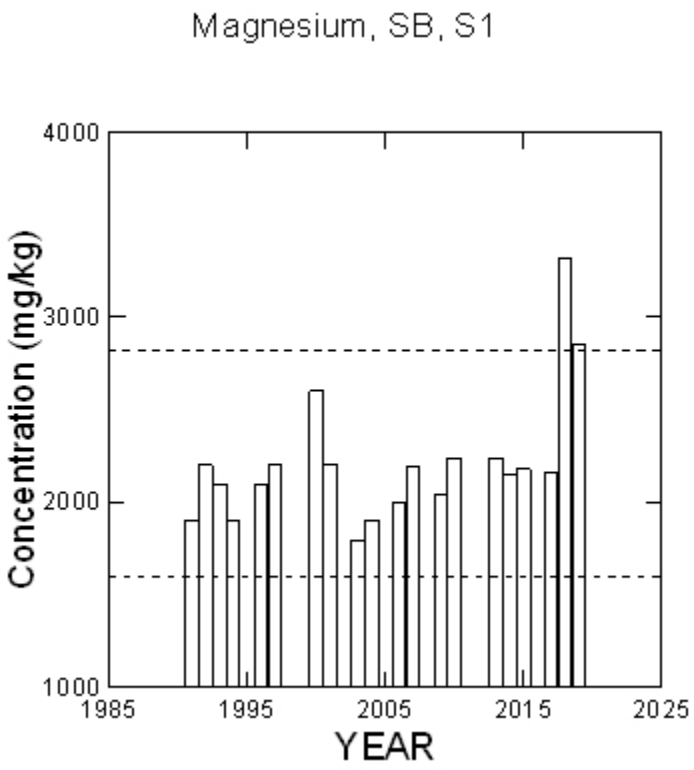
46. Magnesium_SB_N2



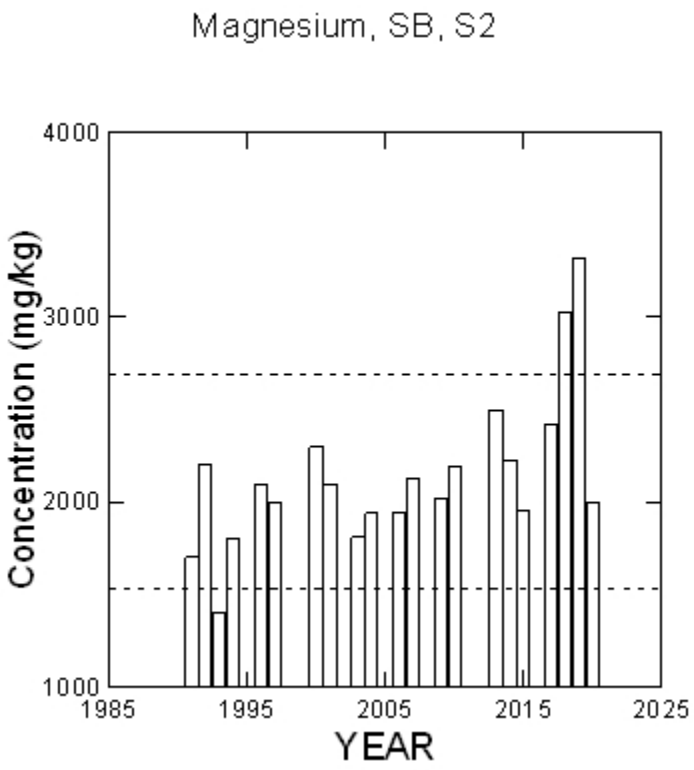
47. Magnesium_SB_N4



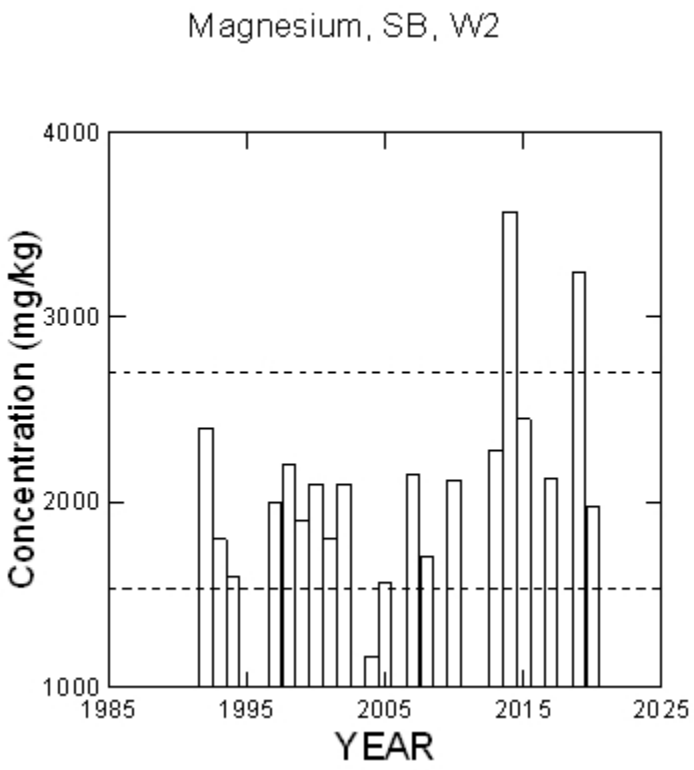
48. Magnesium_SB_S1



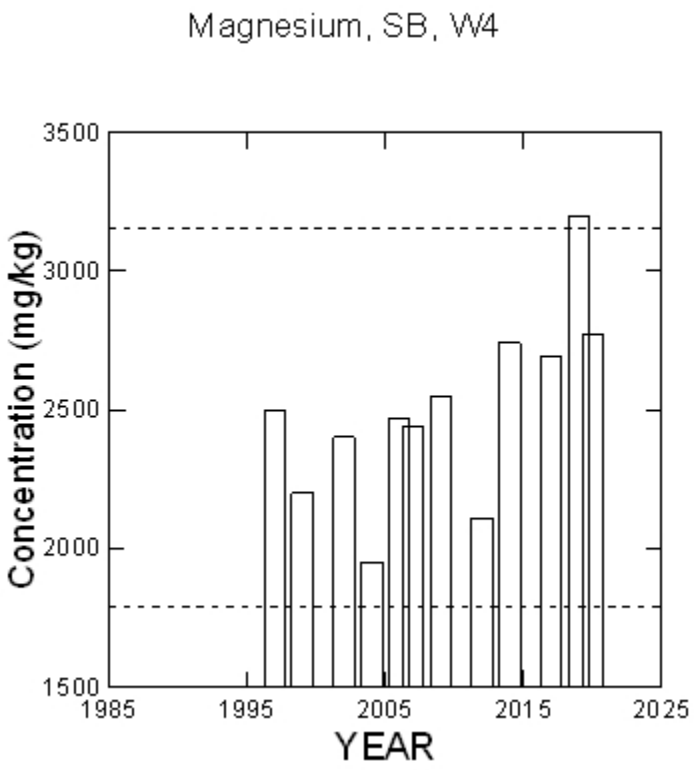
49. Magnesium_SB_S2



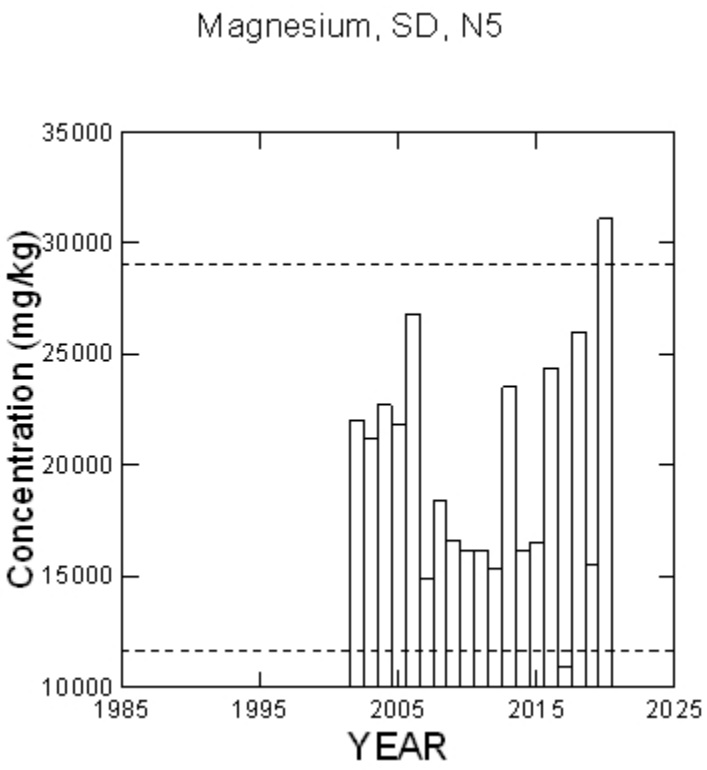
50. Magnesium_SB_W2



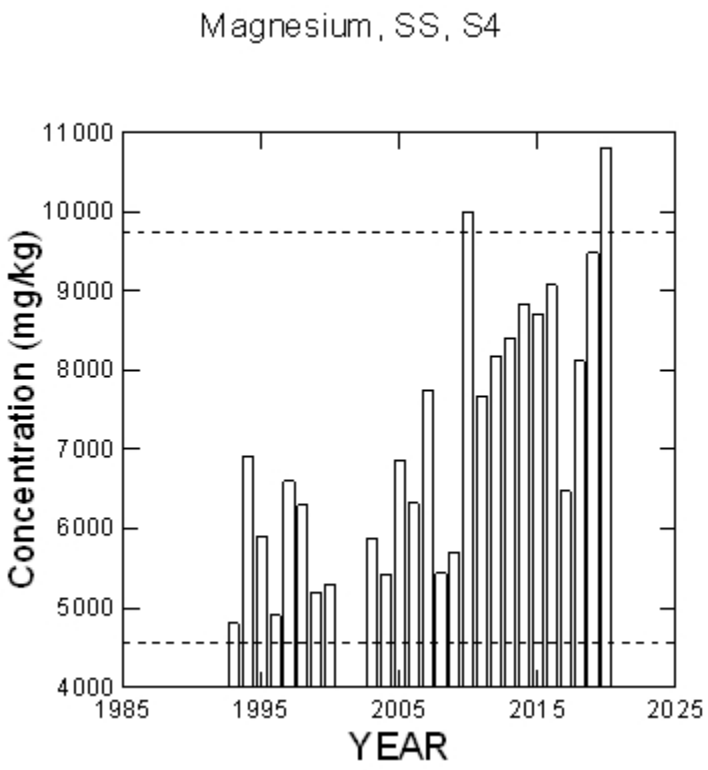
51. Magnesium_SB_W4



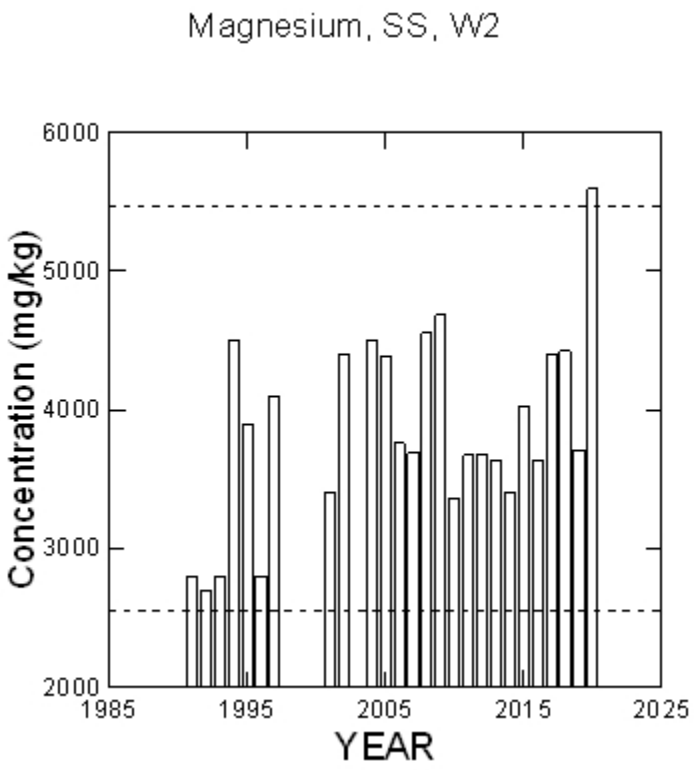
52. Magnesium_SD_N5



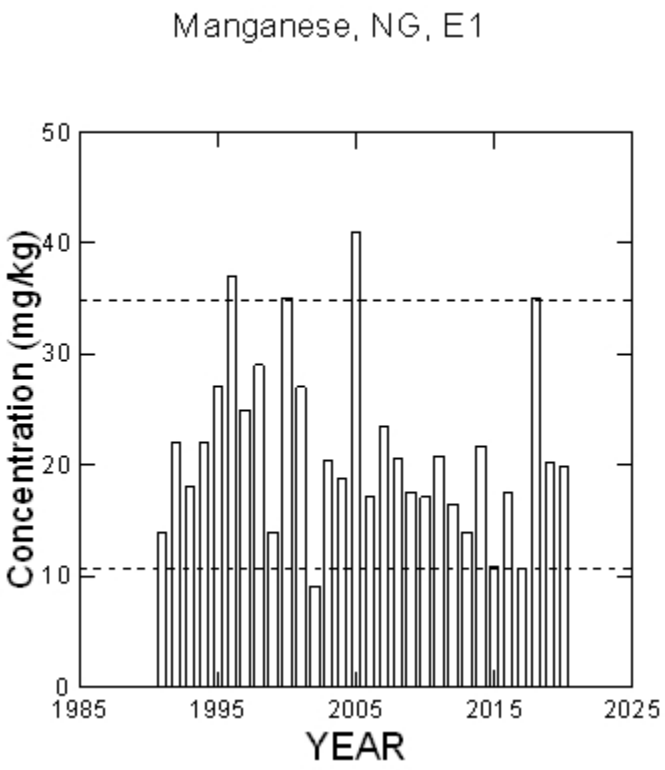
53. Magnesium_SS_S4



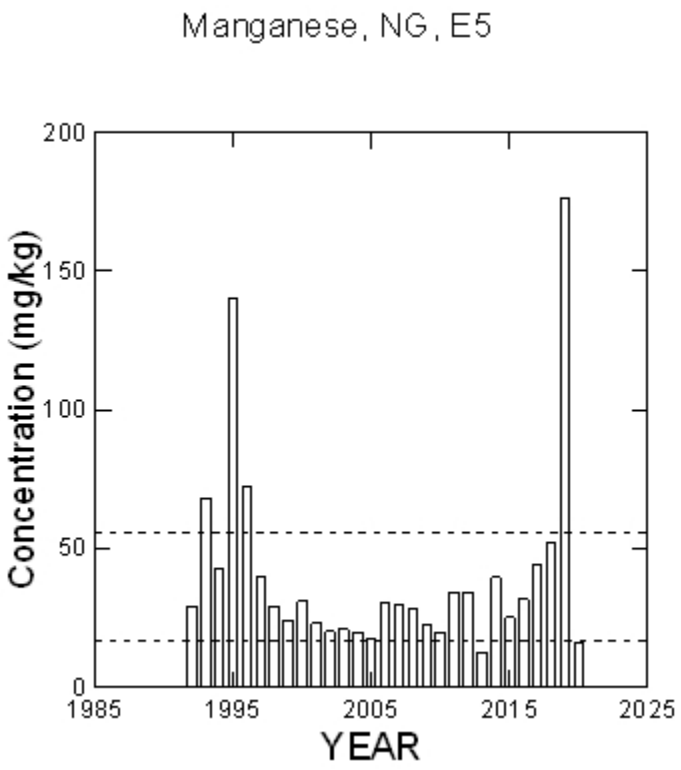
54. Magnesium_SS_W2



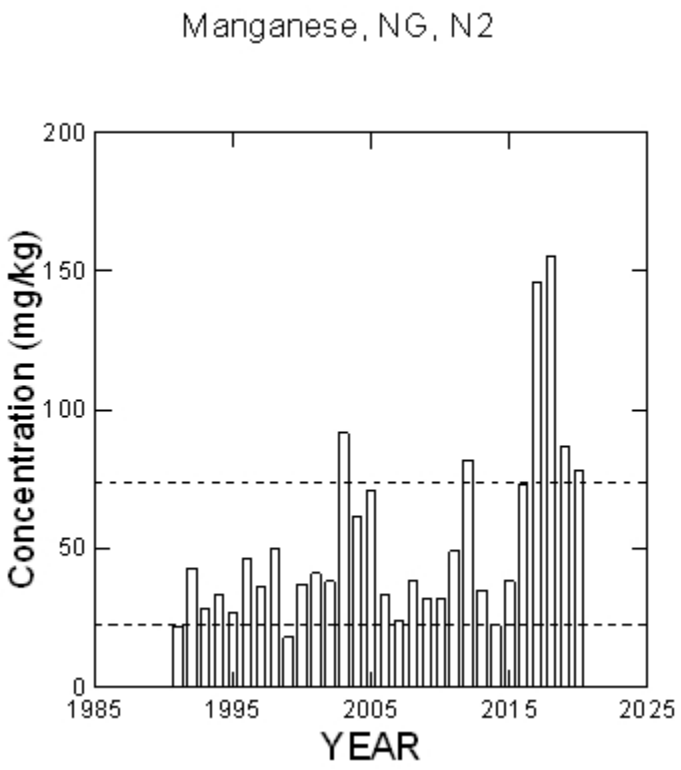
55. Manganese_NG_E1



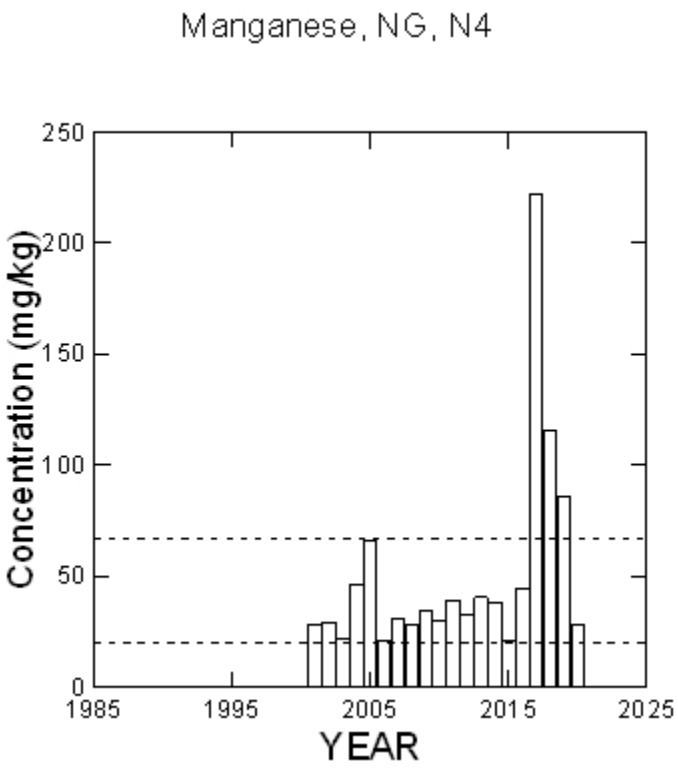
56. Manganese_NG_E5



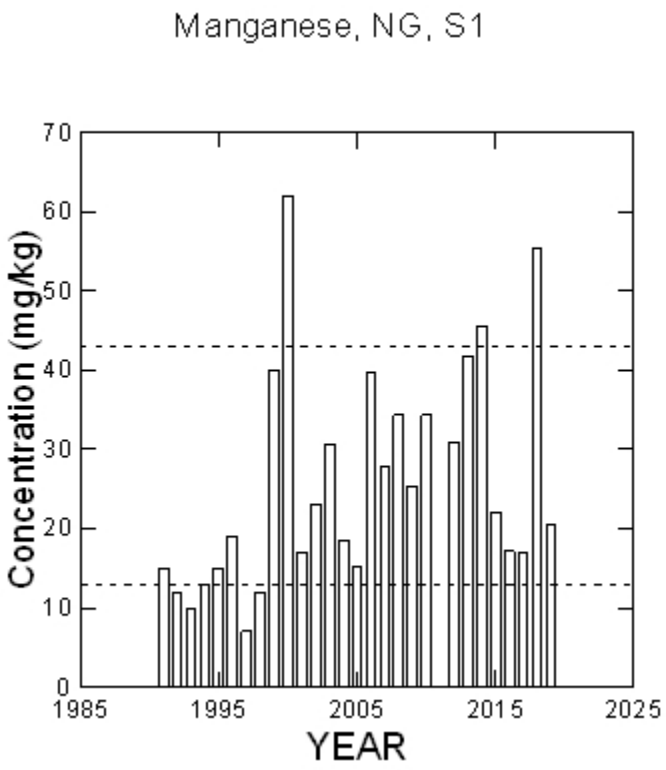
57. Manganese_NG_N2



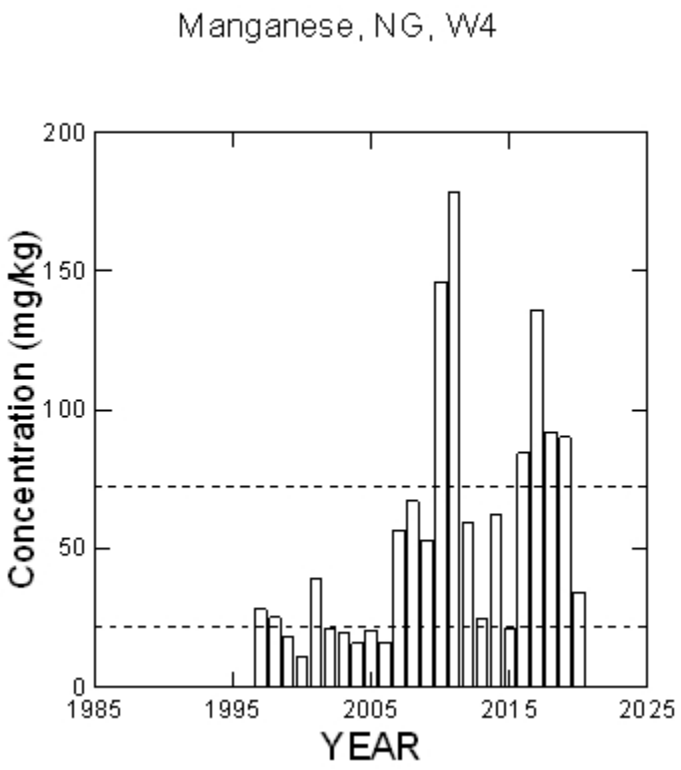
58. Manganese_NG_N4



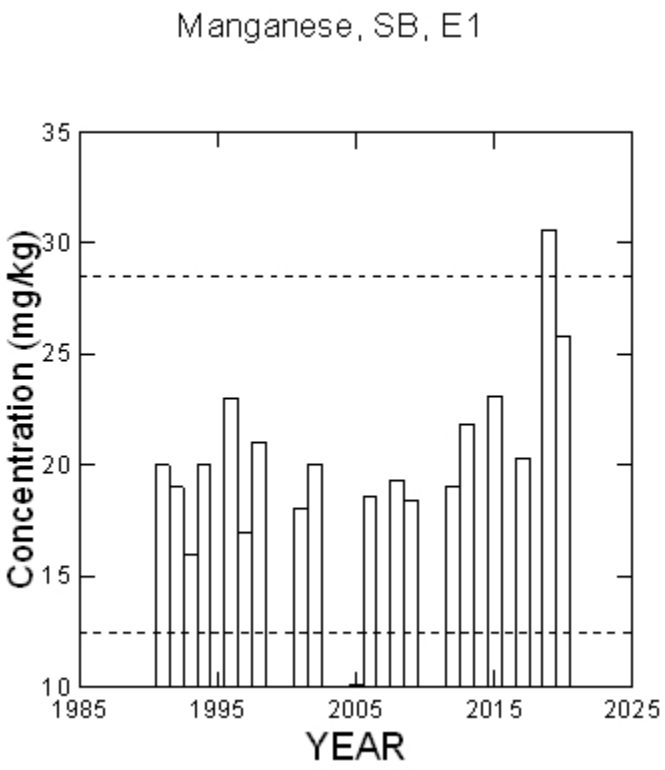
59. Manganese_NG_S1



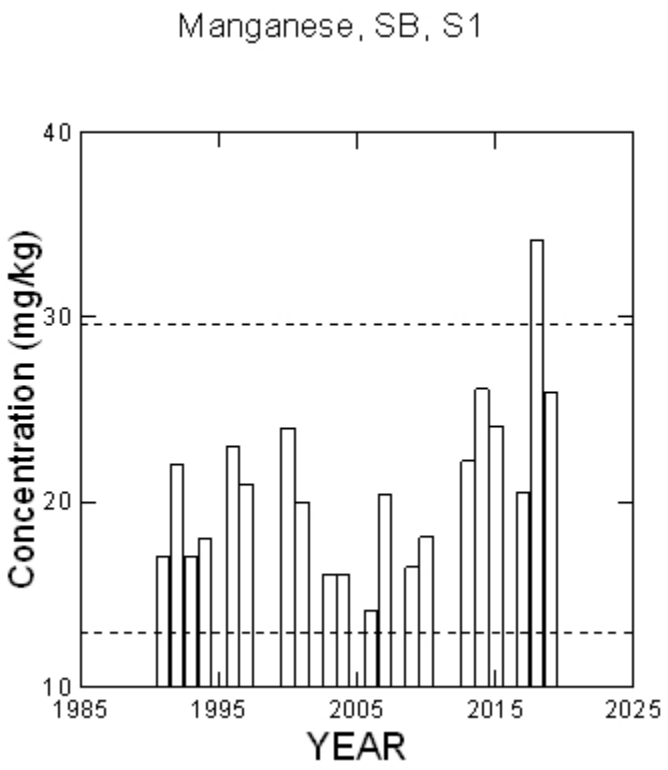
60. Manganese_NG_W4



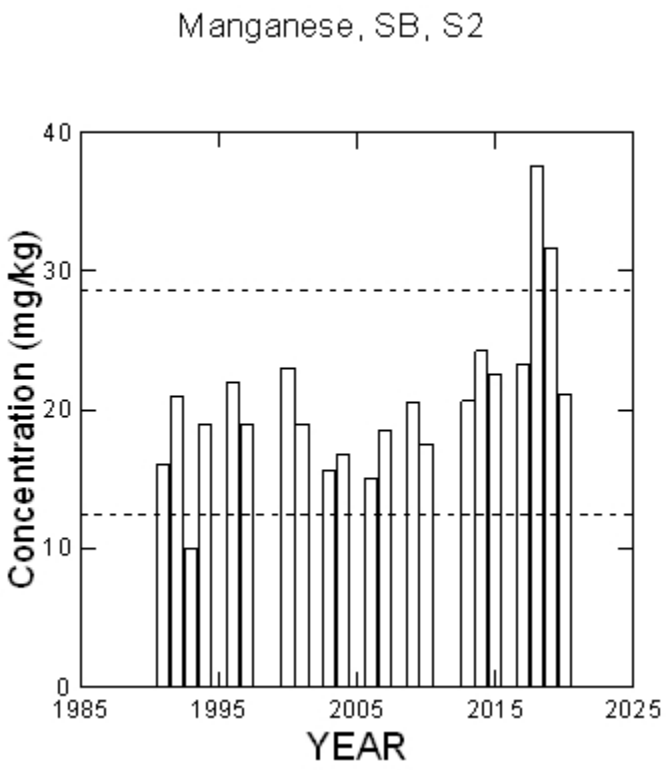
61. Manganese_SB_E1



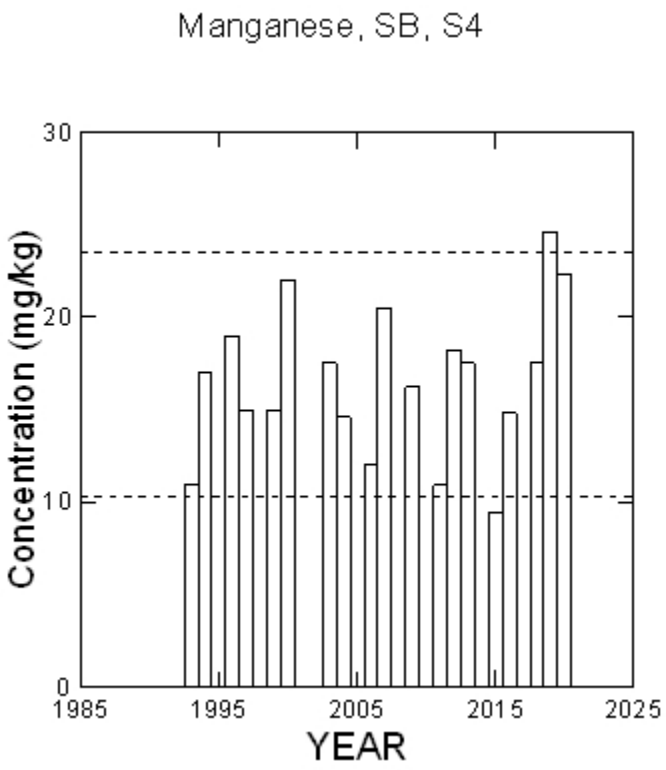
62. Manganese_SB_S1



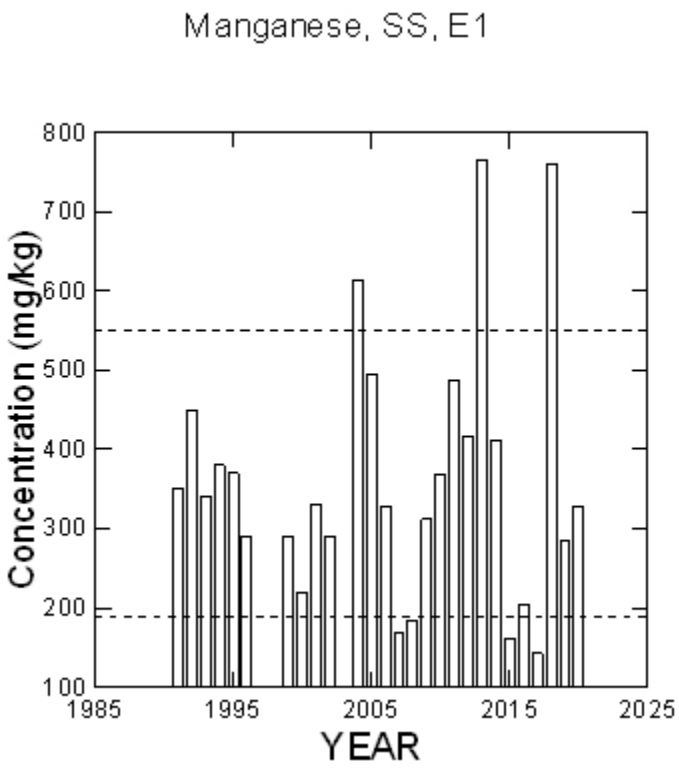
63. Manganese_SB_S2



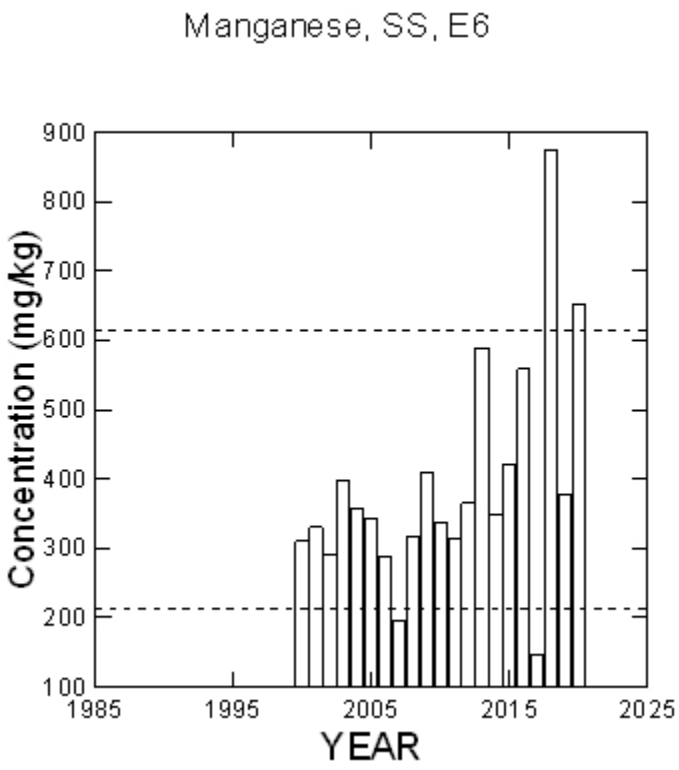
64. Manganese_SB_S4



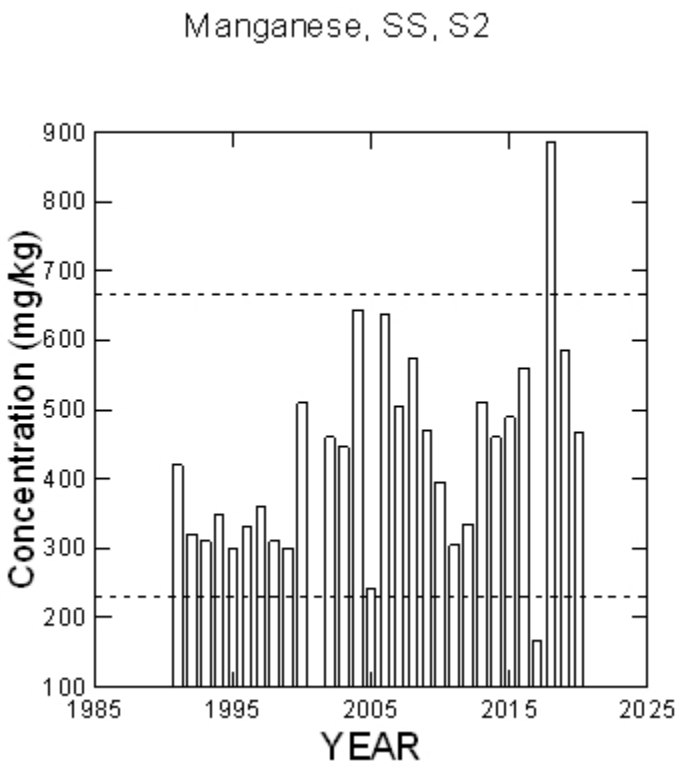
65. Manganese_SS_E1



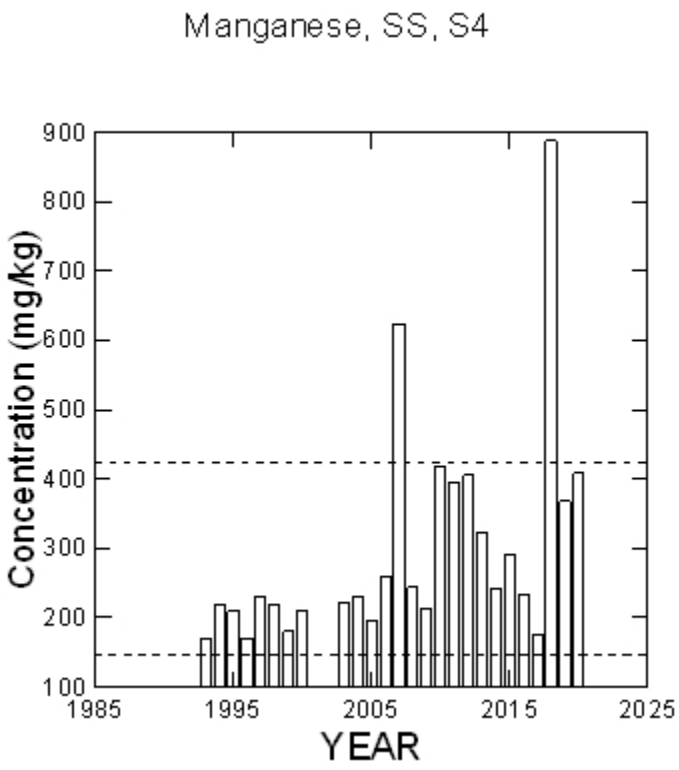
66. Manganese_SS_E6



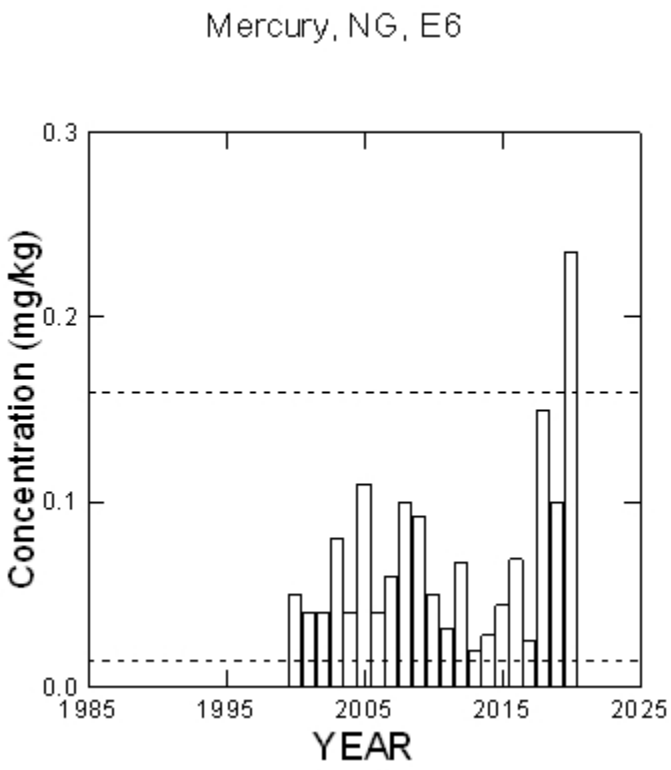
67. Manganese_SS_S2



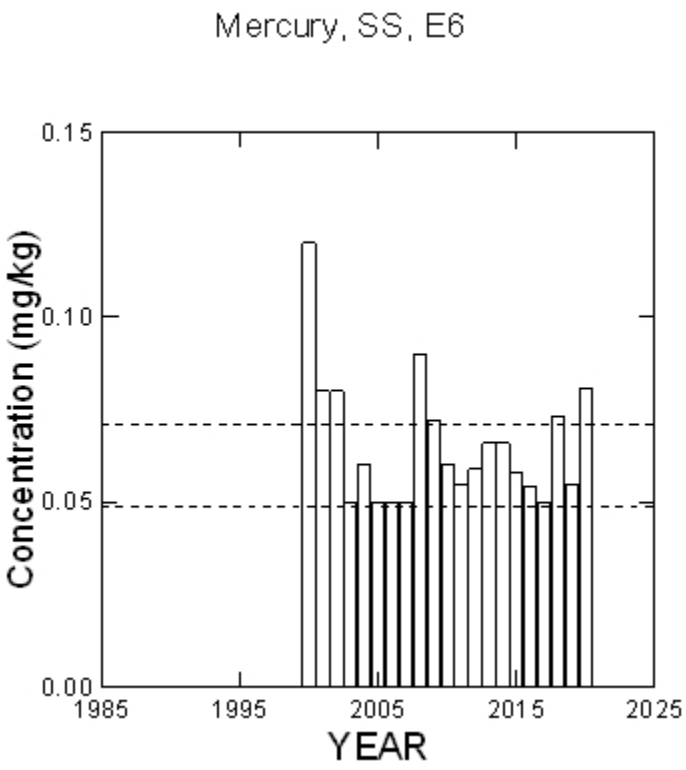
68. Manganese_SS_S4



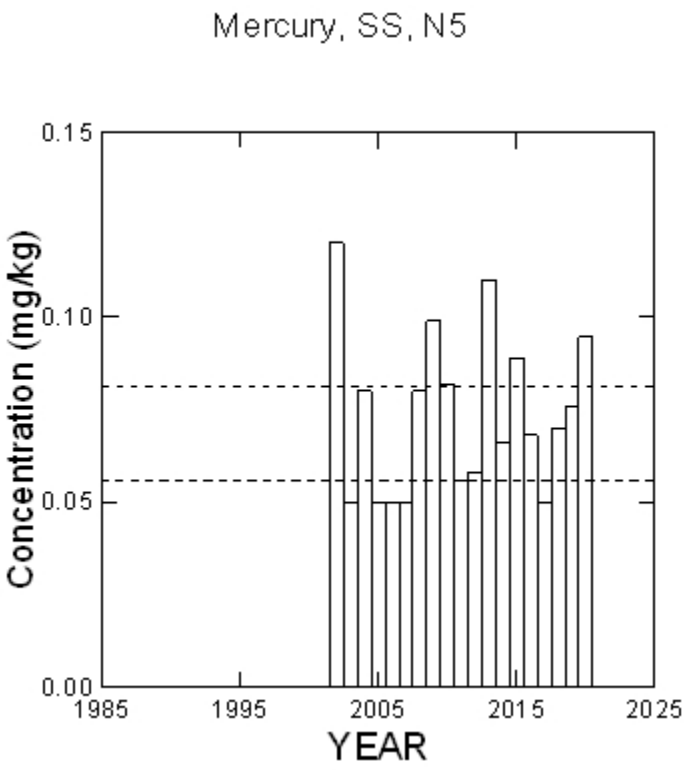
69. Mercury_NG_E6



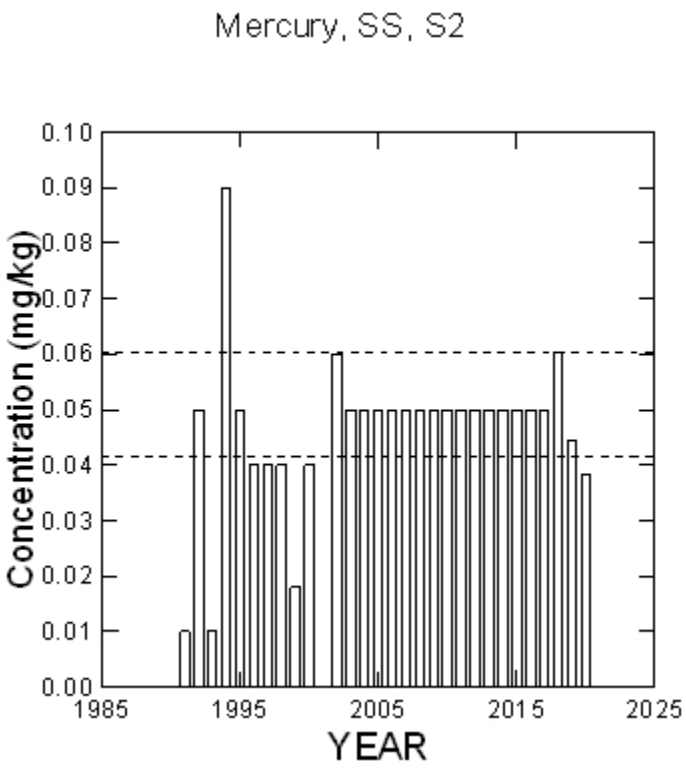
70. Mercury_SS_E6



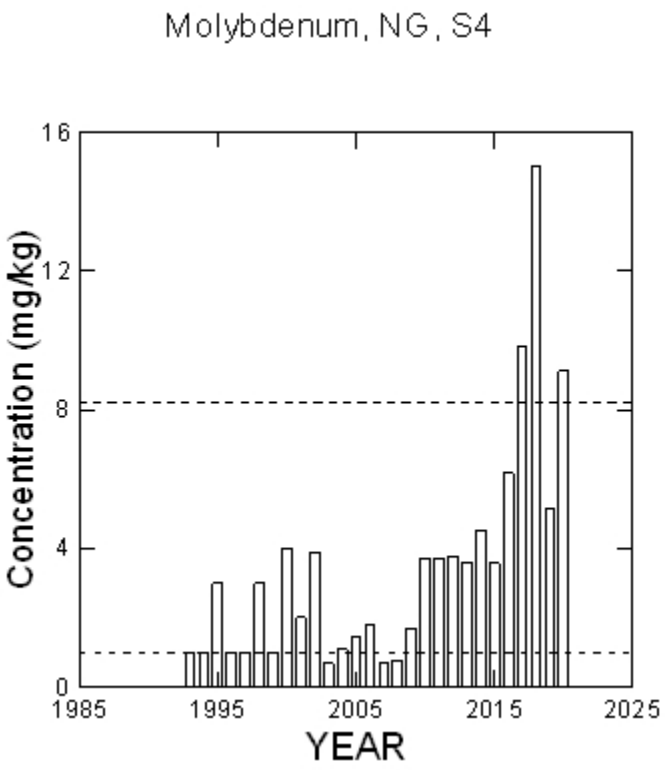
71. Mercury_SS_N5



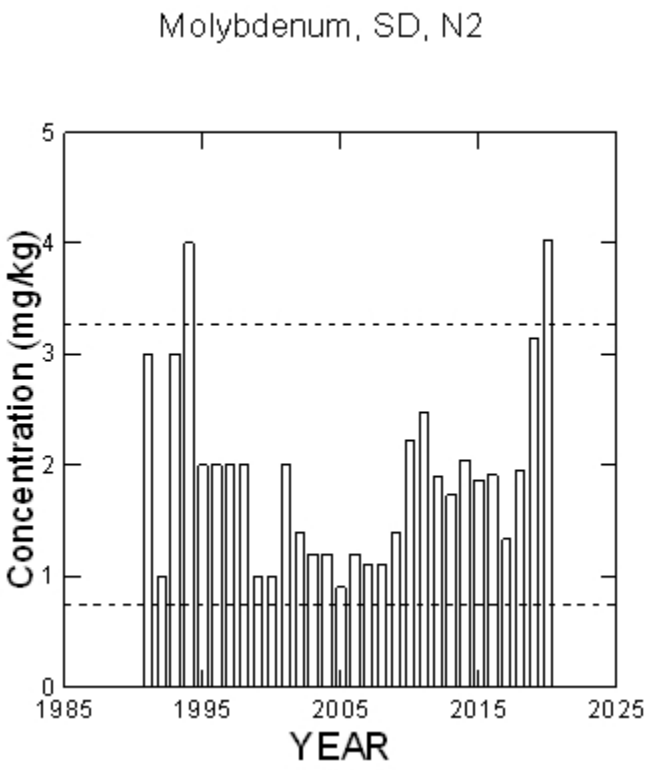
72. Mercury_SS_S2



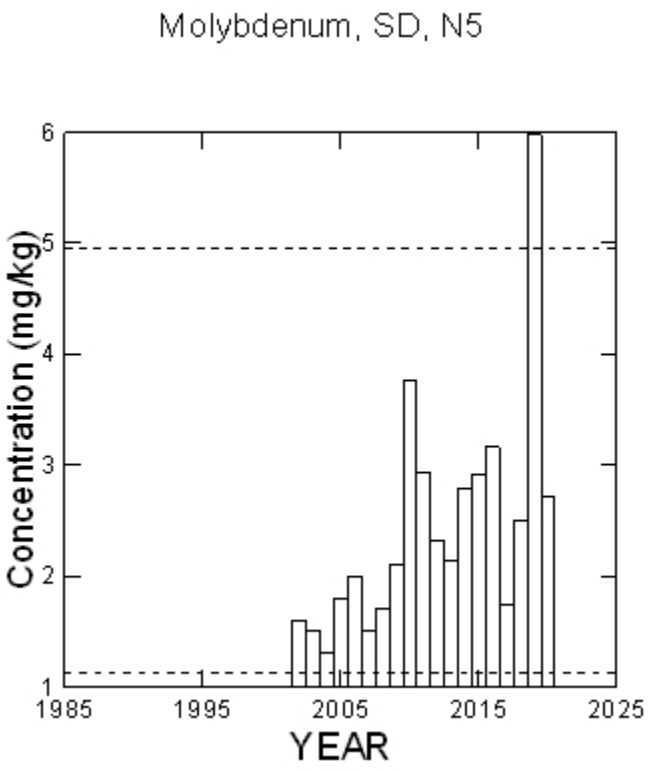
73. Molybdenum_NG_S4



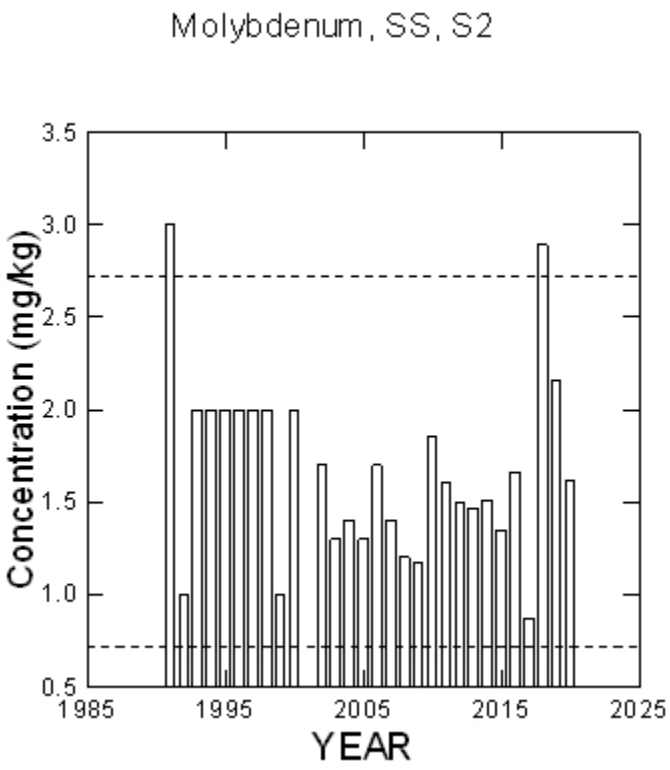
74. Molybdenum_SD_N2



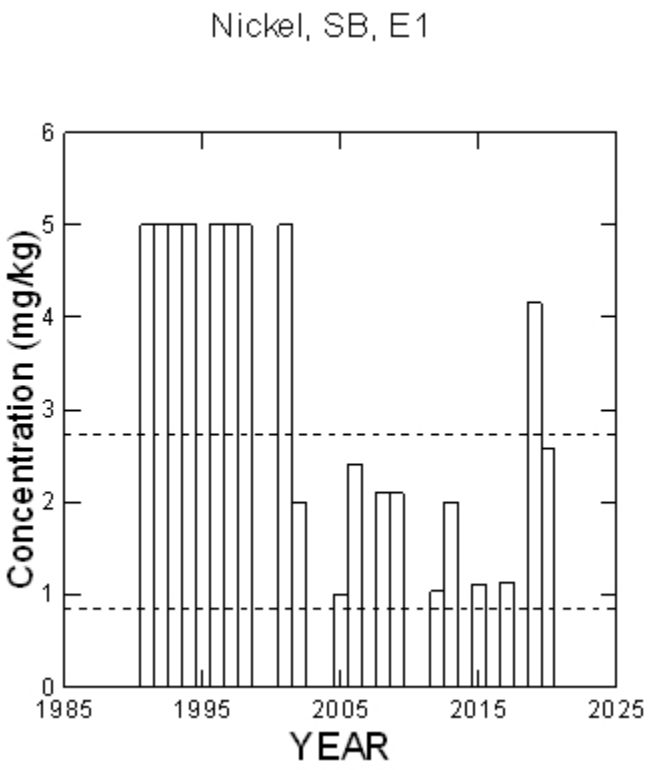
75. Molybdenum_SD_N5



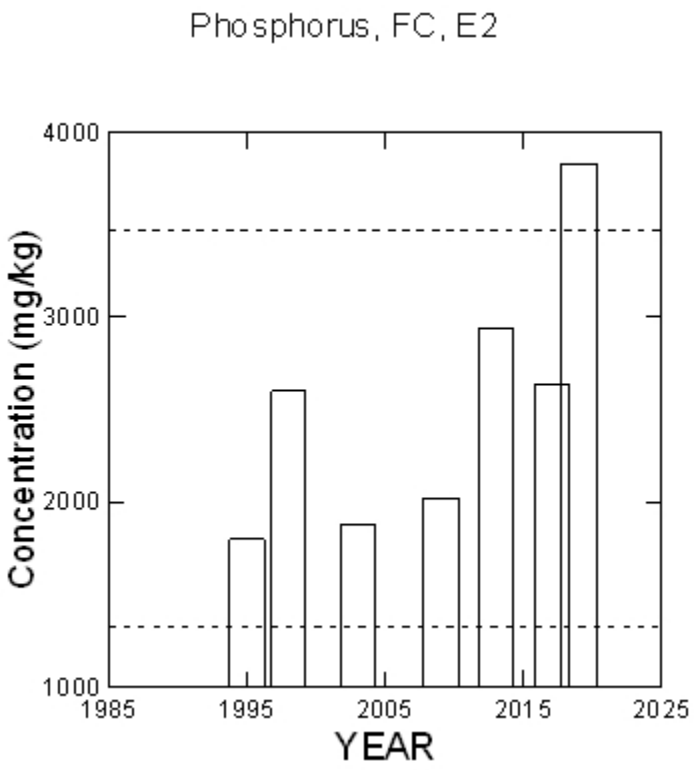
76. Molybdenum_SS_S2



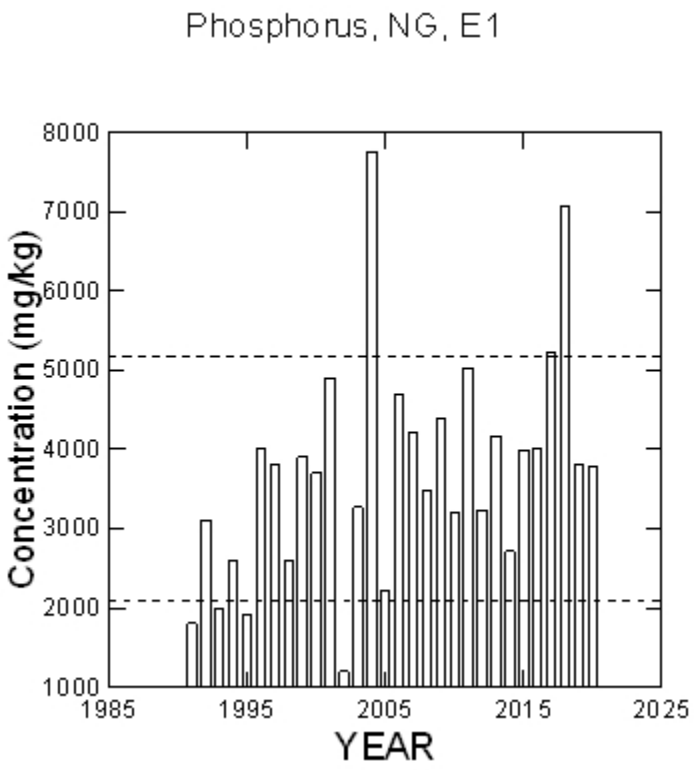
77.Nickel_SB_E1



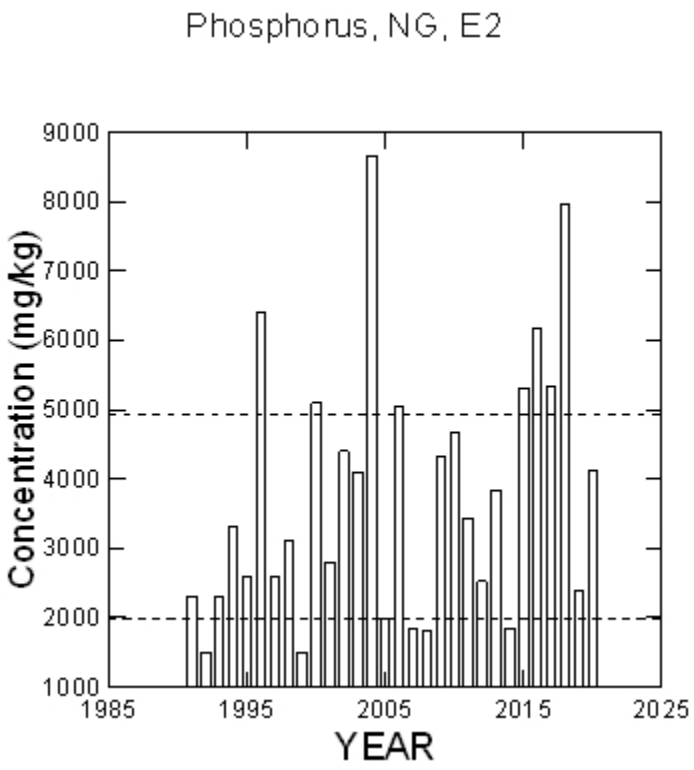
78. Phosphorus_FC_E2



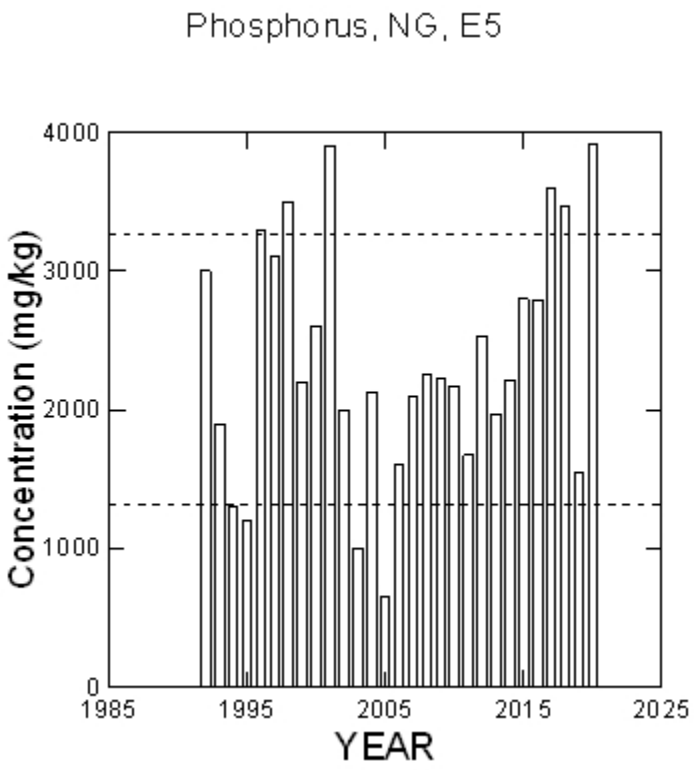
79. Phosphorus_NG_E1



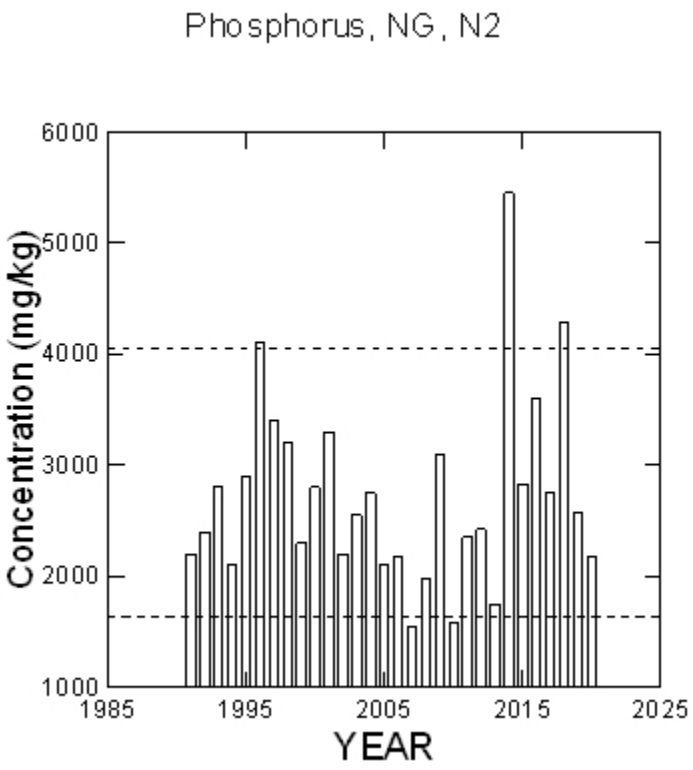
80.Phosphorus_NG_E2



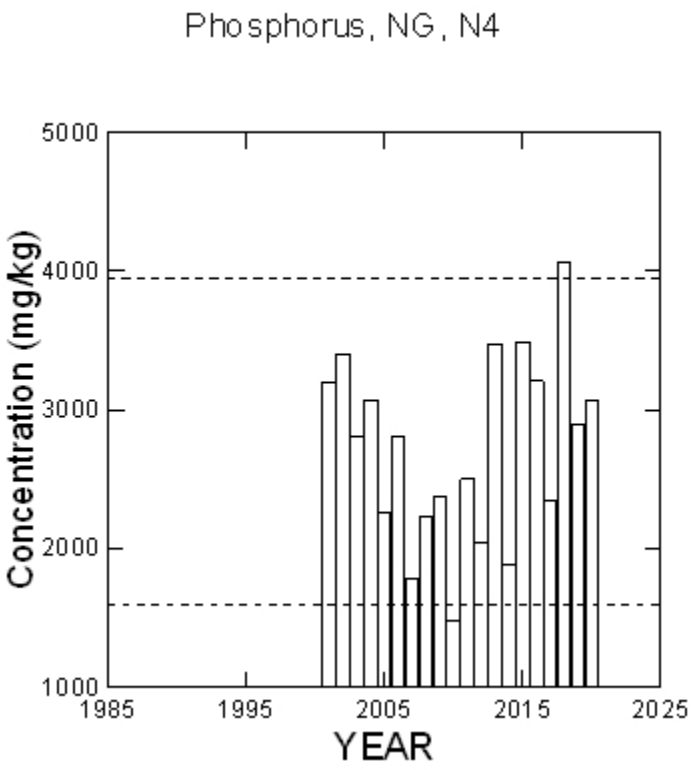
81. Phosphorus_NG_E5



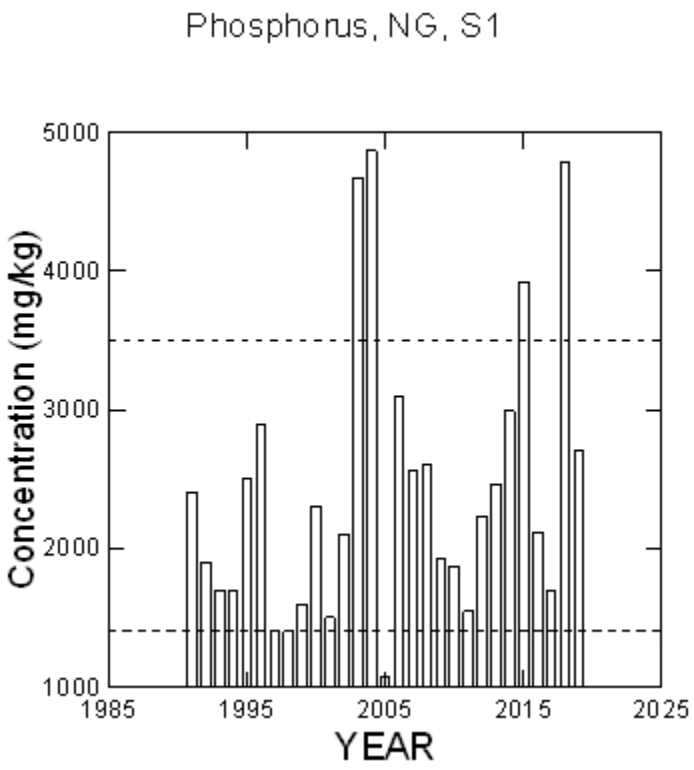
82. Phosphorus_NG_N2



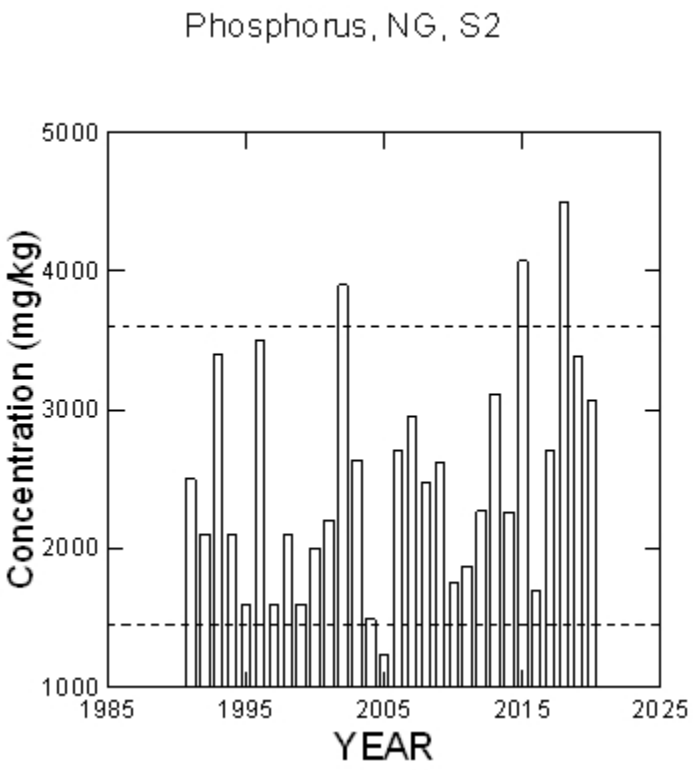
83. Phosphorus_NG_N4



84. Phosphorus_NG_S1



85.Phosphorus_NG_S2



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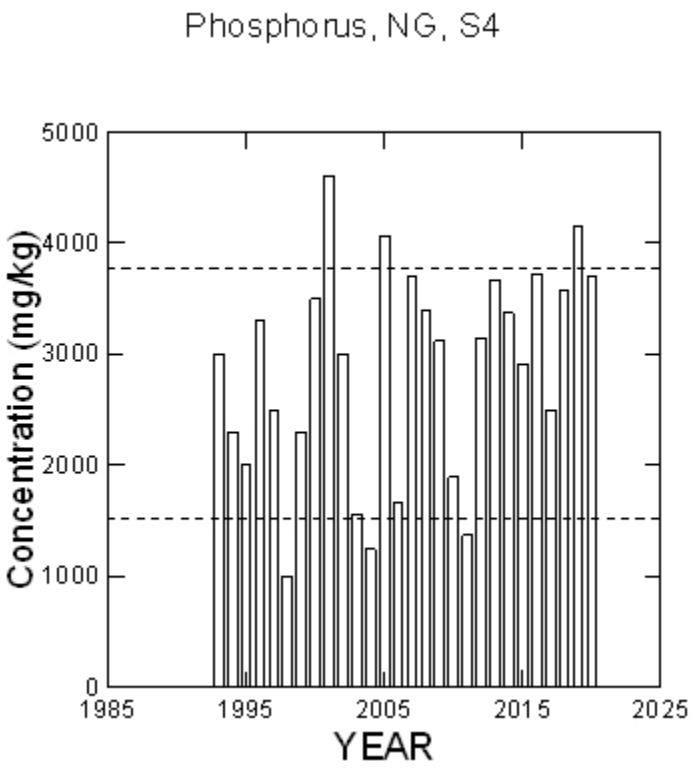
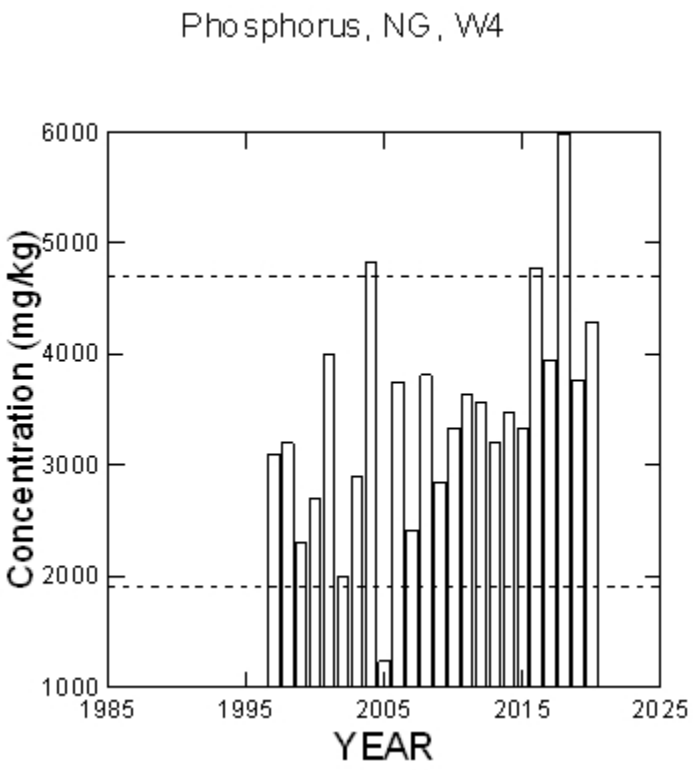
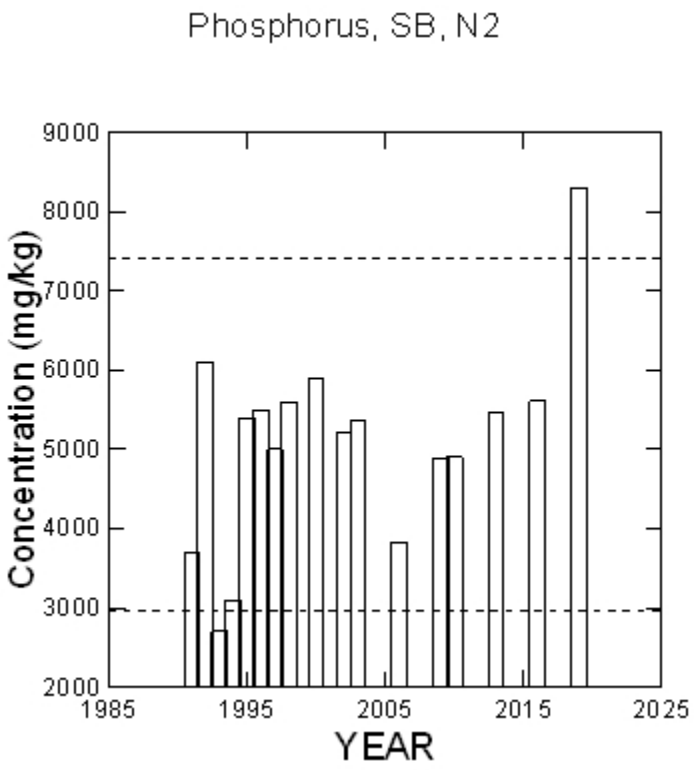


87.Phosphorus_NG_W4



88. Phosphorus_SB_N2



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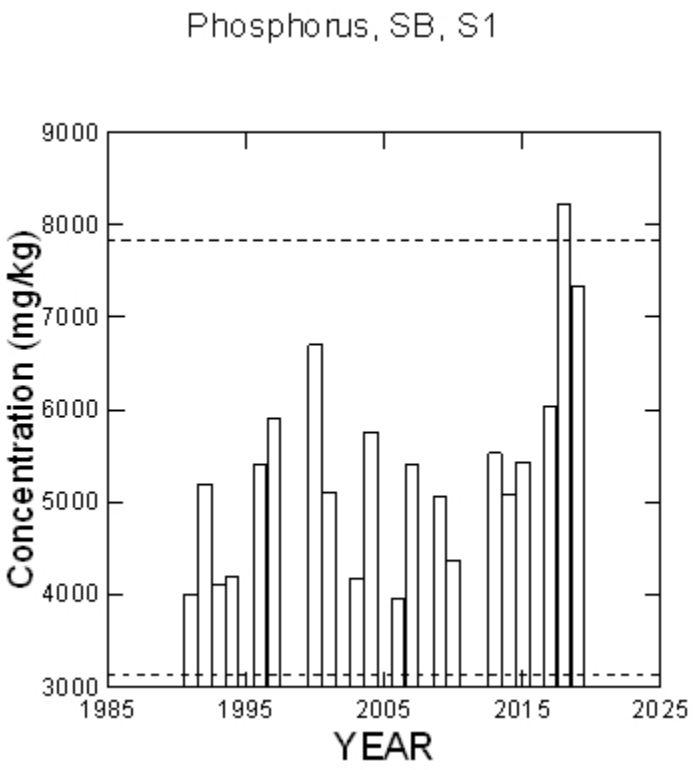

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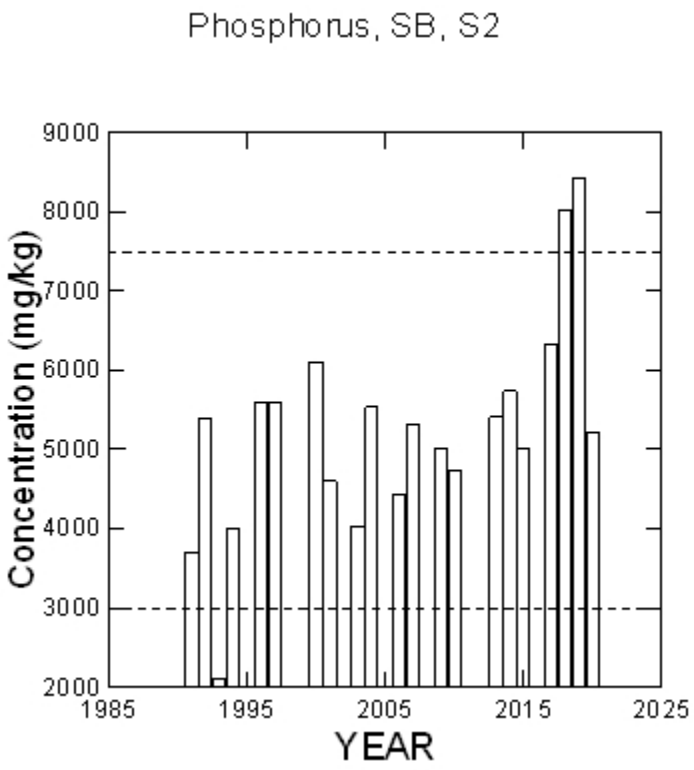

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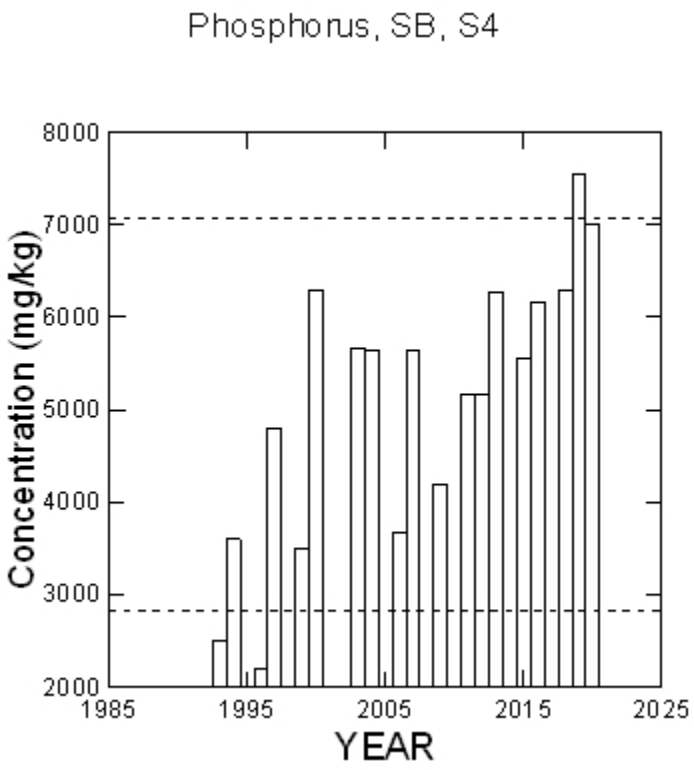
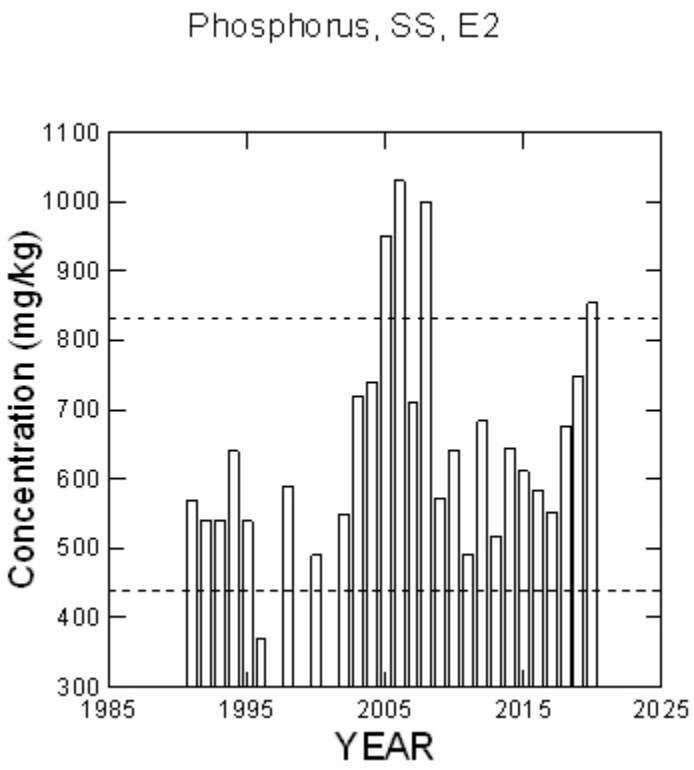


92. Phosphorus_SS_E2



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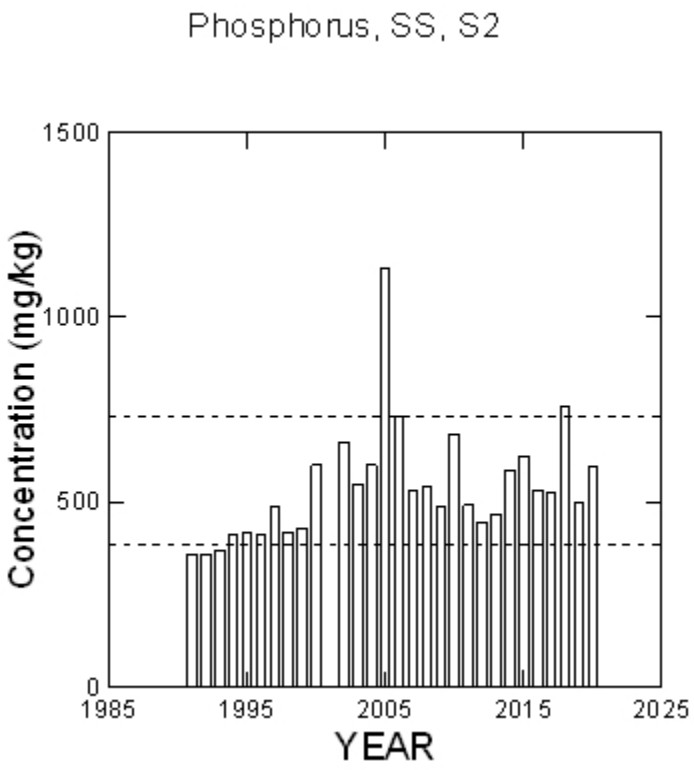

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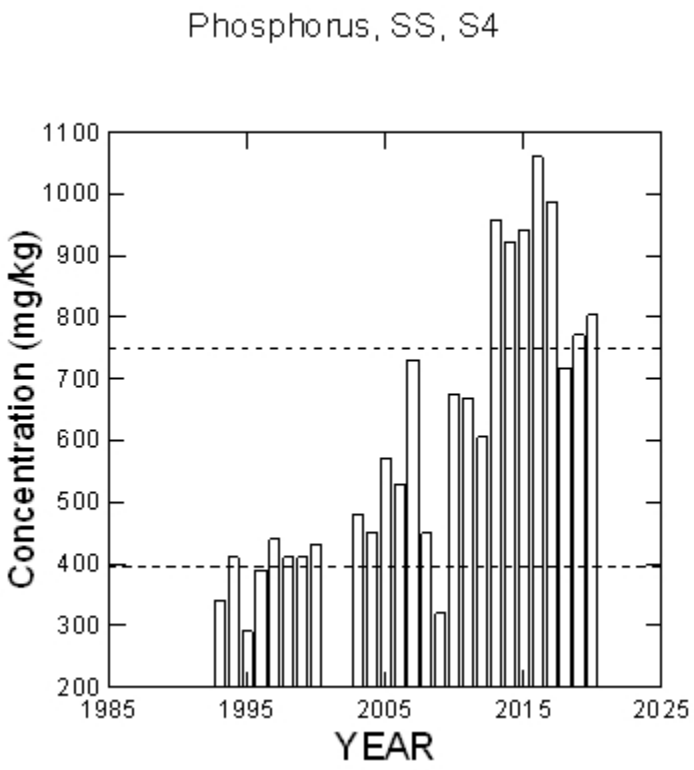
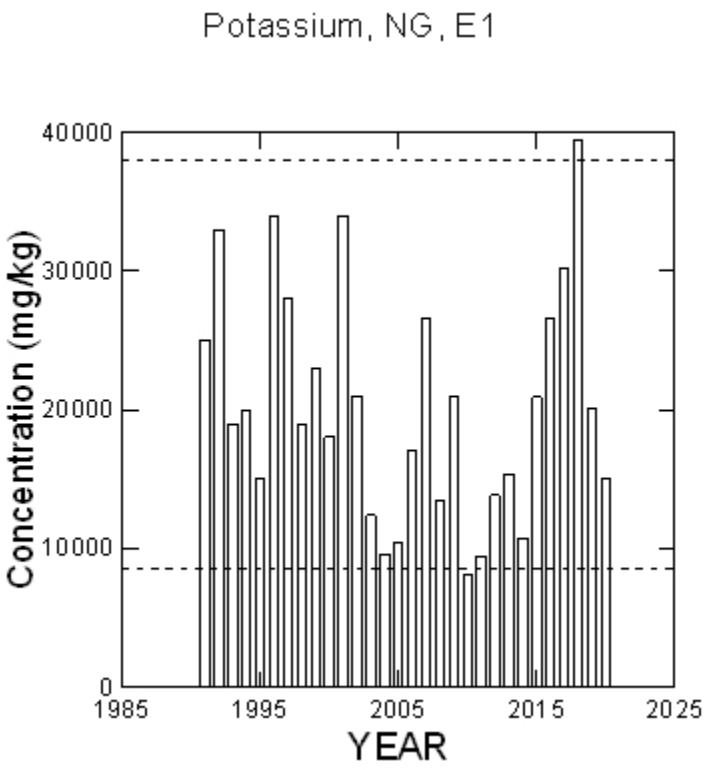
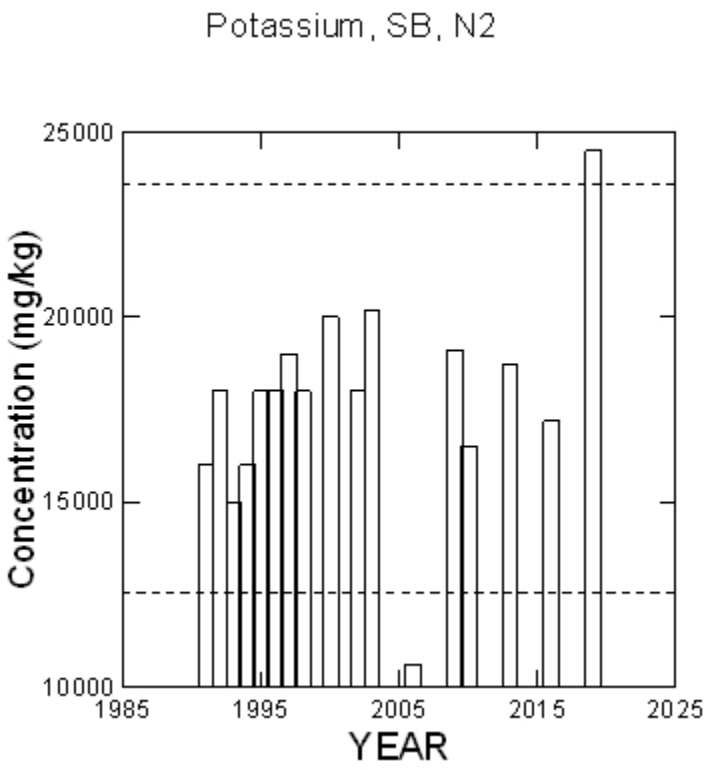


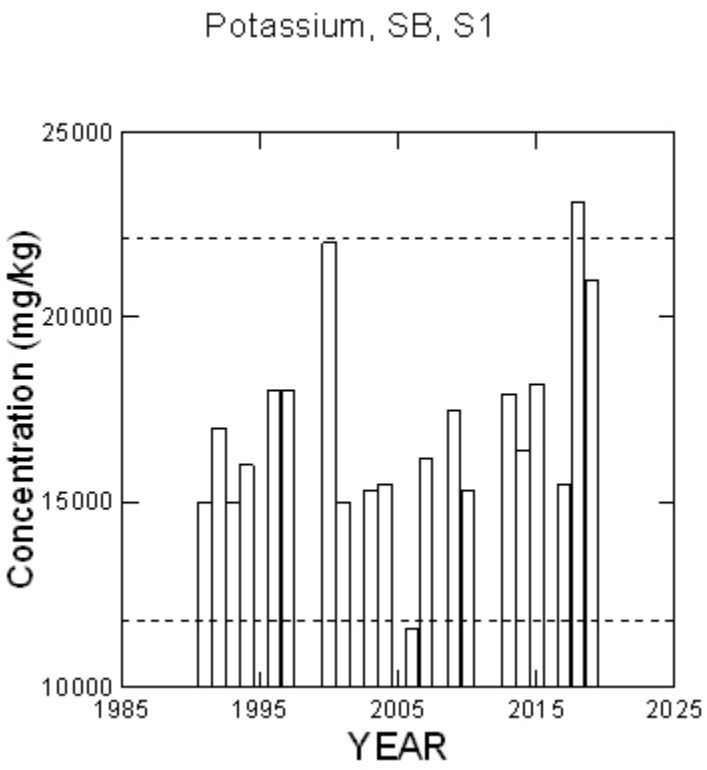
95.Potassium_NG_E1



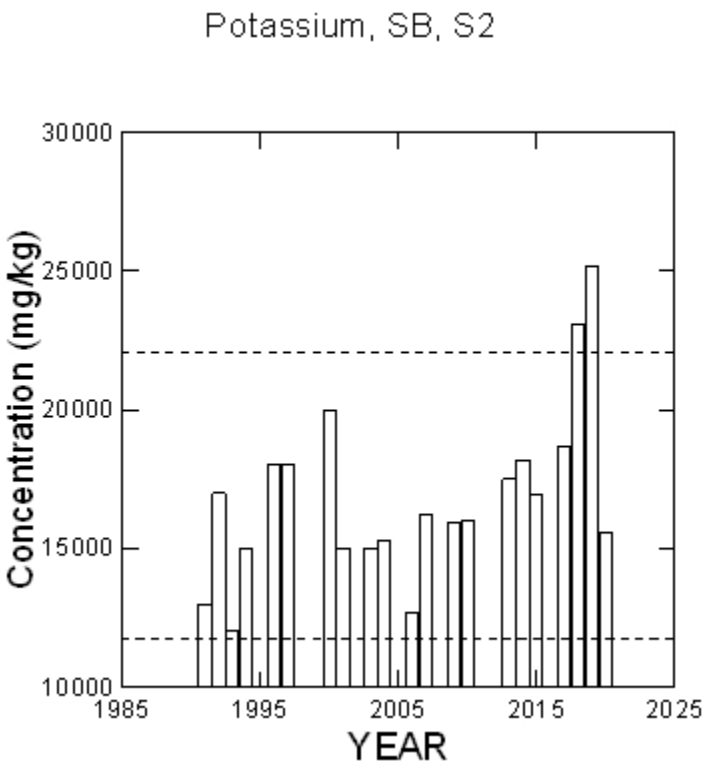
96. Potassium_SB_N2



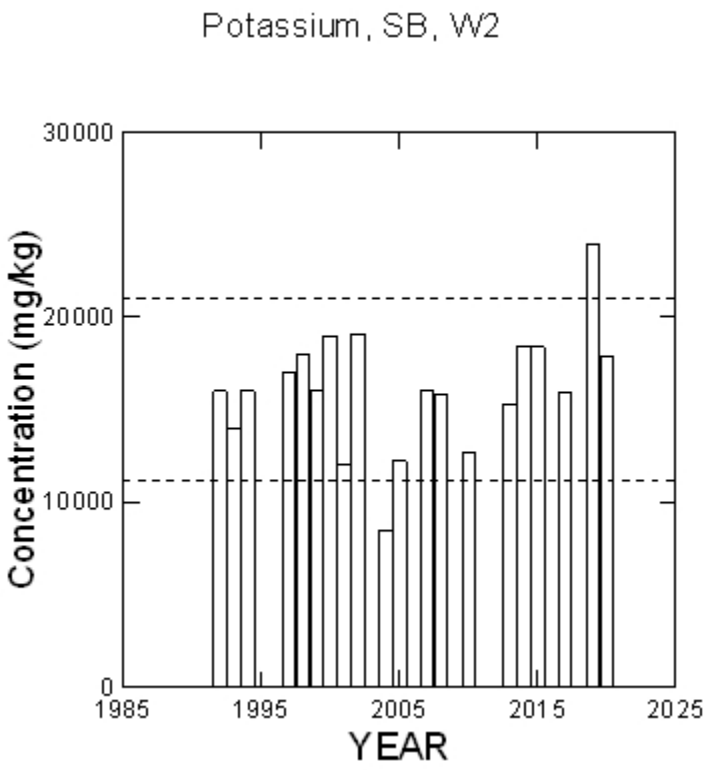
97. Potassium_SB_S1



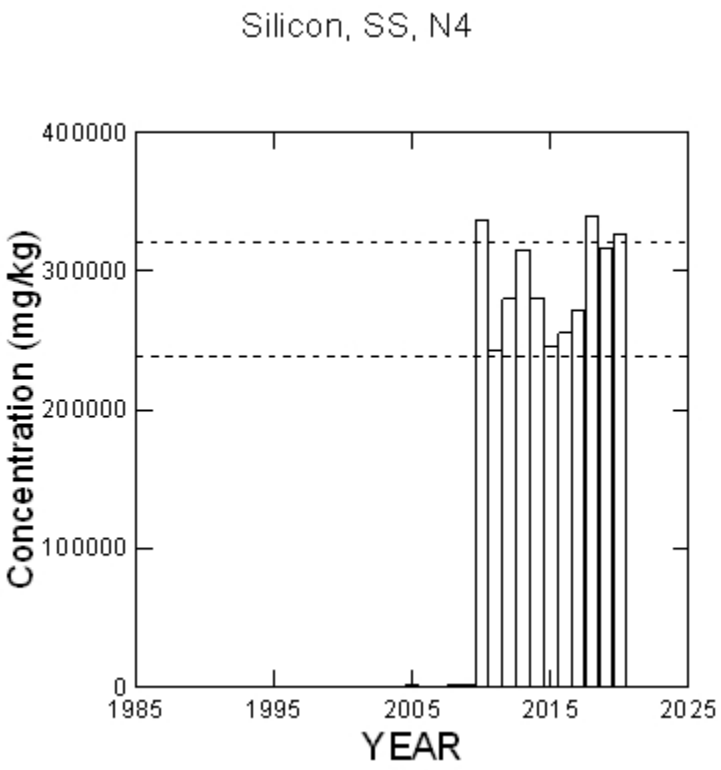
98. Potassium_SB_S2



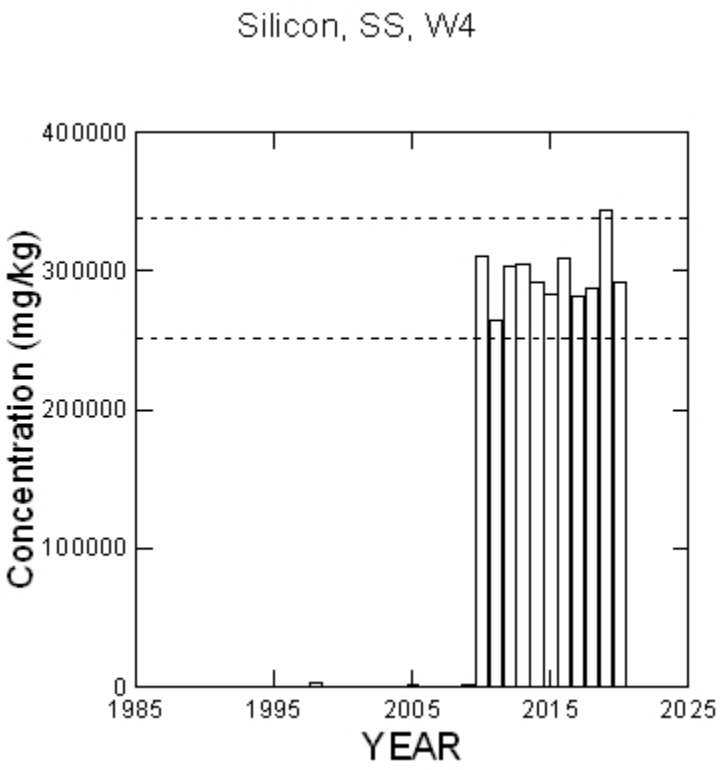
99. Potassium_SB_W2



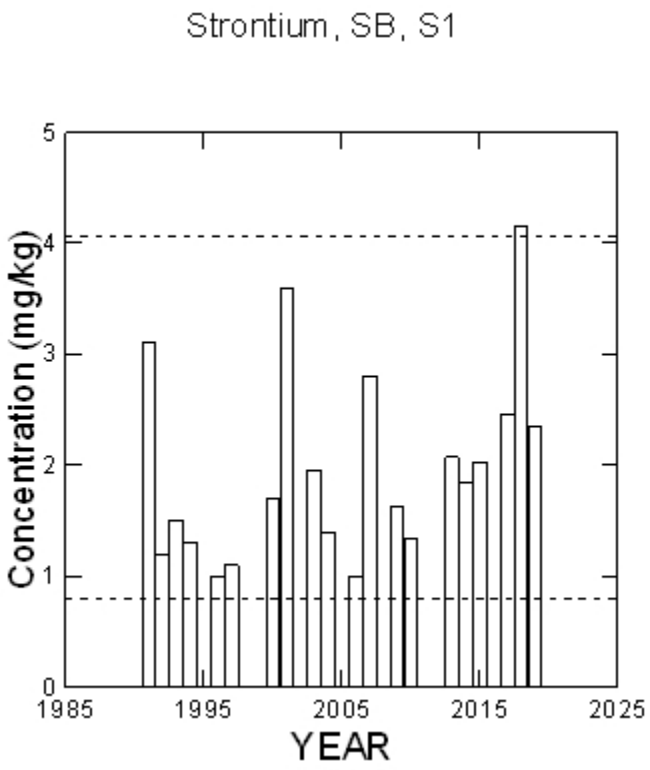
100. Silicon_SS_N4



101. Silicon_SS_W4



102. Strontium_SB_S1



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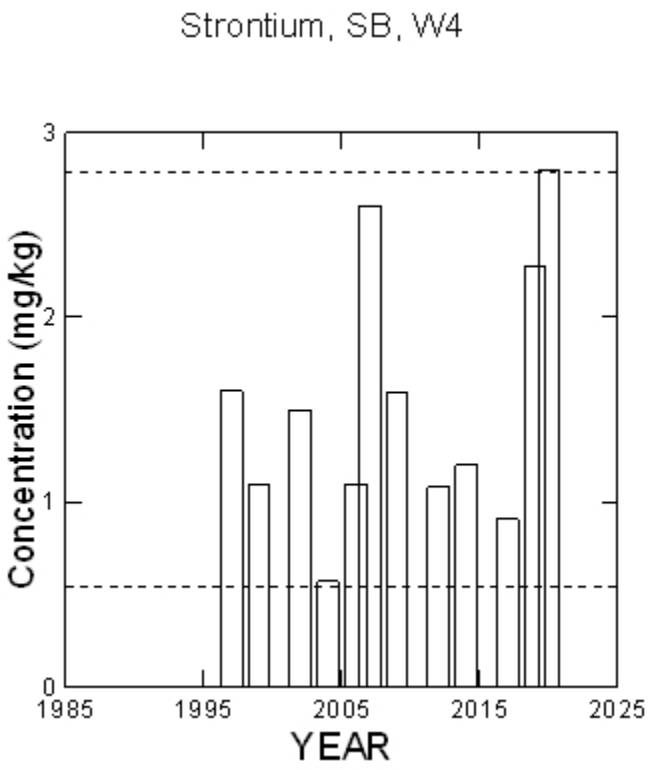

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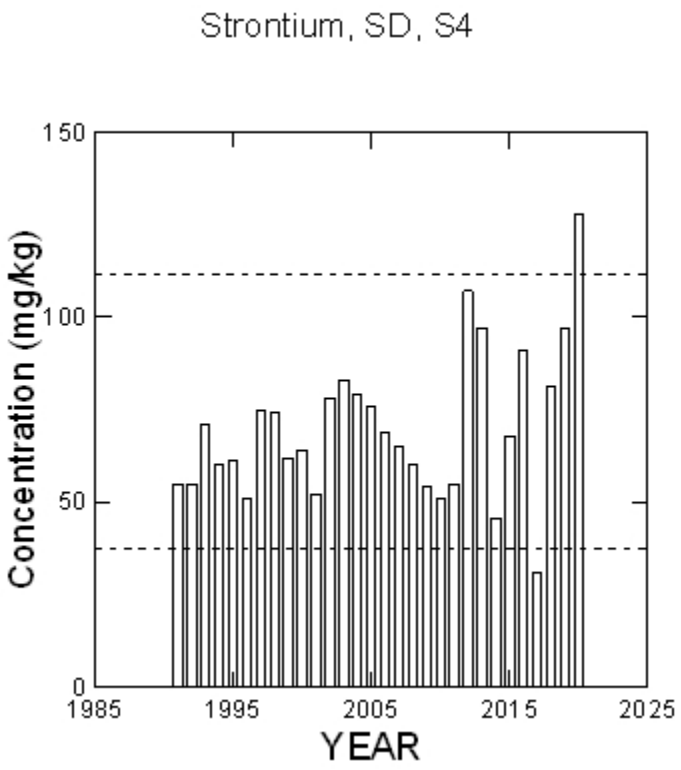
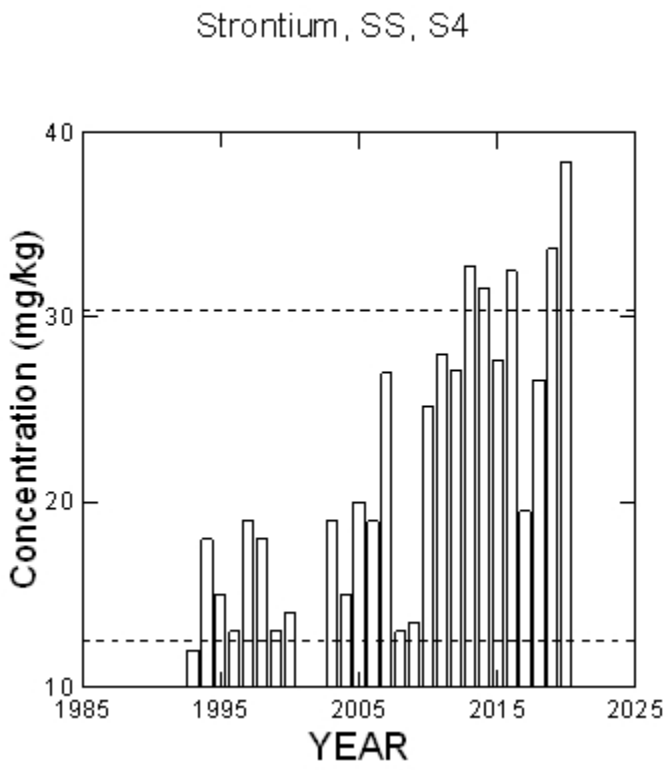
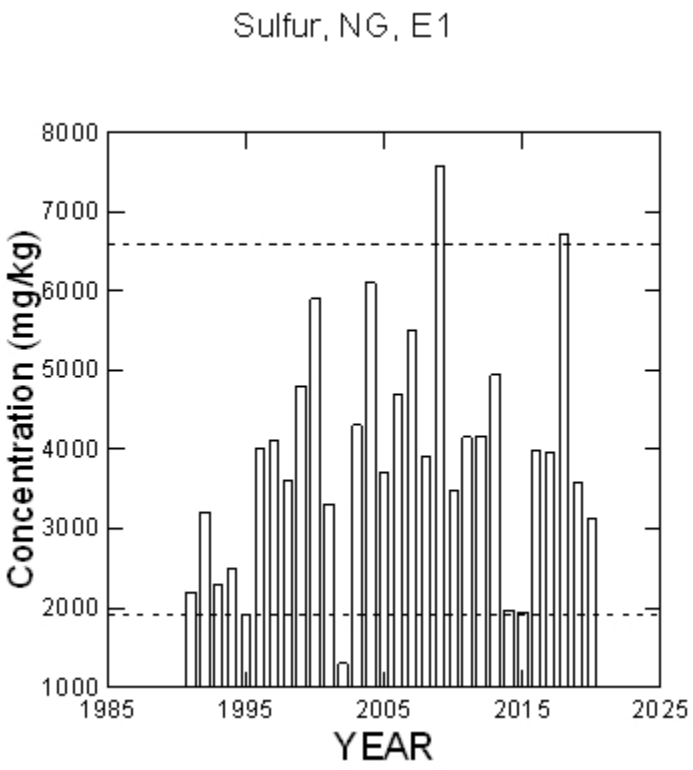


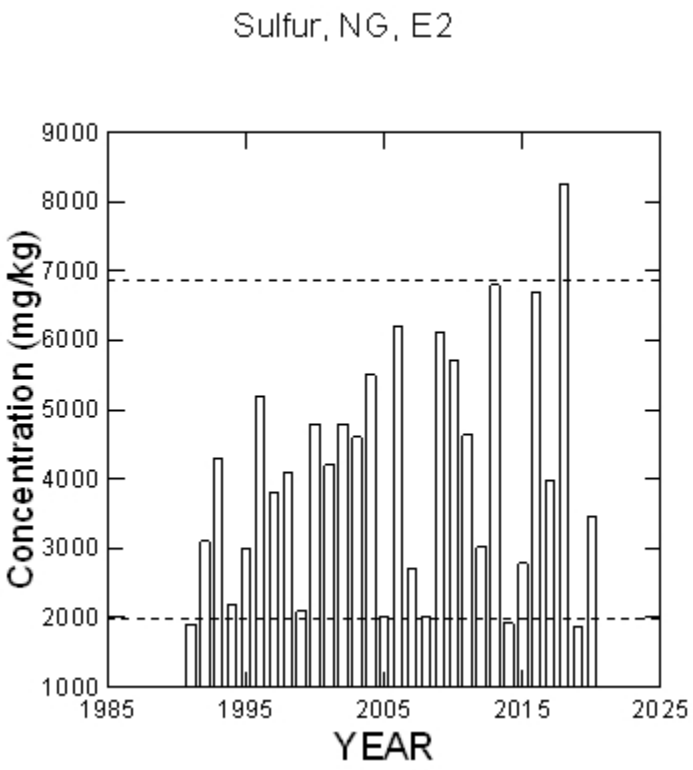
105. Strontium_SS_S4



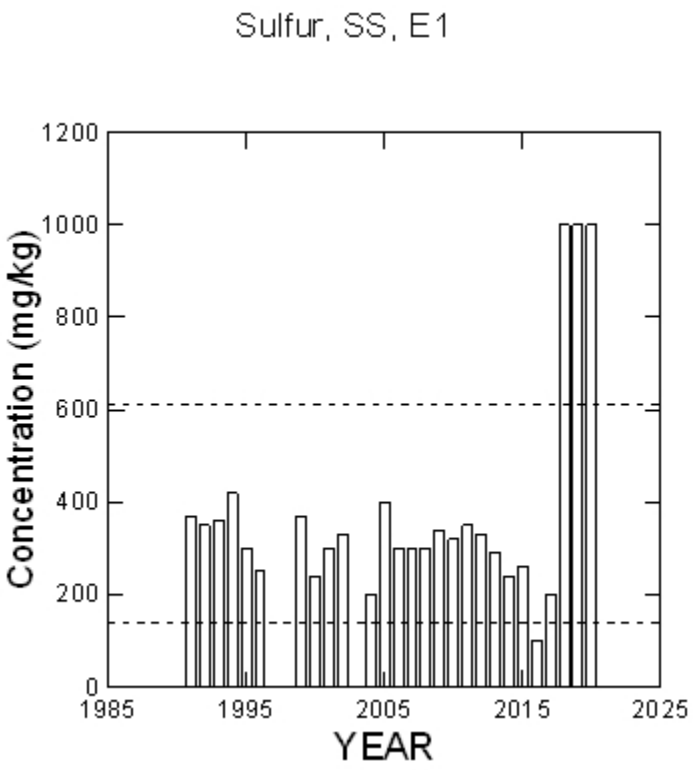
106. Sulfur_NG_E1



107. Sulfur_NG_E2



108. Sulfur_SS_E1



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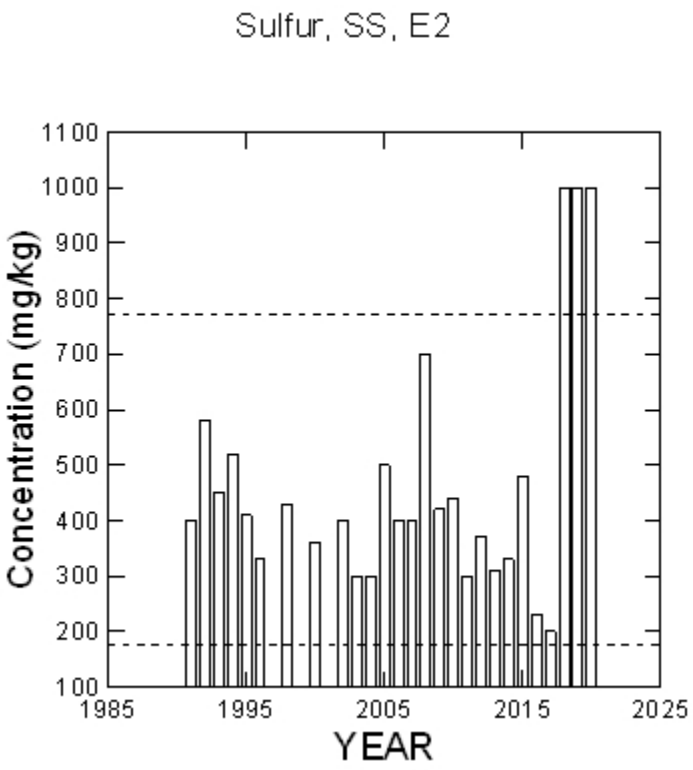

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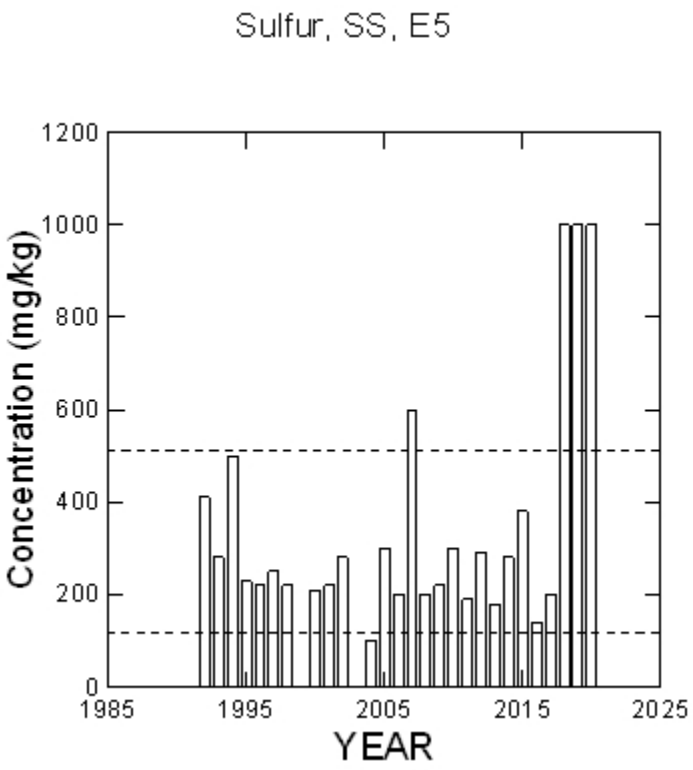
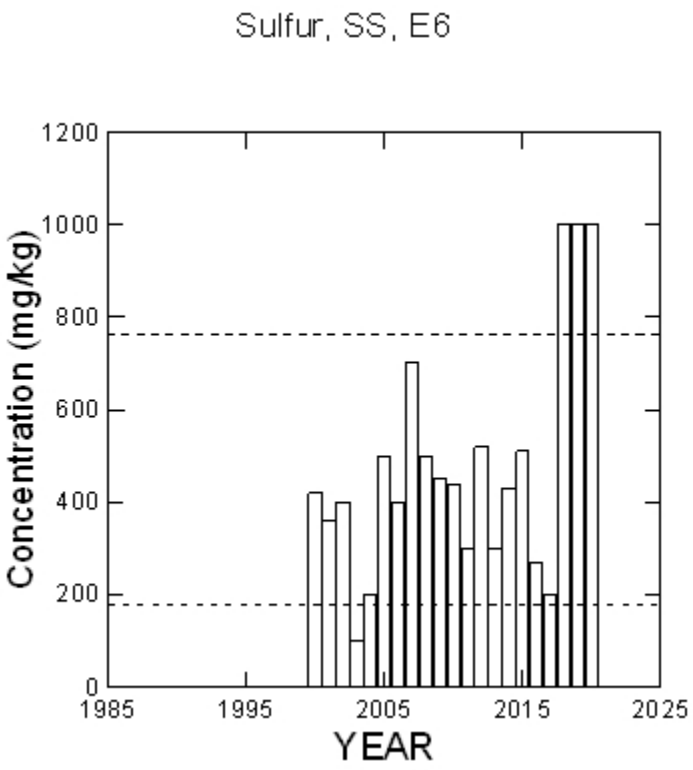
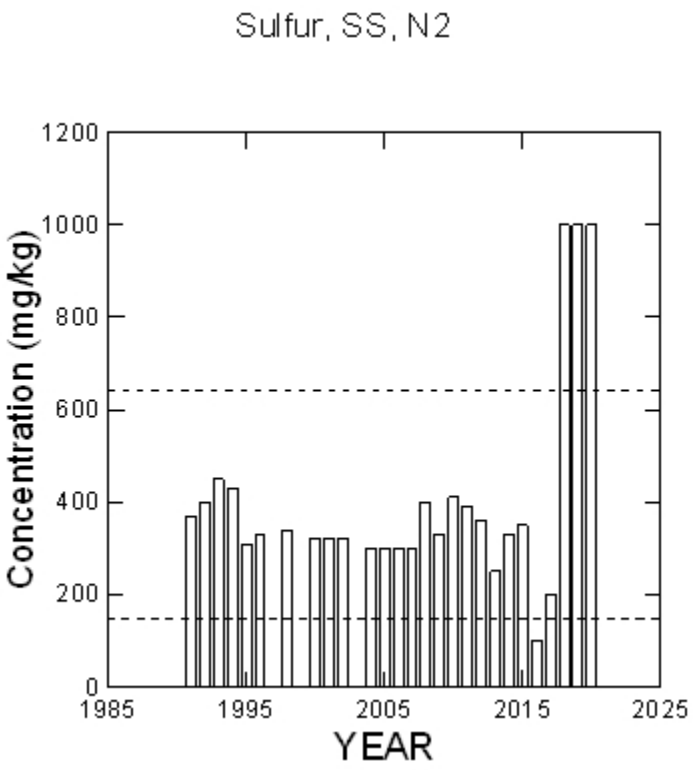


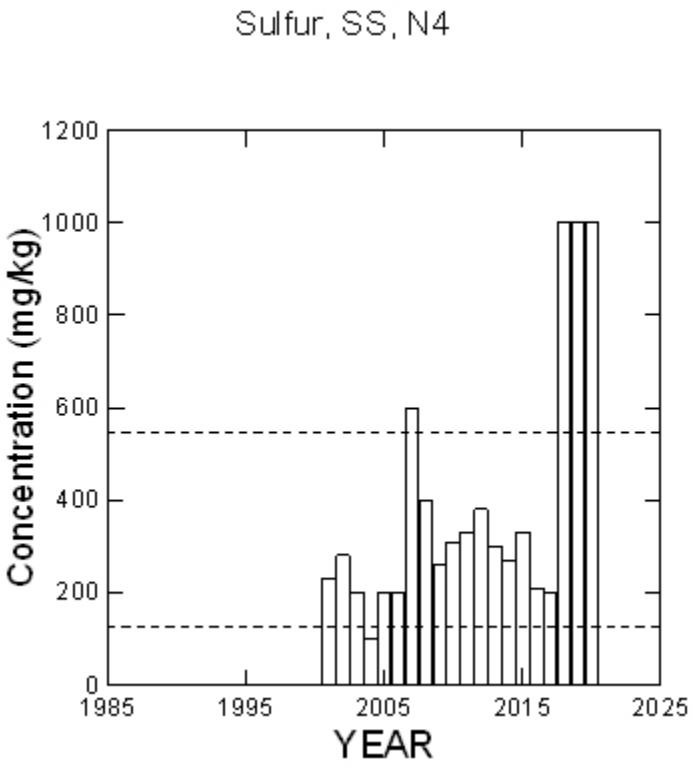
111. Sulfur_SS_E6



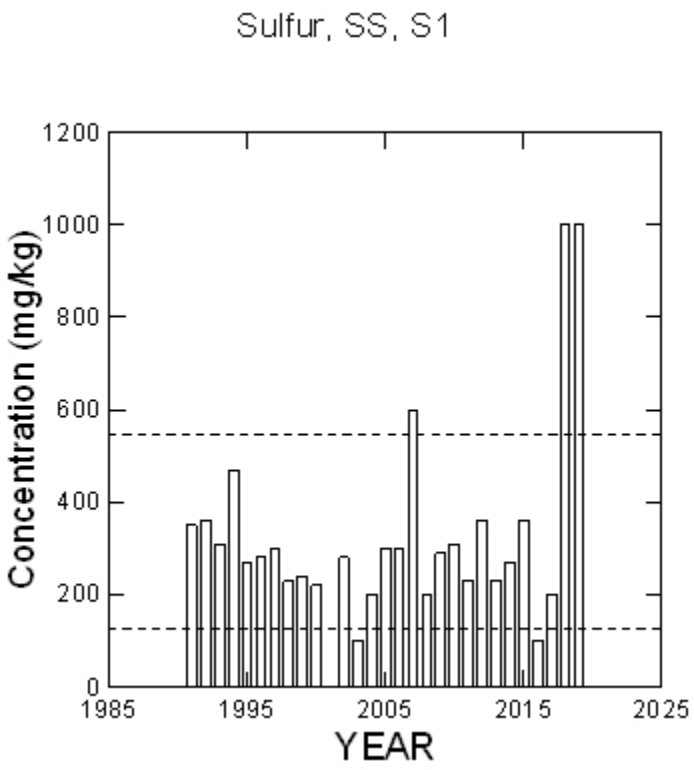
112. Sulfur_SS_N2



113. Sulfur_SS_N4



114. Sulfur_SS_S1



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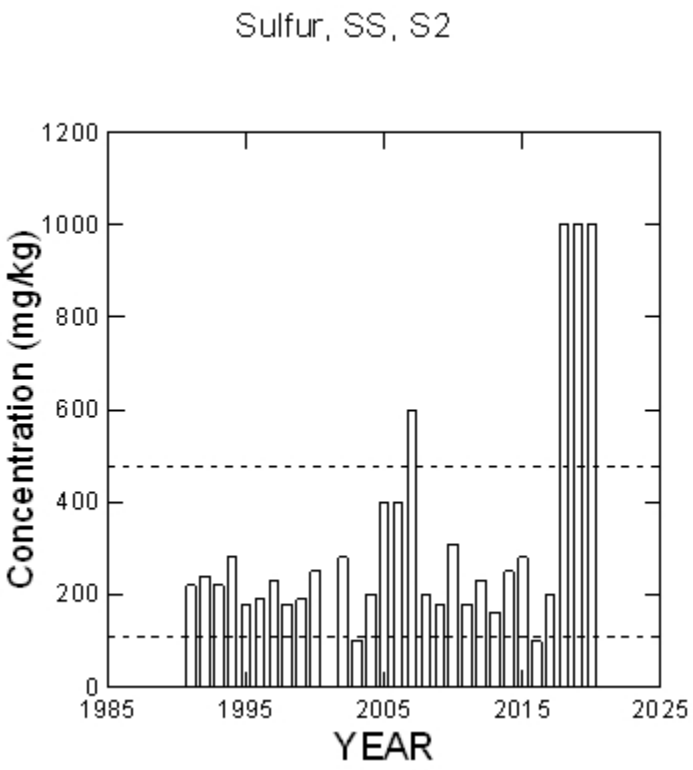

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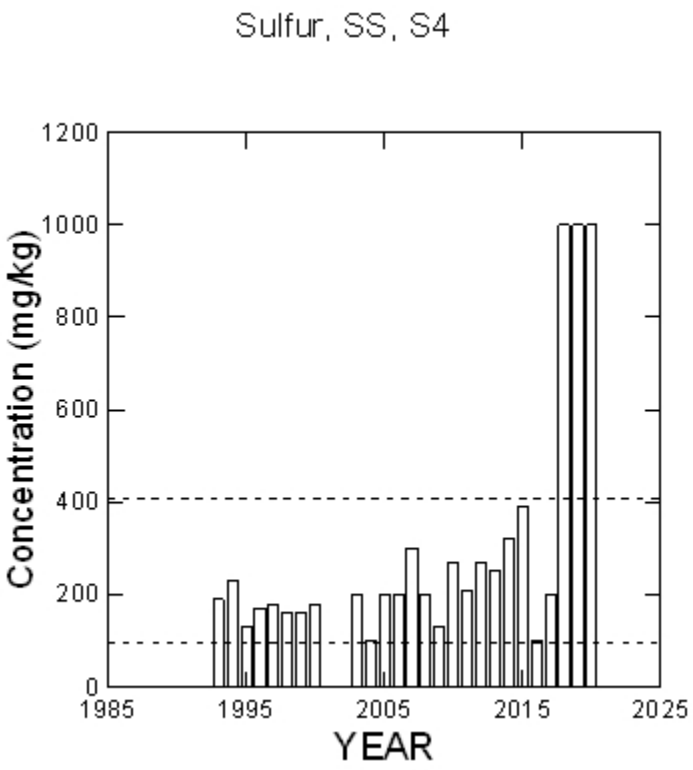
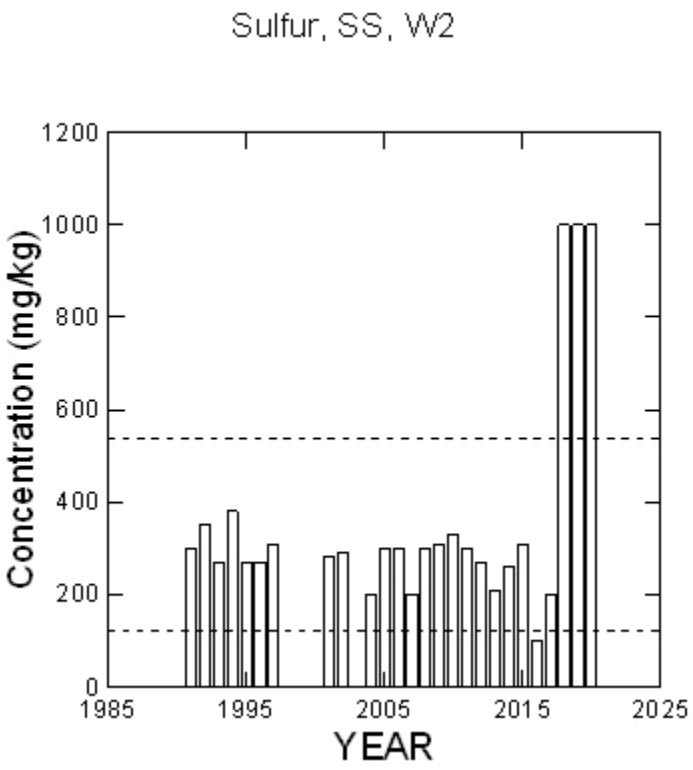
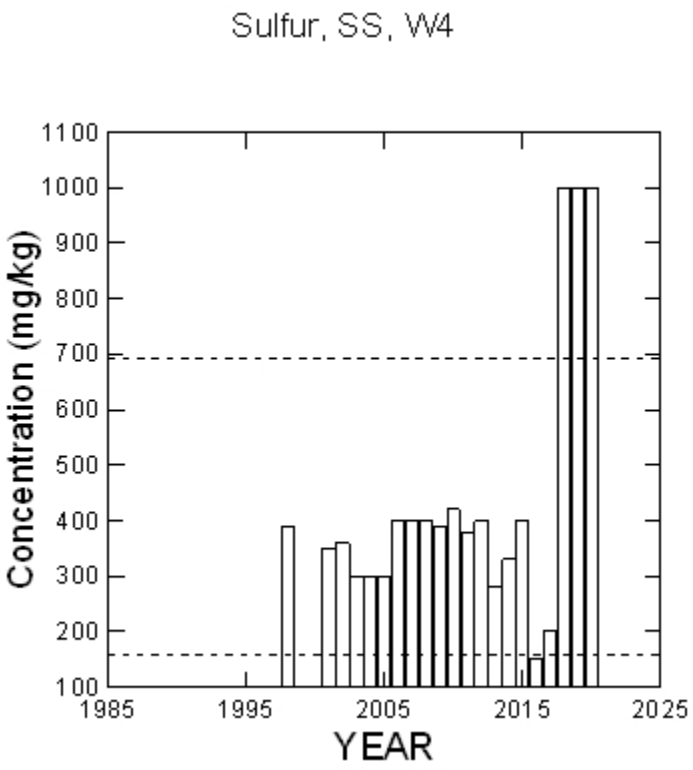


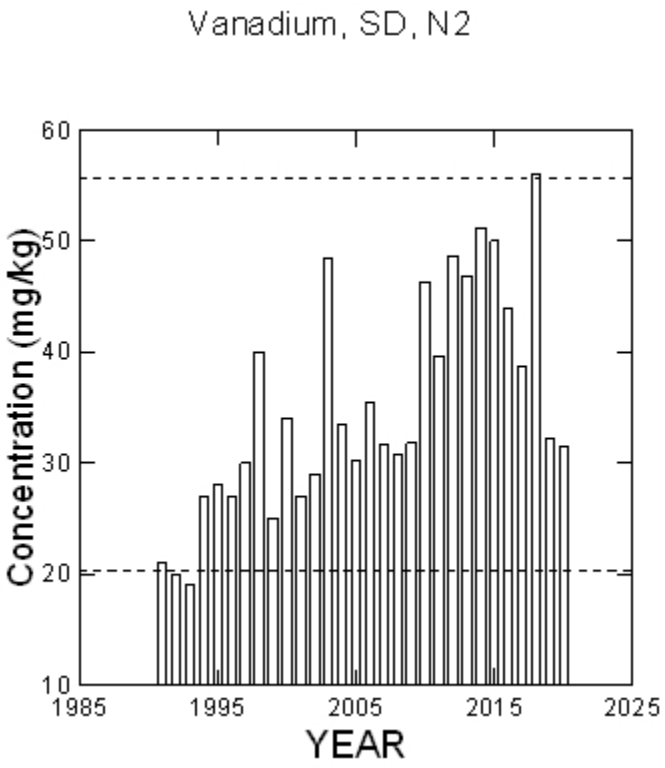
117. Sulfur_SS_W2



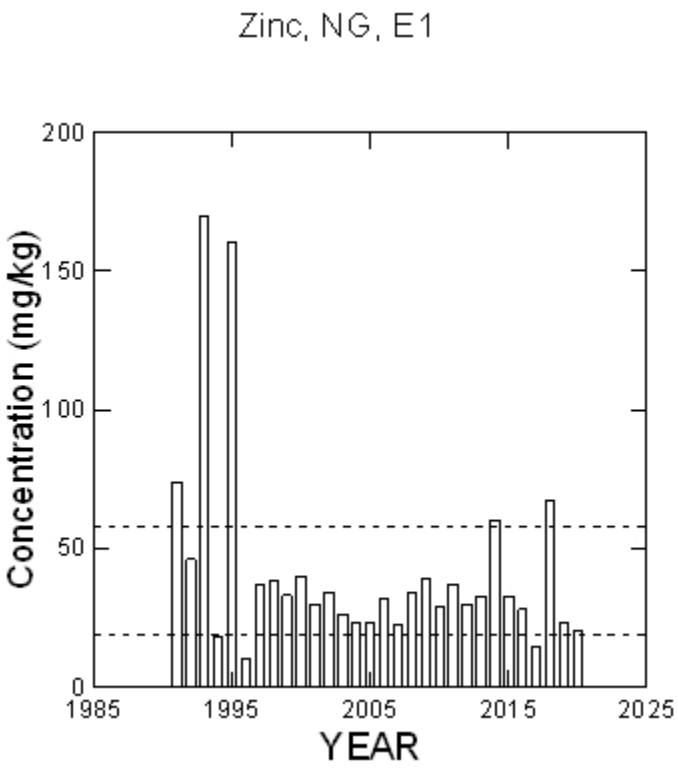
118. Sulfur_SS_W4



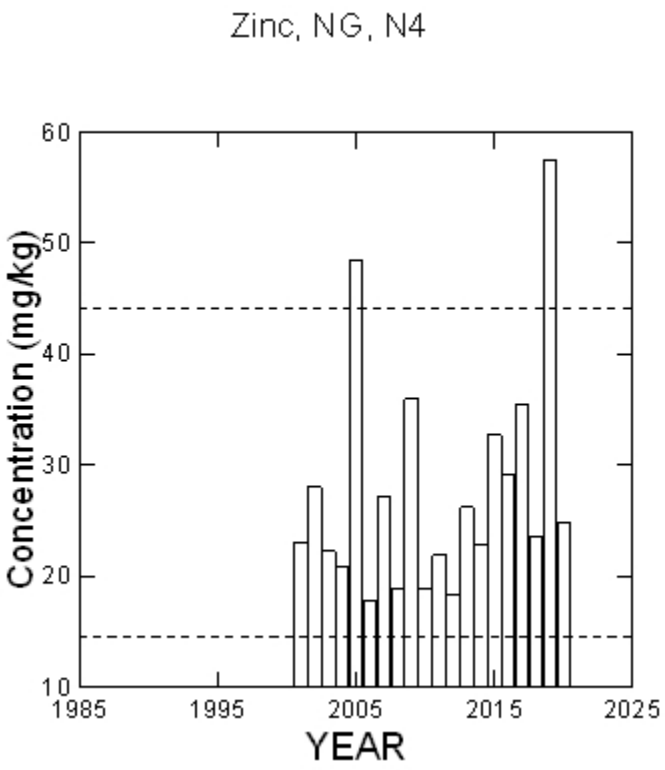
119. Vanadium_SD_N2



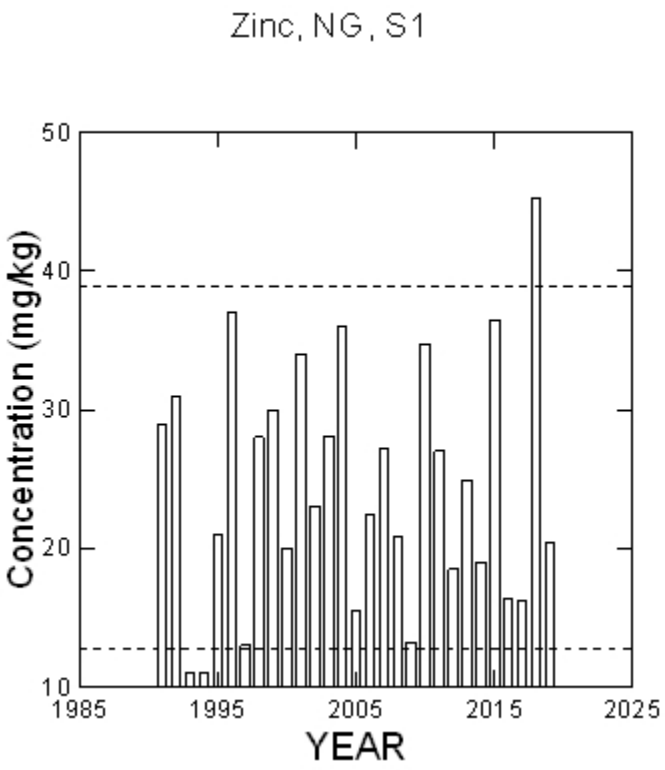
120. Zinc_NG_E1



121. Zinc_NG_N4



122. Zinc_NG_S1



APPENDIX G APPROVED CHANGES TO THE BIOMONITORING PROGRAM

Ministry of the Environment and Climate Change

733 Exeter Road
London ON N6E 1L3
Tel': 519 873-5000
Fax: 519 873-5020

Ministère de l'Environnement et de l'Action en matière de changement climatique

733, rue Exeter
London ON N6E 1L3
Tél.: 519 873-5000
Fax: 519 873-5020

Ontario

February 12, 2018

Mr. Michael E. Parker
Vice President, Canadian Environmental Compliance
Clean Harbors Canada, Inc.
4090 Telfer Road, R.R. No. 1
Corunna ON N0N 1G0

Re: Clean Harbors Hazardous Waste Landfill
Approval of the Bio-Monitoring Plan
Environmental Compliance Approval No. A031806

This letter is being provided pursuant to Condition 9 (a) (i) of Notice No. 9 of Environmental Compliance Approval No. A031806, issued to Clean Harbors Canada Inc. (the "Company") for the hazardous waste landfill.

This is to confirm that the ministry has completed its review of the Company's bio-monitoring plan, and the Company has satisfactorily addressed the ministry's review comments. Therefore, I approve the final Bio-Monitoring Plan outlined in the report titled "Bio-Monitoring Program Lambton Facility, Corunna, Ontario", prepared by Stantec Consulting Limited dated November 26, 2015, and amendments dated September 6, 2016, and April 20, 2017.

The Company shall not make changes to the Bio-Monitoring Program unless such changes have been authorized by or requested by the Regional Director, in writing.

Sincerely,

Angela McGonigal
Director (A)
Southwest Region

c. Mike Moroney, MOECC Sarnia District Office
Sean Morrison, MOECC Sarnia District Office
Don Hayes, MOECC Sarnia District Office
Andrew McDonough, MOECC Environmental Sciences and Standards Division

Clean Harbors Canada, Inc.
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Corunna, ON N0N 1G0

Tel: 519.864.1021
Fax: 519.864.1437
www.cleanharbors.com

April 20, 2017

Mr. Aaron Todd
Supervisor
Terrestrial Assessment and Field Services Unit
Ministry of the Environment and Climate Change
Environmental Monitoring and Reporting Branch
125 Resources Road
Etobicoke ON M9P 3V6

Re: Memorandum – Review of Summary of Proposed Changes to Clean Harbors Biomonitoring Program

Dear Mr. Todd,

This letter is in response to the memorandum titled "Review of Summary of Proposed Changes to Clean Harbors Biomonitoring Program", issued by the Ministry of Environment and Climate Change (MOECC) to Clean Harbors on March 29, 2017.

Environmental Media (Maple Leaves) and *Addition of Fluoride as a Chemical Analyte*

In September 2002, the MOECC provided the preliminary report titled Phytotoxicology 1999, 2000, and 2001 Investigations: Safety-Kleen Limited – Moore Township (Gizyn, 2002). In response to a request from MOECC, Clean Harbors Canada Inc. (formerly Safety-Kleen Limited) volunteered and initiated its own maple leaf sampling program. As such, the maple leaf sampling program is not part of the core mandatory Clean Harbors biomonitoring program as outlined in the ECA no. A031806, and instead is a voluntary program that Clean Harbors is engaged in.

Fluoride testing in the Clean Harbors maple leaf sampling program has not been conducted, and as such Clean Harbors cannot comment on the fluoride concentration differences between the control site and the rest of the onsite locations tested. On the other hand, the MOECC sampling program did include fluoride testing and it is on the basis of the MOECC's fluoride

results in maple leaves that Stantec Consulting Ltd. recommended adding fluoride as an analyte to the biomonitoring program.

As required in Condition no. 9 (a) (i) of ECA no. A031806, and in response to concerns from the District office, an updated biomonitoring program was submitted to MOECC which proposed adding fluoride testing to the core program. At the same time it is the company's opinion that the maple leaf program provides no benefit to the core program. Thus, the company is withdrawing its support from the maple leaf program. The addition of the fluoride testing within the biomonitoring program would fulfill the purpose to determine if fluoride is higher closer to the facility.

Clean Harbors feels that this approach would accomplish the study of fluoride on and off the facility. The maple leaf study results obtained by the company thus far have shown no significant difference between the control sites and the rest of the locations, and as such the company would require suitable justification from the District to continue with this study.

Change in Test Sites Surrounding the Lambton Facility

We appreciate the MOECC support for the rationale establishing a new test site to the northeast of the Facility, and removing Site S5 to the south. We are also in agreement that the data should inform decisions regarding the discontinuation of a site, and that quantitative evidence of the similarities between Sites S2 and S5 would provide additional support. In order to support the removal of Site S5 from the Biomonitoring Program, an evaluation of all data collected was conducted in all media (soil, natural grasses and agricultural crops) and all chemical of concern, CoC.

Specifically in the case of the inorganic contaminants, statistical comparison was conducted between the inorganic upper and lower limits (UL15 and LL15) at Sites S2 and S5 from all available media to determine if the means of the limits were equal for the two sites. Two analysis of variances (ANOVA) were conducted to determine if there were significant differences in the means of the upper and lower limits. The results of the ANOVA support the hypothesis that there are no statistically significant differences between the two sites for both the upper and lower limits ($p>0.05$).

Given that the upper and lower limits can be used to define the "normal" or "expected" variability of the annual mean concentrations of the analytes in a sampling media, and represent the typical ranges of concentrations expected at a specific site, the finding of the ANOVA comparison of the mean upper and lower limits indicates a similarity in inorganic parameters between S2 and S5.

Upper limits are not available for organic parameters due to the large number of non-detect (ND) concentrations. Therefore, for organic parameters, two lines of evidence were reviewed: 1) a comparison to available standards and 2) the number of detected concentrations measured at each site. The results of each review are below:

1) Since the inception of the program (1991) most of the data shows ND. From the detected data none of it was identified at concentrations which exceeded applicable criteria (where available, such as the Ontario Typical Range (MOECC, 2011), the Upper Limit of Normal (MOECC, 1989), or the Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOECC, 2011).
2) The number of detected concentrations is provided in the enclosed tables. Fewer detected concentrations were measured at Site S5 compared to Sites S2, suggesting that the organic concentrations at Site S5 are generally lower than at Site S2.

Therefore, based on the review of both the inorganic and organic data at Sites S2 and S5, it is recommended that Site S5 be removed from the Biomonitoring Program.

Clean Harbors proposes a meeting between the company, the company's consulting firm (Stantec Consulting Ltd.), the District and yourself. During this meeting the parties involved can discuss the elements of the core biomonitoring program, and thus work towards the final acceptance of a new program, and how acceptance of this program will be communicated to the company. We are available at any time for this meeting.

Please feel free to reach out to the undersigned should you require any further information, and to discuss the prospect of a meeting.

Sincerely,

Erica Carabott
Senior Compliance Manager
Clean Harbors Canada, Inc.

519-864-3890
carabott.erica@cleanharbors.com

Parameters	Number of Detected Concentrations (1991-2015)	
	S2	S5
Dioxins/Furans		
C14-Tetrachlorodibenzofuran, 2,3,7,8-	6	9
C14-Tetrachlorodibenzo-p-Dioxin, 2,3,7,8-	5	4
C15-Pentachlorodibenzofuran, 1,2,3,7,8-	5	7
C15-Pentachlorodibenzofuran, 2,3,4,7,8-	5	9
C15-Pentachlorodibenzo-p-Dioxin, 1,2,3,7,8-	4	4
C16-Hexachlorodibenzofuran, 1,2,3,4,7,8-	10	9
C16-Hexachlorodibenzofuran, 1,2,3,6,7,8-	10	9
C16-Hexachlorodibenzofuran, 1,2,3,7,8,9-	3	3
C16-Hexachlorodibenzofuran, 2,3,4,6,7,8-	5	7
C16-Hexachlorodibenzo-p-Dioxin, 1,2,3,4,7,8-	4	4
C16-Hexachlorodibenzo-p-Dioxin, 1,2,3,6,7,8-	6	6
C16-Hexachlorodibenzo-p-Dioxin, 1,2,3,7,8,9-	9	8
C17-Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	9	7
C17-Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	6	5
C17-Heptachlorodibenzo-p-Dioxin, 1,2,3,4,6,7,8-	20	17
C18-Octachlorodibenzofuran	14	13
C18-Octachlorodibenzo-p-dioxin	24	20
Heptachlorodibenzofuran, 1,2,3,4,6,7,8-	23	25
Heptachlorodibenzofuran, 1,2,3,4,7,8,9-	7	7
Heptachlorodibenzo-p-Dioxin, 1,2,3,4,6,7,8-	32	31
Hexachlorodibenzofuran, 1,2,3,4,7,8-	18	17
Hexachlorodibenzofuran, 1,2,3,6,7,8-	15	13
Hexachlorodibenzofuran, 1,2,3,7,8,9-	11	9
Hexachlorodibenzofuran, 2,3,4,6,7,8-	16	15
Hexachlorodibenzo-p-Dioxin, 1,2,3,4,7,8-	9	6
Hexachlorodibenzo-p-Dioxin, 1,2,3,6,7,8-	13	12
Hexachlorodibenzo-p-Dioxin, 1,2,3,7,8,9-	10	13
Octachlorodibenzofuran	34	35
Octachlorodibenzo-p-dioxin	60	55
Pentachlorodibenzofuran, 1,2,3,7,8-	11	11
Pentachlorodibenzofuran, 2,3,4,7,8-	13	10
Pentachlorodibenzo-p-Dioxin, 1,2,3,7,8-	7	7
Tetrachlorodibenzofuran, 2,3,7,8-	6	5
Tetrachlorodibenzo-p-Dioxin, 2,3,7,8-	7	6
Total Heptachlorodibenzofuran	18	17
Total Heptachlorodibenzo-p-dioxin	30	28
Total Hexachlorodibenzofuran	18	22
Total Hexachlorodibenzo-p-dioxin	24	29
Total Pentachlorodibenzofuran	14	13
Total Pentachlorodibenzo-p-dioxin	13	13
Total polychlorinated dibenzofurans (PCDFs)	23	22
Total polychlorinated dibenzo-p-dioxins (PCDDs)	28	27
Total TEQ (ND=0) (WHO Calc)	47	42
Total TEQ (ND=0_5DL) (WHO Calc)	33	33
Total TEQ (ND=DL) (WHO Calc)	33	33
Total Tetrachlorodibenzofuran	12	9
Total Tetrachlorodibenzo-p-dioxin	18	16
OCPs		
Aldrin	1	0
BHC, alpha-	5	3
Chlordane, alpha-	7	2
Chlordane, trans- (gamma-Chlordane)	4	3
DDD (p,p'-DDD)	1	1
DDE (p,p'-DDE)	14	10
DDT (p,p'-DDT)	5	6
Dieldrin	11	10
Endosulfan I	7	4
Endosulfan II	1	3
Endosulfan Sulfate	6	7
Endrin	1	4
Endrin Aldehyde	5	3
Heptachlor	3	3
Heptachlor Epoxide	7	8
Lindane (Hexachlorocyclohexane, gamma)	1	0
Methoxychlor (4,4'-Methoxychlor)	2	1
Mirex	8	7
PARLAR 50	0	1
PCBs		
Polychlorinated Biphenyls (PCBs)	0	0
PCPs		

The Mixed Procedure

Model Information	
Data Set	WORK.S2S5
Dependent Variable	UL15_log_normal
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information		
Class	**Levels**	**Values**
Site	2	S2 S5
Analyte	31	Aluminum Arsenic Barium Beryllium Boron Cadmium Calcium Chloride Chromium (Total Cobalt Copper Iron Lead Magnesium Manganese Mercury Molybdenum Nickel Phosphorus Potassium Silico. Silicon Silver Sodium Strontium Sulfur Thallium Titanium Va.dium Zi. Zirconium

Dimensions	
Covariance Parameters	1
Columns in X	3
Columns in Z	0
Subjects	1
Max Obs per Subject	256

Number of Observations	
Number of Observations Read	258
Number of Observations Used	256
Number of Observations Not Used	2

Covariance Parameter Estimates	
Cov Parm	**Estimate**
Residual	3.7326E9

Fit Statistics	
-2 Res Log Likelihood	6328.8
AIC (Smaller is Better)	6330.8
AICC (Smaller is Better)	6330.8
BIC (Smaller is Better)	6334.3

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
Site	1	254	0.31	0.5756

Least Squares Means						
Effect	Site	Estimate	Standard Error	DF	t Value	Pr > |t|
Site	S2	7045.98	5400.05	254	1.30	0.1931
Site	S5	11327	5400.05	254	2.10	0.0369

Differences of Least Squares Means							
Effect	Site	_Site	Estimate	Standard Error	DF	t Value	Pr > |t|
Site	S2	S5	-4280.79	7636.83	254	-0.56	0.5756

The Mixed Procedure

Model Information	
Data Set	WORK.S2S5
Dependent Variable	LL15_log_normal
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information		
Class	**Levels**	**Values**
Site	2	S2 S5
Analyte	31	Aluminum Arsenic Barium Beryllium Boron Cadmium Calcium Chloride Chromium (Total Cobalt Copper Iron Lead Magnesium Manganese Mercury Molybdenum Nickel Phosphorus Potassium Silico. Silicon Silver Sodium Strontium Sulfur Thallium Titanium Va.dium Zi. Zirconium

Dimensions	
Covariance Parameters	1
Columns in X	3
Columns in Z	0
Subjects	1
Max Obs per Subject	256

Number of Observations	
Number of Observations Read	258
Number of Observations Used	256
Number of Observations Not Used	2

Covariance Parameter Estimates	
Cov Parm	**Estimate**
Residual	5253740

Fit Statistics	
-2 Res Log Likelihood	4661.0
AIC (Smaller is Better)	4663.0
AICC (Smaller is Better)	4663.1
BIC (Smaller is Better)	4666.6

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
Site	1	254	0.02	0.9007

Least Squares Means						
Effect	Site	Estimate	Standard Error	DF	t Value	Pr > |t|
Site	S2	659.88	202.60	254	3.26	0.0013
Site	S5	695.68	202.60	254	3.43	0.0007

Differences of Least Squares Means							
Effect	Site	_Site	Estimate	Standard Error	DF	t Value	Pr > |t|
Site	S2	S5	-35.8036	286.51	254	-0.12	0.9007

Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

September 6, 2016
File: 122160003

Attention: Erica Carabott
Facility Compliance Manager
Clean Harbors
4090 Telfer Road, R.R. #1
Corruna, ON N0N 1G0

Dear Ms. Carabott,

Reference: Summary of Proposed Changes to Clean Harbors Biomonitoring Program

Stantec Consulting Ltd. (Stantec) is proposing a number of modifications to the Clean Harbors Biomonitoring Program to streamline the program and accommodate the Landfill Expansion currently underway. The Biomonitoring Program is required under condition 9 of the Lambton Facility's Environmental Compliance Approval (ECA No. A031806).

The proposed changes were presented in a letter prepared by Stantec (July 3, 2015). Comments were received from the Ontario Ministry of the Environment and Climate Change (MOECC) (September 17, 2015), and Neegan Burnside on behalf of First Nations (August 28, 2015). Taking these comments into consideration a Revised Biomonitoring Sampling Program was prepared (Stantec, December 15, 2015) and provided to the MOECC. Since that time, conditions at the Lambton Facility have changed, resulting in additional proposed changes to the Biomonitoring Program.

The purpose of this letter is to summarize the current proposed changes to the Biomonitoring Program. Each change is discussed in detail in the following sections.

Table 1 – Summary of Proposed Changes to the Biomonitoring Program

Type of Change	Proposed Changes
Test Sites	**Sites within Lambton Facility affected by Landfill Expansion** • Site E6 – No change at this time. • Site S3 – Remove from Biomonitoring Program. Site has been replaced by an access road. • New Site S7 – Proposed new site to replace Site S3. **Sites in Surrounding Area of Lambton Facility** • New Site E7 - Proposed new site to increase coverage to northeast of Facility based on predominant wind direction. • Site S5 – Remove from Biomonitoring Program. Sufficient coverage to the south of Facility is provided by remaining sites.
Environmental Media	Discontinue maple leaf sampling
Chemical Analytes	Add fluoride as an analyte to all environmental media sampled in the Biomonitoring Program
Sampling Frequency	Change sediment fertility and characterization sampling to every three years.
Analytical Frequency	Polychlorinated biphenyls, pentachlorophenol and organochlorinated pesticides (PCB, PCP and OCP): Analysis will change to a three-year cycle. Year 1, all samples will be submitted for analysis. Years 2 and 3, two samples per environmental media will be submitted for analytical testing: the site with highest historical concentration and the control. Should concentrations of PCB, PCP or OCP be detected at concentrations greater than 50% of the applicable guidelines, the remaining samples will be submitted for analysis.
Data Analysis	Create isopleth maps only when investigating recurring exceedances (more than three years consecutively) for Group 2 Chemicals.

CHANGE IN TEST SITES ON THE LAMBTON FACILITY

The Clean Harbors Lambton Facility existing landfill occupies 56 hectares of the Clean Harbors licensed property. In order to keep managing hazardous waste over a 25 year period, Clean Harbors has identified the need to expand the landfill capacity. As a result, an environmental assessment was initiated in March 2011 to identify the environment potentially impacted by the expansion (Clean Harbors, 2014a).

Reference: Summary of Proposed Changes to Clean Harbors Biomonitoring Program

The environmental assessment describes two proposed expansion alternatives to increase the landfill capacity. The first alternative involves a vertical expansion of the existing on-site landfill up to a grade of 9 m above the ground surface, with the exception of the northwest corner. Areas that have not been landfilled in the southeast corner will be excavated and filled (Clean Harbors, 2014a). With this alternative, biomonitoring sites on the facility may be impacted by the expansion. Biomonitoring test site locations are provided on Figures 1 and 2.

Site E6

At this time, Site E6 remains intact, although a new temporary access road has been constructed immediately to the west of the test site. Monitoring at Site E6 will continue and results from samples collected at Site E6 will be closely monitored to determine if traffic from the access road is influencing analyte concentrations.

Site S3 replaced by a New Site S7

Site S3 has been removed and the area replaced by an access road to support construction activities for the landfill expansion. To replace Site S3, it is recommended that a new site (Site S7) be installed at the proposed location directly east of Site S3 (Figure 2). The proposed location will align in a southern direction with the previous location for Site S3 and will allow for the collection of sediment samples from the adjacent drainage ditch which extends from the southwest pond. This will facilitate the continuation of sediment concentration records established at Site S3. Based on the estimated construction schedule, landfilling activities will proceed in a gradual manner and the proposed location for Site S7 will remain viable for up to ten years after being established.

CHANGE IN TEST SITES SURROUNDING THE LAMBTON FACILITY

The locations of test sites surrounding the facility were evaluated based on the current scientific literature and the predominant wind direction. The establishment of a new test site to the northeast of the Facility, and the removal of Site S5 to the south are proposed.

Stantec has generated a wind rose using meteorological data collected from the Lambton Facility from July 2014 to June 2015 (Figure 3). The wind rose indicated that the dominant wind direction came from the south and southwest, and blew to a lesser degree from the north and west. The current program has two sites that are in the maximum deposition area to the north of the incinerator (N2 and N4), and three sites east of the facility (E1, E2 and E5). Sites S1, S2, S4 and S5 are situated to the south of the facility. Sites W2 and W4 are situated in locations opposite from the predominant wind directions.

Site E7 – New Site

The dominant wind direction is toward the northeast from the Facility. The current sites are located to the north and east of the Facility. A new site (Site E7) has been recommended to be added to the northeast of the incinerator approximately 1 km away to provide coverage for areas located downwind from the facility. A map showing the proposed location of the new site has been included as Figure 1. The permanent location of Site E7 will be finalized following consultation with Clean Harbors and associated property owner regarding access to the site.

Site S5 to be Removed

Due to the abundant number of sites located to the south of the facility, and the fact that concentrations reported in samples collected from S5 are similar to or less than concentrations reported at Site S2, Site S5 will be removed from the Biomonitoring Program, as the remaining sites (S1, S2 and S4) will provide sufficient coverage.

ENVIRONMENTAL MEDIA (MAPLE LEAVES)

In an effort to streamline the Biomonitoring Program, a review of the analyzed environmental media has been conducted to determine if any should be added or removed from the program. Based on the past findings of the Maple Leaf Sampling Program, results have shown no significant difference between concentrations measured in maple leaves adjacent to the facility in comparison with the control site. As the maple leaf program does not offer additional meaningful information to supplement the Biomonitoring Program, sampling of maple leaves is proposed to be discontinued.

ADDITION OF FLUORIDE AS A CHEMICAL ANALYTE

A review of the 2014 Landfill Report (Clean Harbors, 2014b) was conducted to determine if the groundwater, surface water, or air quality environmental monitoring programs identified exceedances of analytes that could be added to the current Biomonitoring Program. Potential environmental concerns are limited to those identified in the groundwater. Fluoride was detected at concentrations above the Ontario Drinking Water Standards (ODWS) in the shallow and deep monitoring wells that have been installed on the facility property and off-property. The MOECC has observed that fluoride concentrations within silver maple foliage samples collected in close proximity to the Clean Harbors facility are higher in comparison to samples collected further away (DeBrou, 2010). Due to these high fluoride concentrations in silver maple foliage, and the high fluoride concentrations identified in the groundwater, it is recommended that fluoride be added as an analyte to all environmental media sampled in the Biomonitoring Program.

Reference: Summary of Proposed Changes to Clean Harbors Biomonitoring Program

SEDIMENT FERTILITY AND CHARACTERIZATION SAMPLING FREQUENCY

Based on a review of historical data, sediment particle size distribution (texture) has shown little variation annually. The majority of the sites in the Biomonitoring Program are described as having silt clay, clay, or clay loam texture and a low organic matter content. Although concentrations of inorganic chemicals have been identified in sediment, the clay soil texture in the vicinity of the Lambton Facility means that inorganic chemicals are often sorbed to the abundant clay particles and are less likely to leach into the groundwater or be transported by surface water runoff. Although the majority of the sites are shown to have low organic matter content, the number of detected concentrations for organic chemicals reported in samples collected from these sites is low, and monitoring of the sorption of these parameters to the organic matter in the sediment is not as essential. As a result, the frequency of sediment fertility and characterization sampling will be changed to every three years.

PCB, PCP, AND OCP ANALYTICAL FREQUENCY

Concentrations of select organic analytes (PCBs, PCPs and OCPs) have been relatively consistent for over twenty years and there have been few concentrations measured above the reportable detection limit since 1991. Samples will continue to be collected from all sites on an annual basis, but analytical frequency will change to a three year cycle. In Year 1 all samples will be submitted for analysis. In Years 2 and 3 only one sample from the site that historically has the highest concentrations and one sample from the control site will be submitted for analysis. If PCB, PCP or OCP are detected at concentrations which exceed 50% of the applicable guidelines in the sample from the site that historically has the highest concentrations, the samples from the other sites can be submitted for analysis. However, if these analytes are not detected in the site that historically has the highest concentrations, it is assumed that the other sites will not have detected concentrations greater than applicable guidelines.

ADDITION OF ISOPLETH MAPS FOR DATA ANALYSIS

Isopleth maps will only be generated and used for visual analysis when an analyte/matrix combination for Group 2 chemicals has been identified as repeatedly exceeding a site-specific or site-wide upper limit (UL) in three consecutive years and additional investigation is warranted. Isopleths illustrating the distribution of UL15 values will be used when investigating analytes that have exceeded site-wide concentrations, while isopleths illustrating year-specific concentrations can be used when investigating exceedances of site-specific concentrations.

CLOSURE

This letter outlined a number of recommendations that can be implemented to streamline the Biomonitoring Program and accommodate the Landfill Expansion at the Lambton Facility. Upon approval by the MOECC, they could be implemented during the next cycle of the Biomonitoring Program beginning in the 2017 Field Year.

Reference: Summary of Proposed Changes to Clean Harbors Biomonitoring Program

Should you have any questions, please don't hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

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Principal, Environmental Services
Phone: (519) 575-4112
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Tereza.Dan@stantec.com

Attachment: Figure 1 – Existing and Proposed Sampling Locations (overview)
Figure 2 – Existing and Proposed Sampling Locations (within and adjacent to Facility)
Figure 3 – Wind Speed Direction (blowing from)

c. Mike Parker, Clean Harbors Canada

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ATTACHMENT
FIGURES

\\cd1220-f02\Work_group\01221\active\122160003\drawing\MXD\2016_Q3_SamplingStations\122160003_2016_Q3_Fig01_Existing_ProposedSampling_zoomed_20160826.mxd
Revised: 2016-09-05 By: svandamme

September 2016
122160003

Stantec

Legend

- Existing Sampling Locations (Approximate)
- Proposed Sampling Location (Approximate)
- Existing Sampling Station to be Removed (Approximate)
- Watercourse
- Building
- Lambton Facility
- Waterbody
- Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

Client/Project

Clean Harbors Canada Inc.
Lambton Landfill Expansion

Figure No.

1

Title

Existing and Proposed Sampling Locations

\\cd1220-f02\Work_group\01221\active\122160003\drawing\MXD\2016_Q3_SamplingStations\122160003_2016_Q3_Fig02_ExistingProposedSamplingLocations_20160501.mxd
Revised: 2016-09-05 By: svandamme

Stantec

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2013.

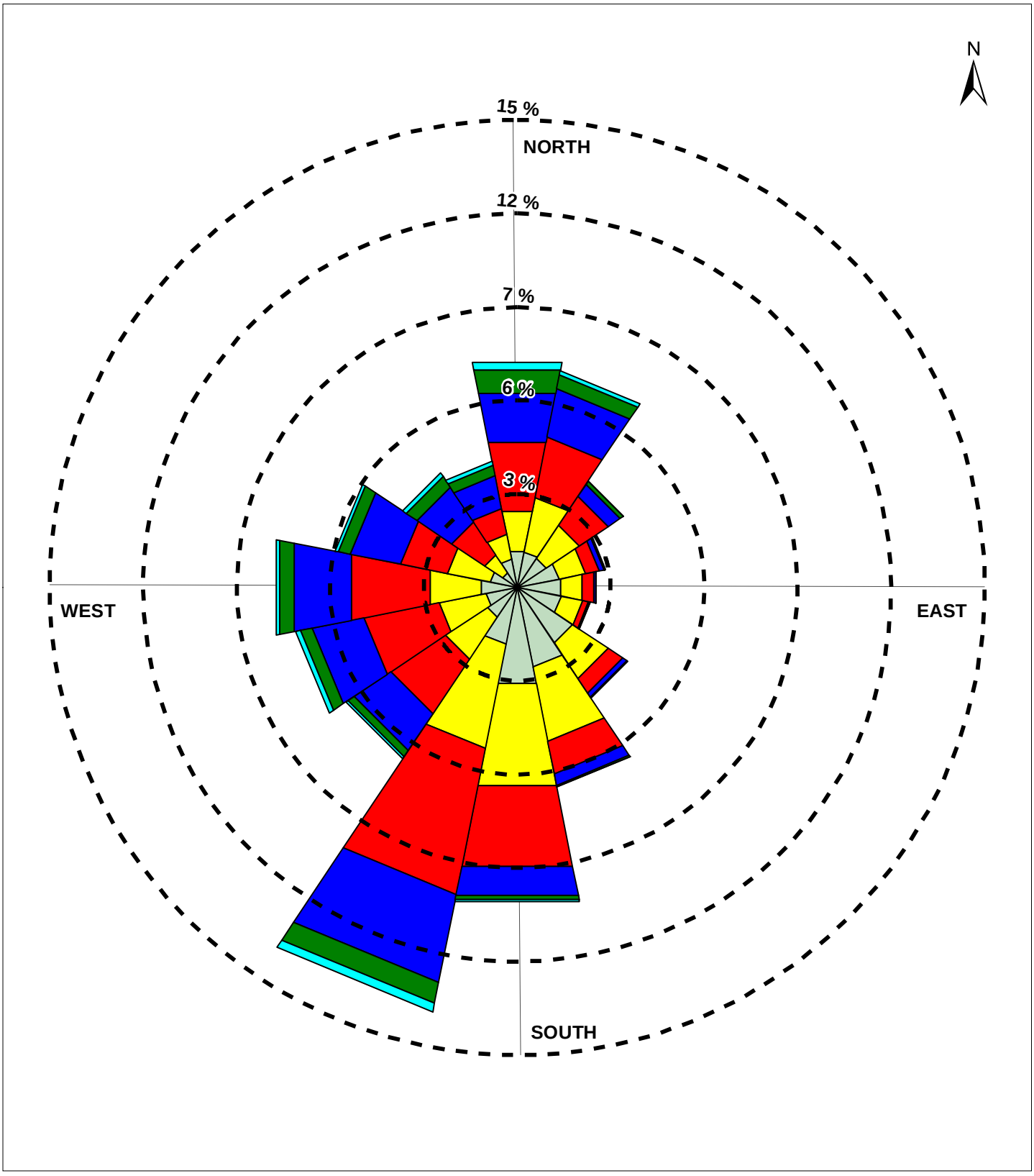
Legend
- Existing Sampling Locations (Approximate)
- Proposed Sampling Location (Approximate)
- Existing Sampling Station to be Removed (Approximate)
- Watercourse
- Building
- Lambton Facility
- Waterbody
- Wooded Area

September 2016
122160003

Client/Project
Clean Harbors Canada Inc.
Lambton Landfill Expansion

Figure No.
2

Title
Existing and Proposed Sampling Locations



\\cd1220-f02\Work_group\01221\active\122160003\drawing\MXD\2016_Q3_SamplingStations\122160003_2016_Q3_Fig03_WindRose.mxd
Revised: 2016-09-05 By: svandamme

September 2016
122160003

Stantec

Notes
1. Not to scale.

Legend

Wind Speed (Knots)

- >= 22
- 17 - 21
- 11 - 17
- 7 - 11
- 4 -7
- 1 - 4

Calms: 3.06%

Client/Project

Clean Harbors Canada Inc.
Lambton Landfill Expansion

Figure No.

3

Title

Wind Speed Direction
(blowing from)

4.0 FOLLOW-UP OF RECOMMENDATIONS FROM PREVIOUS BIOMONITORING REPORTS

Table 4-1 presents the status of conclusions and recommendations presented previously in the 2013 and 2014 Biomonitoring Program reports which are to be addressed in 2015.

Discussion of recommended changes to the Biomonitoring Program is also provided.

Table 4-1: Status of Historical Conclusions and Recommendations

Item No.	Report	Conclusions and Recommendations Requiring Follow-up	Discussion	Status
1.	2014 Annual Landfill Report, 2013 Field Year	Molybdenum investigation	Molybdenum in Soil (Discussed in Section 3.2.6.1) A literature review based on the phytotoxicity of molybdenum in soil was completed due to the high soil concentrations observed at Site S3. Plant tissue concentrations from the 2013 and 2014 Field Year were below the phytotoxic limit of 100 mg/kg, suggesting that current concentrations of molybdenum in soil are not resulting in phytotoxic concentrations in plants.	Based on results of the literature review, no further investigation is required; however, monitoring will continue.
2.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that PCB analysis continue on a 3-year from an annual sample collection schedule in all media.	PCBs have rarely been detected at concentrations above the reporting limit. Where no observations of PCBs have occurred in the last fourteen years of the program. Decreasing the frequency of analysis will help streamline the program.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Neegan Burnside proposed a PCB sample collection schedule of 2 years. The MOECC proposed an annual collection cycle, with only samples from the site with highest historical PCB concentrations and also the control site being submitted for analysis. In the event that PCB/PCP/OCP concentrations are detected above the RDL, the remaining samples can be sent in for analysis. It was also proposed by the MOECC that, on a three year schedule, all samples collected from all

Table 4-1: Status of Historical Conclusions and Recommendations

Item No.	Report	Conclusions and Recommendations Requiring Follow-up	Discussion	Status
				sites should be analyzed. Stantec is currently in the process of investigating these options and responding to stakeholder comments.
3.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that PCP analysis continue on a 3-year from an annual sample collection schedule in all media.	PCP has been detected above the reporting limits in only 4/24 years of the Biomonitoring Program (1998, 1999, 2002 and 2009). Decreasing the frequency of analysis will help streamline the program.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Neegan Burnside proposed a PCB sample collection schedule of 2 years. The MOECC proposed an annual collection cycle, with only samples from the site with highest historical PCB concentrations and also the control site being submitted for analysis. In the event that PCB/PCP/OCP concentrations are detected above the RDL, the remaining samples can be sent in for analysis. It was also proposed by the MOECC that, on a three year schedule, all samples collected from all sites should be analyzed. Stantec is currently in the process of investigating these options and responding to stakeholder comments.

Table 4-1: Status of Historical Conclusions and Recommendations

Item No.	Report	Conclusions and Recommendations Requiring Follow-up	Discussion	Status
4.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that OCP analysis continue on a 3-year from an annual sample collection schedule in all media.	As indicated in **Table C-2f**, OCP are rarely detected at concentrations above the reporting limit. Dieldrin, endosulfan, sulphate, p,p'-DDE, and p,p'-DDT, are the few chemicals which have been reported at detected concentrations in at least 10% of samples. However, there have been no detected concentrations of OCPs which have exceeded the applicable guidelines for these chemicals. Decreasing the frequency of analysis will help streamline the program.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Neegan Burnside proposed a PCB sample collection schedule of 2 years. The MOECC proposed an annual collection cycle, with only samples from the site with highest historical PCB concentrations and also the control site being submitted for analysis. In the event that PCB/PCP/OCP concentrations are detected above the RDL, the remaining samples can be sent in for analysis. It was also proposed by the MOECC that, on a three year schedule, all samples collected from all sites should be analyzed. Stantec is currently in the process of investigating these options and responding to stakeholder comments.

Table 4-1: Status of Historical Conclusions and Recommendations

Item No.	Report	Conclusions and Recommendations Requiring Follow-up	Discussion	Status
5.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that sites be added to, or removed from, the Biomonitoring program.	Based on a review of scientific literature, it is recommended that a new site be added to the northeast of the incinerator 2-2.5 km away within the maximum deposition area. Additionally, a control site may be added to monitor regional background concentrations unaffected by facility operations. Due to the sufficient coverage offered by currently established sites south of the facility, it is recommended that Site S5 can be removed to streamline the Biomonitoring Program.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Neegan Burnside indicated that they concur with the addition of new sites, and are comfortable with the removal of one test site. The MOECC suggested a revision of the proposed locations of the new sites, but agree with the proposed removal of Site S5 on the condition that a data comparison between S2 and S5 is completed to demonstrate that the two sites are similar. Stantec is currently in the process of reviewing the comments and responding to stakeholders.
6.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that sediment particle size distribution (texture) analysis continue on a 3-year schedule.	Sediment particle size distribution (texture) has shown little variation annually so the frequency of analysis for sediment fertility and characterization is recommended to be changed to every three years.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Neegan Burnside did not comment on the proposed revision of the sediment characterization/fertility

Table 4-1: Status of Historical Conclusions and Recommendations

Item No.	Report	Conclusions and Recommendations Requiring Follow-up	Discussion	Status
				analysis schedule, while the MOECC is in agreement. Following acceptance of these proposed changes by Clean Harbors, sediment fertility and characterization (texture) analysis will continue on a 3-year sample collection schedule.
7.	Clean Harbors Biomonitoring Program – Recommended Changes Letter (July, 2015)	It is recommended that fluoride be added as an analyte sampled in the Biomonitoring Program.	Based on a review of the two most recent Clean Harbors Maple Leaf Monitoring reports and the Annual Landfill Report, high fluoride concentrations have been identified in silver maple foliage and groundwater.	A letter summarizing recommended changes to the Biomonitoring Program was submitted to Clean Harbors Environmental Services in July 2015. Comments on the recommended changes were received from Neegan Burnside and the MOECC in September 2015. Both stakeholders are in agreement that fluoride should be added as an analyte to the Biomonitoring Program. Following acceptance of these proposed changes by Clean Harbors, fluoride will be added as an analyte sampled in the Biomonitoring Program.
8.	2014 Annual Landfill Report, 2013 Field Year	Entering the remaining analytes into a database	Two sets of parameters (PCDD and PCDF) were entered into the EQuIS database this year to improve data management efficiency. The remaining parameters should be entered into the EQuIS database.	Historic PCP and PCB data should be imported into the EQuIS database next year.

APPENDIX H LABORATORY CERTIFICATES

STANTEC CONSULTING LTD.
ATTN: Katherine Ketis
70 Southgate Dr, Suite 01
Guelph ON N1G 4P5

Date Received: 25-NOV-19
Report Date: 28-FEB-20 17:01 (MT)
Version: FINAL

Client Phone: 519-836-6050

Certificate of Analysis

Lab Work Order #: L2387288

Project P.O. #: NOT SUBMITTED
Job Reference: 122160003 CLEAN HARBORS
C of C Numbers:
Legal Site Desc:

L. Wrona

Lynne Wrona, M.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-1 19-W2-SS-CH-001							
Sampled By: Client on 10-OCT-19 @ 08:30							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	17.1		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	3.49		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0471		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	16.7		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14800		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.25		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.91		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	59.6		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.59		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	7.6		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.447		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	3680		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	20.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	7.11		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	12.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	17700		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	14.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	19.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	3710		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	416		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.87		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	17.6		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	484		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	1480		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.39		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	52		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	11.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.202		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	139		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.51		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	35.1		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	50.5		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	1.8		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.226	M,J	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.244	M,J	0.041	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.258	M,J	0.071	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.386	M,J	0.070	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.400	M,J,R	0.070	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	6.75		0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	37.4		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.295	M,J	0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.252	M,J	0.063	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.720	[J]	0.050	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-1 19-W2-SS-CH-001							
Sampled By: Client on 10-OCT-19 @ 08:30							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,4,7,8-HxCDF	0.476	M,J	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.310	M,J,R	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.565	M,J	0.082	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.16	M,J,R	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	2.30	[J]	0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.160	M,J,R	0.074	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	2.91	[J]	0.059	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	0.226		0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	1				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	1.87		0.041	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	4.99		0.071	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	4				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	13.0		0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	7.06		0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	11				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	11.2		0.063	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	11				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	5.48		0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	3.68		0.074	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	73.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	76.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	71.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	73.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	70.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	45.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	70.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	68.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	72.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	67.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	64.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	75.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	79.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.994			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-2 19-W2-NG-CH-003							
Sampled By: Client on 10-OCT-19 @ 09:00							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	74.7		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	70.7		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	2300	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0292		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	0.0055		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-2 19-W2-NG-CH-003							
Sampled By: Client on 10-OCT-19 @ 09:00							
Matrix: Plant Tissue							
Sulfur (S)-Total	2350		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.44		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	47.5		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.025		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.046		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	9.67		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	0.021		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	11.7		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0937		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	8190		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0228		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.644		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.029		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	9.28		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	111		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.835		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2270		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	28.3		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.58		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.61		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2440		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	11900		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	2.50		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.689		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	27		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	13.6		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.14		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0049		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.17		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	26.7		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.088	[U]	0.088	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	0.093	M,J	0.075	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.072	M,U	0.072	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.126	M,J	0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.110	M,J,R	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	1.54	[J]	0.062	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	4.85	[J]	0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	0.106	M,J	0.078	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.059	[U]	0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	0.100	M,J	0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.096	M,J	0.067	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.110	M,J,R	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.087	M,U	0.087	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	<0.088	[U]	0.088	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.440	M,J,R	0.067	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-2 19-W2-NG-CH-003							
Sampled By: Client on 10-OCT-19 @ 09:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
1,2,3,4,7,8,9-HpCDF	<0.090	M,U	0.090	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.21	[J]	0.060	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.482		0.088	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	2.03		0.075	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	1.70		0.072	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	4				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	4.25		0.062	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	0.998		0.078	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.569		0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.232		0.088	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.090	[U]	0.090	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	60.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	69.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	56.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	63.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	61.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	57.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	61.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	68.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	68.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	58.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	61.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	51.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	56.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	61.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	64.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	66.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.173			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.257			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.314			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-3 19-W2-SB-CH-005							
Sampled By: Client on 10-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	34.7		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	33.1		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	44	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4210		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-3 19-W2-SB-CH-005							
Sampled By: Client on 10-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	1.05		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	32.4		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0380		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2810		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0137		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.121		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	12.4		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	72.2		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3240		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	28.7		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	10.6		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.49		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	7370		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	23900		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	10.5		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.252		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	2.35		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	34.9		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.036	[U]	0.036	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.019	[U]	0.019	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.019	[U]	0.019	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	<0.018	[U]	0.018	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.028	M,J,R	0.018	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.052	M,J,R	0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	0.344	J,B	0.018	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.015	[U]	0.015	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.012	[U]	0.012	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.011	[U]	0.011	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.011	[U]	0.011	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.016	M,J,R	0.011	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.016	M,J,R	0.014	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	<0.010	[U]	0.010	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.012	[U]	0.012	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.165	M,J,B	0.017	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.036	[U]	0.036	pg/g	22-JAN-20	27-JAN-20	R4982112

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-3 19-W2-SB-CH-005							
Sampled By: Client on 10-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	<0.019	[U]	0.019	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	<0.019	[U]	0.019	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	0.039		0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	<0.015	[U]	0.015	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	<0.014	[U]	0.014	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.012	[U]	0.012	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	48.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	56.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	50.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	48.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	48.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	50.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	47.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	55.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	53.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	49.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	50.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	48.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	46.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	50.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	52.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	58.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.000153			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.0406			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.0745			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-4 19-W4-SS-CH-007							
Sampled By: Client on 09-OCT-19 @ 16:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	22.2		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	1.45		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0482		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	22.5		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	23300		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.26		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	5.22		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	94.3		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.98		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	16.3		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-4 19-W4-SS-CH-007							
Sampled By: Client on 09-OCT-19 @ 16:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Cadmium (Cd)	0.472		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	4530		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	32.8		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	8.66		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	23.3		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	24000		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	15.4		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	27.8		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	6370		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	268		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	1.50		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	29.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	989		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	4070		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.50		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	64		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	18.2		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.277		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	112		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	2.11		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	42.7		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	87.6		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	3.3		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.600	M,J	0.091	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.411	M,J	0.040	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.397	[J]	0.097	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	1.28	[J]	0.096	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.891	M,J	0.095	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	25.6		0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	116		0.20	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.530	M,J	0.085	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.339	M,J	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.687	[J]	0.068	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.588	M,J	0.088	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.476	M,J	0.088	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.794	[J]	0.095	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.15	M,J	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	8.93		0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.386	[J]	0.090	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	16.1		0.090	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	2.42		0.091	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	4.06		0.040	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	9.57		0.097	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-4 19-W4-SS-CH-007							
Sampled By: Client on 09-OCT-19 @ 16:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Total-HpCDD	40.3		0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	10.9		0.085	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	15				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	10.3		0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	10.1		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	8				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	20.4		0.090	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	69.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	67.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	73.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	69.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	45.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	70.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	73.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	69.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	66.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	69.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	65.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	63.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	72.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	72.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	2.13			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	2.13			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	2.13			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-5 19-W4-NG-CH-009							
Sampled By: Client on 09-OCT-19 @ 16:15							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	70.8		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	68.1		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	8500	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0115		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	0.0052		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3110		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.32		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	62.0		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.019		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.138		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	10.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.3		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.180		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	4410		20	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-5 19-W4-NG-CH-009							
Sampled By: Client on 09-OCT-19 @ 16:15							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Cesium (Cs)-Total	0.0418		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.290		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.096		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	8.25		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	122		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.234		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2520		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	90.1		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.94		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	1.29		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	3760		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	24400		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	2.46		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.222		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	68		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	7.42		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.15		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0053		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.17		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	29.3		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.068	[U]	0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	0.071	M,J,R	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	0.058	M,J,R	0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.150	M,J	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.160	M,J,R	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	1.32	[J]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	3.55	[J]	0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	0.160	M,J	0.075	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	0.096	M,J,R	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	0.085	M,J	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.072	M,J	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.067	M,J	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.064	M,J,R	0.047	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.075	M,J	0.043	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.344	[J]	0.024	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.029	[U]	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.653	[J]	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.550		0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	1.45		0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	2.93		0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	4				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	3.66		0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	0.755		0.075	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-5 19-W4-NG-CH-009							
Sampled By: Client on 09-OCT-19 @ 16:15							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total TCDF # Homologues	4				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.683		0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.521		0.047	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	6				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	0.479		0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	76.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	89.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	80.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	78.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	61.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	75.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	83.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	84.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	81.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	79.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	60.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	75.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	79.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	82.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	74.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.0958			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.232			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.266			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-6 19-W4-SB-CH-011							
Sampled By: Client on 09-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	54.3		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	52.4		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	38	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4820		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	1.10		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	34.0		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.282		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2610		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0143		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.101		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-6 19-W4-SB-CH-011							
Sampled By: Client on 09-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Copper (Cu)-Total	16.7		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	78.9		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3200		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	24.0		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	8.82		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	3.50		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	7990		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	23400		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	13.4		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.305		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	2.28		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	51.7		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.081	[U]	0.081	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.041	[U]	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	<0.028	[U]	0.028	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.057	M,J,R	0.021	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	0.301	J,B	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.045	[U]	0.045	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.026	[U]	0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.021	[U]	0.021	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.016	[U]	0.016	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.017	[U]	0.017	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.017	[U]	0.017	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.027	M,J,R	0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	<0.022	[U]	0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.206	M,J,B	0.028	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.081	[U]	0.081	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	<0.041	[U]	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	<0.028	[U]	0.028	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	0.036		0.021	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	<0.045	[U]	0.045	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	<0.026	[U]	0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-6 19-W4-SB-CH-011							
Sampled By: Client on 09-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total-HxCDF	<0.022	[U]	0.022	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.027	[U]	0.027	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	76.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	90.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	80.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	90.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	91.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	71.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	86.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	87.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	77.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	76.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	74.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	72.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	85.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	93.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	76.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.000152			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.0771			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.151			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-7 19-N2-SS-CH-013							
Sampled By: Client on 08-OCT-19 @ 14:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	23.7		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	2.43		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0635		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	23.7		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	26200		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.33		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	4.94		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	120		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	1.16		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	0.23		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	15.6		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.473		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	5550		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	38.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	11.2		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	31.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	25000		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	15.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	35.6		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	7320		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	339		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.35		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-7 19-N2-SS-CH-013							
Sampled By: Client on 08-OCT-19 @ 14:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Nickel (Ni)	36.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	959		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	4010		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.60		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	64		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	21.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.228		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	128		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.87		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	44.3		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	82.9		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	6.4		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	0.347		0.013	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	30.8		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	42.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	28.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	70.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	29.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	83.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	29.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	73.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	48.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	70.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	64.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	69.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	71.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	91.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	65.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	71.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	69.5	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	71.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	77.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	69.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	73.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	66.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	69.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	64.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	62.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0068	[U]	0.0068	ng/g	22-JAN-20	10-FEB-20	R5007833
beta-BHC	<0.0087	[U]	0.0087	ng/g	22-JAN-20	10-FEB-20	R5007833
delta-BHC	<0.0089	[U]	0.0089	ng/g	22-JAN-20	10-FEB-20	R5007833
gamma-BHC	<0.0088	[U]	0.0088	ng/g	22-JAN-20	10-FEB-20	R5007833
Heptachlor	0.00210	M,J,R	0.00033	ng/g	22-JAN-20	10-FEB-20	R5007833
Aldrin	<0.00097	[U]	0.00097	ng/g	22-JAN-20	10-FEB-20	R5007833
Heptachlor Epoxide	0.0102	M,J	0.0010	ng/g	22-JAN-20	10-FEB-20	R5007833

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-7 19-N2-SS-CH-013							
Sampled By: Client on 08-OCT-19 @ 14:00							
Matrix: Soil							
OC Pesticides by Method 1699							
trans-Chlordane	<0.0084	[U]	0.0084	ng/g	22-JAN-20	10-FEB-20	R5007833
cis-Chlordane	<0.0080	[U]	0.0080	ng/g	22-JAN-20	10-FEB-20	R5007833
Dieldrin	0.0240	M,J,R	0.0049	ng/g	22-JAN-20	10-FEB-20	R5007833
Endrin	<0.013	M,U	0.013	ng/g	22-JAN-20	10-FEB-20	R5007833
Endrin Aldehyde	0.0084	M,J	0.0079	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan I	<0.0060	[U]	0.0060	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan II	<0.020	M,U	0.020	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan Sulfate	<0.0025	[U]	0.0025	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDE	0.102	[J]	0.0043	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDD	0.013	M,J,R	0.010	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDT	0.114	M,J	0.0064	ng/g	22-JAN-20	10-FEB-20	R5007833
Methoxychlor	<0.0032	U	0.0032	ng/g	22-JAN-20	10-FEB-20	R5007833
Mirex	0.00920	J,R	0.00025	ng/g	22-JAN-20	10-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	59.0		16-129	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	70.0		14-136	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	77.0		40-151	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Endrin, 13C12-	75.0		35-155	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	77.0		5-122	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	81.0		21-125	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	82.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Mirex, 13C10-	85.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Heptachlor Epoxide A	<0.0077	[U]	0.0077	ng/g	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	87.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	62.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	88.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	72.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	73.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.302	M,J	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.207	[J]	0.046	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.22	M,J,R	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.43	M,J	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.38	M,J	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	5.55		0.16	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	27.8		0.25	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.523	M,J	0.092	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.290	M,J,R	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.580	[J]	0.073	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.402	M,J,B	0.036	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.316	M,J	0.036	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.450	M,J	0.038	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.120	M,J	0.050	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	2.00	M,J,R	0.079	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.162	M,J	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	2.93	[J]	0.18	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	2.08		0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	3.81		0.046	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	6.15		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-7 19-N2-SS-CH-013							
Sampled By: Client on 08-OCT-19 @ 14:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Total-HpCDD	10.6		0.16	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	7.87		0.092	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	11				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	7.62		0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	3.61		0.050	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	1.85		0.079	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	76.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	77.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	66.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	73.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	59.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	23.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	74.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	77.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	72.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	64.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	66.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	62.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	48.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	66.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	79.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.01			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.06			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.06			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-8 19-N2-SD-CH-015							
Sampled By: Client on 08-OCT-19 @ 14:30							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	21.1		0.10	%	22-JAN-20	23-JAN-20	R4976673
Chloride (Cl)	36.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.82		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0231		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	21.2		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13300		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.32		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	6.22		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	63.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.62		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	17.4		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.214		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	94900		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	24.3		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	9.04		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	17.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-8 19-N2-SD-CH-015							
Sampled By: Client on 08-OCT-19 @ 14:30							
Matrix: Sediment							
Metals in Soil by CRC ICPMS							
Iron (Fe)	20400		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	8.21		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	25.3		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	33300		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	362		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	3.14		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	26.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	455		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	2850		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.49		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	169		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	86.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.258		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	212		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.26		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	32.2		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	52.4		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	6.1		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
CARB428 PCB TOTALS							
Total PCB	0.363		0.013	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	25.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	35.3		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	23.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	54.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	24.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	63.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	22.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	57.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	36.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	58.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	40.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	56.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	54.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	73.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	50.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	57.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	58.4	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	55.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	61.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	54.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	58.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	51.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	54.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	54.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	51.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	10-FEB-20	R5007833

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-8 19-N2-SD-CH-015							
Sampled By: Client on 08-OCT-19 @ 14:30							
Matrix: Sediment							
OC Pesticides by Method 1699							
beta-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	10-FEB-20	R5007833
delta-BHC	<0.015	[U]	0.015	ng/g	22-JAN-20	10-FEB-20	R5007833
gamma-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	10-FEB-20	R5007833
Heptachlor	0.00180	M,J,R	0.00086	ng/g	22-JAN-20	10-FEB-20	R5007833
Aldrin	<0.0015	[U]	0.0015	ng/g	22-JAN-20	10-FEB-20	R5007833
Heptachlor Epoxide	<0.0032	M,U	0.0032	ng/g	22-JAN-20	10-FEB-20	R5007833
trans-Chlordane	<0.016	[U]	0.016	ng/g	22-JAN-20	10-FEB-20	R5007833
cis-Chlordane	<0.015	[U]	0.015	ng/g	22-JAN-20	10-FEB-20	R5007833
Dieldrin	0.0084	M,J,R	0.0066	ng/g	22-JAN-20	10-FEB-20	R5007833
Endrin	<0.019	M,U	0.019	ng/g	22-JAN-20	10-FEB-20	R5007833
Endrin Aldehyde	<0.011	[U]	0.011	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan I	<0.0082	[U]	0.0082	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan II	<0.020	M,U	0.020	ng/g	22-JAN-20	10-FEB-20	R5007833
Endosulfan Sulfate	<0.0053	[U]	0.0053	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDE	0.0404	M,J	0.0076	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDD	0.0210	M,J,R	0.0088	ng/g	22-JAN-20	10-FEB-20	R5007833
4,4-DDT	0.012	M,J,R	0.011	ng/g	22-JAN-20	10-FEB-20	R5007833
Methoxychlor	<0.013	[U]	0.013	ng/g	22-JAN-20	10-FEB-20	R5007833
Mirex	<0.00069	[U]	0.00069	ng/g	22-JAN-20	10-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	44.0		16-129	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	45.0		14-136	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	52.0		40-151	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Endrin, 13C12-	50.0		35-155	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	51.0		5-122	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	57.0		21-125	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	49.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Mirex, 13C10-	49.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Heptachlor Epoxide A	<0.024	[U]	0.024	ng/g	22-JAN-20	10-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	56.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	47.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	48.0		5-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	56.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	54.0		11-120	%	22-JAN-20	10-FEB-20	R5007833
L2387288-9 19-N2-NG-CH-019							
Sampled By: Client on 08-OCT-19 @ 15:00							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	62.4		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	54.3		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	6930	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0154		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3460		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.34		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	62.8		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.011		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.044		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	8.75		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-9 19-N2-NG-CH-019							
Sampled By: Client on 08-OCT-19 @ 15:00							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.7		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0416		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	4640		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0132		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.246		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.055		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	5.46		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	113		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.279		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2090		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	86.4		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	4.08		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.72		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2570		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	12400		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	6.79		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	1.40		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	13.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0026		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0091		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.15		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	38.7		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	0.225		0.017	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	39.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	58.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	36.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	80.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	34.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	86.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	33.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	83.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	58.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	68.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	62.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	68.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	69.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	88.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	64.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	71.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	67.3	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	94.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	82.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	69.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	72.9		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-9 19-N2-NG-CH-019							
Sampled By: Client on 08-OCT-19 @ 15:00							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 205	66.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	84.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	66.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	60.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.35	[U]	0.35	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.50	[U]	0.50	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.48	[U]	0.48	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.43	[U]	0.43	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.038	[U]	0.038	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.043	[U]	0.043	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.14	M,U	0.14	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.28	[U]	0.28	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.27	[U]	0.27	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.42	M,J	0.30	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.42	M,U	0.42	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.23	[U]	0.23	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.35	[U]	0.35	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<0.55	[U]	0.55	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.23	[U]	0.23	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	0.33	M,J,R	0.28	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.31	[U]	0.31	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.80	[U]	0.80	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.23	[U]	0.23	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	0.074	M,J	0.021	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	47.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	41.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	70.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	68.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	67.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	63.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	74.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	47.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	46.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	54.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.63	[U]	0.63	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<1.1	[U]	1.1	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	51.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	34.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	54.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	56.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.079	[U]	0.079	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	0.057	M,J	0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.082	[U]	0.082	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	<0.081	[U]	0.081	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	<0.081	[U]	0.081	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	1.06	[J]	0.046	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	3.12	[J]	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	0.169	M,J	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	0.065	M,J,R	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-9 19-N2-NG-CH-019							
Sampled By: Client on 08-OCT-19 @ 15:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,4,7,8-PeCDF	0.071	M,J,R	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.053	M,J,R	0.046	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.076	M,J,R	0.047	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.099	M,J	0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.068	M,J,R	0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.312	[J]	0.024	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.063	M,J,R	0.030	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.830	M,J,R	0.037	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.402		0.079	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	1.30		0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	4				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	2.30		0.082	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	2.74		0.046	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	1.04		0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.522		0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.199		0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	0.312		0.030	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	71.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	83.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	71.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	72.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	76.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	66.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	71.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	80.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	80.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	73.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	72.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	62.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	68.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	73.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	78.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	75.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.0980			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.194			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.245			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-10 19-N2-SB-CH-021							
Sampled By: Client on 08-OCT-19 @ 15:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	53.4		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	53.8		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	49	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-10 19-N2-SB-CH-021							
Sampled By: Client on 08-OCT-19 @ 15:30							
Matrix: Plant Tissue							
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4730		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	1.19		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	36.0		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0810		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2400		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.084		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	15.6		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	81.8		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3130		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	26.8		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	7.30		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	3.30		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	8290		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	24500		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	6.20		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.632		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	1.84		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	45.3		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chlorophenols as acetate derivatives							
Pentachlorophenol	<0.49	[U]	0.49	ng/g	24-JAN-20	11-FEB-20	R5008427
Surrogate: 13C6-Pentachlorophenol	31.0	G	50-150	%	24-JAN-20	11-FEB-20	R5008427
Note: There is low recovery of 13C6-Pentachlorophenol. Detection limit has been raised due to the low recovery.							
PCB congeners by SIM GC/LRMS							
Total PCB	<0.010		0.010	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	46.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	59.2		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	41.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	80.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	41.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	84.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	36.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	69.9		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-10 19-N2-SB-CH-021							
Sampled By: Client on 08-OCT-19 @ 15:30							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 104	50.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	72.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	56.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	67.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	66.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	88.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	61.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	65.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	68.6	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	62.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	69.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	63.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	65.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	61.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	62.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	61.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	57.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
beta-BHC	<0.019	[U]	0.019	ng/g	21-JAN-20	11-FEB-20	R5011480
delta-BHC	<0.018	[U]	0.018	ng/g	21-JAN-20	11-FEB-20	R5011480
gamma-BHC	<0.018	[U]	0.018	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor	0.0030	M,J,R	0.0011	ng/g	21-JAN-20	11-FEB-20	R5011480
Aldrin	<0.0018	[U]	0.0018	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor Epoxide	0.0145	M,J	0.0047	ng/g	21-JAN-20	11-FEB-20	R5011480
trans-Chlordane	<0.015	[U]	0.015	ng/g	21-JAN-20	11-FEB-20	R5011480
cis-Chlordane	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
Dieldrin	0.033	M,J	0.011	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin	<0.015	[U]	0.015	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin Aldehyde	<0.013	[U]	0.013	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan I	<0.018	[U]	0.018	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan II	<0.025	[U]	0.025	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan Sulfate	<0.0064	[U]	0.0064	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDE	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDD	<0.0098	[U]	0.0098	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDT	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
Methoxychlor	<0.0027	[U]	0.0027	ng/g	21-JAN-20	11-FEB-20	R5011480
Mirex	0.00230	M,J,R	0.00074	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	66.0		16-129	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	63.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	92.0		14-136	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	88.0		40-151	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endrin, 13C12-	93.0		35-155	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	86.0		5-122	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	99.0		21-125	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	111.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Mirex, 13C10-	106.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	103.0		5-150	%	21-JAN-20	11-FEB-20	R5011480
Endrin ketone	<0.019	[U]	0.019	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor Epoxide A	<0.036	[U]	0.036	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	72.0		11-120	%	21-JAN-20	11-FEB-20	R5011480

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-10 19-N2-SB-CH-021							
Sampled By: Client on 08-OCT-19 @ 15:30							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
Surrogate: Methoxychlor, 13C12-	139.0	G	5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	82.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	86.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Note: Methoxychlor-ES recovery outside method limits. Target results are calculated against labelled isotopes using isotope dilution, therefore minimal impact on data quality is expected.							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.15	[U]	0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.061	[U]	0.061	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.049	[U]	0.049	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.070	M,J,R	0.051	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.066	M,J,R	0.049	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.334	M,J	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	2.42	[J]	0.044	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.083	[U]	0.083	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.050	[U]	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.040	[U]	0.040	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.040	[U]	0.040	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.042	[U]	0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.041	[U]	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.072	M,J,R	0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.120	M,J,R	0.032	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.110	M,J,R	0.036	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.03	[J]	0.045	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.15	[U]	0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	<0.061	[U]	0.061	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	<0.051	[U]	0.051	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	0.522		0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	<0.083	[U]	0.083	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	<0.050	[U]	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	<0.055	[U]	0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.036	[U]	0.036	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	58.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	76.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	63.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	63.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	77.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	86.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	57.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	67.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	72.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	59.0		26-152	%	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-10 19-N2-SB-CH-021							
Sampled By: Client on 08-OCT-19 @ 15:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	60.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	60.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	56.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	70.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	80.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	60.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.00438			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.152			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.277			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-11 19-N4-SS-CH-023							
Sampled By: Client on 08-OCT-19 @ 12:30							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	19.2		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.97		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0572		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	18.9		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15800		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.22		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.78		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	77.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.68		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	0.23		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	7.5		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.499		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	5020		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	22.7		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	8.31		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	15.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	18400		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	14.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	19.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	4920		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	409		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.83		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	20.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	590		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	1730		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.41		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	<50		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	15.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.194		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	84.3		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.69		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	33.3		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-11 19-N4-SS-CH-023							
Sampled By: Client on 08-OCT-19 @ 12:30							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Zinc (Zn)	59.8		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.9		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.188	M,J	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.190	M,J,R	0.064	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.183	M,J	0.071	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.336	M,J	0.063	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.371	M,J	0.066	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	4.67		0.075	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	25.9		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.403	M,J	0.081	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.269	M,J	0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.533	[J]	0.053	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.353	M,J,B	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.289	M,J	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.381	[J]	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.103	M,J	0.098	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.90	M,J	0.034	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.130	M,J,R	0.040	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	2.49	[J]	0.082	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	1.55		0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	1.05		0.064	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	4				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	3.94		0.071	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	9.40		0.075	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	5.99		0.081	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	6.99		0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	11				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	4.01		0.098	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	2.86		0.040	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	77.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	77.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	70.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	79.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	70.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	40.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	73.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	78.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	74.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	70.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	75.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	73.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	69.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	64.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	73.0		26-138	%	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-11 19-N4-SS-CH-023							
Sampled By: Client on 08-OCT-19 @ 12:30							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	79.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.672			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.863			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.863			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-12 19-N4-NG-CH-025							
Sampled By: Client on 08-OCT-19 @ 12:40							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	56.7		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	52.0		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	7650	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0168		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3190		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	0.67		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	17.9		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.012		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.033		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	7.49		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.5		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0522		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	4170		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0100		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.158		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.039		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	7.01		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	75.8		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.257		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1960		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	86.0		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	3.39		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.71		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2890		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	11700		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	8.66		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	1.33		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	12.6		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0042		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	57.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-12 19-N4-NG-CH-025							
Sampled By: Client on 08-OCT-19 @ 12:40							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.057	[U]	0.057	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	0.052	M,J,R	0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	0.060	M,J,R	0.031	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.070	M,J,R	0.031	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.076	M,J,R	0.031	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.823	[J]	0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	3.11	[J]	0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.053	M,U	0.053	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	0.053	M,J,R	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	0.038	M,J,R	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.046	M,J,R	0.040	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.053	M,J,R	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.055	M,U	0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.066	[J]	0.048	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.356	[J]	0.023	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.044	M,J,R	0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.04	[J]	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.678		0.057	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	1.10		0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	2.13		0.031	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	2.39		0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	0.794		0.053	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.361		0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.370		0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	0.435		0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	72.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	83.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	73.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	70.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	75.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	66.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	72.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	81.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	79.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	75.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	70.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	50.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	69.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	72.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	79.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.0196			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.149			pg/g	22-JAN-20	27-JAN-20	R4982112

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-12 19-N4-NG-CH-025							
Sampled By: Client on 08-OCT-19 @ 12:40							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Upper Bound PCDD/F TEQ (WHO 2005)	0.183			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-13 19-N4-SB-CH-027							
Sampled By: Client on 08-OCT-19 @ 13:00							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	46.9		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	46.9		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	46	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4700		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	0.530		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	33.1		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0642		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	1990		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0084		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.081		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	14.8		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	74.7		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3180		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	25.0		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	18.7		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	2.03		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	8500		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	23000		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	13.4		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.114		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	1.62		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	42.6		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.086	[U]	0.086	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.056	[U]	0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.034	[U]	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-13 19-N4-SB-CH-027							
Sampled By: Client on 08-OCT-19 @ 13:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
1,2,3,6,7,8-HxCDD	<0.034	[U]	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	<0.033	[U]	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.088	M,J,R	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	0.646	J,B	0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.053	[U]	0.053	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.029	[U]	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.025	[U]	0.025	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.057	M,J	0.038	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.037	[U]	0.037	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.038	[U]	0.038	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	<0.049	[U]	0.049	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.046	M,J,R	0.026	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.030	M,U	0.030	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.444	J,B	0.032	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.086	[U]	0.086	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	<0.056	[U]	0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	<0.034	[U]	0.034	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	<0.033	[U]	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	<0.053	[U]	0.053	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	<0.029	[U]	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.057		0.049	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.030	[U]	0.030	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	66.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	78.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	69.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	75.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	93.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	103.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	65.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	74.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	68.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	70.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	67.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	88.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	100.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	75.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.00605			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.0966			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.186			pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-14 19-N5-SS-CH-029							
Sampled By: Client on 14-AUG-19 @ 13:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	19.1		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	2.70		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0761		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	19.2		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14200		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.32		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	5.75		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	65.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.59		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	0.22		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	11.8		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.560		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	19800		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	22.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	7.55		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	14.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	17800		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	22.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	20.4		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	9700		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	287		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	1.71		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	18.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	394		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	1940		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.49		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	88		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	40.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.231		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	109		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	0.991		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	32.2		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	74.6		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	1.6		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.277	M,J	0.057	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.409	[J]	0.039	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	1.01	[J]	0.082	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	4.05		0.080	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	1.85	M,J	0.080	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	218		0.36	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	2130		0.30	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.422	[J]	0.067	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.403	M,J	0.041	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.650	[J]	0.035	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-14 19-N5-SS-CH-029							
Sampled By: Client on 14-AUG-19 @ 13:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,4,7,8-HxCDF	1.45	[J]	0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	1.06	[J]	0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	2.74	[J]	0.093	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.27	M,J	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	36.1		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	1.67	[J]	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	108		0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	2.72		0.057	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	5.76		0.039	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	8				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	26.2		0.082	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	388		0.36	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	6.69		0.067	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	15				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	9.65		0.041	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	28.6		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	96.2		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	76.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	81.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	67.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	76.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	71.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	54.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	73.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	80.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	66.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	69.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	66.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	63.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	76.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	79.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	5.41			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	5.41			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	5.41			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-15 19-N5-SD-CH-031							
Sampled By: Client on 14-AUG-19 @ 13:30							
Matrix: Sediment							
Miscellaneous Parameters							
Chloride (Cl)	167		5.0	mg/kg	18-FEB-20	18-FEB-20	R4998419
Fluoride (F)	2.53		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.178		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	65.4		0.25	%		03-FEB-20	R4987031
Metals in Soil by CRC ICPMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-15 19-N5-SD-CH-031							
Sampled By: Client on 14-AUG-19 @ 13:30							
Matrix: Sediment							
Metals in Soil by CRC ICPMS							
Aluminum (Al)	34300		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.60		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	8.20		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	182		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	1.37		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	0.42		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	22.4		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	1.18		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	21800		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	47.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	11.7		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	33.5		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	34200		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	27.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	53.9		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	15500		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	365		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	5.98		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	42.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	1010		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	5050		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	3.77		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	0.20		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	293		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	50.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	1900		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.485		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	2.2		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	78.9		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	2.55		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	60.3		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	189		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	4.9		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
L2387288-16 19-N5-NG-CH-035							
Sampled By: Client on 14-AUG-19 @ 15:15							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	57.3		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	52.6		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	6440	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0202		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3380		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.10		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	31.0		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.017		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.055		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	11.7		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-16 19-N5-NG-CH-035							
Sampled By: Client on 14-AUG-19 @ 15:15							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	0.011		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	9.0		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.164		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5970		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0066		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.299		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.036		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	3.16		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	76.9		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.719		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1940		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	13.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	2.73		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.26		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	1160		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	13900		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	2.10		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.066		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	46		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	24.1		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0041		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0041		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	15.7		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.14	[U]	0.14	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	0.102	M,J	0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.10	[U]	0.10	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.13	M,J,R	0.10	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.13	M,J,R	0.10	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	1.23	[J]	0.064	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	4.87	[J]	0.070	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.11	[U]	0.11	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.087	[U]	0.087	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.069	[U]	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.078	M,J,R	0.062	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.092	M,J,R	0.064	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.083	M,J	0.061	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.140	M,J,R	0.076	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.448	[J]	0.069	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.099	M,J,R	0.075	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.93	[J]	0.066	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.14	[U]	0.14	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	0.708		0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	3				22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-16 19-N5-NG-CH-035							
Sampled By: Client on 14-AUG-19 @ 15:15							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total-HxCDD	0.17		0.10	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	1.23		0.064	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	0.45		0.11	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.264		0.087	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.170		0.076	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	0.448		0.075	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	67.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	79.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	69.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	67.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	73.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	71.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	67.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	77.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	66.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	64.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	67.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	64.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	69.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	78.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	74.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.129			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.279			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.371			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-17 19-E1-SS-CH-037							
Sampled By: Client on 09-OCT-19 @ 09:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	15.3		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	1.61		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0431		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	15.2		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	12100		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.18		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	4.39		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	55.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.53		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	7.5		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.339		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	3140		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	18.6		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-17 19-E1-SS-CH-037							
Sampled By: Client on 09-OCT-19 @ 09:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Cobalt (Co)	5.67		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	13.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	13400		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	10.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	13.2		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	3280		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	284		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.03		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	15.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	668		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	1610		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.49		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	<50		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	10.6		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.160		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	92.7		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.31		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	28.4		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	48.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.6		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.220	M,J	0.093	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.176	M,J	0.052	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.150	J,R	0.092	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.270	J,R	0.088	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.300	M,J,R	0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	5.08		0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	33.7		0.17	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.31	M,J,R	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.304	M,J	0.079	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.421	[J]	0.067	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.630	M,J	0.093	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.350	M,J,R	0.096	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.499	M,J	0.094	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	<0.14	M,U	0.14	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	3.69		0.067	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.170	J,R	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	6.17		0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	1.69		0.093	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	1.60		0.052	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	4				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	4.11		0.092	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	10.4		0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	3.06		0.11	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-17 19-E1-SS-CH-037							
Sampled By: Client on 09-OCT-19 @ 09:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Total TCDF # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	5.06		0.079	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	3.98		0.14	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	4.18		0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	67.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	68.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	60.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	70.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	62.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	37.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	65.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	66.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	67.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	59.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	67.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	65.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	58.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	56.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	65.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	66.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.744			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.891			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.898			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-18 19-E1-NG-CH-039							
Sampled By: Client on 09-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	75.7		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	76.7		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	3290	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0157		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3590		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.02		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	29.4		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.015		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.035		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	37.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	5.3		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0921		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5890		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0141		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.307		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.023		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-18 19-E1-NG-CH-039							
Sampled By: Client on 09-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Copper (Cu)-Total	6.78		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	77.5		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.519		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2120		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	20.3		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.33		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.35		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	3810		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	20100		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	1.24		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.585		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	29		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	19.4		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.20		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0040		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	23.5		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.085	[U]	0.085	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.052	M,U	0.052	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	0.074	M,J	0.054	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.102	M,J	0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.127	M,J	0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	1.05	[J]	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	3.52	[J]	0.043	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.056	[U]	0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	0.070	J,R	0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	0.062	M,J	0.033	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	0.054	M,J	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.054	M,J	0.029	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.080	M,J	0.031	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.068	M,J	0.035	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.356	[J]	0.021	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.035	M,J,R	0.023	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.19	[J]	0.036	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.317		0.085	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	1.46		0.052	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	1.87		0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	2.85		0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	1.09		0.056	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	7				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	1.02		0.039	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	6				22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-18 19-E1-NG-CH-039							
Sampled By: Client on 09-OCT-19 @ 09:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total-HxCDF	0.532		0.035	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	5				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	0.516		0.023	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	75.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	84.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	76.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	74.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	80.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	76.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	73.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	80.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	77.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	77.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	73.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	68.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	75.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	76.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	87.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	78.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.0902			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.164			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.235			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-19 19-E1-SB-CH-042							
Sampled By: Client on 09-OCT-19 @ 09:20							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	57.8		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	58.0		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	35	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	3710		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	0.967		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	40.1		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0806		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2460		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0184		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.058		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	13.0		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	62.8		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-19 19-E1-SB-CH-042							
Sampled By: Client on 09-OCT-19 @ 09:20							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	2980		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	30.6		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	5.86		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	4.15		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	6360		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	18600		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	16.4		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.566		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	1.97		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	0.0023		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	0.12		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	39.9		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.16	[U]	0.16	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.067	[U]	0.067	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.059	[U]	0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	<0.058	[U]	0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	<0.058	[U]	0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.148	M,J	0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	0.593	M,J,B	0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.11	[U]	0.11	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.066	[U]	0.066	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.052	[U]	0.052	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.041	[U]	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.042	[U]	0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	0.073	M,J	0.043	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	<0.055	[U]	0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.094	M,J,R	0.046	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.050	[U]	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	0.160	M,J,R	0.057	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	<0.16	[U]	0.16	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	<0.067	[U]	0.067	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	<0.059	[U]	0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	0.148		0.059	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	<0.11	[U]	0.11	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	<0.066	[U]	0.066	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	0.073		0.055	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.050	[U]	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-19 19-E1-SB-CH-042							
Sampled By: Client on 09-OCT-19 @ 09:20							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	61.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	79.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	60.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	66.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	84.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	94.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	59.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	70.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	61.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	63.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	60.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	61.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	77.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	85.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.00898			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.154			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.297			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-20 19-E2-SS-CH-043							
Sampled By: Client on 10-OCT-19 @ 15:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	20.2		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	2.57		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0670		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	20.4		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15700		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.31		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	5.20		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	79.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.58		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	8.4		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.387		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	5790		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	21.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	8.66		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	17.1		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	19100		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	22.7		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	20.8		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	4910		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	400		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	1.70		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	19.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	748		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	2440		100	mg/kg	03-FEB-20	04-FEB-20	R4988988

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-20 19-E2-SS-CH-043							
Sampled By: Client on 10-OCT-19 @ 15:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Selenium (Se)	0.47		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	54		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	19.3		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.196		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	76.0		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.11		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	32.2		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	66.4		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	1.9		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
CARB428 PCB TOTALS							
Total PCB	0.686		0.012	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	36.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	48.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	33.8		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	76.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	36.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	84.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	36.5		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	75.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	54.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	70.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	63.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	75.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	73.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	95.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	69.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	76.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	77.1	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	73.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	80.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	75.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	77.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	69.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	72.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	69.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	63.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.013	[U]	0.013	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	0.00100	M,J,R	0.00062	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.0011	[U]	0.0011	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0136	M,J	0.0010	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	<0.0065	M,U	0.0065	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	0.0099	M,J	0.0062	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	0.0159	M,J	0.0038	ng/g	22-JAN-20	11-FEB-20	R5007833

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-20 19-E2-SS-CH-043							
Sampled By: Client on 10-OCT-19 @ 15:00							
Matrix: Soil							
OC Pesticides by Method 1699							
Endrin	<0.011	M,U	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.0061	[U]	0.0061	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0026	[U]	0.0026	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.142		0.0055	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	0.0058	M,J,R	0.0035	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	0.066	M,J,R	0.010	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	<0.0040	M,U	0.0040	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	<0.00035	[U]	0.00035	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	60.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	68.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	72.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	68.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	73.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	81.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	79.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	86.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.0079	[U]	0.0079	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	83.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	66.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	80.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	78.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	75.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.235	M,J	0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.23	M,J	0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.19	M,J	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.34	M,J	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.45	M,J	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	6.42		0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	32.4		0.18	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.32	M,J,R	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.253	M,J	0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.415	[J]	0.054	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.393	M,J,B	0.084	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.333	M,J	0.078	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.433	[J]	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	<0.12	M,U	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.89	M,J	0.047	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.143	M,J	0.061	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	2.01	[J]	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	1.69		0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	2.47		0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	5.68		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	12.7		0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	4.80		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-20 19-E2-SS-CH-043							
Sampled By: Client on 10-OCT-19 @ 15:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Total TCDF # Homologues	8				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	5.92		0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	12				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	3.28		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	2.85		0.061	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	78.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	78.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	63.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	78.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	68.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	41.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	75.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	78.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	73.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	71.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	68.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	65.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	70.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.906			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.944			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.950			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-21 19-E2-SD-CH-045							
Sampled By: Client on 10-OCT-19 @ 15:30							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	24.0		0.10	%	22-JAN-20	23-JAN-20	R4976673
Chloride (Cl)	148		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	6.48		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0228		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	24.2		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	17300		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.25		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	5.34		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	84.5		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.74		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	20.8		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.176		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	95400		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	27.4		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	9.37		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	18.4		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	21400		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	8.26		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	29.8		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-21 19-E2-SD-CH-045							
Sampled By: Client on 10-OCT-19 @ 15:30							
Matrix: Sediment							
Metals in Soil by CRC ICPMS							
Magnesium (Mg)	30400		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	379		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	2.81		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	28.8		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	398		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	3480		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.42		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	221		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	99.0		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.227		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	217		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.32		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	34.0		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	52.8		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	3.7		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
CARB428 PCB TOTALS							
Total PCB	<0.013		0.013	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	25.8		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	38.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	25.2		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	58.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	27.7		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	66.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	26.5		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	59.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	39.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	54.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	50.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	54.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	53.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	70.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	48.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	55.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	60.3	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	53.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	61.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	52.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	54.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	55.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	55.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	55.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	52.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.017	[U]	0.017	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-21 19-E2-SD-CH-045							
Sampled By: Client on 10-OCT-19 @ 15:30							
Matrix: Sediment							
OC Pesticides by Method 1699							
Heptachlor	0.00470	M,J,R	0.00071	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.0023	[U]	0.0023	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0045	M,J,R	0.0021	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	<0.010	[U]	0.010	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	0.0100	M,J,R	0.0065	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	<0.020	M,U	0.020	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.037	M,U	0.037	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0043	[U]	0.0043	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.0187	M,J	0.0089	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	<0.013	[U]	0.013	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	<0.017	[U]	0.017	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	<0.0095	[U]	0.0095	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	<0.00057	[U]	0.00057	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	50.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	48.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	57.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	50.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	50.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	57.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	45.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	47.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.016	[U]	0.016	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	53.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	52.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	45.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	57.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	54.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
L2387288-22 19-E2-NG-CH-049							
Sampled By: Client on 10-OCT-19 @ 16:00							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	43.3		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	44.8		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	2250	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0133		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	1880		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	0.88		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	33.3		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.014		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.024		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	32.1		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	7.1		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0256		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-22 19-E2-NG-CH-049							
Sampled By: Client on 10-OCT-19 @ 16:00							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Calcium (Ca)-Total	6050		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.193		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.025		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	3.72		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	61.1		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.152		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1800		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	26.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.18		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2400		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	11400		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	1.35		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.180		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	20.9		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0032		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	14.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	0.396		0.021	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	42.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	57.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	37.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	75.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	36.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	81.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	33.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	65.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	46.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	66.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	56.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	65.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	64.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	83.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	60.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	65.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	66.1	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	65.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	69.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	61.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	64.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	58.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	69.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	56.6		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-22 19-E2-NG-CH-049							
Sampled By: Client on 10-OCT-19 @ 16:00							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 209	94.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.56	[U]	0.56	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.76	[U]	0.76	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.77	[U]	0.77	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.66	[U]	0.66	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.053	[U]	0.053	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.063	[U]	0.063	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.30	M,U	0.30	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.45	[U]	0.45	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.43	M,U	0.43	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.88	M,J	0.14	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.19	[U]	0.19	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.26	[U]	0.26	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.80	[U]	0.80	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<1.2	[U]	1.2	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.33	[U]	0.33	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	0.74	M,J,R	0.42	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.49	[U]	0.49	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.72	[U]	0.72	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.29	[U]	0.29	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	<0.027	[U]	0.027	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	42.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	36.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	61.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	57.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	59.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	55.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	68.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	47.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	48.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	53.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.79	[U]	0.79	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<2.3	[U]	2.3	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	46.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	44.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	48.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	50.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.15	[U]	0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.12	M,U	0.12	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	0.140	M,J,R	0.076	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	0.143	M,J	0.077	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.150	M,J,R	0.076	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.967	M,J	0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDD	2.94	[J]	0.077	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,7,8-TCDF	<0.15	[U]	0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8-PeCDF	0.086	M,J,B	0.052	pg/g	22-JAN-20	27-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.042	[U]	0.042	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.068	[U]	0.068	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	0.082	M,J,R	0.073	pg/g	22-JAN-20	27-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-22 19-E2-NG-CH-049							
Sampled By: Client on 10-OCT-19 @ 16:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,4,6,7,8-HxCDF	<0.099	[U]	0.099	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.130	M,J,R	0.091	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.370	M,J,R	0.041	pg/g	22-JAN-20	27-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	0.065	M,J,R	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112
OCDF	1.31	[J]	0.076	pg/g	22-JAN-20	27-JAN-20	R4982112
Total-TCDD	0.39		0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDD # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-PeCDD	1.09		0.12	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HxCDD	1.77		0.077	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDD # Homologues	3				22-JAN-20	27-JAN-20	R4982112
Total-HpCDD	2.42		0.058	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-TCDF	0.25		0.15	pg/g	22-JAN-20	27-JAN-20	R4982112
Total TCDF # Homologues	1				22-JAN-20	27-JAN-20	R4982112
Total-PeCDF	0.213		0.052	pg/g	22-JAN-20	27-JAN-20	R4982112
Total PeCDF # Homologues	2				22-JAN-20	27-JAN-20	R4982112
Total-HxCDF	<0.099	[U]	0.099	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HxCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Total-HpCDF	<0.050	[U]	0.050	pg/g	22-JAN-20	27-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	74.0		25-164	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	89.0		25-181	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	78.0		32-141	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	73.0		28-130	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-140	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-OCDD	70.0		17-157	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	74.0		24-169	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	83.0		21-192	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	85.0		21-178	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	77.0		26-152	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	75.0		26-123	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	59.0		29-147	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	70.0		28-136	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	77.0		28-143	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	78.0		26-138	%	22-JAN-20	27-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	78.0		31-197	%	22-JAN-20	27-JAN-20	R4982112
Lower Bound PCDD/F TEQ (WHO 2005)	0.0278			pg/g	22-JAN-20	27-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.240			pg/g	22-JAN-20	27-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.397			pg/g	22-JAN-20	27-JAN-20	R4982112
L2387288-23 19-E2-FC-CH-051							
Sampled By: Client on 10-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	37.9		0.10	%	22-JAN-20	23-JAN-20	R4976647
% Moisture	35.3		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	436	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	1030		100	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-23 19-E2-FC-CH-051							
Sampled By: Client on 10-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	3.1		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	43		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	1.24		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	18.5		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	1260		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	3.82		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	0.472		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	0.24		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	3830		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	4860		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	0.982		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	0.095		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	19.1		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chlorophenols as acetate derivatives							
Pentachlorophenol	<0.49	[U]	0.49	ng/g	24-JAN-20	11-FEB-20	R5008427
Surrogate: 13C6-Pentachlorophenol	32.0	G	50-150	%	24-JAN-20	11-FEB-20	R5008427
Note: There is low recovery of 13C6-Pentachlorophenol. Detection limit has been raised due to the low recovery.							
PCB congeners by SIM GC/LRMS							
Total PCB	<0.010		0.010	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	40.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	53.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	34.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	65.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	33.2		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	71.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	29.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	58.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	43.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	60.4		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-23 19-E2-FC-CH-051							
Sampled By: Client on 10-OCT-19 @ 16:30							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 118	51.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	58.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	59.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	71.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	57.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	60.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	61.8	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	56.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	58.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	57.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	60.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	50.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	57.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	51.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	47.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
beta-BHC	<0.017	[U]	0.017	ng/g	21-JAN-20	11-FEB-20	R5011480
delta-BHC	<0.017	[U]	0.017	ng/g	21-JAN-20	11-FEB-20	R5011480
gamma-BHC	<0.017	[U]	0.017	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor	0.00130	M,J,R	0.00053	ng/g	21-JAN-20	11-FEB-20	R5011480
Aldrin	<0.0021	[U]	0.0021	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor Epoxide	<0.0024	[U]	0.0024	ng/g	21-JAN-20	11-FEB-20	R5011480
trans-Chlordane	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
cis-Chlordane	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
Dieldrin	<0.0046	M,U	0.0046	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin	0.0071	M,J,R	0.0058	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin Aldehyde	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan I	<0.015	[U]	0.015	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan II	<0.029	[U]	0.029	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan Sulfate	<0.0035	[U]	0.0035	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDE	<0.0088	[U]	0.0088	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDD	<0.0041	[U]	0.0041	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDT	<0.013	[U]	0.013	ng/g	21-JAN-20	11-FEB-20	R5011480
Methoxychlor	<0.0039	[U]	0.0039	ng/g	21-JAN-20	11-FEB-20	R5011480
Mirex	0.00110	M,J,R	0.00029	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	72.0		16-129	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	71.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	93.0		14-136	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	97.0		40-151	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endrin, 13C12-	104.0		35-155	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	89.0		5-122	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	110.0		21-125	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	115.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Mirex, 13C10-	99.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	111.0		5-150	%	21-JAN-20	11-FEB-20	R5011480
Endrin ketone	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor Epoxide A	<0.018	[U]	0.018	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	78.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	118.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	89.0		11-120	%	21-JAN-20	11-FEB-20	R5011480

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-23 19-E2-FC-CH-051							
Sampled By: Client on 10-OCT-19 @ 16:30							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
Surrogate: delta-BHC, 13C6-	93.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.023	[U]	0.023	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,7,8-PeCDD	<0.010	[U]	0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,4,7,8-HxCDD	<0.0098	[U]	0.0098	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,6,7,8-HxCDD	<0.010	[U]	0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,7,8,9-HxCDD	0.0110	M,J,R	0.0099	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDD	0.053	[J]	0.011	pg/g	22-JAN-20	28-JAN-20	R4982112
OCDD	0.239	M,J,B	0.011	pg/g	22-JAN-20	28-JAN-20	R4982112
2,3,7,8-TCDF	<0.017	M,U	0.017	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,7,8-PeCDF	<0.0095	[U]	0.0095	pg/g	22-JAN-20	28-JAN-20	R4982112
2,3,4,7,8-PeCDF	<0.0073	[U]	0.0073	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,4,7,8-HxCDF	<0.0082	[U]	0.0082	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,6,7,8-HxCDF	<0.0079	M,U	0.0079	pg/g	22-JAN-20	28-JAN-20	R4982112
2,3,4,6,7,8-HxCDF	<0.0078	M,U	0.0078	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,7,8,9-HxCDF	0.028	M,J,R	0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,4,6,7,8-HpCDF	0.0390	J,R	0.0074	pg/g	22-JAN-20	28-JAN-20	R4982112
1,2,3,4,7,8,9-HpCDF	<0.0088	[U]	0.0088	pg/g	22-JAN-20	28-JAN-20	R4982112
OCDF	0.209	M,J,B	0.012	pg/g	22-JAN-20	28-JAN-20	R4982112
Total-TCDD	<0.023	[U]	0.023	pg/g	22-JAN-20	28-JAN-20	R4982112
Total TCDD # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Total-PeCDD	<0.010	[U]	0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
Total PeCDD # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Total-HxCDD	<0.010	[U]	0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
Total HxCDD # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Total-HpCDD	0.077		0.011	pg/g	22-JAN-20	28-JAN-20	R4982112
Total HpCDD # Homologues	2				22-JAN-20	28-JAN-20	R4982112
Total-TCDF	<0.017	[U]	0.017	pg/g	22-JAN-20	28-JAN-20	R4982112
Total TCDF # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Total-PeCDF	<0.0095	[U]	0.0095	pg/g	22-JAN-20	28-JAN-20	R4982112
Total PeCDF # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Total-HxCDF	0.013		0.010	pg/g	22-JAN-20	28-JAN-20	R4982112
Total HxCDF # Homologues	1				22-JAN-20	28-JAN-20	R4982112
Total-HpCDF	<0.0088	[U]	0.0088	pg/g	22-JAN-20	28-JAN-20	R4982112
Total HpCDF # Homologues	0				22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDD	75.0		25-164	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDD	86.0		25-181	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	83.0		32-141	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	78.0		28-130	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	82.0		23-140	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-OCDD	89.0		17-157	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-2,3,7,8-TCDF	74.0		24-169	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8-PeCDF	79.0		21-192	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-2,3,4,7,8-PeCDF	83.0		21-178	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	79.0		26-152	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	77.0		26-123	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	78.0		29-147	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	73.0		28-136	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	80.0		28-143	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	86.0		26-138	%	22-JAN-20	28-JAN-20	R4982112
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		31-197	%	22-JAN-20	28-JAN-20	R4982112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-23 19-E2-FC-CH-051							
Sampled By: Client on 10-OCT-19 @ 16:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Lower Bound PCDD/F TEQ (WHO 2005)	0.000659			pg/g	22-JAN-20	28-JAN-20	R4982112
Mid Point PCDD/F TEQ (WHO 2005)	0.0258			pg/g	22-JAN-20	28-JAN-20	R4982112
Upper Bound PCDD/F TEQ (WHO 2005)	0.0466			pg/g	22-JAN-20	28-JAN-20	R4982112
L2387288-24 19-E5-SS-CH-053							
Sampled By: Client on 09-OCT-19 @ 10:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	15.2		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.17		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0295		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	14.6		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	13700		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.19		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.09		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	58.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.50		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	7.0		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.317		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	6970		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	20.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	7.02		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	9.73		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	17000		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	12.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	17.6		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	5410		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	316		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.51		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	17.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	332		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	1500		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.28		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	53		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	14.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.172		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	128		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.03		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	32.6		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	48.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	1.2		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.246	M,J	0.074	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.150	M,J	0.056	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.18	M,J	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-24 19-E5-SS-CH-053							
Sampled By: Client on 09-OCT-19 @ 10:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,6,7,8-HxCDD	0.25	M,J,R	0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.34	M,J,R	0.10	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	4.32		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	21.1		0.21	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.228	M,J	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.187	M,J	0.070	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.313	M,J	0.060	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.300	M,J,B	0.084	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.201	M,J	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.270	J,R	0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.14	M,J	0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.58	[J]	0.058	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.110	M,J,R	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	2.00	[J]	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	1.18		0.074	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	2.14		0.056	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	2.11		0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	3				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	8.62		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	2.90		0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	4.70		0.070	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	1.46		0.13	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	2.17		0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	73.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	69.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	69.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	78.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	66.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	40.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	71.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	72.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	68.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	68.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	77.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	72.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	65.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	65.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	68.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.666			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.753			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.753			pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-25 19-E5-NG-CH-055							
Sampled By: Client on 09-OCT-19 @ 10:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	69.2		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	58.4		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	3480	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0250		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	0.0069		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	2810		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.72		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	59.8		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.024		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.079		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	21.7		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	0.034		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	10.1		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.275		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	8070		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0122		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.436		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.074		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	5.93		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	106		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	1.57		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	1.04		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2440		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	176		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	8.00		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.34		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	1540		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	9030		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	3.23		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.189		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	27		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	12.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0027		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0059		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.20		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	29.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.056	[U]	0.056	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.071	M,J,B	0.038	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.061	M,J,R	0.053	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.120	M,J,R	0.051	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.081	M,J,R	0.052	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	1.46	[J]	0.037	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDD	4.73	[J]	0.052	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,7,8-TCDF	0.118	M,J	0.058	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.139	[J]	0.037	pg/g	23-JAN-20	28-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-25 19-E5-NG-CH-055							
Sampled By: Client on 09-OCT-19 @ 10:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,4,7,8-PeCDF	0.110	J,R	0.027	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.102	M,J	0.039	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.089	M,J	0.042	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.128	[J]	0.037	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.094	M,J,R	0.052	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.513	[J]	0.028	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.043	M,J,R	0.032	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDF	0.807	[J]	0.039	pg/g	23-JAN-20	28-JAN-20	R4985267
Total-TCDD	1.08		0.056	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDD # Homologues	5				23-JAN-20	28-JAN-20	R4985267
Total-PeCDD	1.23		0.038	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDD # Homologues	3				23-JAN-20	28-JAN-20	R4985267
Total-HxCDD	1.18		0.053	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-HpCDD	3.53		0.037	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-TCDF	2.53		0.058	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDF # Homologues	11				23-JAN-20	28-JAN-20	R4985267
Total-PeCDF	1.69		0.037	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDF # Homologues	5				23-JAN-20	28-JAN-20	R4985267
Total-HxCDF	0.930		0.052	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDF # Homologues	5				23-JAN-20	28-JAN-20	R4985267
Total-HpCDF	0.678		0.032	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDF # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	68.0		25-164	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	78.0		25-181	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	67.0		32-141	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	68.0		28-130	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	68.0		23-140	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-OCDD	69.0		17-157	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	67.0		24-169	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	69.0		21-192	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	72.0		21-178	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	66.0		26-123	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	69.0		29-147	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	62.0		28-136	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	65.0		28-143	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	76.0		26-138	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-197	%	23-JAN-20	28-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.140			pg/g	23-JAN-20	28-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.237			pg/g	23-JAN-20	28-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.265			pg/g	23-JAN-20	28-JAN-20	R4985267
L2387288-26 19-E5-SB-CH-057							
Sampled By: Client on 09-OCT-19 @ 10:15							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	57.8		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	55.7		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	62	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-26 19-E5-SB-CH-057							
Sampled By: Client on 09-OCT-19 @ 10:15							
Matrix: Plant Tissue							
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4220		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	0.469		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	39.4		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0361		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2790		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0240		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.103		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	14.9		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	66.9		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3270		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	24.9		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	20.8		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.23		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	7090		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	20500		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	16.7		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.277		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	2.12		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	0.0036		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	43.8		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.25	[U]	0.25	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.14	[U]	0.14	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.13	[U]	0.13	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.12	[U]	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	<0.12	[U]	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.190	M,J,R	0.097	pg/g	23-JAN-20	30-JAN-20	R4985267
OCDD	0.28	M,J,R	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,7,8-TCDF	0.19	M,J	0.15	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.25	M,J	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.18	M,J,R	0.10	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.11	[U]	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.11	[U]	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.20	M,J	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	<0.16	[U]	0.16	pg/g	23-JAN-20	30-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-26 19-E5-SB-CH-057							
Sampled By: Client on 09-OCT-19 @ 10:15							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
1,2,3,4,6,7,8-HpCDF	0.471	M,J	0.081	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.097	[U]	0.097	pg/g	23-JAN-20	30-JAN-20	R4985267
OCDF	0.62	M,J	0.13	pg/g	23-JAN-20	30-JAN-20	R4985267
Total-TCDD	<0.25	[U]	0.25	pg/g	23-JAN-20	30-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	30-JAN-20	R4985267
Total-PeCDD	<0.14	[U]	0.14	pg/g	23-JAN-20	30-JAN-20	R4985267
Total PeCDD # Homologues	0				23-JAN-20	30-JAN-20	R4985267
Total-HxCDD	<0.13	[U]	0.13	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HxCDD # Homologues	0				23-JAN-20	30-JAN-20	R4985267
Total-HpCDD	0.156		0.097	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HpCDD # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Total-TCDF	0.40		0.15	pg/g	23-JAN-20	30-JAN-20	R4985267
Total TCDF # Homologues	2				23-JAN-20	30-JAN-20	R4985267
Total-PeCDF	0.94		0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
Total PeCDF # Homologues	3				23-JAN-20	30-JAN-20	R4985267
Total-HxCDF	0.20		0.16	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Total-HpCDF	0.471		0.097	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HpCDF # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	56.0		25-164	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	60.0		25-181	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	64.0		32-141	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	60.0		28-130	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	61.0		23-140	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-OCDD	54.0		17-157	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	64.0		24-169	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	65.0		21-192	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	61.0		21-178	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	70.0		26-152	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	66.0		26-123	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	64.0		29-147	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	57.0		28-136	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	65.0		28-143	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	67.0		26-138	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	73.0		31-197	%	23-JAN-20	30-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0517			pg/g	23-JAN-20	30-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.341	0		pg/g	23-JAN-20	30-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.574			pg/g	23-JAN-20	30-JAN-20	R4985267
L2387288-27 19-E6-SS-CH-059							
Sampled By: Client on 14-AUG-19 @ 12:30							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	16.3		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	3.58		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0548		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	15.5		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	16000		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.30		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.90		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-27 19-E6-SS-CH-059							
Sampled By: Client on 14-AUG-19 @ 12:30							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Barium (Ba)	73.7		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.65		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	11.7		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.449		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	20200		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	25.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	7.88		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	15.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	19500		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	14.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	21.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	10200		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	378		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	2.33		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	23.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	438		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	2290		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.42		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	80		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	36.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.221		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	143		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.11		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	35.6		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	63.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.1		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	2.01		0.012	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	53.7		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	67.2		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	50.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	91.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	49.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	95.7		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	45.5		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	84.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	66.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	84.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	74.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	84.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	75.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	99.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	75.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	82.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	87.4	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	78.6		10-145	%	22-JAN-20	28-JAN-20	R4996239

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-27 19-E6-SS-CH-059							
Sampled By: Client on 14-AUG-19 @ 12:30							
Matrix: Soil							
CARB428 PCB TOTALS							
Surrogate: 13C12 PCB 169	80.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	76.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	77.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	68.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	76.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	67.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	60.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0055	[U]	0.0055	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.0074	[U]	0.0074	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.0075	M,U	0.0075	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	0.0400	J,R	0.0071	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	0.00240	M,J,R	0.00031	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.00076	[U]	0.00076	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0167	[J]	0.00074	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	0.0097	M,J	0.0074	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	0.0120	M,J,R	0.0071	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	0.0230	M,J	0.0025	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	<0.0064	M,U	0.0064	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.0049	[U]	0.0049	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.0051	[U]	0.0051	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.0091	[U]	0.0091	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0011	[U]	0.0011	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.306		0.0030	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	0.0300	[J]	0.0025	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	0.265		0.0075	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	0.0096	M,J,R	0.0029	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	0.00859	[J]	0.00031	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	82.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	81.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	91.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	89.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	93.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	98.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	99.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	96.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.0057	[U]	0.0057	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	109.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	84.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	105.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	98.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	99.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.417	[J]	0.091	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.263	[J]	0.086	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.246	[J]	0.096	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.507	M,J	0.089	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.516	M,J	0.092	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	8.46		0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	57.8		0.26	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.295	M,J	0.087	pg/g	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-27 19-E6-SS-CH-059							
Sampled By: Client on 14-AUG-19 @ 12:30							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,7,8-PeCDF	0.386	M,J	0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.484	[J]	0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.66	M,J	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.42	M,J,R	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.51	[J]	0.11	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.16	M,J	0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	3.22		0.081	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.213	[J]	0.094	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	5.15	[J]	0.090	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	3.63		0.091	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	9				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	3.73		0.086	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	7.89		0.096	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	17.3		0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	6.17		0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	12				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	6.59		0.077	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	11				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	4.46		0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	5.32		0.094	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	4				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	73.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	65.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	75.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	68.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	43.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	71.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	71.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	75.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	71.0		29-147	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	64.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	64.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	72.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	73.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.26			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.31			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.31			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-28 19-E6-NG-CH-061							
Sampled By: Client on 14-AUG-19 @ 12:45							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	50.6		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	51.7		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	8770	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-28 19-E6-NG-CH-061							
Sampled By: Client on 14-AUG-19 @ 12:45							
Matrix: Plant Tissue							
Mercury (Hg)-Total	0.0998		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	0.0261		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	2270		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.35		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	40.8		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.055		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.202		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	6.33		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	0.086		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	15.9		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.981		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5730		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0216		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.457		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.099		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	3.82		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	84.9		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	6.94		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	2.88		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1720		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	64.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	9.90		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.64		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	625		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	12200		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	2.09		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.322		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	79		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	33.1		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0178		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.18		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0077		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.15		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	29.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	0.426		0.018	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	39.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	57.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	35.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	77.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	33.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	80.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	32.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	68.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	48.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	65.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	56.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	64.9		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-28 19-E6-NG-CH-061							
Sampled By: Client on 14-AUG-19 @ 12:45							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 105	65.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	83.7	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	59.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	65.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	72.3	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	62.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	72.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	60.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	63.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	54.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	57.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	54.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	48.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.34	[U]	0.34	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.49	[U]	0.49	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.47	[U]	0.47	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.45	[U]	0.45	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.028	[U]	0.028	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.079	[U]	0.079	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.11	[U]	0.11	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.32	[U]	0.32	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.30	[U]	0.30	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	<0.31	M,U	0.31	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.43	[U]	0.43	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.19	[U]	0.19	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.46	[U]	0.46	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<1.1	[U]	1.1	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.25	[U]	0.25	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	0.35	M,J,R	0.32	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.34	[U]	0.34	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.37	[U]	0.37	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.26	[U]	0.26	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	<0.017	[U]	0.017	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	49.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	38.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	63.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	61.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	59.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	55.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	72.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	52.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	51.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	58.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.59	[U]	0.59	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<0.81	[U]	0.81	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	51.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	48.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	52.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	57.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-28 19-E6-NG-CH-061							
Sampled By: Client on 14-AUG-19 @ 12:45							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.090	[U]	0.090	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.089	M,J,B	0.050	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.069	M,J,R	0.061	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.084	M,J,R	0.062	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.095	M,J	0.061	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	1.40	[J]	0.051	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDD	7.24	[J]	0.046	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,7,8-TCDF	<0.078	M,U	0.078	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.074	M,J	0.040	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.031	[U]	0.031	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.058	[U]	0.058	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.058	[U]	0.058	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.078	M,U	0.078	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	<0.076	[U]	0.076	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.673	[J]	0.031	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.036	[U]	0.036	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDF	1.92	[J]	0.049	pg/g	23-JAN-20	28-JAN-20	R4985267
Total-TCDD	<0.090	[U]	0.090	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	28-JAN-20	R4985267
Total-PeCDD	0.323		0.050	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-HxCDD	2.18		0.062	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDD # Homologues	3				23-JAN-20	28-JAN-20	R4985267
Total-HpCDD	3.62		0.051	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-TCDF	0.092		0.078	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDF # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-PeCDF	0.074		0.040	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-HxCDF	0.097		0.078	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-HpCDF	1.34		0.036	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDF # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	78.0		25-164	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	90.0		25-181	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	77.0		32-141	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	82.0		23-140	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-OCDD	75.0		17-157	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	77.0		24-169	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	82.0		21-192	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	87.0		21-178	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	80.0		26-152	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	76.0		26-123	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	67.0		29-147	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	76.0		28-136	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	80.0		28-143	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	88.0		26-138	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	84.0		31-197	%	23-JAN-20	28-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.124			pg/g	23-JAN-20	28-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.206			pg/g	23-JAN-20	28-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-28 19-E6-NG-CH-061							
Sampled By: Client on 14-AUG-19 @ 12:45							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Upper Bound PCDD/F TEQ (WHO 2005)	0.274			pg/g	23-JAN-20	28-JAN-20	R4985267
L2387288-29 19-E7-SS-CH-303							
Sampled By: Client on 09-OCT-19 @ 13:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	17.9		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	14.1		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	3.85		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0355		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	17.7		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	19400		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.23		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	6.35		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	89.7		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.77		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	10.7		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.332		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	5770		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	26.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	9.88		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	14.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	21800		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	14.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	24.9		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	6300		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	365		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.68		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	25.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	537		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	2500		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.34		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	60		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	18.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.231		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	142		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.45		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	40.1		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	55.5		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	1.9		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	0.529		0.012	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	44.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	59.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	42.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	85.2		5-145	%	22-JAN-20	28-JAN-20	R4996239

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-29 19-E7-SS-CH-303							
Sampled By: Client on 09-OCT-19 @ 13:00							
Matrix: Soil							
CARB428 PCB TOTALS							
Surrogate: 13C12 PCB 19	42.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	93.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	40.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	79.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	59.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	76.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	68.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	76.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	73.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	97.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	72.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	78.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	80.8	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	72.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	82.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	74.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	75.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	76.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	77.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	76.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	71.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0081	[U]	0.0081	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.010	[U]	0.010	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	0.00120	M,J,R	0.00046	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	0.223		0.00071	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0144	[J]	0.00093	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	<0.0052	[U]	0.0052	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	<0.0050	[U]	0.0050	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	2.13		0.0063	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	<0.019	M,U	0.019	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.0068	[U]	0.0068	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.010	M,U	0.010	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0020	[U]	0.0020	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.198		0.0040	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	0.0058	M,J	0.0040	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	0.210		0.0075	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	0.0077	M,J,R	0.0031	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	<0.00045	[U]	0.00045	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	64.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	72.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	79.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	71.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	79.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	85.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	77.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	85.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.0071	[U]	0.0071	ng/g	22-JAN-20	11-FEB-20	R5007833

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-29 19-E7-SS-CH-303							
Sampled By: Client on 09-OCT-19 @ 13:00							
Matrix: Soil							
OC Pesticides by Method 1699							
Surrogate: 4,4'-DDD, 13C12-	86.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	67.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	81.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	75.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	75.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.211	M,J	0.075	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.213	[J]	0.061	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.227	[J]	0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.493	M,J	0.076	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.451	M,J	0.080	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	10.4		0.18	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDD	73.2		0.30	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,7,8-TCDF	0.478	[J]	0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.21	M,J,R	0.14	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.60	[J]	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.382	M,J,B	0.067	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.309	M,J	0.065	pg/g	21-JAN-20	24-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.588	[J]	0.069	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.130	M,J,R	0.098	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	3.22		0.094	pg/g	21-JAN-20	24-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.18	M,J,R	0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
OCDF	6.12	M	0.15	pg/g	21-JAN-20	24-JAN-20	R4981388
Total-TCDD	1.80		0.075	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDD # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-PeCDD	1.98		0.061	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	24-JAN-20	R4981388
Total-HxCDD	6.65		0.087	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDD # Homologues	6				21-JAN-20	24-JAN-20	R4981388
Total-HpCDD	19.8		0.18	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Total-TCDF	5.86		0.083	pg/g	21-JAN-20	24-JAN-20	R4981388
Total TCDF # Homologues	8				21-JAN-20	24-JAN-20	R4981388
Total-PeCDF	7.50		0.14	pg/g	21-JAN-20	24-JAN-20	R4981388
Total PeCDF # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HxCDF	5.54		0.098	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	24-JAN-20	R4981388
Total-HpCDF	6.34		0.12	pg/g	21-JAN-20	24-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	68.0		25-164	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	67.0		25-181	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	60.0		32-141	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	72.0		28-130	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	62.0		23-140	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-OCDD	33.0		17-157	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	66.0		24-169	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	68.0		24-185	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	64.0		21-178	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	61.0		26-152	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	69.0		26-123	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	65.0		29-147	%	21-JAN-20	24-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-29 19-E7-SS-CH-303							
Sampled By: Client on 09-OCT-19 @ 13:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	59.0		28-136	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	58.0		28-143	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	63.0		26-138	%	21-JAN-20	24-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	73.0		35-197	%	21-JAN-20	24-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.06			pg/g	21-JAN-20	24-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	24-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	24-JAN-20	R4981388
L2387288-30 19-E7-NG-CH-305							
Sampled By: Client on 09-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	69.3		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	72.0		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	11500	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0157		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	3800		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	0.32		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	50.4		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.012		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.036		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	10.8		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	9.1		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0661		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5260		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0092		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.391		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.038		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	6.13		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	79.9		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.247		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	3080		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	17.4		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	3.76		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.56		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	3220		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	23000		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	7.07		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.110		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	24		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	13.8		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0022		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0097		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.14		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-30 19-E7-NG-CH-305							
Sampled By: Client on 09-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Zinc (Zn)-Total	19.9		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	<0.020		0.020	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	34.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	48.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	31.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	66.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	29.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	70.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	28.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	63.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	44.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	63.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	54.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	61.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	61.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	85.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	56.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	65.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	60.4	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	59.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	65.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	59.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	62.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	55.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	60.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	56.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	66.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.37	[U]	0.37	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.51	[U]	0.51	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.46	[U]	0.46	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.42	[U]	0.42	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.037	[U]	0.037	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.054	[U]	0.054	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.046	[U]	0.046	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.29	[U]	0.29	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.28	[U]	0.28	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.21	M,J	0.11	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.19	[U]	0.19	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.30	[U]	0.30	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.23	[U]	0.23	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<0.65	[U]	0.65	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.18	[U]	0.18	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	<0.24	M,U	0.24	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.17	[U]	0.17	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.48	[U]	0.48	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.20	[U]	0.20	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	0.027	M,J,R	0.016	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	40.0		16-129	%	21-JAN-20	12-FEB-20	R5011480

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-30 19-E7-NG-CH-305							
Sampled By: Client on 09-OCT-19 @ 13:30							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
Surrogate: Heptachlor, 13C10-	32.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	60.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	61.0	M	40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	52.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	56.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	69.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	47.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	46.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Endrin Ketone	<0.55	[U]	0.55	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<0.35	[U]	0.35	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	54.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	44.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	44.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	46.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	50.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.068	[U]	0.068	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.063	M,J,B	0.040	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.049	M,J,R	0.044	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.116	M,J	0.044	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.102	M,J	0.044	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.964	[J]	0.033	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDD	3.78	[J]	0.045	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,7,8-TCDF	0.151	M,J	0.056	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.088	M,J	0.030	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.056	M,J	0.023	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.052	M,J,R	0.035	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.062	M,J,R	0.036	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.065	M,J	0.035	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.062	M,J,R	0.046	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.353	[J]	0.023	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.041	M,J,R	0.026	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDF	0.713	[J]	0.035	pg/g	23-JAN-20	28-JAN-20	R4985267
Total-TCDD	1.02		0.068	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-PeCDD	1.32		0.040	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDD # Homologues	5				23-JAN-20	28-JAN-20	R4985267
Total-HxCDD	1.58		0.044	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDD # Homologues	4				23-JAN-20	28-JAN-20	R4985267
Total-HpCDD	2.51		0.033	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-TCDF	1.36		0.056	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDF # Homologues	9				23-JAN-20	28-JAN-20	R4985267
Total-PeCDF	0.662		0.030	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDF # Homologues	4				23-JAN-20	28-JAN-20	R4985267
Total-HxCDF	0.595		0.046	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDF # Homologues	3				23-JAN-20	28-JAN-20	R4985267
Total-HpCDF	0.502		0.026	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDF # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	72.0		25-164	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	83.0		25-181	%	23-JAN-20	28-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-30 19-E7-NG-CH-305							
Sampled By: Client on 09-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	73.0		32-141	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	73.0		28-130	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-140	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-OCDD	77.0		17-157	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	73.0		24-169	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		21-192	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	80.0		21-178	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	74.0		26-152	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	75.0		29-147	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	71.0		28-136	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	75.0		28-143	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	85.0		26-138	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		31-197	%	23-JAN-20	28-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.140			pg/g	23-JAN-20	28-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.197			pg/g	23-JAN-20	28-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.231			pg/g	23-JAN-20	28-JAN-20	R4985267
L2387288-31 19-E7-SB-CH-300							
Sampled By: Client on 01-OCT-19 @ 12:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	16.0		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	14.6		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	66	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	3520		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	0.901		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	33.2		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0587		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2630		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0118		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.138		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	10.1		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	57.1		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3070		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	25.9		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	16.6		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.05		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	6640		10	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-31 19-E7-SB-CH-300							
Sampled By: Client on 01-OCT-19 @ 12:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Potassium (K)-Total	20100		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	11.1		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.259		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	3.93		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	30.7		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chlorophenols as acetate derivatives							
Pentachlorophenol	<2.5	[U]	2.5	ng/g	24-JAN-20	11-FEB-20	R5008427
Surrogate: 13C6-Pentachlorophenol	5.0	G	50-150	%	24-JAN-20	11-FEB-20	R5008427
Note: There is low recovery of 13C6-Pentachlorophenol. Detection limit has been raised due to the low recovery.							
PCB congeners by SIM GC/LRMS							
Total PCB	0.277		0.010	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	40.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	52.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	36.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	74.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	37.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	83.0		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	34.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	68.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	48.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	70.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	61.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	67.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	68.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	95.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	67.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	73.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	73.7	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	61.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	74.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	68.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	76.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	64.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	64.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	67.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	60.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
beta-BHC	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
delta-BHC	<0.014	[U]	0.014	ng/g	21-JAN-20	11-FEB-20	R5011480
gamma-BHC	<0.013	[U]	0.013	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor	0.00200	M,J,R	0.00090	ng/g	21-JAN-20	11-FEB-20	R5011480
Aldrin	<0.0013	[U]	0.0013	ng/g	21-JAN-20	11-FEB-20	R5011480

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-31 19-E7-SB-CH-300							
Sampled By: Client on 01-OCT-19 @ 12:30							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
Heptachlor Epoxide	0.0195	M,J	0.0021	ng/g	21-JAN-20	11-FEB-20	R5011480
trans-Chlordane	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
cis-Chlordane	<0.011	[U]	0.011	ng/g	21-JAN-20	11-FEB-20	R5011480
Dieldrin	0.0853	M,J	0.0076	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin	<0.0095	[U]	0.0095	ng/g	21-JAN-20	11-FEB-20	R5011480
Endrin Aldehyde	<0.0037	[U]	0.0037	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan I	<0.0077	[U]	0.0077	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan II	<0.015	[U]	0.015	ng/g	21-JAN-20	11-FEB-20	R5011480
Endosulfan Sulfate	<0.0049	[U]	0.0049	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDE	<0.0083	[U]	0.0083	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDD	<0.0068	[U]	0.0068	ng/g	21-JAN-20	11-FEB-20	R5011480
4,4-DDT	<0.012	[U]	0.012	ng/g	21-JAN-20	11-FEB-20	R5011480
Methoxychlor	<0.0059	[U]	0.0059	ng/g	21-JAN-20	11-FEB-20	R5011480
Mirex	0.00140	M,J,R	0.00064	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	55.0		16-129	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	53.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	67.0		14-136	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	70.0		40-151	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endrin, 13C12-	74.0		35-155	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	65.0		5-122	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	82.0		21-125	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	74.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Mirex, 13C10-	53.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	74.0		5-150	%	21-JAN-20	11-FEB-20	R5011480
Endrin ketone	<0.013	[U]	0.013	ng/g	21-JAN-20	11-FEB-20	R5011480
Heptachlor Epoxide A	<0.016	[U]	0.016	ng/g	21-JAN-20	11-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	61.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	61.0		5-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	69.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	71.0		11-120	%	21-JAN-20	11-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.020	[U]	0.020	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.0080	[U]	0.0080	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.0077	[U]	0.0077	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.0146	M,J	0.0078	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.023	M,J,B	0.011	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDD	0.091	[J]	0.015	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,7,8-TCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.0140	M,J	0.0092	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.0068	[U]	0.0068	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.0076	M,U	0.0076	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.0079	[U]	0.0079	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.0084	[U]	0.0084	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.018	M,J	0.011	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.0140	M,J,R	0.0083	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDF	0.099	[J]	0.012	pg/g	23-JAN-20	28-JAN-20	R4985267
Total-TCDD	<0.020	[U]	0.020	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	28-JAN-20	R4985267
Total-PeCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	28-JAN-20	R4985267

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-31 19-E7-SB-CH-300							
Sampled By: Client on 01-OCT-19 @ 12:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total PeCDD # Homologues	0				23-JAN-20	28-JAN-20	R4985267
Total-HxCDD	0.0146		0.0080	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDD # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-HpCDD	0.040		0.011	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-TCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	28-JAN-20	R4985267
Total-PeCDF	0.0140		0.0092	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-HxCDF	0.018		0.011	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	28-JAN-20	R4985267
Total-HpCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	63.0		25-164	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	70.0		32-141	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	68.0		28-130	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	69.0		23-140	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-OCDD	62.0		17-157	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	63.0		24-169	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	67.0		21-192	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	71.0		21-178	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	69.0		26-152	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	70.0		26-123	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	67.0		29-147	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	63.0		28-136	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	69.0		28-143	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	69.0		26-138	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	64.0		31-197	%	23-JAN-20	28-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.00392			pg/g	23-JAN-20	28-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0246			pg/g	23-JAN-20	28-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.0452			pg/g	23-JAN-20	28-JAN-20	R4985267
L2387288-32 19-S1-SS-CH-063							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	18.0		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	5.3		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.43		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0411		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	17.9		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	22300		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.27		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	7.70		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	115		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.95		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	16.6		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.464		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	15500		50	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-32 19-S1-SS-CH-063							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Chromium (Cr)	32.2		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	13.0		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	16.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	24900		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	14.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	30.7		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	11000		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	766		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.34		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	33.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	619		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	3280		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.33		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	88		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	24.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.255		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	193		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.29		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	48.0		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	63.7		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.8		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.525	M,J	0.062	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.254	M,J	0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.185	M,J	0.084	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.290	M,J,R	0.080	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.345	M,J	0.081	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	6.62		0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDD	36.7		0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,7,8-TCDF	0.366	[J]	0.098	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.230	M,J	0.063	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.421	M,J	0.052	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.336	M,J,B	0.042	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.207	M,J	0.041	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.386	[J]	0.043	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.089	M,J	0.061	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.64	[J]	0.067	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.153	M,J	0.088	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDF	2.13	[J]	0.072	pg/g	21-JAN-20	25-JAN-20	R4981388
Total-TCDD	2.90		0.062	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDD # Homologues	8				21-JAN-20	25-JAN-20	R4981388
Total-PeCDD	1.94		0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HxCDD	5.58		0.084	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HpCDD	11.6		0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	25-JAN-20	R4981388

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-32 19-S1-SS-CH-063							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Total-TCDF	5.14		0.098	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDF # Homologues	10				21-JAN-20	25-JAN-20	R4981388
Total-PeCDF	5.13		0.063	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDF # Homologues	8				21-JAN-20	25-JAN-20	R4981388
Total-HxCDF	2.89		0.061	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	25-JAN-20	R4981388
Total-HpCDF	2.83		0.088	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	78.0		25-164	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	76.0		25-181	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	67.0		32-141	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	77.0		28-130	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	71.0		23-140	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-OCDD	45.0		17-157	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	75.0		24-169	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		24-185	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	70.0		21-178	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	76.0		26-123	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	70.0		29-147	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	64.0		28-136	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	63.0		28-143	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	69.0		26-138	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	82.0		35-197	%	21-JAN-20	25-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.20			pg/g	21-JAN-20	25-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.23			pg/g	21-JAN-20	25-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.23			pg/g	21-JAN-20	25-JAN-20	R4981388
L2387288-33 19-S1-SD-CH-065							
Sampled By: Client on 10-OCT-19 @ 11:15							
Matrix: Sediment							
Miscellaneous Parameters							
Chloride (Cl)	16.9		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	3.97		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0411		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	29.4		0.25	%		03-FEB-20	R4987031
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15100		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.34		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	4.03		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	70.4		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.68		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	20.3		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.373		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	77000		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	28.8		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	8.45		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	17.8		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	19200		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	12.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	26.7		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-33 19-S1-SD-CH-065							
Sampled By: Client on 10-OCT-19 @ 11:15							
Matrix: Sediment							
Metals in Soil by CRC ICPMS							
Magnesium (Mg)	25800		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	247		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	2.76		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	26.2		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	569		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	3050		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.43		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	152		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	64.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.251		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	180		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.19		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	33.8		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	56.4		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	3.7		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
L2387288-34 19-S1-NG-CH-069							
Sampled By: Client on 10-OCT-19 @ 11:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	52.2		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	52.5		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	5500	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0164		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	1950		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	1.98		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	158		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.014		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.062		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	11.0		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	9.2		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.127		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5100		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0186		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.431		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.082		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	4.42		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	186		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.393		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2170		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	20.4		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	3.17		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-34 19-S1-NG-CH-069							
Sampled By: Client on 10-OCT-19 @ 11:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Nickel (Ni)-Total	0.68		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2700		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	12100		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	2.24		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	1.06		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	29		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	8.24		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0031		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.11		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0123		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.38		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	20.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.070	[U]	0.070	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.132	M,J,B	0.057	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.088	M,J,R	0.057	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.188	[J]	0.057	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.166	M,J	0.056	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	1.66	[J]	0.035	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDD	4.15	[J]	0.053	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,7,8-TCDF	0.140	M,J	0.059	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.112	M,J	0.038	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.056	M,J	0.028	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.087	M,J	0.053	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.061	M,J,R	0.055	pg/g	23-JAN-20	28-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.065	M,J,R	0.053	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.069	J,R	0.068	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.334	[J]	0.026	pg/g	23-JAN-20	28-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.050	M,J,R	0.031	pg/g	23-JAN-20	28-JAN-20	R4985267
OCDF	0.704	[J]	0.046	pg/g	23-JAN-20	28-JAN-20	R4985267
Total-TCDD	0.449		0.070	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDD # Homologues	3				23-JAN-20	28-JAN-20	R4985267
Total-PeCDD	0.833		0.057	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-HxCDD	4.22		0.057	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDD # Homologues	5				23-JAN-20	28-JAN-20	R4985267
Total-HpCDD	4.60		0.035	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Total-TCDF	1.10		0.059	pg/g	23-JAN-20	28-JAN-20	R4985267
Total TCDF # Homologues	6				23-JAN-20	28-JAN-20	R4985267
Total-PeCDF	0.923		0.038	pg/g	23-JAN-20	28-JAN-20	R4985267
Total PeCDF # Homologues	6				23-JAN-20	28-JAN-20	R4985267
Total-HxCDF	0.564		0.068	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HxCDF # Homologues	4				23-JAN-20	28-JAN-20	R4985267
Total-HpCDF	0.368		0.031	pg/g	23-JAN-20	28-JAN-20	R4985267
Total HpCDF # Homologues	2				23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	94.0		25-164	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	110.0		25-181	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	100.0		32-141	%	23-JAN-20	28-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-34 19-S1-NG-CH-069							
Sampled By: Client on 10-OCT-19 @ 11:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	90.0		28-130	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	100.0		23-140	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-OCDD	83.0		17-157	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	93.0		24-169	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	101.0		21-192	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	105.0		21-178	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	97.0		26-152	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	94.0		26-123	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	94.0		29-147	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	93.0		28-136	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	91.0		28-143	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	100.0		26-138	%	23-JAN-20	28-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	101.0		31-197	%	23-JAN-20	28-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.232			pg/g	23-JAN-20	28-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.295			pg/g	23-JAN-20	28-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.330			pg/g	23-JAN-20	28-JAN-20	R4985267
L2387288-35 19-S1-SB-CH-071							
Sampled By: Client on 10-OCT-19 @ 11:45							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	19.8		0.50	%		10-FEB-20	R4993331
Chloride (Cl)	66	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	13-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	3900		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	0.728		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	34.1		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0537		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2640		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0116		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.171		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	12.3		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	68.3		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	2850		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	25.9		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	9.63		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.80		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	7330		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	21000		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	11.1		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-35 19-S1-SB-CH-071							
Sampled By: Client on 10-OCT-19 @ 11:45							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Selenium (Se)-Total	0.143		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	2.35		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	34.9		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.0090	[U]	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.0096	M,U	0.0096	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.0087	M,U	0.0087	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.0120	M,J,R	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.0427	M,J,B	0.0083	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	0.194	[J]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	<0.013	[U]	0.013	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.015	M,J,R	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.0078	M,U	0.0078	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.0100	M,J,R	0.0073	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.0081	M,J,R	0.0074	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.0107	M,J	0.0070	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.0160	M,J,R	0.0091	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.0240	M,J	0.0086	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.0110	M,J,R	0.0094	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.0948	[J]	0.0087	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	<0.0090	[U]	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	<0.0096	[U]	0.0096	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	0.0427		0.0083	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	<0.013	[U]	0.013	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	0.0107		0.0091	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	0.0240		0.0094	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	67.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	79.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	68.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	68.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	70.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	70.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	66.0		24-169	%	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-35 19-S1-SB-CH-071							
Sampled By: Client on 10-OCT-19 @ 11:45							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	74.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	64.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	63.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	67.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	63.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	68.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	73.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.00182			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0232			pg/g	23-JAN-20	29-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.0395			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-36 19-S2-SS-CH-073							
Sampled By: Client on 10-OCT-19 @ 10:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	18.0		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.05		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0443		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	17.9		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	22900		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.24		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	7.18		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	110		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.94		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	0.22		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	12.6		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.417		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	7730		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	32.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	13.3		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	15.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	26600		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	15.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	31.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	7360		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	585		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	2.16		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	28.4		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	497		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	3000		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.38		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	68		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	22.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.259		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	155		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-36 19-S2-SS-CH-073							
Sampled By: Client on 10-OCT-19 @ 10:00							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.55		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	45.6		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	66.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.6		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.39	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.192	[J]	0.055	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.21	M,J	0.11	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.39	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.40	M,J,R	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	5.15		0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDD	21.7		0.32	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,7,8-TCDF	0.37	M,J	0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.23	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.504	[J]	0.085	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.44	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.285	M,J	0.099	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.42	M,J	0.11	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	<0.15	[U]	0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.94	[J]	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.22	M,J,R	0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDF	1.69	M,J	0.16	pg/g	21-JAN-20	25-JAN-20	R4981388
Total-TCDD	1.52		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDD # Homologues	4				21-JAN-20	25-JAN-20	R4981388
Total-PeCDD	1.85		0.055	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HxCDD	5.27		0.11	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HpCDD	9.95		0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Total-TCDF	5.89		0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDF # Homologues	10				21-JAN-20	25-JAN-20	R4981388
Total-PeCDF	6.50		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	25-JAN-20	R4981388
Total-HxCDF	3.49		0.15	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	25-JAN-20	R4981388
Total-HpCDF	2.70		0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	77.0		25-164	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	75.0		25-181	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	70.0		32-141	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	83.0		28-130	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	73.0		23-140	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-OCDD	41.0		17-157	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	73.0		24-169	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	76.0		24-185	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	73.0		21-178	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	72.0		26-152	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	78.0		26-123	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	75.0		29-147	%	21-JAN-20	25-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-36 19-S2-SS-CH-073							
Sampled By: Client on 10-OCT-19 @ 10:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	65.0		28-136	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	70.0		28-143	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	75.0		26-138	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	81.0		35-197	%	21-JAN-20	25-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.03			pg/g	21-JAN-20	25-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	25-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.08			pg/g	21-JAN-20	25-JAN-20	R4981388
L2387288-37 19-S2-NG-CH-075							
Sampled By: Client on 10-OCT-19 @ 10:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	60.7		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	56.8		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	5470	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0170		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	0.0053		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	2270		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	3.40		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	154		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	0.019		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.076		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	40.3		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	0.012		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.5		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.150		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	4570		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0259		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.494		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.064		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	7.17		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	189		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.739		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1770		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	17.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	1.83		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.35		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	3380		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	16600		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	4.46		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.259		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	16.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	0.0036		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	0.19		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0117		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.37		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-37 19-S2-NG-CH-075							
Sampled By: Client on 10-OCT-19 @ 10:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Zinc (Zn)-Total	17.2		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.054	[U]	0.054	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.055	M,J,R	0.027	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.072	J,B	0.034	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.115	[J]	0.034	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.092	M,J,R	0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	1.14	[J]	0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	4.13	[J]	0.032	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	0.091	M,J	0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.061	M,J,R	0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.052	M,J,R	0.026	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.054	M,J	0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.070	M,J	0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.073	M,J	0.035	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	<0.043	M,U	0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.267	[J]	0.024	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.023	[U]	0.023	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.788	[J]	0.022	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	0.196		0.054	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	1.05		0.027	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	5				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	2.42		0.034	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	4				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	2.97		0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	0.832		0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	7				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	0.523		0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	4				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	0.615		0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	6				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	0.420		0.024	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	72.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	80.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	71.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	70.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	74.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	72.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	69.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	74.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	69.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	66.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	70.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	70.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	65.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	78.0		26-138	%	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-37 19-S2-NG-CH-075							
Sampled By: Client on 10-OCT-19 @ 10:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0631			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.174			pg/g	23-JAN-20	29-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.203			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-38 19-S2-SB-CH-077							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	36.8		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	32.1		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	61	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	4380		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	1.16		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	35.5		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0369		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	3110		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0105		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.161		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	12.5		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	82.8		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3320		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	31.6		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	7.98		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.53		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	8420		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	25200		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	13.1		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.368		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	3.39		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	38.2		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-38 19-S2-SB-CH-077							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.025	[U]	0.025	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.040	M,J,R	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	0.193	[J]	0.021	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	<0.015	[U]	0.015	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.013	M,J,R	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.0090	[U]	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.018	M,J	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.018	M,J,R	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.024	M,J,R	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.024	M,J,R	0.016	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.123	[J]	0.019	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	<0.025	[U]	0.025	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	<0.015	[U]	0.015	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	0.018		0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	<0.016	[U]	0.016	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	65.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	72.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	70.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	70.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	66.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	66.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	67.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	70.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	70.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	70.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	70.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	67.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	69.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	75.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	78.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.00191			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0287			pg/g	23-JAN-20	29-JAN-20	R4985267

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-38 19-S2-SB-CH-077							
Sampled By: Client on 10-OCT-19 @ 11:00							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Upper Bound PCDD/F TEQ (WHO 2005)	0.0525			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-39 19-S4-SS-CH-087							
Sampled By: Client on 09-OCT-19 @ 14:00							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	21.2		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	8.8		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	3.87		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0450		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	20.9		0.25	%		11-FEB-20	R4994469
Metals in Soil by CRC ICPMS							
Aluminum (Al)	29600		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.20		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	5.19		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	122		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	1.17		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	0.21		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	20.1		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.280		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	10900		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	38.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	11.4		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	17.7		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	29600		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	15.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	41.7		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	9480		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	368		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	0.80		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	29.6		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	771		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	4430		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.33		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	81		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	33.7		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.247		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	122		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.27		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	49.7		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	77.8		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	3.1		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.244	M,J	0.060	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.316	M,J	0.065	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.328	M,J	0.061	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.682	M,J	0.056	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.679	M,J	0.058	pg/g	21-JAN-20	25-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-39 19-S4-SS-CH-087							
Sampled By: Client on 09-OCT-19 @ 14:00							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,4,6,7,8-HpCDD	13.7		0.17	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDD	73.7		0.25	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,7,8-TCDF	0.520	M,J,R	0.088	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.389	[J]	0.092	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.579	M,J	0.074	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.457	M,J	0.057	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.370	M,J	0.057	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.652	[J]	0.055	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.134	[J]	0.078	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	3.64		0.088	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.29	[J]	0.11	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDF	7.53		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total-TCDD	2.41		0.060	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDD # Homologues	7				21-JAN-20	25-JAN-20	R4981388
Total-PeCDD	3.58		0.065	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDD # Homologues	6				21-JAN-20	25-JAN-20	R4981388
Total-HxCDD	5.05		0.061	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HpCDD	22.7		0.17	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Total-TCDF	7.99		0.088	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDF # Homologues	11				21-JAN-20	25-JAN-20	R4981388
Total-PeCDF	7.93		0.092	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDF # Homologues	9				21-JAN-20	25-JAN-20	R4981388
Total-HxCDF	3.95		0.078	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDF # Homologues	6				21-JAN-20	25-JAN-20	R4981388
Total-HpCDF	7.49		0.11	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDF # Homologues	3				21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	82.0		25-164	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	80.0		25-181	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	69.0		32-141	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	87.0		28-130	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	73.0		23-140	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-OCDD	42.0		17-157	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	77.0		24-169	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	79.0		24-185	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	76.0		21-178	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	72.0		26-152	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	78.0		26-123	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	79.0		29-147	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	69.0		28-136	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	68.0		28-143	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	74.0		26-138	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	88.0		35-197	%	21-JAN-20	25-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	1.28			pg/g	21-JAN-20	25-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	1.33			pg/g	21-JAN-20	25-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	1.33			pg/g	21-JAN-20	25-JAN-20	R4981388
L2387288-40 19-S4-SD-CH-089							
Sampled By: Client on 09-OCT-19 @ 14:45							
Matrix: Soil							
Miscellaneous Parameters							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-40 19-S4-SD-CH-089							
Sampled By: Client on 09-OCT-19 @ 14:45							
Matrix: Soil							
Chloride (Cl)	27.1		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	4.32		0.20	mg/kg	03-FEB-20	11-FEB-20	R4994593
Mercury (Hg)	0.0366		0.0050	mg/kg	03-FEB-20	04-FEB-20	R4987948
Moisture	41.0		0.25	%		03-FEB-20	R4987031
Metals in Soil by CRC ICPMS							
Aluminum (Al)	24000		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Antimony (Sb)	0.23		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Arsenic (As)	4.45		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Barium (Ba)	115		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Beryllium (Be)	0.95		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Bismuth (Bi)	<0.20		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Boron (B)	25.7		5.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cadmium (Cd)	0.269		0.020	mg/kg	03-FEB-20	04-FEB-20	R4988988
Calcium (Ca)	73100		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Chromium (Cr)	35.9		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Cobalt (Co)	11.2		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Copper (Cu)	20.5		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Iron (Fe)	27100		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lead (Pb)	12.2		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Lithium (Li)	38.6		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Magnesium (Mg)	24200		20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Manganese (Mn)	374		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Molybdenum (Mo)	1.25		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Nickel (Ni)	32.2		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Phosphorus (P)	803		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Potassium (K)	4500		100	mg/kg	03-FEB-20	04-FEB-20	R4988988
Selenium (Se)	0.56		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Silver (Ag)	<0.10		0.10	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sodium (Na)	173		50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Strontium (Sr)	96.8		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Sulfur (S)	<1000		1000	mg/kg	03-FEB-20	04-FEB-20	R4988988
Thallium (Tl)	0.250		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tin (Sn)	<2.0		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Titanium (Ti)	217		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Tungsten (W)	<0.50		0.50	mg/kg	03-FEB-20	04-FEB-20	R4988988
Uranium (U)	1.52		0.050	mg/kg	03-FEB-20	04-FEB-20	R4988988
Vanadium (V)	44.3		0.20	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zinc (Zn)	69.4		2.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
Zirconium (Zr)	3.1		1.0	mg/kg	03-FEB-20	04-FEB-20	R4988988
L2387288-41 19-S4-NG-CH-093							
Sampled By: Client on 09-OCT-19 @ 14:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	70.0		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	68.5		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	12500	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0102		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	2650		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	2.12		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-41 19-S4-NG-CH-093							
Sampled By: Client on 09-OCT-19 @ 14:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	101		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.032		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	5.88		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	4.9		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0674		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5350		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0105		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.290		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.059		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	5.03		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	120		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.108		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2720		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	28.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.17		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.81		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	4150		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	25100		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	4.83		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.245		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	9.51		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0049		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.21		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	18.4		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.19	[U]	0.19	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.18	[U]	0.18	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.11	[U]	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.11	[U]	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	<0.11	[U]	0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	1.02	[J]	0.092	pg/g	23-JAN-20	30-JAN-20	R4985267
OCDD	3.37	[J]	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,7,8-TCDF	<0.14	[U]	0.14	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.104	M,J	0.082	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.095	M,J,R	0.068	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.091	[U]	0.091	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.094	[U]	0.094	pg/g	23-JAN-20	30-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.10	[U]	0.10	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	<0.12	[U]	0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.230	M,J,R	0.074	pg/g	23-JAN-20	30-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.093	[U]	0.093	pg/g	23-JAN-20	30-JAN-20	R4985267
OCDF	0.808	M,J	0.096	pg/g	23-JAN-20	30-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-41 19-S4-NG-CH-093							
Sampled By: Client on 09-OCT-19 @ 14:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total-TCDD	<0.19	[U]	0.19	pg/g	23-JAN-20	30-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	30-JAN-20	R4985267
Total-PeCDD	0.56		0.18	pg/g	23-JAN-20	30-JAN-20	R4985267
Total PeCDD # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Total-HxCDD	1.53		0.11	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HxCDD # Homologues	2				23-JAN-20	30-JAN-20	R4985267
Total-HpCDD	2.54		0.092	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	30-JAN-20	R4985267
Total-TCDF	0.52		0.14	pg/g	23-JAN-20	30-JAN-20	R4985267
Total TCDF # Homologues	2				23-JAN-20	30-JAN-20	R4985267
Total-PeCDF	0.104		0.082	pg/g	23-JAN-20	30-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Total-HxCDF	0.33		0.12	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	30-JAN-20	R4985267
Total-HpCDF	<0.093	[U]	0.093	pg/g	23-JAN-20	30-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	69.0		25-164	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	78.0		25-181	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	73.0		32-141	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	69.0		28-130	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	72.0		23-140	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-OCDD	59.0		17-157	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	78.0		24-169	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	82.0		21-192	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	81.0		21-178	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	82.0		26-152	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	78.0		26-123	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	70.0		29-147	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	73.0		28-136	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	76.0		28-143	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	77.0		26-138	%	23-JAN-20	30-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	71.0		31-197	%	23-JAN-20	30-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0146			pg/g	23-JAN-20	30-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.275	0		pg/g	23-JAN-20	30-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.504			pg/g	23-JAN-20	30-JAN-20	R4985267
L2387288-42 19-S4-SB-CH-095							
Sampled By: Client on 01-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	20.1		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	16.1		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	104	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	3790		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-42 19-S4-SB-CH-095							
Sampled By: Client on 01-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Barium (Ba)-Total	0.761		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	33.5		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0223		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2940		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	0.0104		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.111		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	10.8		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	55.3		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	2660		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	24.6		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	5.30		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	1.66		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	7550		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	21200		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	13.2		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	0.077		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	3.41		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	35.3		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.061	[U]	0.061	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.028	[U]	0.028	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.023	[U]	0.023	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.023	[U]	0.023	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	<0.023	[U]	0.023	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.038	M,J,R	0.018	pg/g	23-JAN-20	31-JAN-20	R4985267
OCDD	0.090	M,J,R	0.029	pg/g	23-JAN-20	31-JAN-20	R4985267
2,3,7,8-TCDF	<0.036	[U]	0.036	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,7,8-PeCDF	<0.021	[U]	0.021	pg/g	23-JAN-20	31-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.017	[U]	0.017	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.018	[U]	0.018	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.019	[U]	0.019	pg/g	23-JAN-20	31-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.018	[U]	0.018	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.032	M,J	0.024	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.036	M,J	0.025	pg/g	23-JAN-20	31-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.031	[U]	0.031	pg/g	23-JAN-20	31-JAN-20	R4985267
OCDF	0.055	M,J,R	0.023	pg/g	23-JAN-20	31-JAN-20	R4985267
Total-TCDD	<0.061	[U]	0.061	pg/g	23-JAN-20	31-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-PeCDD	<0.028	[U]	0.028	pg/g	23-JAN-20	31-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-42 19-S4-SB-CH-095							
Sampled By: Client on 01-OCT-19 @ 13:30							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total PeCDD # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-HxCDD	<0.023	[U]	0.023	pg/g	23-JAN-20	31-JAN-20	R4985267
Total HxCDD # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-HpCDD	<0.018	[U]	0.018	pg/g	23-JAN-20	31-JAN-20	R4985267
Total HpCDD # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-TCDF	<0.036	[U]	0.036	pg/g	23-JAN-20	31-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-PeCDF	<0.021	[U]	0.021	pg/g	23-JAN-20	31-JAN-20	R4985267
Total PeCDF # Homologues	0				23-JAN-20	31-JAN-20	R4985267
Total-HxCDF	0.032		0.024	pg/g	23-JAN-20	31-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	31-JAN-20	R4985267
Total-HpCDF	0.036		0.031	pg/g	23-JAN-20	31-JAN-20	R4985267
Total HpCDF # Homologues	1				23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	78.0		25-164	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	91.0		25-181	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	87.0		32-141	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	81.0		28-130	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	79.0		23-140	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-OCDD	75.0		17-157	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	88.0		24-169	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	95.0		21-192	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	94.0		21-178	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	96.0		26-152	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	88.0		26-123	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	92.0		29-147	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	83.0		28-136	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	86.0		28-143	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	85.0		26-138	%	23-JAN-20	31-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	86.0		31-197	%	23-JAN-20	31-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.00351			pg/g	23-JAN-20	31-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0595	0		pg/g	23-JAN-20	31-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.115			pg/g	23-JAN-20	31-JAN-20	R4985267
L2387288-43 19-D1-SS-CH-200							
Sampled By: Client on 08-OCT-19 @ 14:10							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	22.9		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	2.41		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0620		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	22.7		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	27500		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.32		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.17		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	117		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	1.21		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	0.24		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	18.4		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.463		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	5610		50	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-43 19-D1-SS-CH-200							
Sampled By: Client on 08-OCT-19 @ 14:10							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Chromium (Cr)	42.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	11.5		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	31.6		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	26100		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	16.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	35.6		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	7790		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	365		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.38		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	37.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	953		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	4350		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.56		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	68		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	23.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.242		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	166		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.96		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	49.8		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	82.9		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	5.8		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	0.749		0.013	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	54.3		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	67.8		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	46.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	91.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	44.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	100.2		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	41.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	88.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	61.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	85.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	75.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	84.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	82.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	108.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	76.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	84.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	89.7	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	83.0		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	89.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	80.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	81.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	73.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	78.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	73.4		10-145	%	22-JAN-20	28-JAN-20	R4996239

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-43 19-D1-SS-CH-200							
Sampled By: Client on 08-OCT-19 @ 14:10							
Matrix: Soil							
CARB428 PCB TOTALS							
Surrogate: 13C12 PCB 209	71.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0095	[U]	0.0095	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	0.00220	M,J,R	0.00050	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.00092	[U]	0.00092	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0090	M,J	0.0010	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	0.0171	M,J	0.0063	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	0.0109	M,J	0.0060	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	0.0308	M,J	0.0020	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	0.0068	M,J	0.0057	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.014	[U]	0.014	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	0.0949	M,J	0.0067	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.0094	[U]	0.0094	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0024	[U]	0.0024	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.109	[J]	0.0035	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	0.0073	M,J,R	0.0044	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	0.118	[J]	0.0072	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	<0.0038	[U]	0.0038	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	0.0130	[J]	0.00044	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	69.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	74.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	86.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	82.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	81.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	94.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	92.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	82.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.0079	[U]	0.0079	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	100.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	74.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	88.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	74.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	74.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.244	M,J	0.067	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.189	M,J	0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.20	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.346	M,J	0.096	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.358	M,J	0.097	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	4.72		0.090	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDD	21.6		0.20	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,7,8-TCDF	0.29	M,J	0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDF	0.243	M,J	0.095	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.465	[J]	0.077	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.328	M,J,B	0.069	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.202	M,J	0.066	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.369	[J]	0.074	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.11	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-43 19-D1-SS-CH-200							
Sampled By: Client on 08-OCT-19 @ 14:10							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,4,6,7,8-HpCDF	1.69	M,J	0.051	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.136	M,J	0.058	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDF	1.80	M,J,R	0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
Total-TCDD	1.25		0.067	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDD # Homologues	4				21-JAN-20	25-JAN-20	R4981388
Total-PeCDD	1.20		0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDD # Homologues	3				21-JAN-20	25-JAN-20	R4981388
Total-HxCDD	4.45		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HpCDD	9.38		0.090	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Total-TCDF	6.84		0.12	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDF # Homologues	13				21-JAN-20	25-JAN-20	R4981388
Total-PeCDF	5.24		0.095	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDF # Homologues	9				21-JAN-20	25-JAN-20	R4981388
Total-HxCDF	2.80		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	25-JAN-20	R4981388
Total-HpCDF	1.83		0.058	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDF # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	73.0		25-164	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	62.0		32-141	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	75.0		28-130	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	61.0		23-140	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-OCDD	34.0		17-157	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	69.0		24-169	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	71.0		24-185	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	69.0		21-178	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	69.0		26-123	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	66.0		29-147	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	61.0		28-136	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	55.0		28-143	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	65.0		26-138	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	77.0		35-197	%	21-JAN-20	25-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.872			pg/g	21-JAN-20	25-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.872			pg/g	21-JAN-20	25-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.872			pg/g	21-JAN-20	25-JAN-20	R4981388
L2387288-44 19-D2-SS-CH-201							
Sampled By: Client on 10-OCT-19 @ 15:15							
Matrix: Soil							
Miscellaneous Parameters							
% Moisture	19.5		0.10	%	21-JAN-20	22-JAN-20	R4974811
Chloride (Cl)	<5.0		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	2.30		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0716		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	20.5		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	15400		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.33		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.17		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-44 19-D2-SS-CH-201							
Sampled By: Client on 10-OCT-19 @ 15:15							
Matrix: Soil							
Metals in Soil by CRC ICPMS							
Barium (Ba)	76.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.60		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	8.6		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.371		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	6280		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	22.0		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	7.94		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	16.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	18500		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	23.7		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	20.9		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	4950		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	347		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	1.63		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	19.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	778		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	2320		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.37		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	50		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	19.9		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.198		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	100		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Uranium (U)	1.12		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	31.6		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	65.8		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	2.4		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	1.63		0.012	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	35.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	50.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	33.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	74.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	35.3		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	83.6		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	34.3		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	73.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	51.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	70.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	64.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	71.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	72.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	94.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	67.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	72.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	79.4	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	70.7		10-145	%	22-JAN-20	28-JAN-20	R4996239

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-44 19-D2-SS-CH-201							
Sampled By: Client on 10-OCT-19 @ 15:15							
Matrix: Soil							
CARB428 PCB TOTALS							
Surrogate: 13C12 PCB 169	77.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	70.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	71.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	65.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	69.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	65.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	64.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0062	[U]	0.0062	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.0084	[U]	0.0084	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.0083	[U]	0.0083	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.0083	[U]	0.0083	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	0.00140	M,J,R	0.00034	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.00095	[U]	0.00095	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	0.0166	[J]	0.00086	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	0.0056	M,J	0.0042	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	0.0077	M,J,R	0.0040	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	0.0160	M,J,R	0.0019	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	<0.0052	M,U	0.0052	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.015	[U]	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.0047	[U]	0.0047	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	<0.0089	[U]	0.0089	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0019	[U]	0.0019	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	0.153		0.0038	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	0.0035	M,J	0.0028	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	0.0779	M,J	0.0048	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	<0.0031	[U]	0.0031	ng/g	22-JAN-20	11-FEB-20	R5007833
Mirex	<0.00067	[U]	0.00067	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	79.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	80.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	88.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	82.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	87.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	94.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	88.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	88.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.0066	[U]	0.0066	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	96.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	79.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	89.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	93.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	93.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	0.179	M,J	0.063	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8-PeCDD	0.224	M,J	0.051	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDD	0.221	M,J	0.076	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDD	0.382	M,J	0.070	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDD	0.409	M,J	0.072	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDD	6.32		0.095	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDD	33.2		0.19	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,7,8-TCDF	0.375	M,J	0.079	pg/g	21-JAN-20	25-JAN-20	R4981388

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-44 19-D2-SS-CH-201							
Sampled By: Client on 10-OCT-19 @ 15:15							
Matrix: Soil							
Dioxins and Furans HR 1613B							
1,2,3,7,8-PeCDF	0.190	M,J,R	0.051	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,7,8-PeCDF	0.426	M,J	0.045	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8-HxCDF	0.366	M,J,B	0.072	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,6,7,8-HxCDF	0.307	M,J	0.070	pg/g	21-JAN-20	25-JAN-20	R4981388
2,3,4,6,7,8-HxCDF	0.407	[J]	0.074	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,7,8,9-HxCDF	0.13	M,J	0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,6,7,8-HpCDF	1.86	[J]	0.032	pg/g	21-JAN-20	25-JAN-20	R4981388
1,2,3,4,7,8,9-HpCDF	0.211	[J]	0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
OCDF	2.15	[J]	0.087	pg/g	21-JAN-20	25-JAN-20	R4981388
Total-TCDD	1.42		0.063	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDD # Homologues	4				21-JAN-20	25-JAN-20	R4981388
Total-PeCDD	3.04		0.051	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDD # Homologues	6				21-JAN-20	25-JAN-20	R4981388
Total-HxCDD	3.47		0.076	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDD # Homologues	5				21-JAN-20	25-JAN-20	R4981388
Total-HpCDD	12.5		0.095	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDD # Homologues	2				21-JAN-20	25-JAN-20	R4981388
Total-TCDF	4.86		0.079	pg/g	21-JAN-20	25-JAN-20	R4981388
Total TCDF # Homologues	9				21-JAN-20	25-JAN-20	R4981388
Total-PeCDF	6.00		0.051	pg/g	21-JAN-20	25-JAN-20	R4981388
Total PeCDF # Homologues	10				21-JAN-20	25-JAN-20	R4981388
Total-HxCDF	3.27		0.10	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HxCDF # Homologues	7				21-JAN-20	25-JAN-20	R4981388
Total-HpCDF	3.11		0.040	pg/g	21-JAN-20	25-JAN-20	R4981388
Total HpCDF # Homologues	4				21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDD	81.0		25-164	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDD	78.0		25-181	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	72.0		32-141	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	88.0		28-130	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	75.0		23-140	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-OCDD	46.0		17-157	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,7,8-TCDF	77.0		24-169	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8-PeCDF	80.0		24-185	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,7,8-PeCDF	75.0		21-178	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	75.0		26-152	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	82.0		26-123	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	78.0		29-147	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	73.0		28-136	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	70.0		28-143	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	77.0		26-138	%	21-JAN-20	25-JAN-20	R4981388
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	83.0		35-197	%	21-JAN-20	25-JAN-20	R4981388
Lower Bound PCDD/F TEQ (WHO 2005)	0.885			pg/g	21-JAN-20	25-JAN-20	R4981388
Mid Point PCDD/F TEQ (WHO 2005)	0.890			pg/g	21-JAN-20	25-JAN-20	R4981388
Upper Bound PCDD/F TEQ (WHO 2005)	0.890			pg/g	21-JAN-20	25-JAN-20	R4981388
L2387288-45 19-D3-NG-CH-203							
Sampled By: Client on 08-OCT-19 @ 15:10							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	57.9		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	55.0		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	5360	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-45 19-D3-NG-CH-203							
Sampled By: Client on 08-OCT-19 @ 15:10							
Matrix: Plant Tissue							
Mercury (Hg)-Total	0.0118		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	4240		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	0.74		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	40.9		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.033		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	8.54		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.5		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0564		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	4780		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	0.0107		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.595		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.044		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	5.20		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	91.2		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.205		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	2510		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	83.6		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	4.19		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	0.70		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	3090		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	19400		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	7.84		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	1.66		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	13.1		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0047		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	32.7		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	<0.020		0.020	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	35.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	50.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	32.2		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	69.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	32.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	75.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	29.4		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	63.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	48.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	63.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	58.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	62.7		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-45 19-D3-NG-CH-203							
Sampled By: Client on 08-OCT-19 @ 15:10							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 105	62.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	77.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	62.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	62.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	51.0	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	79.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	61.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	62.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	62.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	55.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	72.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	55.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	52.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.26	[U]	0.26	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.33	[U]	0.33	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.36	[U]	0.36	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.33	[U]	0.33	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.020	[U]	0.020	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.054	[U]	0.054	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.083	[U]	0.083	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.29	[U]	0.29	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.27	[U]	0.27	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.21	M,J	0.11	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.14	[U]	0.14	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.040	[U]	0.040	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.34	[U]	0.34	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<0.60	[U]	0.60	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.14	[U]	0.14	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	0.27	M,J,R	0.17	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.21	[U]	0.21	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.42	[U]	0.42	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.14	[U]	0.14	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	<0.0081	[U]	0.0081	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	53.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	42.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	74.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	75.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	69.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	66.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	86.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	58.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	57.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	67.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.34	[U]	0.34	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<0.64	[U]	0.64	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	56.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	52.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	61.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	60.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-45 19-D3-NG-CH-203							
Sampled By: Client on 08-OCT-19 @ 15:10							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.052	[U]	0.052	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	0.063	M,J,R	0.029	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	0.052	M,J,R	0.040	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	0.092	M,J,R	0.037	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.057	M,J,R	0.038	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.953	[J]	0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	2.66	[J]	0.044	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	0.054	M,J,R	0.045	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.079	M,J	0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	0.043	M,J,R	0.029	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	0.058	M,J,R	0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	0.061	M,J,R	0.032	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.049	M,J	0.033	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.044	M,J,R	0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.270	J,R	0.038	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	0.050	M,J,R	0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.609	[J]	0.039	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	0.668		0.052	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	3				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	1.35		0.029	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	3				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	1.74		0.040	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	2.57		0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	0.444		0.045	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	3				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	0.079		0.036	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	0.049		0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	<0.043	[U]	0.043	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	72.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	82.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	71.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	70.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	73.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	65.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	70.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	78.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	78.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	71.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	71.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	68.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	67.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	70.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	75.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	75.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0178			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.165			pg/g	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-45 19-D3-NG-CH-203							
Sampled By: Client on 08-OCT-19 @ 15:10							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Upper Bound PCDD/F TEQ (WHO 2005)	0.191			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-46 19-D8-NG-CH-208							
Sampled By: Client on 10-OCT-19 @ 16:10							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	37.0		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	46.5		0.50	%		10-FEB-20	R4993331
Chloride (Cl)	1970	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	0.0144		0.0050	mg/kg	11-FEB-20	13-FEB-20	R4995704
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sulfur (S)-Total	2080		100	mg/kg	11-FEB-20	12-FEB-20	R4995951
Titanium (Ti)-Total	0.70		0.25	mg/kg	11-FEB-20	12-FEB-20	R4995951
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	35.2		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Antimony (Sb)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Arsenic (As)-Total	0.032		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Barium (Ba)-Total	33.9		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Beryllium (Be)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	11-FEB-20	12-FEB-20	R4995951
Boron (B)-Total	6.9		1.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cadmium (Cd)-Total	0.0411		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Calcium (Ca)-Total	5980		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Chromium (Cr)-Total	0.242		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Cobalt (Co)-Total	0.023		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Copper (Cu)-Total	3.89		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Iron (Fe)-Total	64.6		3.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lead (Pb)-Total	0.151		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Lithium (Li)-Total	<0.50		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Magnesium (Mg)-Total	1980		2.0	mg/kg	11-FEB-20	12-FEB-20	R4995951
Manganese (Mn)-Total	30.5		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Molybdenum (Mo)-Total	5.45		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Nickel (Ni)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Phosphorus (P)-Total	2390		10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Potassium (K)-Total	11900		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Rubidium (Rb)-Total	1.46		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Selenium (Se)-Total	0.193		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Sodium (Na)-Total	<20		20	mg/kg	11-FEB-20	12-FEB-20	R4995951
Strontium (Sr)-Total	22.2		0.050	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tellurium (Te)-Total	<0.020		0.020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Tin (Sn)-Total	<0.10		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Uranium (U)-Total	0.0030		0.0020	mg/kg	11-FEB-20	12-FEB-20	R4995951
Vanadium (V)-Total	0.11		0.10	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zinc (Zn)-Total	18.5		0.50	mg/kg	11-FEB-20	12-FEB-20	R4995951
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	11-FEB-20	12-FEB-20	R4995951
PCB congeners by SIM GC/LRMS							
Total PCB	0.430		0.020	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	42.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	58.8		5-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-46 19-D8-NG-CH-208							
Sampled By: Client on 10-OCT-19 @ 16:10							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 4	37.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	80.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	38.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	83.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	36.2		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	68.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	50.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	59.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	63.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	67.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	67.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	87.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	66.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	68.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	74.7	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	61.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	69.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	67.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	69.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	60.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	66.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	61.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	74.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.67	[U]	0.67	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<1.1	[U]	1.1	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<1.0	[U]	1.0	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.83	[U]	0.83	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	<0.059	[U]	0.059	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.093	[U]	0.093	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.30	M,U	0.30	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.55	[U]	0.55	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.53	[U]	0.53	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.73	M,J	0.60	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.86	[U]	0.86	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.27	[U]	0.27	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.66	[U]	0.66	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<1.3	[U]	1.3	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.41	[U]	0.41	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	1.1	M,J	1.0	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<1.1	[U]	1.1	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<2.1	[U]	2.1	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<1.2	[U]	1.2	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	<0.086	[U]	0.086	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	42.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	37.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	64.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	65.0	M	40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	59.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	51.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	59.0		21-125	%	21-JAN-20	12-FEB-20	R5011480

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-46 19-D8-NG-CH-208							
Sampled By: Client on 10-OCT-19 @ 16:10							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
Surrogate: 4,4'-DDT, 13C12-	34.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	29.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	40.0	M	5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<1.4	[U]	1.4	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<2.3	[U]	2.3	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	44.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	20.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	40.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	43.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.12	[U]	0.12	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.076	[U]	0.076	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.085	[U]	0.085	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.082	M,U	0.082	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	<0.083	M,U	0.083	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.663	M,J,B	0.048	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	1.89	[J]	0.092	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	0.098	M,J,R	0.092	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.125	M,J	0.069	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.054	[U]	0.054	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.070	[U]	0.070	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.070	[U]	0.070	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	0.069	M,J,R	0.068	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.091	M,J,R	0.089	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	0.210	M,J,R	0.058	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.064	[U]	0.064	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.561	[J]	0.068	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	0.24		0.12	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	0.283		0.076	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	0.807		0.085	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	1.72		0.048	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	0.510		0.092	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	2				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	0.125		0.069	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	<0.089	[U]	0.089	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	<0.064	[U]	0.064	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	75.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	87.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	82.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	79.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	85.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	84.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	75.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	78.0		21-192	%	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-46 19-D8-NG-CH-208							
Sampled By: Client on 10-OCT-19 @ 16:10							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Surrogate: 13C12-2,3,4,7,8-PeCDF	82.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	80.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	78.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	80.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	75.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	82.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	90.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	80.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0111			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.165			pg/g	23-JAN-20	29-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.291			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-47 19-D4-SD-CH-204							
Sampled By: Client on 08-OCT-19 @ 14:40							
Matrix: Sediment							
Miscellaneous Parameters							
% Moisture	26.1		0.10	%	22-JAN-20	23-JAN-20	R4976673
Chloride (Cl)	34.2		5.0	mg/kg	10-FEB-20	11-FEB-20	R4995561
Fluoride (F)	5.45		0.20	mg/kg	10-FEB-20	11-FEB-20	R4994600
Mercury (Hg)	0.0218		0.0050	mg/kg	10-FEB-20	12-FEB-20	R4994872
Moisture	19.4		0.25	%		10-FEB-20	R4992895
Metals in Soil by CRC ICPMS							
Aluminum (Al)	14600		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Antimony (Sb)	0.33		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Arsenic (As)	5.49		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Barium (Ba)	69.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Beryllium (Be)	0.62		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Bismuth (Bi)	<0.20		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Boron (B)	17.2		5.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cadmium (Cd)	0.204		0.020	mg/kg	10-FEB-20	12-FEB-20	R4995450
Calcium (Ca)	96500		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Chromium (Cr)	25.5		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Cobalt (Co)	9.66		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Copper (Cu)	17.8		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Iron (Fe)	20600		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lead (Pb)	8.11		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Lithium (Li)	26.4		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Magnesium (Mg)	33500		20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Manganese (Mn)	418		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Molybdenum (Mo)	3.66		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Nickel (Ni)	29.3		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Phosphorus (P)	435		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Potassium (K)	2940		100	mg/kg	10-FEB-20	12-FEB-20	R4995450
Selenium (Se)	0.38		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Silver (Ag)	<0.10		0.10	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sodium (Na)	174		50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Strontium (Sr)	85.1		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450
Sulfur (S)	<1000		1000	mg/kg	10-FEB-20	12-FEB-20	R4995450
Thallium (Tl)	0.268		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tin (Sn)	<2.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Titanium (Ti)	220		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Tungsten (W)	<0.50		0.50	mg/kg	10-FEB-20	12-FEB-20	R4995450

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-47 19-D4-SD-CH-204							
Sampled By: Client on 08-OCT-19 @ 14:40							
Matrix: Sediment							
Metals in Soil by CRC ICPMS							
Uranium (U)	1.31		0.050	mg/kg	10-FEB-20	12-FEB-20	R4995450
Vanadium (V)	32.5		0.20	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zinc (Zn)	51.0		2.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
Zirconium (Zr)	8.8		1.0	mg/kg	10-FEB-20	12-FEB-20	R4995450
CARB428 PCB TOTALS							
Total PCB	<0.013		0.013	ng/g	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 1	15.1	M	5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 3	27.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 4	16.9		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 15	49.4		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 19	19.1		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 37	66.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 54	21.0		5-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 81	61.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 104	37.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 123	68.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 118	45.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 114	64.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 105	66.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 126	95.1		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 155	59.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 167	71.6		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 156	70.3	M	10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 157	65.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 169	77.5		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 188	67.9		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 202	70.2		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 205	66.3		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 208	67.4		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 206	66.8		10-145	%	22-JAN-20	28-JAN-20	R4996239
Surrogate: 13C12 PCB 209	65.7		10-145	%	22-JAN-20	28-JAN-20	R4996239
OC Pesticides by Method 1699							
alpha-BHC	<0.0099	[U]	0.0099	ng/g	22-JAN-20	11-FEB-20	R5007833
beta-BHC	<0.013	[U]	0.013	ng/g	22-JAN-20	11-FEB-20	R5007833
delta-BHC	<0.014	[U]	0.014	ng/g	22-JAN-20	11-FEB-20	R5007833
gamma-BHC	<0.013	[U]	0.013	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor	<0.00051	M,J,R	0.00051	ng/g	22-JAN-20	11-FEB-20	R5007833
Aldrin	<0.0012	[U]	0.0012	ng/g	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide	<0.0015	[U]	0.0015	ng/g	22-JAN-20	11-FEB-20	R5007833
trans-Chlordane	<0.0073	[U]	0.0073	ng/g	22-JAN-20	11-FEB-20	R5007833
cis-Chlordane	<0.0070	[U]	0.0070	ng/g	22-JAN-20	11-FEB-20	R5007833
Dieldrin	<0.0050	M,U	0.0050	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin	<0.015	M,U	0.015	ng/g	22-JAN-20	11-FEB-20	R5007833
Endrin Aldehyde	<0.0089	[U]	0.0089	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan I	<0.0044	[U]	0.0044	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan II	0.0085	M,J,R	0.0075	ng/g	22-JAN-20	11-FEB-20	R5007833
Endosulfan Sulfate	<0.0033	[U]	0.0033	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDE	<0.0045	[U]	0.0045	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDD	<0.0040	[U]	0.0040	ng/g	22-JAN-20	11-FEB-20	R5007833
4,4-DDT	<0.0037	[U]	0.0037	ng/g	22-JAN-20	11-FEB-20	R5007833
Methoxychlor	<0.0032	[U]	0.0032	ng/g	22-JAN-20	11-FEB-20	R5007833

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-47 19-D4-SD-CH-204							
Sampled By: Client on 08-OCT-19 @ 14:40							
Matrix: Sediment							
OC Pesticides by Method 1699							
Mirex	<0.00039	[U]	0.00039	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: alpha-BHC, 13C6-	54.0		16-129	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: trans-Nonachlor, 13C10-	66.0		14-136	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Dieldrin, 13C12-	74.0		40-151	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endrin, 13C12-	67.0		35-155	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Endosulfan II, 13C9-	75.0		5-122	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDE, 13C12-	82.0		21-125	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDT, 13C12-	76.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Mirex, 13C10-	85.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Heptachlor Epoxide A	<0.011	[U]	0.011	ng/g	22-JAN-20	11-FEB-20	R5007833
Surrogate: 4,4'-DDD, 13C12-	83.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: gamma-BHC, 13C6-	55.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: Methoxychlor, 13C12-	82.0		5-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: beta-BHC, 13C6-	62.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
Surrogate: delta-BHC, 13C6-	61.0		11-120	%	22-JAN-20	11-FEB-20	R5007833
L2387288-48 19-D5-SB-CH-206							
Sampled By: Client on 08-OCT-19 @ 15:40							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	46.6		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	41.2		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	51	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	5100		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	1.12		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	36.1		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	0.0942		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Calcium (Ca)-Total	2500		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	0.084		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	17.3		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	91.9		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	3470		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	28.7		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	7.68		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	3.55		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	9240		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	28000		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	7.82		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-48 19-D5-SB-CH-206							
Sampled By: Client on 08-OCT-19 @ 15:40							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Selenium (Se)-Total	1.07		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	1.84		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	48.4		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chlorophenols as acetate derivatives							
Pentachlorophenol	<0.49	[U]	0.49	ng/g	24-JAN-20	11-FEB-20	R5008427
Surrogate: 13C6-Pentachlorophenol	29.0	G	50-150	%	24-JAN-20	11-FEB-20	R5008427
Note: There is low recovery of 13C6-Pentachlorophenol. Detection limit has been raised due to the low recovery.							
PCB congeners by SIM GC/LRMS							
Total PCB	<0.010		0.010	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	40.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	54.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	34.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	76.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	32.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	79.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	29.9		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	67.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	47.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	58.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	54.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	58.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	60.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	78.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	58.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	61.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	59.6	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	52.7		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	56.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 188	59.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	57.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	53.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	58.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	55.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	53.3		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.018	[U]	0.018	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.020	[U]	0.020	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.020	[U]	0.020	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.020	[U]	0.020	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	0.00130	M,J,R	0.00078	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.0016	[U]	0.0016	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	0.0120	M,J,R	0.0020	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.011	[U]	0.011	ng/g	21-JAN-20	12-FEB-20	R5011480

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-48 19-D5-SB-CH-206							
Sampled By: Client on 08-OCT-19 @ 15:40							
Matrix: Plant Tissue							
OC Pesticides by Method 1699							
cis-Chlordane	<0.011	[U]	0.011	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	0.0420	M,J,R	0.0059	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.0073	M,U	0.0073	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.0052	[U]	0.0052	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.014	[U]	0.014	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<0.067	[U]	0.067	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.0056	[U]	0.0056	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	<0.012	[U]	0.012	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.0059	[U]	0.0059	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.016	[U]	0.016	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.0097	[U]	0.0097	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	0.00120	M,J,R	0.00074	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	64.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	61.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	87.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	85.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	96.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	79.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	100.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	102.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	85.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	99.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.019	[U]	0.019	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<0.015	[U]	0.015	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	74.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	111.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	88.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	89.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.024	[U]	0.024	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.014	M,J	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.0370	M,J,R	0.0095	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	0.128	[J]	0.016	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,7,8-TCDF	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.018	M,J	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.0091	[U]	0.0091	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.016	M,J,R	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	<0.010	[U]	0.010	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.114	M,J	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	<0.024	[U]	0.024	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	0.014		0.012	pg/g	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-48 19-D5-SB-CH-206							
Sampled By: Client on 08-OCT-19 @ 15:40							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
Total HxCDD # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	<0.0095	[U]	0.0095	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	0.018		0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	1				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	<0.014	[U]	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	<0.012	[U]	0.012	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	62.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	72.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	63.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	61.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	65.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	59.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	60.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	66.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	67.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	65.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	62.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	60.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	61.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	64.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	66.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	66.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.00200			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0281			pg/g	23-JAN-20	29-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.0522			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-49 19-D6-FC-CH-207							
Sampled By: Client on 10-OCT-19 @ 16:40							
Matrix: Plant Tissue							
Miscellaneous Parameters							
% Moisture	37.4		0.10	%	23-JAN-20	27-JAN-20	R4980115
% Moisture	34.3		0.50	%		07-FEB-20	R4992446
Chloride (Cl)	404	DLM	20	mg/kg	11-FEB-20	12-FEB-20	R4995904
Mercury (Hg)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	11-FEB-20	R4994346
Silver (Ag)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sulfur (S)-Total	1080		100	mg/kg	06-FEB-20	10-FEB-20	R4992782
Titanium (Ti)-Total	<0.25		0.25	mg/kg	06-FEB-20	10-FEB-20	R4992782
Metals in Tissue by CRC ICPMS (DRY)							
Aluminum (Al)-Total	<2.0		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Antimony (Sb)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Arsenic (As)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Barium (Ba)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Beryllium (Be)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Bismuth (Bi)-Total	<0.010		0.010	mg/kg	06-FEB-20	10-FEB-20	R4992782
Boron (B)-Total	3.6		1.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cadmium (Cd)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-49 19-D6-FC-CH-207							
Sampled By: Client on 10-OCT-19 @ 16:40							
Matrix: Plant Tissue							
Metals in Tissue by CRC ICPMS (DRY)							
Calcium (Ca)-Total	53		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cesium (Cs)-Total	<0.0050		0.0050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chromium (Cr)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Cobalt (Co)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Copper (Cu)-Total	1.26		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Iron (Fe)-Total	19.3		3.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lead (Pb)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Lithium (Li)-Total	<0.50		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Magnesium (Mg)-Total	1240		2.0	mg/kg	06-FEB-20	10-FEB-20	R4992782
Manganese (Mn)-Total	4.25		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Molybdenum (Mo)-Total	0.394		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Nickel (Ni)-Total	0.29		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Phosphorus (P)-Total	3860		10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Potassium (K)-Total	4960		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Rubidium (Rb)-Total	1.03		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Selenium (Se)-Total	<0.050		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Sodium (Na)-Total	<20		20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Strontium (Sr)-Total	0.097		0.050	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tellurium (Te)-Total	<0.020		0.020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Thallium (Tl)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Tin (Sn)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Uranium (U)-Total	<0.0020		0.0020	mg/kg	06-FEB-20	10-FEB-20	R4992782
Vanadium (V)-Total	<0.10		0.10	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zinc (Zn)-Total	21.4		0.50	mg/kg	06-FEB-20	10-FEB-20	R4992782
Zirconium (Zr)-Total	<0.20		0.20	mg/kg	06-FEB-20	10-FEB-20	R4992782
Chlorophenols as acetate derivatives							
Pentachlorophenol	<1.2	[U]	1.2	ng/g	24-JAN-20	11-FEB-20	R5008427
Surrogate: 13C6-Pentachlorophenol	10.0	M	50-150	%	24-JAN-20	11-FEB-20	R5008427
Note: There is low recovery of 13C6-Pentachlorophenol. Detection limit has been raised due to the low recovery.							
PCB congeners by SIM GC/LRMS							
Total PCB	0.293		0.010	ng/g	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 1	46.3		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 3	59.8		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 4	39.6		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 15	81.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 19	37.5		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 37	86.7		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 54	34.1		5-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 81	71.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 104	49.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 123	69.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 118	57.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 114	67.6		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 105	67.9		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 126	87.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 155	64.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 167	68.8		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 156	70.4	M	10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 157	67.2		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 169	70.2		10-145	%	21-JAN-20	28-JAN-20	R4988567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-49 19-D6-FC-CH-207							
Sampled By: Client on 10-OCT-19 @ 16:40							
Matrix: Plant Tissue							
PCB congeners by SIM GC/LRMS							
Surrogate: 13C12 PCB 188	67.5		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 202	68.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 205	64.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 208	73.0		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 206	63.1		10-145	%	21-JAN-20	28-JAN-20	R4988567
Surrogate: 13C12 PCB 209	60.4		10-145	%	21-JAN-20	28-JAN-20	R4988567
OC Pesticides by Method 1699							
alpha-BHC	<0.011	[U]	0.011	ng/g	21-JAN-20	12-FEB-20	R5011480
beta-BHC	<0.013	[U]	0.013	ng/g	21-JAN-20	12-FEB-20	R5011480
delta-BHC	<0.014	[U]	0.014	ng/g	21-JAN-20	12-FEB-20	R5011480
gamma-BHC	<0.013	[U]	0.013	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor	0.00110	M,J,R	0.00064	ng/g	21-JAN-20	12-FEB-20	R5011480
Aldrin	<0.0016	[U]	0.0016	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide	<0.0019	M,U	0.0019	ng/g	21-JAN-20	12-FEB-20	R5011480
trans-Chlordane	<0.015	[U]	0.015	ng/g	21-JAN-20	12-FEB-20	R5011480
cis-Chlordane	<0.015	[U]	0.015	ng/g	21-JAN-20	12-FEB-20	R5011480
Dieldrin	<0.012	[U]	0.012	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin	<0.014	[U]	0.014	ng/g	21-JAN-20	12-FEB-20	R5011480
Endrin Aldehyde	<0.0058	[U]	0.0058	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan I	<0.0082	[U]	0.0082	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan II	<0.027	[U]	0.027	ng/g	21-JAN-20	12-FEB-20	R5011480
Endosulfan Sulfate	<0.0045	[U]	0.0045	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDE	<0.011	[U]	0.011	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDD	<0.0086	[U]	0.0086	ng/g	21-JAN-20	12-FEB-20	R5011480
4,4-DDT	<0.014	[U]	0.014	ng/g	21-JAN-20	12-FEB-20	R5011480
Methoxychlor	<0.012	[U]	0.012	ng/g	21-JAN-20	12-FEB-20	R5011480
Mirex	0.00230	M,J,R	0.00057	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: alpha-BHC, 13C6-	74.0		16-129	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Heptachlor, 13C10-	75.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: trans-Nonachlor, 13C10-	102.0		14-136	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Dieldrin, 13C12-	97.0		40-151	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endrin, 13C12-	110.0		35-155	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Endosulfan II, 13C9-	88.0		5-122	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDE, 13C12-	111.0		21-125	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDT, 13C12-	99.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Mirex, 13C10-	78.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: 4,4'-DDD, 13C12-	106.0		5-150	%	21-JAN-20	12-FEB-20	R5011480
Endrin ketone	<0.013	[U]	0.013	ng/g	21-JAN-20	12-FEB-20	R5011480
Heptachlor Epoxide A	<0.015	[U]	0.015	ng/g	21-JAN-20	12-FEB-20	R5011480
Surrogate: gamma-BHC, 13C6-	81.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: Methoxychlor, 13C12-	97.0		5-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: beta-BHC, 13C6-	97.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Surrogate: delta-BHC, 13C6-	95.0		11-120	%	21-JAN-20	12-FEB-20	R5011480
Dioxins and Furans HR 1613B							
2,3,7,8-TCDD	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDD	<0.0091	[U]	0.0091	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDD	<0.0099	[U]	0.0099	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDD	<0.0097	[U]	0.0097	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDD	0.0110	M,J,R	0.0097	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDD	0.0300	M,J,R	0.0065	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDD	0.117	[J]	0.017	pg/g	23-JAN-20	29-JAN-20	R4985267

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-49 19-D6-FC-CH-207							
Sampled By: Client on 10-OCT-19 @ 16:40							
Matrix: Plant Tissue							
Dioxins and Furans HR 1613B							
2,3,7,8-TCDF	<0.013	[U]	0.013	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8-PeCDF	0.0098	M,J,R	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,7,8-PeCDF	<0.0072	[U]	0.0072	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8-HxCDF	<0.0085	[U]	0.0085	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,6,7,8-HxCDF	<0.0082	[U]	0.0082	pg/g	23-JAN-20	29-JAN-20	R4985267
2,3,4,6,7,8-HxCDF	<0.0082	[U]	0.0082	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,7,8,9-HxCDF	0.028	M,J,R	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,6,7,8-HpCDF	<0.0082	[U]	0.0082	pg/g	23-JAN-20	29-JAN-20	R4985267
1,2,3,4,7,8,9-HpCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
OCDF	0.097	M,J	0.014	pg/g	23-JAN-20	29-JAN-20	R4985267
Total-TCDD	<0.018	[U]	0.018	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDD	<0.0091	[U]	0.0091	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDD	<0.0099	[U]	0.0099	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDD	<0.0065	[U]	0.0065	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDD # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-TCDF	<0.013	[U]	0.013	pg/g	23-JAN-20	29-JAN-20	R4985267
Total TCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-PeCDF	<0.0090	[U]	0.0090	pg/g	23-JAN-20	29-JAN-20	R4985267
Total PeCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HxCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HxCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Total-HpCDF	<0.011	[U]	0.011	pg/g	23-JAN-20	29-JAN-20	R4985267
Total HpCDF # Homologues	0				23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDD	70.0		25-164	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDD	81.0		25-181	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDD	68.0		32-141	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDD	68.0		28-130	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD	67.0		23-140	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-OCDD	56.0		17-157	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,7,8-TCDF	69.0		24-169	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8-PeCDF	75.0		21-192	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,7,8-PeCDF	77.0		21-178	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8-HxCDF	66.0		26-152	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,6,7,8-HxCDF	66.0		26-123	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-2,3,4,6,7,8-HxCDF	65.0		29-147	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,7,8,9-HxCDF	62.0		28-136	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF	66.0		28-143	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF	63.0		26-138	%	23-JAN-20	29-JAN-20	R4985267
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)	79.0		31-197	%	23-JAN-20	29-JAN-20	R4985267
Lower Bound PCDD/F TEQ (WHO 2005)	0.0000641			pg/g	23-JAN-20	29-JAN-20	R4985267
Mid Point PCDD/F TEQ (WHO 2005)	0.0222			pg/g	23-JAN-20	29-JAN-20	R4985267
Upper Bound PCDD/F TEQ (WHO 2005)	0.0398			pg/g	23-JAN-20	29-JAN-20	R4985267
L2387288-50 19-E6-FB-CH-211							
Sampled By: Client on 14-AUG-19 @ 12:05							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		03-FEB-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-50 19-E6-FB-CH-211							
Sampled By: Client on 14-AUG-19 @ 12:05							
Matrix: Water							
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		03-FEB-20	
L2387288-51 19-E1-FB-CH-213							
Sampled By: Client on 09-OCT-19 @ 08:30							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		04-FEB-20	
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-51 19-E1-FB-CH-213							
Sampled By: Client on 09-OCT-19 @ 08:30							
Matrix: Water							
Total Metals in Water by CRC ICPMS							
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	0.0113	RRV	0.0050	mg/L		04-FEB-20	R4988192
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		04-FEB-20	
L2387288-52 19-E6-RB-CH-215							
Sampled By: Client on 14-AUG-19 @ 12:00							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		04-FEB-20	
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		04-FEB-20	R4988192
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		04-FEB-20	R4988192
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-52 19-E6-RB-CH-215							
Sampled By: Client on 14-AUG-19 @ 12:00							
Matrix: Water							
Total Metals in Water by CRC ICPMS							
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	0.0092	RRV	0.0050	mg/L		04-FEB-20	R4988192
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		04-FEB-20	
L2387288-53 19-E1-RB-CH-216							
Sampled By: Client on 09-OCT-19 @ 08:35							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		03-FEB-20	
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		03-FEB-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-53 19-E1-RB-CH-216							
Sampled By: Client on 09-OCT-19 @ 08:35							
Matrix: Water							
L2387288-54 19-E6-TB-CH-220							
Sampled By: Client on 14-AUG-19							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		03-FEB-20	
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		03-FEB-20	
L2387288-55 19-E1-TB-CH-221							
Sampled By: Client on 09-OCT-19							
Matrix: Water							
Total Metals in Water + Hg (CCME/BCWQG)							
Hardness							
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		03-FEB-20	
Total Mercury in Water by CVAAS or CVAFS							
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		29-JAN-20	R4982896
Total Metals in Water by CRC ICPMS							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Antimony (Sb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Arsenic (As)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2387288-55 19-E1-TB-CH-221							
Sampled By: Client on 09-OCT-19							
Matrix: Water							
Total Metals in Water by CRC ICPMS							
Barium (Ba)-Total	<0.020		0.020	mg/L		03-FEB-20	R4987008
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		03-FEB-20	R4987008
Boron (B)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		03-FEB-20	R4987008
Calcium (Ca)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Chromium (Cr)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Cobalt (Co)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Copper (Cu)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Iron (Fe)-Total	<0.030		0.030	mg/L		03-FEB-20	R4987008
Lead (Pb)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Lithium (Li)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Magnesium (Mg)-Total	<0.10		0.10	mg/L		03-FEB-20	R4987008
Manganese (Mn)-Total	<0.00030		0.00030	mg/L		03-FEB-20	R4987008
Molybdenum (Mo)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Nickel (Ni)-Total	<0.0010		0.0010	mg/L		03-FEB-20	R4987008
Potassium (K)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Selenium (Se)-Total	<0.000050		0.000050	mg/L		03-FEB-20	R4987008
Silver (Ag)-Total	<0.000020		0.000020	mg/L		03-FEB-20	R4987008
Sodium (Na)-Total	<2.0		2.0	mg/L		03-FEB-20	R4987008
Sulfur (S)-Total	<0.50		0.50	mg/L		03-FEB-20	R4987008
Thallium (Tl)-Total	<0.000010		0.000010	mg/L		03-FEB-20	R4987008
Tin (Sn)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Titanium (Ti)-Total	<0.010		0.010	mg/L		03-FEB-20	R4987008
Uranium (U)-Total	<0.00020		0.00020	mg/L		03-FEB-20	R4987008
Vanadium (V)-Total	<0.00050		0.00050	mg/L		03-FEB-20	R4987008
Zinc (Zn)-Total	<0.0050		0.0050	mg/L		03-FEB-20	R4987008
Miscellaneous Parameters							
Silicon (as SiO2)-Total	<0.21		0.21	mg/L		03-FEB-20	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
J,B	The analyte was detected below the calibrated range but above the EDL, and was detected in the Method Blank at >10% of the sample concentration.
J,R	The analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M	A peak has been manually integrated.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,B	A peak has been manually integrated. Target analyte was detected below the calibrated range but above the EDL. Compound was detected in the method blank at >10% of the sample concentration.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
U	Not Detected.
[J]	The analyte was detected below the calibrated range but above the EDL.
[U]	The analyte was not detected above the EDL.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
AG-DRY-CCMS-N-VA	Tissue	Silver in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

CL-DRY-SOL-L-IC-ED	Tissue	Chloride (Cl) - Soluble dry weight	Comm Soil Sci 16:7/APHA 4110B

Leachable Anions in vegetation analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time. The resulting extract is then analyzed for chloride by ion chromatography with conductivity or UV detection.

CL-LEACH-IC-VA	Soil	Chloride leach (1:10) by IC	APHA 4110 IC

Leachable Anions in Sediment/Soil Method analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time. The resulting extract is then analysed anions by ion chromatography with conductivity or UV detection. The method is applicable to the following anions: fluoride, chloride, phosphate, bromide, nitrate, sulphate.

CP-CUSTOM-LRMS-BU	Solid	Chlorophenols as acetate derivatives	EPA 8270 (modified)

Chlorophenols as acetate derivatives by SIM GC/MS.

DX-1613B-HRMS-BU	Biota	Dioxins and Furans HR 1613B	USEPA 1613B
DX-1613B-HRMS-BU	Soil	Dioxins and Furans HR 1613B	USEPA 1613B

Samples are extracted by Soxhlet. The extracts are prepared using column chromatography, reduced in volume and analyzed by isotope-dilution GC/HRMS

F-1:5-DI-SIE-VA	Soil	Fluoride leach (1:5) by SIE	BCMOE/APHA Method 4500-F Fluoride

This analysis is carried out using procedures from the Method: "Fluoride in Soils by 5:1 Aqueous Extraction", BC Ministry of Environment, 22 January 2008, and procedures adapted from APHA Method 4500-F "Fluoride". The procedure involves mixing the dried (at <60°C) and sieved (2mm) sample with deionized/distilled water at a 1:5 ratio of soil to water. Fluoride is determined using a selective ion electrode

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-200.2-CVAF-VA	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)

Soil samples are digested with hot nitric and hydrochloric acids, followed by CVAAS analysis. This method is fully compliant with the BC SALM strong acid leachable metals digestion method.

HG-DRY-CVAFS-N-VA	Tissue	Mercury in Tissue by CVAAS (DRY)	EPA 200.3, EPA 245.7

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.

HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

MET-200.2-CCMS-VA	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

MET-DRY-CCMS-N-VA	Tissue	Metals in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MOISTURE-BU	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

This method is used to determine the percent moisture in a sample. Samples are homogenized, moisture is removed by heating at 105°C until constant mass is achieved. The residues are measured gravimetrically and the difference in weight between the wet sample and the dried sample is used to determine the moisture content. This percent moisture can be used, in conjunction with analytical results, to report data on a dry weight basis.

MOISTURE-BU	Tissue	% Moisture	ASTM METHOD D2794-00

This method is used to determine the percent moisture in a sample. Samples are homogenized, moisture is removed by heating at 105°C until constant mass is achieved. The residues are measured gravimetrically and the difference in weight between the wet sample and the dried sample is used to determine the moisture content. This percent moisture can be used, in conjunction with analytical results, to report data on a dry weight basis.

MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	Puget Sound WQ Authority, Apr 1997

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

MOISTURE-VA	Soil	Moisture content	CCME PHC in Soil - Tier 1 (mod)

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of two hours.

OCPEST-1699-HRMS-BU	Solid	OC Pesticides by Method 1699	OC PESTICIDES 1699

Samples are extracted by Soxhlet, prepared by column chromatography, and analyzed by GC-HRMS.

OCPEST-1699-HRMS-BU	Tissue	OC Pesticides by Method 1699	EPA 1699

Samples are extracted by Soxhlet, prepared by gel-permeation chromatography followed by column chromatography, and analyzed by GC-HRMS.

PCB-C428-LRMS-BU	Solid	CARB428 PCB TOTALS	C428 LRMS
PCB-C428-LRMS-BU	Tissue	PCB congeners by SIM GC/LRMS	SIM GC/LRMS

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

Samples are Soxhlet extracted with dichloromethane. Extracts are passed through GPC for lipid removal and cleaned by column chromatograpahy. Extracts are analyzed via SIM GC/LRMS.

S-DRY-CCMS-N-VA	Tissue	Sulfur in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

SIO2-T-CALC-VA	Water	Total Silicon (reported as Silica)	CALCULATION

Total Silicon (as SiO2) is a calculated parameter. Total Silicon (as SiO2 mg/L) = 2.139 x Total Silicon (mg/L).

TI-DRY-CCMS-N-VA	Tissue	Ti in Tissue by CRC ICPMS (DRY)	EPA 200.3/6020A

This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
BU	ALS ENVIRONMENTAL - BURLINGTON, ONTARIO, CANADA
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Client: STANTEC CONSULTING LTD.
70 Southgate Dr, Suite 01
Guelph ON N1G 4P5
Contact: Katherine Ketis

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA	**Water**							
Batch R4982896								
WG3265542-2 LCS								
Mercury (Hg)-Total			94.6		%		80-120	29-JAN-20
WG3265542-1 MB								
Mercury (Hg)-Total			<0.000005(		mg/L		0.000005	29-JAN-20
MET-T-CCMS-VA	**Water**							
Batch R4987008								
WG3268371-2 LCS								
Aluminum (Al)-Total			103.2		%		80-120	03-FEB-20
Antimony (Sb)-Total			104.4		%		80-120	03-FEB-20
Arsenic (As)-Total			101.6		%		80-120	03-FEB-20
Barium (Ba)-Total			103.9		%		80-120	03-FEB-20
Beryllium (Be)-Total			104.9		%		80-120	03-FEB-20
Boron (B)-Total			98.7		%		80-120	03-FEB-20
Cadmium (Cd)-Total			101.9		%		80-120	03-FEB-20
Calcium (Ca)-Total			102.5		%		80-120	03-FEB-20
Chromium (Cr)-Total			108.1		%		80-120	03-FEB-20
Cobalt (Co)-Total			101.4		%		80-120	03-FEB-20
Copper (Cu)-Total			102.1		%		80-120	03-FEB-20
Iron (Fe)-Total			109.0		%		80-120	03-FEB-20
Lead (Pb)-Total			106.6		%		80-120	03-FEB-20
Lithium (Li)-Total			106.9		%		80-120	03-FEB-20
Magnesium (Mg)-Total			104.4		%		80-120	03-FEB-20
Manganese (Mn)-Total			105.7		%		80-120	03-FEB-20
Molybdenum (Mo)-Total			100.3		%		80-120	03-FEB-20
Nickel (Ni)-Total			102.1		%		80-120	03-FEB-20
Potassium (K)-Total			106.1		%		80-120	03-FEB-20
Selenium (Se)-Total			104.8		%		80-120	03-FEB-20
Silver (Ag)-Total			100.8		%		80-120	03-FEB-20
Sodium (Na)-Total			104.0		%		80-120	03-FEB-20
Sulfur (S)-Total			100.4		%		80-120	03-FEB-20
Thallium (Tl)-Total			100.2		%		80-120	03-FEB-20
Tin (Sn)-Total			100.7		%		80-120	03-FEB-20
Titanium (Ti)-Total			98.6		%		80-120	03-FEB-20
Uranium (U)-Total			104.9		%		80-120	03-FEB-20
Vanadium (V)-Total			105.1		%		80-120	03-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R4987008								
WG3268371-2 LCS								
Zinc (Zn)-Total			98.1		%		80-120	03-FEB-20
WG3268371-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	03-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	03-FEB-20
Cadmium (Cd)-Total			<0.000005C		mg/L		0.000005	03-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	03-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	03-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	03-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	03-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	03-FEB-20
Sulfur (S)-Total			<0.50		mg/L		0.5	03-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	03-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-FEB-20
Batch R4988192								
WG3268944-2 LCS								
Aluminum (Al)-Total			108.0		%		80-120	04-FEB-20
Antimony (Sb)-Total			105.3		%		80-120	04-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R4988192								
WG3268944-2 LCS								
Arsenic (As)-Total			101.7		%		80-120	04-FEB-20
Barium (Ba)-Total			106.7		%		80-120	04-FEB-20
Beryllium (Be)-Total			101.5		%		80-120	04-FEB-20
Boron (B)-Total			101.5		%		80-120	04-FEB-20
Cadmium (Cd)-Total			104.3		%		80-120	04-FEB-20
Calcium (Ca)-Total			101.8		%		80-120	04-FEB-20
Chromium (Cr)-Total			106.1		%		80-120	04-FEB-20
Cobalt (Co)-Total			104.9		%		80-120	04-FEB-20
Copper (Cu)-Total			102.8		%		80-120	04-FEB-20
Iron (Fe)-Total			104.9		%		80-120	04-FEB-20
Lead (Pb)-Total			100.4		%		80-120	04-FEB-20
Lithium (Li)-Total			104.3		%		80-120	04-FEB-20
Magnesium (Mg)-Total			105.6		%		80-120	04-FEB-20
Manganese (Mn)-Total			107.9		%		80-120	04-FEB-20
Molybdenum (Mo)-Total			98.0		%		80-120	04-FEB-20
Nickel (Ni)-Total			105.2		%		80-120	04-FEB-20
Potassium (K)-Total			103.8		%		80-120	04-FEB-20
Selenium (Se)-Total			99.1		%		80-120	04-FEB-20
Silver (Ag)-Total			107.0		%		80-120	04-FEB-20
Sodium (Na)-Total			105.7		%		80-120	04-FEB-20
Sulfur (S)-Total			101.9		%		80-120	04-FEB-20
Thallium (Tl)-Total			101.9		%		80-120	04-FEB-20
Tin (Sn)-Total			102.0		%		80-120	04-FEB-20
Titanium (Ti)-Total			96.9		%		80-120	04-FEB-20
Uranium (U)-Total			99.4		%		80-120	04-FEB-20
Vanadium (V)-Total			108.1		%		80-120	04-FEB-20
Zinc (Zn)-Total			102.8		%		80-120	04-FEB-20
WG3268944-1 MB								
Aluminum (Al)-Total			<0.0030		mg/L		0.003	04-FEB-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Boron (B)-Total			<0.010		mg/L		0.01	04-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA	**Water**							
Batch R4988192								
WG3268944-1 MB								
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	04-FEB-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-FEB-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	04-FEB-20
Iron (Fe)-Total			<0.010		mg/L		0.01	04-FEB-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-FEB-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-FEB-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-FEB-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	04-FEB-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-FEB-20
Potassium (K)-Total			<0.050		mg/L		0.05	04-FEB-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	04-FEB-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	04-FEB-20
Sodium (Na)-Total			<0.050		mg/L		0.05	04-FEB-20
Sulfur (S)-Total			<0.50		mg/L		0.5	04-FEB-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	04-FEB-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-FEB-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-FEB-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-FEB-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-FEB-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-FEB-20
CL-LEACH-IC-VA	**Soil**							
Batch R4995561								
WG3272652-4 DUP		**L2387288-24**						
Chloride (Cl)		<5.0	<5.0	RPD-NA	mg/kg	N/A	30	11-FEB-20
WG3272669-3 DUP		**L2387288-29**						
Chloride (Cl)		14.1	13.5		mg/kg	4.9	30	11-FEB-20
WG3272652-2 LCS								
Chloride (Cl)			99.7		%		70-130	11-FEB-20
WG3272669-2 LCS								
Chloride (Cl)			98.7		%		70-130	11-FEB-20
WG3272652-1 MB								
Chloride (Cl)			<5.0		mg/kg		5	11-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-LEACH-IC-VA	**Soil**							
Batch R4995561								
WG3272669-1 MB								
Chloride (Cl)			<5.0		mg/kg		5	11-FEB-20
Batch R4998419								
WG3277018-3 DUP		**L2387288-15**						
Chloride (Cl)		167	164		mg/kg	2.0	30	18-FEB-20
WG3277018-2 LCS								
Chloride (Cl)			99.0		%		70-130	18-FEB-20
WG3277018-1 MB								
Chloride (Cl)			<5.0		mg/kg		5	18-FEB-20
DX-1613B-HRMS-BU	**Soil**							
Batch R4981388								
WG3253377-4 DUP		**L2387288-1**						
2,3,7,8-TCDD		0.226	0.225		pg/g	0.4	50	24-JAN-20
1,2,3,7,8-PeCDD		0.244	0.229		pg/g	6.3	50	24-JAN-20
1,2,3,4,7,8-HxCDD		0.258	0.230		pg/g	11	50	24-JAN-20
1,2,3,6,7,8-HxCDD		0.386	0.399		pg/g	3.3	50	24-JAN-20
1,2,3,7,8,9-HxCDD		0.400	0.440		pg/g	9.5	50	24-JAN-20
1,2,3,4,6,7,8-HpCDD		6.75	6.04		pg/g	11	50	24-JAN-20
OCDD		37.4	31.7		pg/g	16	50	24-JAN-20
2,3,7,8-TCDF		0.295	0.32		pg/g	8.1	50	24-JAN-20
1,2,3,7,8-PeCDF		0.252	0.216		pg/g	15	50	24-JAN-20
2,3,4,7,8-PeCDF		0.720	0.634		pg/g	13	50	24-JAN-20
1,2,3,4,7,8-HxCDF		0.476	0.384		pg/g	21	50	24-JAN-20
1,2,3,6,7,8-HxCDF		0.310	0.289		pg/g	7.0	50	24-JAN-20
2,3,4,6,7,8-HxCDF		0.565	0.512		pg/g	9.8	50	24-JAN-20
1,2,3,7,8,9-HxCDF		0.16	0.113		pg/g	34	50	24-JAN-20
1,2,3,4,6,7,8-HpCDF		2.30	1.94		pg/g	17	50	24-JAN-20
1,2,3,4,7,8,9-HpCDF		0.160	0.122		pg/g	27	50	24-JAN-20
OCDF		2.91	2.52		pg/g	14	50	24-JAN-20
Total-TCDD		0.226	0.958	G	pg/g	124	50	24-JAN-20
Total-PeCDD		1.87	2.48		pg/g	28	50	24-JAN-20
Total-HxCDD		4.99	4.20		pg/g	17	50	24-JAN-20
Total-HpCDD		13.0	11.4		pg/g	13	50	24-JAN-20
Total-TCDF		7.06	5.15		pg/g	31	50	24-JAN-20
Total-PeCDF		11.2	9.74		pg/g	14	50	24-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Soil**							
Batch R4981388								
WG3253377-4 DUP		**L2387288-1**						
Total-HxCDF		5.48	4.58		pg/g	18	50	24-JAN-20
Total-HpCDF		3.68	3.20		pg/g	14	50	24-JAN-20
COMMENTS: Sample and duplicate replication criteria not met for Total TCDD results. None of the compounds were detected at levels above the Lower Quantitation Limit so replication criteria are not applicable.								
WG3253377-2 LCS								
2,3,7,8-TCDD			96.0		%		67-158	24-JAN-20
1,2,3,7,8-PeCDD			102.0		%		70-142	24-JAN-20
1,2,3,4,7,8-HxCDD			97.0		%		70-164	24-JAN-20
1,2,3,6,7,8-HxCDD			97.0		%		76-134	24-JAN-20
1,2,3,7,8,9-HxCDD			103.0		%		64-162	24-JAN-20
1,2,3,4,6,7,8-HpCDD			98.0		%		70-140	24-JAN-20
OCDD			95.0		%		78-144	24-JAN-20
2,3,7,8-TCDF			97.0		%		75-158	24-JAN-20
1,2,3,7,8-PeCDF			98.0		%		80-134	24-JAN-20
2,3,4,7,8-PeCDF			91.0		%		68-160	24-JAN-20
1,2,3,4,7,8-HxCDF			98.0		%		72-134	24-JAN-20
1,2,3,6,7,8-HxCDF			104.0		%		84-130	24-JAN-20
2,3,4,6,7,8-HxCDF			98.0		%		70-156	24-JAN-20
1,2,3,7,8,9-HxCDF			104.0		%		78-130	24-JAN-20
1,2,3,4,6,7,8-HpCDF			104.0		%		82-122	24-JAN-20
1,2,3,4,7,8,9-HpCDF			92.0		%		78-138	24-JAN-20
OCDF			107.0		%		63-170	24-JAN-20
WG3253377-1 MB								
2,3,7,8-TCDD			<0.065	[U]	pg/g		0.065	24-JAN-20
1,2,3,7,8-PeCDD			<0.055	[U]	pg/g		0.055	24-JAN-20
1,2,3,4,7,8-HxCDD			<0.054	[U]	pg/g		0.054	24-JAN-20
1,2,3,6,7,8-HxCDD			<0.051	[U]	pg/g		0.051	24-JAN-20
1,2,3,7,8,9-HxCDD			<0.051	[U]	pg/g		0.051	24-JAN-20
1,2,3,4,6,7,8-HpCDD			0.067	M,J,R	pg/g		0.057	24-JAN-20
OCDD			0.67	M,J	pg/g		0.16	24-JAN-20
2,3,7,8-TCDF			<0.047	[U]	pg/g		0.047	24-JAN-20
1,2,3,7,8-PeCDF			<0.035	M,U	pg/g		0.035	24-JAN-20
2,3,4,7,8-PeCDF			<0.032	[U]	pg/g		0.032	24-JAN-20
1,2,3,4,7,8-HxCDF			0.041	M,J	pg/g		0.036	24-JAN-20
1,2,3,6,7,8-HxCDF			<0.035	[U]	pg/g		0.035	24-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Soil**							
Batch R4981388								
WG3253377-1 MB								
2,3,4,6,7,8-HxCDF			<0.038	[U]	pg/g		0.038	24-JAN-20
1,2,3,7,8,9-HxCDF			<0.057	[U]	pg/g		0.057	24-JAN-20
1,2,3,4,6,7,8-HpCDF			<0.050	[U]	pg/g		0.05	24-JAN-20
1,2,3,4,7,8,9-HpCDF			<0.064	[U]	pg/g		0.064	24-JAN-20
OCDF			<0.15	[U]	pg/g		0.15	24-JAN-20
Total-TCDD			<0.065	[U]	pg/g		0.065	24-JAN-20
Total-PeCDD			<0.055	[U]	pg/g		0.055	24-JAN-20
Total-HxCDD			<0.054	[U]	pg/g		0.054	24-JAN-20
Total-HpCDD			<0.057	[U]	pg/g		0.057	24-JAN-20
Total-TCDF			<0.047	[U]	pg/g		0.047	24-JAN-20
Total-PeCDF			<0.035	[U]	pg/g		0.035	24-JAN-20
Total-HxCDF			<0.057	[U]	pg/g		0.057	24-JAN-20
Total-HpCDF			<0.064	[U]	pg/g		0.064	24-JAN-20
Surrogate: 13C12-2,3,7,8-TCDD			73.0		%		25-164	24-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDD			72.0		%		25-181	24-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			64.0		%		32-141	24-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			82.0		%		28-130	24-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			71.0		%		23-140	24-JAN-20
Surrogate: 13C12-OCDD			39.0		%		17-157	24-JAN-20
Surrogate: 13C12-2,3,7,8-TCDF			71.0		%		24-169	24-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDF			75.0		%		24-185	24-JAN-20
Surrogate: 13C12-2,3,4,7,8-PeCDF			71.0		%		21-178	24-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			67.0		%		26-152	24-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			75.0		%		26-123	24-JAN-20
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			71.0		%		29-147	24-JAN-20
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			64.0		%		28-136	24-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			62.0		%		28-143	24-JAN-20
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			72.0		%		26-138	24-JAN-20
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			77.0		%		35-197	24-JAN-20
F-1:5-DI-SIE-VA	**Soil**							
Batch R4994593								
WG3268526-3 DUP		**L2387288-4**						
Fluoride (F)		1.45	1.33		mg/kg	8.4	30	11-FEB-20
WG3268526-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-1:5-DI-SIE-VA	**Soil**							
Batch R4994593								
WG3268526-2 LCS								
Fluoride (F)			94.8		%		70-130	11-FEB-20
WG3268526-1 MB								
Fluoride (F)			<0.20		mg/kg		0.2	11-FEB-20
WG3268526-4 MS		**L2387288-8**						
Fluoride (F)			110.1		%		60-140	11-FEB-20
Batch R4994600								
WG3272809-3 DUP		**L2387288-1**						
Fluoride (F)		3.49	3.62		mg/kg	3.7	30	11-FEB-20
WG3272809-2 LCS								
Fluoride (F)			90.6		%		70-130	11-FEB-20
WG3272809-1 MB								
Fluoride (F)			<0.20		mg/kg		0.2	11-FEB-20
HG-200.2-CVAF-VA	**Soil**							
Batch R4987948								
WG3268520-4 CRM		**VA-CANMET-TILL2**						
Mercury (Hg)			106.9		%		70-130	04-FEB-20
WG3268520-3 LCS								
Mercury (Hg)			97.9		%		80-120	04-FEB-20
WG3268520-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	04-FEB-20
Batch R4994872								
WG3272817-4 CRM		**VA-CANMET-TILL2**						
Mercury (Hg)			103.1		%		70-130	12-FEB-20
WG3272817-2 DUP		**L2387288-7**						
Mercury (Hg)		0.0635	0.0647		mg/kg	1.9	40	12-FEB-20
WG3272817-3 LCS								
Mercury (Hg)			99.3		%		80-120	12-FEB-20
WG3272817-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	12-FEB-20
MET-200.2-CCMS-VA	**Soil**							
Batch R4988988								
WG3268520-4 CRM		**VA-CANMET-TILL2**						
Aluminum (Al)			101.9		%		70-130	04-FEB-20
Antimony (Sb)			100.6		%		70-130	04-FEB-20
Arsenic (As)			100.3		%		70-130	04-FEB-20
Barium (Ba)			94.2		%		70-130	04-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4988988								
WG3268520-4 CRM		**VA-CANMET-TILL2**						
Beryllium (Be)			93.0		%		70-130	04-FEB-20
Bismuth (Bi)			93.4		%		70-130	04-FEB-20
Cadmium (Cd)			104.7		%		70-130	04-FEB-20
Calcium (Ca)			102.7		%		70-130	04-FEB-20
Chromium (Cr)			97.0		%		70-130	04-FEB-20
Cobalt (Co)			94.2		%		70-130	04-FEB-20
Copper (Cu)			95.9		%		70-130	04-FEB-20
Iron (Fe)			101.9		%		70-130	04-FEB-20
Lead (Pb)			93.7		%		70-130	04-FEB-20
Lithium (Li)			96.3		%		70-130	04-FEB-20
Magnesium (Mg)			101.6		%		70-130	04-FEB-20
Manganese (Mn)			100.0		%		70-130	04-FEB-20
Molybdenum (Mo)			99.1		%		70-130	04-FEB-20
Nickel (Ni)			97.6		%		70-130	04-FEB-20
Phosphorus (P)			95.5		%		70-130	04-FEB-20
Potassium (K)			97.7		%		70-130	04-FEB-20
Selenium (Se)			0.33		mg/kg		0.15-0.55	04-FEB-20
Silver (Ag)			0.27		mg/kg		0.16-0.36	04-FEB-20
Sodium (Na)			90.5		%		70-130	04-FEB-20
Strontium (Sr)			100.3		%		70-130	04-FEB-20
Thallium (Tl)			91.4		%		70-130	04-FEB-20
Tin (Sn)			2.2		mg/kg		0.2-4.2	04-FEB-20
Titanium (Ti)			94.2		%		70-130	04-FEB-20
Tungsten (W)			1.24		mg/kg		1-2	04-FEB-20
Uranium (U)			98.7		%		70-130	04-FEB-20
Vanadium (V)			98.4		%		70-130	04-FEB-20
Zinc (Zn)			99.4		%		70-130	04-FEB-20
Zirconium (Zr)			100.4		%		70-130	04-FEB-20
WG3268520-3 LCS								
Aluminum (Al)			103.4		%		80-120	04-FEB-20
Antimony (Sb)			112.9		%		80-120	04-FEB-20
Arsenic (As)			102.4		%		80-120	04-FEB-20
Barium (Ba)			99.9		%		80-120	04-FEB-20
Beryllium (Be)			97.5		%		80-120	04-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4988988								
WG3268520-3 LCS								
Bismuth (Bi)			103.9		%		80-120	04-FEB-20
Boron (B)			98.0		%		80-120	04-FEB-20
Cadmium (Cd)			100.4		%		80-120	04-FEB-20
Calcium (Ca)			100.1		%		80-120	04-FEB-20
Chromium (Cr)			100.4		%		80-120	04-FEB-20
Cobalt (Co)			97.9		%		80-120	04-FEB-20
Copper (Cu)			98.6		%		80-120	04-FEB-20
Iron (Fe)			99.6		%		80-120	04-FEB-20
Lead (Pb)			101.7		%		80-120	04-FEB-20
Lithium (Li)			96.8		%		80-120	04-FEB-20
Magnesium (Mg)			105.6		%		80-120	04-FEB-20
Manganese (Mn)			101.5		%		80-120	04-FEB-20
Molybdenum (Mo)			103.2		%		80-120	04-FEB-20
Nickel (Ni)			100.6		%		80-120	04-FEB-20
Phosphorus (P)			97.1		%		80-120	04-FEB-20
Potassium (K)			104.0		%		80-120	04-FEB-20
Selenium (Se)			100.7		%		80-120	04-FEB-20
Silver (Ag)			95.5		%		80-120	04-FEB-20
Sodium (Na)			110.8		%		80-120	04-FEB-20
Strontium (Sr)			110.3		%		80-120	04-FEB-20
Sulfur (S)			101.6		%		80-120	04-FEB-20
Thallium (Tl)			101.4		%		80-120	04-FEB-20
Tin (Sn)			100.8		%		80-120	04-FEB-20
Titanium (Ti)			101.8		%		80-120	04-FEB-20
Tungsten (W)			99.3		%		80-120	04-FEB-20
Uranium (U)			100.9		%		80-120	04-FEB-20
Vanadium (V)			103.9		%		80-120	04-FEB-20
Zinc (Zn)			101.2		%		80-120	04-FEB-20
Zirconium (Zr)			93.6		%		70-130	04-FEB-20
WG3268520-1 MB								
Aluminum (Al)			<50		mg/kg		50	04-FEB-20
Antimony (Sb)			<0.10		mg/kg		0.1	04-FEB-20
Arsenic (As)			<0.10		mg/kg		0.1	04-FEB-20
Barium (Ba)			<0.50		mg/kg		0.5	04-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4988988								
WG3268520-1 MB								
Beryllium (Be)			<0.10		mg/kg		0.1	04-FEB-20
Bismuth (Bi)			<0.20		mg/kg		0.2	04-FEB-20
Boron (B)			<5.0		mg/kg		5	04-FEB-20
Cadmium (Cd)			<0.020		mg/kg		0.02	04-FEB-20
Calcium (Ca)			<50		mg/kg		50	04-FEB-20
Chromium (Cr)			<0.50		mg/kg		0.5	04-FEB-20
Cobalt (Co)			<0.10		mg/kg		0.1	04-FEB-20
Copper (Cu)			<0.50		mg/kg		0.5	04-FEB-20
Iron (Fe)			<50		mg/kg		50	04-FEB-20
Lead (Pb)			<0.50		mg/kg		0.5	04-FEB-20
Lithium (Li)			<2.0		mg/kg		2	04-FEB-20
Magnesium (Mg)			<20		mg/kg		20	04-FEB-20
Manganese (Mn)			<1.0		mg/kg		1	04-FEB-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	04-FEB-20
Nickel (Ni)			<0.50		mg/kg		0.5	04-FEB-20
Phosphorus (P)			<50		mg/kg		50	04-FEB-20
Potassium (K)			<100		mg/kg		100	04-FEB-20
Selenium (Se)			<0.20		mg/kg		0.2	04-FEB-20
Silver (Ag)			<0.10		mg/kg		0.1	04-FEB-20
Sodium (Na)			<50		mg/kg		50	04-FEB-20
Strontium (Sr)			<0.50		mg/kg		0.5	04-FEB-20
Sulfur (S)			<1000		mg/kg		1000	04-FEB-20
Thallium (Tl)			<0.050		mg/kg		0.05	04-FEB-20
Tin (Sn)			<2.0		mg/kg		2	04-FEB-20
Titanium (Ti)			<1.0		mg/kg		1	04-FEB-20
Tungsten (W)			<0.50		mg/kg		0.5	04-FEB-20
Uranium (U)			<0.050		mg/kg		0.05	04-FEB-20
Vanadium (V)			<0.20		mg/kg		0.2	04-FEB-20
Zinc (Zn)			<2.0		mg/kg		2	04-FEB-20
Zirconium (Zr)			<1.0		mg/kg		1	04-FEB-20
Batch R4995450								
WG3272817-4 CRM		**VA-CANMET-TILL2**						
Aluminum (Al)			99.6		%		70-130	12-FEB-20
Antimony (Sb)			93.5		%		70-130	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4995450								
WG3272817-4 CRM		**VA-CANMET-TILL2**						
Arsenic (As)			99.4		%		70-130	12-FEB-20
Barium (Ba)			87.9		%		70-130	12-FEB-20
Beryllium (Be)			89.1		%		70-130	12-FEB-20
Bismuth (Bi)			94.9		%		70-130	12-FEB-20
Cadmium (Cd)			96.0		%		70-130	12-FEB-20
Calcium (Ca)			91.9		%		70-130	12-FEB-20
Chromium (Cr)			98.3		%		70-130	12-FEB-20
Cobalt (Co)			98.7		%		70-130	12-FEB-20
Copper (Cu)			100.0		%		70-130	12-FEB-20
Iron (Fe)			97.7		%		70-130	12-FEB-20
Lead (Pb)			92.0		%		70-130	12-FEB-20
Lithium (Li)			92.5		%		70-130	12-FEB-20
Magnesium (Mg)			100.2		%		70-130	12-FEB-20
Manganese (Mn)			97.4		%		70-130	12-FEB-20
Molybdenum (Mo)			91.6		%		70-130	12-FEB-20
Nickel (Ni)			100.7		%		70-130	12-FEB-20
Phosphorus (P)			95.9		%		70-130	12-FEB-20
Potassium (K)			94.6		%		70-130	12-FEB-20
Selenium (Se)			0.38		mg/kg		0.15-0.55	12-FEB-20
Silver (Ag)			0.25		mg/kg		0.16-0.36	12-FEB-20
Sodium (Na)			88.3		%		70-130	12-FEB-20
Strontium (Sr)			89.5		%		70-130	12-FEB-20
Thallium (Tl)			88.8		%		70-130	12-FEB-20
Tin (Sn)			2.1		mg/kg		0.2-4.2	12-FEB-20
Titanium (Ti)			98.1		%		70-130	12-FEB-20
Tungsten (W)			1.44		mg/kg		1-2	12-FEB-20
Uranium (U)			92.4		%		70-130	12-FEB-20
Vanadium (V)			97.8		%		70-130	12-FEB-20
Zinc (Zn)			96.0		%		70-130	12-FEB-20
Zirconium (Zr)			84.1		%		70-130	12-FEB-20
WG3272817-2 DUP		**L2387288-7**						
Aluminum (Al)		26200	27500		mg/kg	4.5	40	12-FEB-20
Antimony (Sb)		0.33	0.32		mg/kg	4.3	30	12-FEB-20
Arsenic (As)		4.94	5.05		mg/kg	2.2	30	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4995450								
WG3272817-2 DUP		**L2387288-7**						
Barium (Ba)		120	124		mg/kg	3.0	40	12-FEB-20
Beryllium (Be)		1.16	1.18		mg/kg	1.8	30	12-FEB-20
Bismuth (Bi)		0.23	0.24		mg/kg	1.5	30	12-FEB-20
Boron (B)		15.6	18.7		mg/kg	18	30	12-FEB-20
Cadmium (Cd)		0.473	0.501		mg/kg	5.7	30	12-FEB-20
Calcium (Ca)		5550	5740		mg/kg	3.5	30	12-FEB-20
Chromium (Cr)		38.2	39.2		mg/kg	2.7	30	12-FEB-20
Cobalt (Co)		11.2	11.3		mg/kg	1.2	30	12-FEB-20
Copper (Cu)		31.3	32.1		mg/kg	2.7	30	12-FEB-20
Iron (Fe)		25000	25100		mg/kg	0.4	30	12-FEB-20
Lead (Pb)		15.4	15.8		mg/kg	2.6	40	12-FEB-20
Lithium (Li)		35.6	36.5		mg/kg	2.3	30	12-FEB-20
Magnesium (Mg)		7320	7440		mg/kg	1.6	30	12-FEB-20
Manganese (Mn)		339	351		mg/kg	3.5	30	12-FEB-20
Molybdenum (Mo)		1.35	1.32		mg/kg	2.0	40	12-FEB-20
Nickel (Ni)		36.1	36.5		mg/kg	1.1	30	12-FEB-20
Phosphorus (P)		959	963		mg/kg	0.4	30	12-FEB-20
Potassium (K)		4010	4460		mg/kg	11	40	12-FEB-20
Selenium (Se)		0.60	0.58		mg/kg	2.6	30	12-FEB-20
Silver (Ag)		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	12-FEB-20
Sodium (Na)		64	70		mg/kg	7.9	40	12-FEB-20
Strontium (Sr)		21.8	22.2		mg/kg	1.6	40	12-FEB-20
Sulfur (S)		<1000	<1000	RPD-NA	mg/kg	N/A	30	12-FEB-20
Thallium (Tl)		0.228	0.246		mg/kg	7.5	30	12-FEB-20
Tin (Sn)		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	12-FEB-20
Titanium (Ti)		128	164		mg/kg	25	40	12-FEB-20
Tungsten (W)		<0.50	<0.50	RPD-NA	mg/kg	N/A	30	12-FEB-20
Uranium (U)		1.87	1.96		mg/kg	5.0	30	12-FEB-20
Vanadium (V)		44.3	46.5		mg/kg	4.8	30	12-FEB-20
Zinc (Zn)		82.9	82.2		mg/kg	0.8	30	12-FEB-20
Zirconium (Zr)		6.4	6.1		mg/kg	4.8	30	12-FEB-20
WG3272817-3 LCS								
Aluminum (Al)			103.1		%		80-120	12-FEB-20
Antimony (Sb)			105.3		%		80-120	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4995450								
WG3272817-3 LCS								
Arsenic (As)			98.7		%		80-120	12-FEB-20
Barium (Ba)			98.3		%		80-120	12-FEB-20
Beryllium (Be)			91.9		%		80-120	12-FEB-20
Bismuth (Bi)			95.5		%		80-120	12-FEB-20
Boron (B)			93.9		%		80-120	12-FEB-20
Cadmium (Cd)			94.9		%		80-120	12-FEB-20
Calcium (Ca)			98.1		%		80-120	12-FEB-20
Chromium (Cr)			98.9		%		80-120	12-FEB-20
Cobalt (Co)			99.2		%		80-120	12-FEB-20
Copper (Cu)			98.3		%		80-120	12-FEB-20
Iron (Fe)			99.6		%		80-120	12-FEB-20
Lead (Pb)			98.1		%		80-120	12-FEB-20
Lithium (Li)			91.4		%		80-120	12-FEB-20
Magnesium (Mg)			106.8		%		80-120	12-FEB-20
Manganese (Mn)			101.4		%		80-120	12-FEB-20
Molybdenum (Mo)			98.5		%		80-120	12-FEB-20
Nickel (Ni)			100.0		%		80-120	12-FEB-20
Phosphorus (P)			101.3		%		80-120	12-FEB-20
Potassium (K)			104.2		%		80-120	12-FEB-20
Selenium (Se)			97.3		%		80-120	12-FEB-20
Silver (Ag)			98.5		%		80-120	12-FEB-20
Sodium (Na)			101.1		%		80-120	12-FEB-20
Strontium (Sr)			99.3		%		80-120	12-FEB-20
Sulfur (S)			99.3		%		80-120	12-FEB-20
Thallium (Tl)			98.2		%		80-120	12-FEB-20
Tin (Sn)			96.8		%		80-120	12-FEB-20
Titanium (Ti)			99.4		%		80-120	12-FEB-20
Tungsten (W)			98.4		%		80-120	12-FEB-20
Uranium (U)			97.7		%		80-120	12-FEB-20
Vanadium (V)			102.2		%		80-120	12-FEB-20
Zinc (Zn)			97.6		%		80-120	12-FEB-20
Zirconium (Zr)			97.4		%		70-130	12-FEB-20
WG3272817-1 MB								
Aluminum (Al)			<50		mg/kg		50	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-VA	**Soil**							
Batch R4995450								
WG3272817-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	12-FEB-20
Arsenic (As)			<0.10		mg/kg		0.1	12-FEB-20
Barium (Ba)			<0.50		mg/kg		0.5	12-FEB-20
Beryllium (Be)			<0.10		mg/kg		0.1	12-FEB-20
Bismuth (Bi)			<0.20		mg/kg		0.2	12-FEB-20
Boron (B)			<5.0		mg/kg		5	12-FEB-20
Cadmium (Cd)			<0.020		mg/kg		0.02	12-FEB-20
Calcium (Ca)			<50		mg/kg		50	12-FEB-20
Chromium (Cr)			<0.50		mg/kg		0.5	12-FEB-20
Cobalt (Co)			<0.10		mg/kg		0.1	12-FEB-20
Copper (Cu)			<0.50		mg/kg		0.5	12-FEB-20
Iron (Fe)			<50		mg/kg		50	12-FEB-20
Lead (Pb)			<0.50		mg/kg		0.5	12-FEB-20
Lithium (Li)			<2.0		mg/kg		2	12-FEB-20
Magnesium (Mg)			<20		mg/kg		20	12-FEB-20
Manganese (Mn)			<1.0		mg/kg		1	12-FEB-20
Molybdenum (Mo)			<0.10		mg/kg		0.1	12-FEB-20
Nickel (Ni)			<0.50		mg/kg		0.5	12-FEB-20
Phosphorus (P)			<50		mg/kg		50	12-FEB-20
Potassium (K)			<100		mg/kg		100	12-FEB-20
Selenium (Se)			<0.20		mg/kg		0.2	12-FEB-20
Silver (Ag)			<0.10		mg/kg		0.1	12-FEB-20
Sodium (Na)			<50		mg/kg		50	12-FEB-20
Strontium (Sr)			<0.50		mg/kg		0.5	12-FEB-20
Sulfur (S)			<1000		mg/kg		1000	12-FEB-20
Thallium (Tl)			<0.050		mg/kg		0.05	12-FEB-20
Tin (Sn)			<2.0		mg/kg		2	12-FEB-20
Titanium (Ti)			<1.0		mg/kg		1	12-FEB-20
Tungsten (W)			<0.50		mg/kg		0.5	12-FEB-20
Uranium (U)			<0.050		mg/kg		0.05	12-FEB-20
Vanadium (V)			<0.20		mg/kg		0.2	12-FEB-20
Zinc (Zn)			<2.0		mg/kg		2	12-FEB-20
Zirconium (Zr)			<1.0		mg/kg		1	12-FEB-20
MOISTURE-BU	**Soil**							

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-BU	**Soil**							
Batch R4974811								
WG3253380-3 DUP		**L2387288-1**						
% Moisture		17.1	16.5		%	3.2	20	22-JAN-20
WG3253380-2 LCS								
% Moisture			93.1		%		90-110	22-JAN-20
WG3253380-1 MB								
% Moisture			<0.10		%		0.3	22-JAN-20
Batch R4976673								
WG3253401-2 LCS								
% Moisture			96.0		%		90-110	23-JAN-20
WG3253401-1 MB								
% Moisture			<0.10		%		0.3	23-JAN-20
MOISTURE-VA	**Soil**							
Batch R4987031								
WG3268534-2 LCS								
Moisture			100.2		%		90-110	03-FEB-20
WG3268534-1 MB								
Moisture			<0.25		%		0.25	03-FEB-20
Batch R4992895								
WG3272824-2 LCS								
Moisture			100.4		%		90-110	10-FEB-20
WG3272824-1 MB								
Moisture			<0.25		%		0.25	10-FEB-20
Batch R4994469								
WG3273551-3 DUP		**L2387288-4**						
Moisture		22.5	22.1		%	2.1	20	11-FEB-20
WG3273551-2 LCS								
Moisture			100.4		%		90-110	11-FEB-20
WG3273551-1 MB								
Moisture			<0.25		%		0.25	11-FEB-20
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Silver (Ag)-Total			106.0		%		70-130	10-FEB-20
WG3270945-2 DUP		**L2387288-49**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	10-FEB-20
WG3270945-4 LCS								
Silver (Ag)-Total			93.3		%		80-120	10-FEB-20
WG3270945-1 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
AG-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	10-FEB-20
Batch R4995951								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Silver (Ag)-Total			103.9		%		70-130	12-FEB-20
WG3272564-2 DUP		**L2387288-9**						
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	12-FEB-20
WG3272564-4 LCS								
Silver (Ag)-Total			91.1		%		80-120	12-FEB-20
WG3272564-1 MB								
Silver (Ag)-Total			<0.0050		mg/kg		0.005	12-FEB-20
CL-DRY-SOL-L-IC-ED	**Tissue**							
Batch R4995904								
WG3273428-4 DUP		**L2387288-3**						
Chloride (Cl)		44	45		mg/kg	2.2	35	12-FEB-20
WG3273887-2 DUP		**L2387288-48**						
Chloride (Cl)		51	51		mg/kg	0.3	35	12-FEB-20
WG3273428-3 LCS								
Chloride (Cl)			106.0		%		70-130	12-FEB-20
WG3273887-3 LCS								
Chloride (Cl)			104.2		%		70-130	12-FEB-20
WG3273428-1 MB								
Chloride (Cl)			<10		mg/kg		10	12-FEB-20
WG3273887-1 MB								
Chloride (Cl)			<10		mg/kg		10	12-FEB-20
WG3273428-5 MS		**L2387288-6**						
Chloride (Cl)			102.4		%		70-130	12-FEB-20
WG3273887-4 MS		**L2387288-31**						
Chloride (Cl)			106.0		%		70-130	12-FEB-20
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R4994346								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Mercury (Hg)-Total			105.4		%		70-130	11-FEB-20
WG3270945-2 DUP		**L2387288-49**						
Mercury (Hg)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	11-FEB-20
WG3270945-4 LCS								
Mercury (Hg)-Total			96.2		%		80-120	11-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-DRY-CVAFS-N-VA	**Tissue**							
Batch R4994346								
WG3270945-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	11-FEB-20
Batch R4995704								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Mercury (Hg)-Total			109.2		%		70-130	13-FEB-20
WG3272564-2 DUP		**L2387288-9**						
Mercury (Hg)-Total		0.0154	0.0131		mg/kg	16	40	13-FEB-20
WG3272564-4 LCS								
Mercury (Hg)-Total			100.1		%		80-120	13-FEB-20
WG3272564-1 MB								
Mercury (Hg)-Total			<0.0050		mg/kg		0.005	13-FEB-20
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Aluminum (Al)-Total			108.1		%		70-130	10-FEB-20
Arsenic (As)-Total			99.7		%		70-130	10-FEB-20
Barium (Ba)-Total			109.1		%		70-130	10-FEB-20
Beryllium (Be)-Total			0.015		mg/kg		0.005-0.025	10-FEB-20
Bismuth (Bi)-Total			0.010		mg/kg		0.002-0.022	10-FEB-20
Boron (B)-Total			90.0		%		70-130	10-FEB-20
Cadmium (Cd)-Total			98.3		%		70-130	10-FEB-20
Calcium (Ca)-Total			99.1		%		70-130	10-FEB-20
Cesium (Cs)-Total			95.3		%		70-130	10-FEB-20
Chromium (Cr)-Total			106.7		%		70-130	10-FEB-20
Cobalt (Co)-Total			103.6		%		70-130	10-FEB-20
Copper (Cu)-Total			98.9		%		70-130	10-FEB-20
Iron (Fe)-Total			111.7		%		70-130	10-FEB-20
Lead (Pb)-Total			100.0		%		70-130	10-FEB-20
Lithium (Li)-Total			1.12		mg/kg		0.71-1.71	10-FEB-20
Magnesium (Mg)-Total			104.5		%		70-130	10-FEB-20
Manganese (Mn)-Total			96.0		%		70-130	10-FEB-20
Molybdenum (Mo)-Total			91.0		%		70-130	10-FEB-20
Nickel (Ni)-Total			99.8		%		70-130	10-FEB-20
Phosphorus (P)-Total			104.3		%		70-130	10-FEB-20
Potassium (K)-Total			107.5		%		70-130	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Rubidium (Rb)-Total			104.5		%		70-130	10-FEB-20
Selenium (Se)-Total			108.4		%		70-130	10-FEB-20
Sodium (Na)-Total			110.5		%		70-130	10-FEB-20
Strontium (Sr)-Total			94.2		%		70-130	10-FEB-20
Thallium (Tl)-Total			79.6		%		70-130	10-FEB-20
Uranium (U)-Total			96.5		%		70-130	10-FEB-20
Vanadium (V)-Total			101.2		%		70-130	10-FEB-20
Zinc (Zn)-Total			109.8		%		70-130	10-FEB-20
Zirconium (Zr)-Total			0.26		mg/kg		0.05-0.45	10-FEB-20
WG3270945-2 DUP		**L2387288-49**						
Aluminum (Al)-Total		<2.0	<2.0	RPD-NA	mg/kg	N/A	40	10-FEB-20
Antimony (Sb)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	10-FEB-20
Arsenic (As)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Barium (Ba)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	10-FEB-20
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	10-FEB-20
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	10-FEB-20
Boron (B)-Total		3.6	2.5		mg/kg	37	40	10-FEB-20
Cadmium (Cd)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	10-FEB-20
Calcium (Ca)-Total		53	45		mg/kg	16	60	10-FEB-20
Cesium (Cs)-Total		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	40	10-FEB-20
Chromium (Cr)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	10-FEB-20
Cobalt (Co)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Copper (Cu)-Total		1.26	1.03		mg/kg	20	40	10-FEB-20
Iron (Fe)-Total		19.3	15.9		mg/kg	19	40	10-FEB-20
Lead (Pb)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	10-FEB-20
Magnesium (Mg)-Total		1240	1110		mg/kg	11	40	10-FEB-20
Manganese (Mn)-Total		4.25	3.49		mg/kg	20	40	10-FEB-20
Molybdenum (Mo)-Total		0.394	0.306		mg/kg	25	40	10-FEB-20
Nickel (Ni)-Total		0.29	0.22		mg/kg	24	40	10-FEB-20
Phosphorus (P)-Total		3860	3310		mg/kg	15	40	10-FEB-20
Potassium (K)-Total		4960	3980		mg/kg	22	40	10-FEB-20
Rubidium (Rb)-Total		1.03	0.853		mg/kg	19	40	10-FEB-20
Selenium (Se)-Total		<0.050	<0.050	RPD-NA	mg/kg	N/A	40	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-2 DUP		**L2387288-49**						
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	10-FEB-20
Strontium (Sr)-Total		0.097	0.077		mg/kg	23	60	10-FEB-20
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Thallium (Tl)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	10-FEB-20
Uranium (U)-Total		<0.0020	<0.0020	RPD-NA	mg/kg	N/A	40	10-FEB-20
Vanadium (V)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	10-FEB-20
Zinc (Zn)-Total		21.4	18.3		mg/kg	15	40	10-FEB-20
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	10-FEB-20
WG3270945-4 LCS								
Aluminum (Al)-Total			109.8		%		80-120	10-FEB-20
Antimony (Sb)-Total			105.0		%		80-120	10-FEB-20
Arsenic (As)-Total			107.5		%		80-120	10-FEB-20
Barium (Ba)-Total			114.1		%		80-120	10-FEB-20
Beryllium (Be)-Total			98.0		%		80-120	10-FEB-20
Bismuth (Bi)-Total			102.7		%		80-120	10-FEB-20
Boron (B)-Total			99.1		%		80-120	10-FEB-20
Cadmium (Cd)-Total			102.7		%		80-120	10-FEB-20
Calcium (Ca)-Total			105.7		%		80-120	10-FEB-20
Cesium (Cs)-Total			106.1		%		80-120	10-FEB-20
Chromium (Cr)-Total			108.4		%		80-120	10-FEB-20
Cobalt (Co)-Total			105.9		%		80-120	10-FEB-20
Copper (Cu)-Total			105.3		%		80-120	10-FEB-20
Iron (Fe)-Total			111.3		%		80-120	10-FEB-20
Lead (Pb)-Total			103.8		%		80-120	10-FEB-20
Lithium (Li)-Total			107.7		%		80-120	10-FEB-20
Magnesium (Mg)-Total			110.9		%		80-120	10-FEB-20
Manganese (Mn)-Total			107.5		%		80-120	10-FEB-20
Molybdenum (Mo)-Total			105.4		%		80-120	10-FEB-20
Nickel (Ni)-Total			106.2		%		80-120	10-FEB-20
Phosphorus (P)-Total			115.3		%		80-120	10-FEB-20
Potassium (K)-Total			110.6		%		80-120	10-FEB-20
Rubidium (Rb)-Total			107.0		%		80-120	10-FEB-20
Selenium (Se)-Total			109.2		%		80-120	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-4 LCS								
Sodium (Na)-Total			112.1		%		80-120	10-FEB-20
Strontium (Sr)-Total			109.6		%		80-120	10-FEB-20
Tellurium (Te)-Total			104.3		%		80-120	10-FEB-20
Thallium (Tl)-Total			99.3		%		80-120	10-FEB-20
Tin (Sn)-Total			102.7		%		80-120	10-FEB-20
Uranium (U)-Total			104.4		%		80-120	10-FEB-20
Vanadium (V)-Total			109.8		%		80-120	10-FEB-20
Zinc (Zn)-Total			103.2		%		80-120	10-FEB-20
Zirconium (Zr)-Total			102.6		%		80-120	10-FEB-20
WG3270945-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	10-FEB-20
Antimony (Sb)-Total			<0.010		mg/kg		0.01	10-FEB-20
Arsenic (As)-Total			<0.020		mg/kg		0.02	10-FEB-20
Barium (Ba)-Total			<0.050		mg/kg		0.05	10-FEB-20
Beryllium (Be)-Total			<0.010		mg/kg		0.01	10-FEB-20
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	10-FEB-20
Boron (B)-Total			<1.0		mg/kg		1	10-FEB-20
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	10-FEB-20
Calcium (Ca)-Total			<20		mg/kg		20	10-FEB-20
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	10-FEB-20
Chromium (Cr)-Total			<0.050		mg/kg		0.05	10-FEB-20
Cobalt (Co)-Total			<0.020		mg/kg		0.02	10-FEB-20
Copper (Cu)-Total			<0.10		mg/kg		0.1	10-FEB-20
Iron (Fe)-Total			<3.0		mg/kg		3	10-FEB-20
Lead (Pb)-Total			<0.020		mg/kg		0.02	10-FEB-20
Lithium (Li)-Total			<0.50		mg/kg		0.5	10-FEB-20
Magnesium (Mg)-Total			<2.0		mg/kg		2	10-FEB-20
Manganese (Mn)-Total			<0.050		mg/kg		0.05	10-FEB-20
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	10-FEB-20
Nickel (Ni)-Total			<0.20		mg/kg		0.2	10-FEB-20
Phosphorus (P)-Total			<10		mg/kg		10	10-FEB-20
Potassium (K)-Total			<20		mg/kg		20	10-FEB-20
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	10-FEB-20
Selenium (Se)-Total			<0.050		mg/kg		0.05	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-1 MB								
Sodium (Na)-Total			<20		mg/kg		20	10-FEB-20
Strontium (Sr)-Total			<0.050		mg/kg		0.05	10-FEB-20
Tellurium (Te)-Total			<0.020		mg/kg		0.02	10-FEB-20
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	10-FEB-20
Tin (Sn)-Total			<0.10		mg/kg		0.1	10-FEB-20
Uranium (U)-Total			<0.0020		mg/kg		0.002	10-FEB-20
Vanadium (V)-Total			<0.10		mg/kg		0.1	10-FEB-20
Zinc (Zn)-Total			<0.50		mg/kg		0.5	10-FEB-20
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	10-FEB-20
Batch R4995951								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Aluminum (Al)-Total			95.9		%		70-130	12-FEB-20
Arsenic (As)-Total			92.8		%		70-130	12-FEB-20
Barium (Ba)-Total			102.1		%		70-130	12-FEB-20
Beryllium (Be)-Total			0.014		mg/kg		0.005-0.025	12-FEB-20
Bismuth (Bi)-Total			0.010		mg/kg		0.002-0.022	12-FEB-20
Boron (B)-Total			90.2		%		70-130	12-FEB-20
Cadmium (Cd)-Total			92.3		%		70-130	12-FEB-20
Calcium (Ca)-Total			95.0		%		70-130	12-FEB-20
Cesium (Cs)-Total			95.5		%		70-130	12-FEB-20
Chromium (Cr)-Total			99.9		%		70-130	12-FEB-20
Cobalt (Co)-Total			94.9		%		70-130	12-FEB-20
Copper (Cu)-Total			93.2		%		70-130	12-FEB-20
Iron (Fe)-Total			102.2		%		70-130	12-FEB-20
Lead (Pb)-Total			99.8		%		70-130	12-FEB-20
Lithium (Li)-Total			1.05		mg/kg		0.71-1.71	12-FEB-20
Magnesium (Mg)-Total			94.4		%		70-130	12-FEB-20
Manganese (Mn)-Total			107.6		%		70-130	12-FEB-20
Molybdenum (Mo)-Total			91.6		%		70-130	12-FEB-20
Nickel (Ni)-Total			92.7		%		70-130	12-FEB-20
Phosphorus (P)-Total			93.4		%		70-130	12-FEB-20
Potassium (K)-Total			96.6		%		70-130	12-FEB-20
Rubidium (Rb)-Total			99.3		%		70-130	12-FEB-20
Selenium (Se)-Total			103.3		%		70-130	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4995951								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Sodium (Na)-Total			98.6		%		70-130	12-FEB-20
Strontium (Sr)-Total			89.7		%		70-130	12-FEB-20
Thallium (Tl)-Total			89.1		%		70-130	12-FEB-20
Uranium (U)-Total			94.5		%		70-130	12-FEB-20
Vanadium (V)-Total			95.4		%		70-130	12-FEB-20
Zinc (Zn)-Total			103.7		%		70-130	12-FEB-20
Zirconium (Zr)-Total			0.24		mg/kg		0.05-0.45	12-FEB-20
WG3272564-2 DUP		**L2387288-9**						
Aluminum (Al)-Total		62.8	50.5		mg/kg	22	40	12-FEB-20
Antimony (Sb)-Total		0.011	0.011		mg/kg	2.4	40	12-FEB-20
Arsenic (As)-Total		0.044	0.038		mg/kg	15	40	12-FEB-20
Barium (Ba)-Total		8.75	8.65		mg/kg	1.1	40	12-FEB-20
Beryllium (Be)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	12-FEB-20
Bismuth (Bi)-Total		<0.010	<0.010	RPD-NA	mg/kg	N/A	40	12-FEB-20
Boron (B)-Total		6.7	6.3		mg/kg	7.3	40	12-FEB-20
Cadmium (Cd)-Total		0.0416	0.0411		mg/kg	1.2	40	12-FEB-20
Calcium (Ca)-Total		4640	4260		mg/kg	8.7	60	12-FEB-20
Cesium (Cs)-Total		0.0132	0.0107		mg/kg	21	40	12-FEB-20
Chromium (Cr)-Total		0.246	0.225		mg/kg	9.0	40	12-FEB-20
Cobalt (Co)-Total		0.055	0.054		mg/kg	2.7	40	12-FEB-20
Copper (Cu)-Total		5.46	5.67		mg/kg	3.8	40	12-FEB-20
Iron (Fe)-Total		113	98.2		mg/kg	14	40	12-FEB-20
Lead (Pb)-Total		0.279	0.231		mg/kg	19	40	12-FEB-20
Lithium (Li)-Total		<0.50	<0.50	RPD-NA	mg/kg	N/A	40	12-FEB-20
Magnesium (Mg)-Total		2090	2110		mg/kg	1.0	40	12-FEB-20
Manganese (Mn)-Total		86.4	84.8		mg/kg	1.8	40	12-FEB-20
Molybdenum (Mo)-Total		4.08	3.80		mg/kg	7.0	40	12-FEB-20
Nickel (Ni)-Total		0.72	0.70		mg/kg	2.3	40	12-FEB-20
Phosphorus (P)-Total		2570	2540		mg/kg	1.2	40	12-FEB-20
Potassium (K)-Total		12400	12300		mg/kg	0.6	40	12-FEB-20
Rubidium (Rb)-Total		6.79	6.83		mg/kg	0.6	40	12-FEB-20
Selenium (Se)-Total		1.40	1.42		mg/kg	1.7	40	12-FEB-20
Sodium (Na)-Total		<20	<20	RPD-NA	mg/kg	N/A	40	12-FEB-20
Strontium (Sr)-Total		13.5	12.6		mg/kg	6.8	60	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4995951								
WG3272564-2 DUP		**L2387288-9**						
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/kg	N/A	40	12-FEB-20
Thallium (Tl)-Total		0.0026	0.0023		mg/kg	13	40	12-FEB-20
Tin (Sn)-Total		<0.10	<0.10	RPD-NA	mg/kg	N/A	40	12-FEB-20
Uranium (U)-Total		0.0091	0.0068		mg/kg	28	40	12-FEB-20
Vanadium (V)-Total		0.15	0.12		mg/kg	21	40	12-FEB-20
Zinc (Zn)-Total		38.7	43.2		mg/kg	11	40	12-FEB-20
Zirconium (Zr)-Total		<0.20	<0.20	RPD-NA	mg/kg	N/A	40	12-FEB-20
WG3272564-4 LCS								
Aluminum (Al)-Total			103.7		%		80-120	12-FEB-20
Antimony (Sb)-Total			95.6		%		80-120	12-FEB-20
Arsenic (As)-Total			107.2		%		80-120	12-FEB-20
Barium (Ba)-Total			111.1		%		80-120	12-FEB-20
Beryllium (Be)-Total			88.4		%		80-120	12-FEB-20
Bismuth (Bi)-Total			88.4		%		80-120	12-FEB-20
Boron (B)-Total			88.0		%		80-120	12-FEB-20
Cadmium (Cd)-Total			102.8		%		80-120	12-FEB-20
Calcium (Ca)-Total			89.2		%		80-120	12-FEB-20
Cesium (Cs)-Total			96.8		%		80-120	12-FEB-20
Chromium (Cr)-Total			106.4		%		80-120	12-FEB-20
Cobalt (Co)-Total			105.1		%		80-120	12-FEB-20
Copper (Cu)-Total			105.0		%		80-120	12-FEB-20
Iron (Fe)-Total			111.8		%		80-120	12-FEB-20
Lead (Pb)-Total			89.7		%		80-120	12-FEB-20
Lithium (Li)-Total			90.6		%		80-120	12-FEB-20
Magnesium (Mg)-Total			105.7		%		80-120	12-FEB-20
Manganese (Mn)-Total			107.5		%		80-120	12-FEB-20
Molybdenum (Mo)-Total			95.9		%		80-120	12-FEB-20
Nickel (Ni)-Total			104.0		%		80-120	12-FEB-20
Phosphorus (P)-Total			113.2		%		80-120	12-FEB-20
Potassium (K)-Total			110.7		%		80-120	12-FEB-20
Rubidium (Rb)-Total			106.4		%		80-120	12-FEB-20
Selenium (Se)-Total			108.5		%		80-120	12-FEB-20
Sodium (Na)-Total			107.9		%		80-120	12-FEB-20
Strontium (Sr)-Total			94.4		%		80-120	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4995951								
WG3272564-4 LCS								
Tellurium (Te)-Total			98.1		%		80-120	12-FEB-20
Thallium (Tl)-Total			88.7		%		80-120	12-FEB-20
Tin (Sn)-Total			90.5		%		80-120	12-FEB-20
Uranium (U)-Total			91.1		%		80-120	12-FEB-20
Vanadium (V)-Total			107.8		%		80-120	12-FEB-20
Zinc (Zn)-Total			103.3		%		80-120	12-FEB-20
Zirconium (Zr)-Total			92.6		%		80-120	12-FEB-20
WG3272564-1 MB								
Aluminum (Al)-Total			<2.0		mg/kg		2	12-FEB-20
Antimony (Sb)-Total			<0.010		mg/kg		0.01	12-FEB-20
Arsenic (As)-Total			<0.020		mg/kg		0.02	12-FEB-20
Barium (Ba)-Total			<0.050		mg/kg		0.05	12-FEB-20
Beryllium (Be)-Total			<0.010		mg/kg		0.01	12-FEB-20
Bismuth (Bi)-Total			<0.010		mg/kg		0.01	12-FEB-20
Boron (B)-Total			<1.0		mg/kg		1	12-FEB-20
Cadmium (Cd)-Total			<0.0050		mg/kg		0.005	12-FEB-20
Calcium (Ca)-Total			<20		mg/kg		20	12-FEB-20
Cesium (Cs)-Total			<0.0050		mg/kg		0.005	12-FEB-20
Chromium (Cr)-Total			<0.050		mg/kg		0.05	12-FEB-20
Cobalt (Co)-Total			<0.020		mg/kg		0.02	12-FEB-20
Copper (Cu)-Total			<0.10		mg/kg		0.1	12-FEB-20
Iron (Fe)-Total			<3.0		mg/kg		3	12-FEB-20
Lead (Pb)-Total			<0.020		mg/kg		0.02	12-FEB-20
Lithium (Li)-Total			<0.50		mg/kg		0.5	12-FEB-20
Magnesium (Mg)-Total			<2.0		mg/kg		2	12-FEB-20
Manganese (Mn)-Total			<0.050		mg/kg		0.05	12-FEB-20
Molybdenum (Mo)-Total			<0.020		mg/kg		0.02	12-FEB-20
Nickel (Ni)-Total			<0.20		mg/kg		0.2	12-FEB-20
Phosphorus (P)-Total			<10		mg/kg		10	12-FEB-20
Potassium (K)-Total			<20		mg/kg		20	12-FEB-20
Rubidium (Rb)-Total			<0.050		mg/kg		0.05	12-FEB-20
Selenium (Se)-Total			<0.050		mg/kg		0.05	12-FEB-20
Sodium (Na)-Total			<20		mg/kg		20	12-FEB-20
Strontium (Sr)-Total			<0.050		mg/kg		0.05	12-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-DRY-CCMS-N-VA	**Tissue**							
Batch R4995951								
WG3272564-1 MB								
Tellurium (Te)-Total			<0.020		mg/kg		0.02	12-FEB-20
Thallium (Tl)-Total			<0.0020		mg/kg		0.002	12-FEB-20
Tin (Sn)-Total			<0.10		mg/kg		0.1	12-FEB-20
Uranium (U)-Total			<0.0020		mg/kg		0.002	12-FEB-20
Vanadium (V)-Total			<0.10		mg/kg		0.1	12-FEB-20
Zinc (Zn)-Total			<0.50		mg/kg		0.5	12-FEB-20
Zirconium (Zr)-Total			<0.20		mg/kg		0.2	12-FEB-20
MOISTURE-BU	**Tissue**							
Batch R4976647								
WG3254533-2 LCS								
% Moisture			94.7		%		50-150	23-JAN-20
WG3254533-1 MB								
% Moisture			<0.10		%		0.1	23-JAN-20
Batch R4980115								
WG3254677-2 LCS								
% Moisture			96.6		%		50-150	27-JAN-20
WG3254677-1 MB								
% Moisture			<0.10		%		0.1	27-JAN-20
MOISTURE-TISS-VA	**Tissue**							
Batch R4992446								
WG3270879-3 DUP		**L2387288-19**						
% Moisture		58.0	58.1		%	0.3	20	07-FEB-20
WG3270879-6 DUP		**L2387288-23**						
% Moisture		35.3	35.1		%	0.5	20	07-FEB-20
WG3270879-2 LCS								
% Moisture			93.7		%		90-110	07-FEB-20
WG3270879-5 LCS								
% Moisture			90.9		%		90-110	07-FEB-20
WG3270879-1 MB								
% Moisture			<0.50		%		0.5	07-FEB-20
WG3270879-4 MB								
% Moisture			<0.50		%		0.5	07-FEB-20
Batch R4993331								
WG3272631-3 DUP		**L2387288-35**						
% Moisture		19.8	20.2		%	2.1	20	10-FEB-20
WG3272631-2 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-TISS-VA	**Tissue**							
Batch R4993331								
WG3272631-2 LCS								
% Moisture			100.0		%		90-110	10-FEB-20
WG3272631-1 MB								
% Moisture			<0.50		%		0.5	10-FEB-20
PCB-C428-LRMS-BU	**Tissue**							
Batch R4988567								
WG3254521-2 LCS								
Total PCB			109.0		%		50-150	28-JAN-20
WG3254521-4 LCS								
Total PCB			106.8		%		50-150	28-JAN-20
WG3254521-1 MB								
Total PCB			<0.010		ng/g		0.01	28-JAN-20
Surrogate: 13C12 PCB 1			24.1		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 3			32.7		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 4			24.2		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 15			47.6		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 19			22.7		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 37			58.8		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 54			23.2		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 81			62.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 104			37.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 123			58.8		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 118			61.1		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 114			61.6		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 105			65.1		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 126			81.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 155			52.0		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 167			65.7		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 156			72.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 157			62.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 169			67.7		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 188			60.8		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 202			65.7		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 205			64.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 208			64.1		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 206			67.2		%		10-145	28-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-C428-LRMS-BU	**Tissue**							
Batch R4988567								
WG3254521-1 MB								
Surrogate: 13C12 PCB 209			61.9		%		10-145	28-JAN-20
S-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Sulfur (S)-Total			113.0		%		70-130	10-FEB-20
WG3270945-2 DUP		**L2387288-49**						
Sulfur (S)-Total		1080	850		mg/kg	24	40	10-FEB-20
WG3270945-4 LCS								
Sulfur (S)-Total			107.6		%		70-130	10-FEB-20
WG3270945-1 MB								
Sulfur (S)-Total			<100		mg/kg		100	10-FEB-20
Batch R4995951								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Sulfur (S)-Total			106.5		%		70-130	12-FEB-20
WG3272564-2 DUP		**L2387288-9**						
Sulfur (S)-Total		3460	3420		mg/kg	1.2	40	12-FEB-20
WG3272564-4 LCS								
Sulfur (S)-Total			107.1		%		70-130	12-FEB-20
WG3272564-1 MB								
Sulfur (S)-Total			<100		mg/kg		100	12-FEB-20
TI-DRY-CCMS-N-VA	**Tissue**							
Batch R4992782								
WG3270945-3 CRM		**VA-NRC-DORM4**						
Titanium (Ti)-Total			118.0		%		70-130	10-FEB-20
WG3270945-2 DUP		**L2387288-49**						
Titanium (Ti)-Total		<0.25	<0.25	RPD-NA	mg/kg	N/A	40	10-FEB-20
WG3270945-4 LCS								
Titanium (Ti)-Total			107.2		%		80-120	10-FEB-20
WG3270945-1 MB								
Titanium (Ti)-Total			<0.25		mg/kg		0.25	10-FEB-20
Batch R4995951								
WG3272564-3 CRM		**VA-NRC-DORM4**						
Titanium (Ti)-Total			105.0		%		70-130	12-FEB-20
WG3272564-2 DUP		**L2387288-9**						
Titanium (Ti)-Total		1.34	1.04		mg/kg	25	40	12-FEB-20
WG3272564-4 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TI-DRY-CCMS-N-VA	**Tissue**							
Batch R4995951								
WG3272564-4 LCS								
Titanium (Ti)-Total			103.0		%		80-120	12-FEB-20
WG3272564-1 MB								
Titanium (Ti)-Total			<0.25		mg/kg		0.25	12-FEB-20
CP-CUSTOM-LRMS-BU	**Solid**							
Batch R5008427								
WG3255028-2 LCS								
Pentachlorophenol			110.0		%		50-150	11-FEB-20
COMMENTS: There is low recovery of 13C6-Pentachlorophenol.								
WG3255028-4 LCS								
Pentachlorophenol			127.0		%		50-150	11-FEB-20
COMMENTS: There is low recovery of 13C6-Pentachlorophenol.								
WG3255028-1 MB								
Pentachlorophenol			<0.25	[U]	ng/g		0.25	11-FEB-20
Surrogate: 13C6-Pentachlorophenol			43.0	G	%		50-150	11-FEB-20
COMMENTS: There is low recovery of 13C6-Pentachlorophenol.								
OCPEST-1699-HRMS-BU	**Solid**							
Batch R5007833								
WG3253398-4 DUP		**L2387288-7**						
alpha-BHC		<0.0068	<0.0092	RPD-NA	ng/g	N/A	50	10-FEB-20
beta-BHC		<0.0087	<0.013	RPD-NA	ng/g	N/A	50	10-FEB-20
delta-BHC		<0.0089	<0.013	RPD-NA	ng/g	N/A	50	10-FEB-20
gamma-BHC		<0.0088	<0.011	RPD-NA	ng/g	N/A	50	10-FEB-20
Heptachlor		0.00210	0.00150		ng/g	33	50	10-FEB-20
Aldrin		<0.00097	<0.00084	RPD-NA	ng/g	N/A	50	10-FEB-20
Heptachlor Epoxide		0.0102	0.0089		ng/g	14	50	10-FEB-20
trans-Chlordane		<0.0084	<0.0030	RPD-NA	ng/g	N/A	50	10-FEB-20
cis-Chlordane		<0.0080	0.0108	G	ng/g	N/A	50	10-FEB-20
Dieldrin		0.0240	0.0170		ng/g	34	50	10-FEB-20
Endrin		<0.013	<0.0062	RPD-NA	ng/g	N/A	50	10-FEB-20
Endrin Aldehyde		0.0084	<0.0031	G	ng/g	N/A	50	10-FEB-20
Endosulfan I		<0.0060	<0.0064	RPD-NA	ng/g	N/A	50	10-FEB-20
Endosulfan II		<0.020	<0.012	RPD-NA	ng/g	N/A	50	10-FEB-20
Endosulfan Sulfate		<0.0025	<0.0027	RPD-NA	ng/g	N/A	50	10-FEB-20
4,4-DDE		0.102	0.0825		ng/g	21	50	10-FEB-20
4,4-DDD		0.013	0.0052	J	ng/g	0.0078	0.02	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCPEST-1699-HRMS-BU	**Solid**							
Batch R5007833								
WG3253398-4 DUP		**L2387288-7**						
4,4-DDT		0.114	0.0914		ng/g	22	50	10-FEB-20
Methoxychlor		<0.0032	<0.0041	RPD-NA	ng/g	N/A	50	10-FEB-20
Mirex		0.00920	<0.00032	G	ng/g	N/A	50	10-FEB-20
Heptachlor Epoxide A		<0.0077	<0.0080	RPD-NA	ng/g	N/A	50	10-FEB-20
COMMENTS: Sample and duplicate RPD criteria outside method limits due to presence of low level hits.								
WG3253398-2 LCS								
alpha-BHC			115.0		%		50-120	10-FEB-20
beta-BHC			112.0		%		50-120	10-FEB-20
delta-BHC			109.0		%		50-120	10-FEB-20
gamma-BHC			111.0		%		50-120	10-FEB-20
Heptachlor			108.0		%		50-120	10-FEB-20
Aldrin			95.0		%		50-120	10-FEB-20
Heptachlor Epoxide			115.0		%		20-200	10-FEB-20
trans-Chlordane			105.0		%		50-120	10-FEB-20
cis-Chlordane			109.0		%		50-120	10-FEB-20
Dieldrin			105.0		%		50-120	10-FEB-20
Endrin			109.0		%		50-120	10-FEB-20
Endrin Aldehyde			101.0		%		20-200	10-FEB-20
Endosulfan I			88.0		%		50-120	10-FEB-20
Endosulfan II			96.0		%		5-200	10-FEB-20
Endosulfan Sulfate			106.0		%		50-200	10-FEB-20
4,4-DDE			111.0		%		50-120	10-FEB-20
4,4-DDD			109.0		%		42-120	10-FEB-20
4,4-DDT			108.0		%		50-120	10-FEB-20
Methoxychlor			110.0		%		50-120	10-FEB-20
Mirex			105.0		%		50-120	10-FEB-20
Heptachlor Epoxide A			116.0		%		50-150	10-FEB-20
COMMENTS: 13C12-Methoxychlor % recovery above the method limit;native target calculation against labelled using isotope dilution, therefore minimal impact on data quality is expected.								
WG3253398-1 MB								
alpha-BHC			<0.0077	[U]	ng/g		0.14	10-FEB-20
beta-BHC			<0.010	[U]	ng/g		0.14	10-FEB-20
delta-BHC			<0.010	[U]	ng/g		0.14	10-FEB-20
gamma-BHC			<0.0090	[U]	ng/g		0.14	10-FEB-20
Heptachlor			0.00085	M,J,R	ng/g		0.14	10-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCPEST-1699-HRMS-BU	**Solid**							
Batch	**R5007833**							
WG3253398-1	**MB**							
Aldrin			<0.00074	[U]	ng/g		0.14	10-FEB-20
Heptachlor Epoxide			0.0013	M,J,R	ng/g		0.14	10-FEB-20
trans-Chlordane			<0.0055	[U]	ng/g		0.14	10-FEB-20
cis-Chlordane			<0.0053	[U]	ng/g		0.14	10-FEB-20
Dieldrin			<0.0031	M,U	ng/g		0.14	10-FEB-20
Endrin			<0.0084	[U]	ng/g		0.14	10-FEB-20
Endrin Aldehyde			<0.011	[U]	ng/g		0.14	10-FEB-20
Endosulfan I			<0.0067	[U]	ng/g		0.14	10-FEB-20
Endosulfan II			<0.012	[U]	ng/g		0.14	10-FEB-20
Endosulfan Sulfate			<0.0029	[U]	ng/g		0.14	10-FEB-20
4,4-DDE			<0.0051	[U]	ng/g		0.14	10-FEB-20
4,4-DDD			<0.0042	[U]	ng/g		0.14	10-FEB-20
4,4-DDT			<0.010	[U]	ng/g		0.14	10-FEB-20
Methoxychlor			<0.0019	[U]	ng/g		0.14	10-FEB-20
Mirex			<0.00037	[U]	ng/g		0.14	10-FEB-20
Surrogate: alpha-BHC, 13C6-			74.0		%		16-129	10-FEB-20
Surrogate: trans-Nonachlor, 13C10-			87.0		%		14-136	10-FEB-20
Surrogate: Dieldrin, 13C12-			97.0		%		40-151	10-FEB-20
Surrogate: Endrin, 13C12-			93.0		%		35-155	10-FEB-20
Surrogate: Endosulfan II, 13C9-			94.0		%		5-122	10-FEB-20
Surrogate: 4,4'-DDE, 13C12-			91.0		%		21-125	10-FEB-20
Surrogate: 4,4'-DDT, 13C12-			87.0		%		5-120	10-FEB-20
Surrogate: Mirex, 13C10-			83.0		%		5-120	10-FEB-20
Heptachlor Epoxide A			<0.0081	[U]	ng/g		0.14	10-FEB-20
Surrogate: 4,4'-DDD, 13C12-			94.0		%		5-120	10-FEB-20
Surrogate: gamma-BHC, 13C6-			80.0		%		11-120	10-FEB-20
Surrogate: Methoxychlor, 13C12-			84.0		%		5-120	10-FEB-20
Surrogate: beta-BHC, 13C6-			89.0		%		11-120	10-FEB-20
Surrogate: delta-BHC, 13C6-			88.0		%		11-120	10-FEB-20
Batch	**R5011480**							
WG3254521-2	**LCS**							
alpha-BHC			108.0		%		50-120	11-FEB-20
beta-BHC			104.0		%		50-120	11-FEB-20
delta-BHC			113.0		%		50-120	11-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCPEST-1699-HRMS-BU	**Solid**							
Batch R5011480								
WG3254521-2 LCS								
gamma-BHC			105.0		%		50-120	11-FEB-20
Heptachlor			104.0		%		50-120	11-FEB-20
Aldrin			99.0		%		50-120	11-FEB-20
Heptachlor Epoxide			120.0		%		20-200	11-FEB-20
trans-Chlordane			100.0		%		50-120	11-FEB-20
cis-Chlordane			105.0		%		50-120	11-FEB-20
Dieldrin			106.0		%		50-120	11-FEB-20
Endrin			114.0		%		50-120	11-FEB-20
Endrin Aldehyde			73.0		%		20-200	11-FEB-20
Endosulfan I			83.0		%		50-120	11-FEB-20
Endosulfan II			100.0		%		5-200	11-FEB-20
Endosulfan Sulfate			108.0		%		50-200	11-FEB-20
4,4-DDE			113.0		%		50-120	11-FEB-20
4,4-DDD			107.0		%		42-120	11-FEB-20
4,4-DDT			110.0		%		50-120	11-FEB-20
Methoxychlor			110.0		%		50-120	11-FEB-20
Mirex			109.0		%		50-120	11-FEB-20
Endrin Ketone			104.0		%		50-150	11-FEB-20
Heptachlor Epoxide A			111.0		%		50-150	11-FEB-20
COMMENTS: Methoxychlor-ES recovery outside method limits. Target results are calculated against labelled isotopes using isotope dilution, therefore minimal impact on data quality is expected.								
WG3254521-1 MB								
alpha-BHC			<0.034	[U]	ng/g		1.3	11-FEB-20
beta-BHC			<0.046	[U]	ng/g		1.3	11-FEB-20
delta-BHC			<0.042	[U]	ng/g		1.3	11-FEB-20
gamma-BHC			<0.042	[U]	ng/g		1.3	11-FEB-20
Heptachlor			0.0015	M,J,R	ng/g		1.3	11-FEB-20
Aldrin			<0.0050	[U]	ng/g		1.3	11-FEB-20
Heptachlor Epoxide			<0.0058	[U]	ng/g		1.3	11-FEB-20
trans-Chlordane			<0.015	[U]	ng/g		1.3	11-FEB-20
cis-Chlordane			<0.015	[U]	ng/g		1.3	11-FEB-20
Dieldrin			<0.0095	[U]	ng/g		1.3	11-FEB-20
Endrin			<0.013	[U]	ng/g		1.3	11-FEB-20
Endrin Aldehyde			<0.013	[U]	ng/g		1.3	11-FEB-20
Endosulfan I			<0.023	[U]	ng/g		1.3	11-FEB-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
OCPEST-1699-HRMS-BU	**Solid**							
Batch **R5011480**								
WG3254521-1 **MB**								
Endosulfan II			<0.055	[U]	ng/g		1.3	11-FEB-20
Endosulfan Sulfate			<0.018	[U]	ng/g		1.3	11-FEB-20
4,4-DDE			<0.018	[U]	ng/g		1.3	11-FEB-20
4,4-DDD			<0.017	[U]	ng/g		1.3	11-FEB-20
4,4-DDT			<0.027	[U]	ng/g		1.3	11-FEB-20
Methoxychlor			<0.0043	[U]	ng/g		1.3	11-FEB-20
Mirex			<0.0010	[U]	ng/g		1.3	11-FEB-20
Surrogate: alpha-BHC, 13C6-			42.0		%		16-129	11-FEB-20
Surrogate: Heptachlor, 13C10-			41.0		%		5-120	11-FEB-20
Surrogate: trans-Nonachlor, 13C10-			64.0		%		14-136	11-FEB-20
Surrogate: Dieldrin, 13C12-			68.0		%		40-151	11-FEB-20
Surrogate: Endrin, 13C12-			67.0		%		35-155	11-FEB-20
Surrogate: Endosulfan II, 13C9-			66.0		%		5-122	11-FEB-20
Surrogate: 4,4'-DDE, 13C12-			69.0		%		21-125	11-FEB-20
Surrogate: 4,4'-DDT, 13C12-			80.0		%		5-120	11-FEB-20
Surrogate: Mirex, 13C10-			79.0		%		5-120	11-FEB-20
Endrin Ketone			<0.032	[U]	ng/g		1.3	11-FEB-20
Heptachlor Epoxide A			<0.045	[U]	ng/g		1.3	11-FEB-20
Surrogate: 4,4'-DDD, 13C12-			78.0		%		5-120	11-FEB-20
Surrogate: gamma-BHC, 13C6-			46.0		%		11-120	11-FEB-20
Surrogate: Methoxychlor, 13C12-			95.0		%		5-120	11-FEB-20
Surrogate: beta-BHC, 13C6-			51.0		%		11-120	11-FEB-20
Surrogate: delta-BHC, 13C6-			54.0		%		11-120	11-FEB-20
PCB-C428-LRMS-BU	**Solid**							
Batch **R4996239**								
WG3253398-4 **DUP**		**L2387288-7**						
Total PCB		0.347	0.547		ng/g	45	50	28-JAN-20
WG3253398-2 **LCS**								
Total PCB			108.8		%		50-150	27-JAN-20
WG3253398-5 **LCS**								
Total PCB			102.2		%		50-150	27-JAN-20
WG3253398-1 **MB**								
Total PCB			<0.010		ng/g		0.01	28-JAN-20
Surrogate: 13C12 PCB 1			40.2		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 3			52.4		%		5-145	28-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PCB-C428-LRMS-BU	**Solid**							
Batch	**R4996239**							
WG3253398-1	**MB**							
Surrogate: 13C12 PCB 4			36.7		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 15			70.4		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 19			33.8		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 37			80.4		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 54			32.8		%		5-145	28-JAN-20
Surrogate: 13C12 PCB 81			75.1		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 104			51.7		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 123			67.6		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 118			66.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 114			71.8		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 105			75.6		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 126			98.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 155			67.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 167			76.3		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 156			81.0	M	%		10-145	28-JAN-20
Surrogate: 13C12 PCB 157			73.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 169			83.9		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 188			73.1		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 202			76.0		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 205			71.6		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 208			70.2		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 206			68.8		%		10-145	28-JAN-20
Surrogate: 13C12 PCB 209			66.1		%		10-145	28-JAN-20
DX-1613B-HRMS-BU	**Biota**							
Batch	**R4982112**							
WG3254540-2	**LCS**							
2,3,7,8-TCDD			97.0		%		67-158	27-JAN-20
1,2,3,7,8-PeCDD			99.0		%		70-142	27-JAN-20
1,2,3,4,7,8-HxCDD			100.0		%		70-164	27-JAN-20
1,2,3,6,7,8-HxCDD			91.0		%		76-134	27-JAN-20
1,2,3,7,8,9-HxCDD			99.0		%		64-162	27-JAN-20
1,2,3,4,6,7,8-HpCDD			102.0		%		70-140	27-JAN-20
OCDD			94.0		%		78-144	27-JAN-20
2,3,7,8-TCDF			93.0		%		75-158	27-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Biota**							
Batch R4982112								
WG3254540-2 LCS								
1,2,3,7,8-PeCDF			99.0		%		80-134	27-JAN-20
2,3,4,7,8-PeCDF			90.0		%		68-160	27-JAN-20
1,2,3,4,7,8-HxCDF			96.0		%		72-134	27-JAN-20
1,2,3,6,7,8-HxCDF			101.0		%		84-130	27-JAN-20
2,3,4,6,7,8-HxCDF			98.0		%		70-156	27-JAN-20
1,2,3,7,8,9-HxCDF			105.0		%		78-130	27-JAN-20
1,2,3,4,6,7,8-HpCDF			103.0		%		82-122	27-JAN-20
1,2,3,4,7,8,9-HpCDF			93.0		%		78-138	27-JAN-20
OCDF			87.0		%		63-170	27-JAN-20
WG3254540-1 MB								
2,3,7,8-TCDD			<0.044	[U]	pg/g		0.044	27-JAN-20
1,2,3,7,8-PeCDD			<0.024	[U]	pg/g		0.024	27-JAN-20
1,2,3,4,7,8-HxCDD			<0.018	[U]	pg/g		0.018	27-JAN-20
1,2,3,6,7,8-HxCDD			<0.018	[U]	pg/g		0.018	27-JAN-20
1,2,3,7,8,9-HxCDD			<0.018	[U]	pg/g		0.018	27-JAN-20
1,2,3,4,6,7,8-HpCDD			0.025	M,J,R	pg/g		0.022	27-JAN-20
OCDD			0.086	M,J	pg/g		0.018	27-JAN-20
2,3,7,8-TCDF			<0.032	[U]	pg/g		0.032	27-JAN-20
1,2,3,7,8-PeCDF			0.030	M,J	pg/g		0.015	27-JAN-20
2,3,4,7,8-PeCDF			<0.013	[U]	pg/g		0.013	27-JAN-20
1,2,3,4,7,8-HxCDF			<0.015	[U]	pg/g		0.015	27-JAN-20
1,2,3,6,7,8-HxCDF			<0.015	[U]	pg/g		0.015	27-JAN-20
2,3,4,6,7,8-HxCDF			<0.015	[U]	pg/g		0.015	27-JAN-20
1,2,3,7,8,9-HxCDF			0.024	M,J,R	pg/g		0.02	27-JAN-20
1,2,3,4,6,7,8-HpCDF			0.021	M,J,R	pg/g		0.017	27-JAN-20
1,2,3,4,7,8,9-HpCDF			<0.020	[U]	pg/g		0.02	27-JAN-20
OCDF			0.049	M,J	pg/g		0.024	27-JAN-20
Total-TCDD			<0.044	[U]	pg/g		0.044	27-JAN-20
Total-PeCDD			<0.024	[U]	pg/g		0.024	27-JAN-20
Total-HxCDD			<0.018	[U]	pg/g		0.018	27-JAN-20
Total-HpCDD			<0.022	[U]	pg/g		0.022	27-JAN-20
Total-TCDF			<0.032	[U]	pg/g		0.032	27-JAN-20
Total-PeCDF			0.030	A	pg/g		0.015	27-JAN-20
Total-HxCDF			<0.020	[U]	pg/g		0.02	27-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Biota**							
Batch	**R4982112**							
WG3254540-1	**MB**							
Total-HpCDF			<0.020	[U]	pg/g		0.02	27-JAN-20
Surrogate: 13C12-2,3,7,8-TCDD			65.0		%		25-164	27-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDD			73.0		%		25-181	27-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			65.0		%		32-141	27-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			71.0		%		28-130	27-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			70.0		%		23-140	27-JAN-20
Surrogate: 13C12-OCDD			71.0		%		17-157	27-JAN-20
Surrogate: 13C12-2,3,7,8-TCDF			64.0		%		24-169	27-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDF			71.0		%		21-192	27-JAN-20
Surrogate: 13C12-2,3,4,7,8-PeCDF			71.0		%		21-178	27-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			62.0		%		26-152	27-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			70.0		%		26-123	27-JAN-20
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			66.0		%		29-147	27-JAN-20
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			59.0		%		28-136	27-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			70.0		%		28-143	27-JAN-20
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			72.0		%		26-138	27-JAN-20
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			68.0		%		31-197	27-JAN-20
COMMENTS: Blank has low levels of select targets. No impact to data quality is expected.								
Batch	**R4985267**							
WG3254570-2	**LCS**							
2,3,7,8-TCDD			101.0		%		67-158	28-JAN-20
1,2,3,7,8-PeCDD			102.0		%		70-142	28-JAN-20
1,2,3,4,7,8-HxCDD			103.0		%		70-164	28-JAN-20
1,2,3,6,7,8-HxCDD			97.0		%		76-134	28-JAN-20
1,2,3,7,8,9-HxCDD			95.0		%		64-162	28-JAN-20
1,2,3,4,6,7,8-HpCDD			103.0		%		70-140	28-JAN-20
OCDD			93.0		%		78-144	28-JAN-20
2,3,7,8-TCDF			94.0		%		75-158	28-JAN-20
1,2,3,7,8-PeCDF			100.0		%		80-134	28-JAN-20
2,3,4,7,8-PeCDF			96.0		%		68-160	28-JAN-20
1,2,3,4,7,8-HxCDF			99.0		%		72-134	28-JAN-20
1,2,3,6,7,8-HxCDF			102.0		%		84-130	28-JAN-20
2,3,4,6,7,8-HxCDF			100.0		%		70-156	28-JAN-20
1,2,3,7,8,9-HxCDF			106.0		%		78-130	28-JAN-20
1,2,3,4,6,7,8-HpCDF			103.0		%		82-122	28-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Biota**							
Batch R4985267								
WG3254570-2 LCS								
1,2,3,4,7,8,9-HpCDF			94.0		%		78-138	28-JAN-20
OCDF			92.0		%		63-170	28-JAN-20
WG3254570-1 MB								
2,3,7,8-TCDD			<0.029	[U]	pg/g		0.029	28-JAN-20
1,2,3,7,8-PeCDD			0.020	M,J	pg/g		0.019	28-JAN-20
1,2,3,4,7,8-HxCDD			0.021	M,J	pg/g		0.019	28-JAN-20
1,2,3,6,7,8-HxCDD			<0.020	M,U	pg/g		0.02	28-JAN-20
1,2,3,7,8,9-HxCDD			0.035	M,J,R	pg/g		0.019	28-JAN-20
1,2,3,4,6,7,8-HpCDD			0.071	M,J	pg/g		0.014	28-JAN-20
OCDD			0.260	M,J,R	pg/g		0.024	28-JAN-20
2,3,7,8-TCDF			<0.019	[U]	pg/g		0.019	28-JAN-20
1,2,3,7,8-PeCDF			<0.015	[U]	pg/g		0.015	28-JAN-20
2,3,4,7,8-PeCDF			<0.011	M,U	pg/g		0.011	28-JAN-20
1,2,3,4,7,8-HxCDF			<0.016	[U]	pg/g		0.016	28-JAN-20
1,2,3,6,7,8-HxCDF			<0.016	[U]	pg/g		0.016	28-JAN-20
2,3,4,6,7,8-HxCDF			<0.016	M,U	pg/g		0.016	28-JAN-20
1,2,3,7,8,9-HxCDF			0.042	M,J,R	pg/g		0.021	28-JAN-20
1,2,3,4,6,7,8-HpCDF			0.031	M,J,R	pg/g		0.013	28-JAN-20
1,2,3,4,7,8,9-HpCDF			<0.017	M,U	pg/g		0.017	28-JAN-20
OCDF			0.069	M,J,R	pg/g		0.021	28-JAN-20
Total-TCDD			<0.029	[U]	pg/g		0.029	28-JAN-20
Total-PeCDD			0.020	A	pg/g		0.019	28-JAN-20
Total-HxCDD			0.021	A	pg/g		0.02	28-JAN-20
Total-HpCDD			0.125	A	pg/g		0.014	28-JAN-20
Total-TCDF			<0.019	[U]	pg/g		0.019	28-JAN-20
Total-PeCDF			<0.015	[U]	pg/g		0.015	28-JAN-20
Total-HxCDF			<0.021	[U]	pg/g		0.021	28-JAN-20
Total-HpCDF			<0.017	[U]	pg/g		0.017	28-JAN-20
Surrogate: 13C12-2,3,7,8-TCDD			69.0		%		25-164	28-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDD			78.0		%		25-181	28-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDD			74.0		%		32-141	28-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDD			74.0		%		28-130	28-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDD			75.0		%		23-140	28-JAN-20
Surrogate: 13C12-OCDD			73.0		%		17-157	28-JAN-20

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DX-1613B-HRMS-BU	**Biota**							
Batch	**R4985267**							
WG3254570-1	**MB**							
Surrogate: 13C12-2,3,7,8-TCDF			70.0		%		24-169	28-JAN-20
Surrogate: 13C12-1,2,3,7,8-PeCDF			74.0		%		21-192	28-JAN-20
Surrogate: 13C12-2,3,4,7,8-PeCDF			72.0		%		21-178	28-JAN-20
Surrogate: 13C12-1,2,3,4,7,8-HxCDF			69.0		%		26-152	28-JAN-20
Surrogate: 13C12-1,2,3,6,7,8-HxCDF			72.0		%		26-123	28-JAN-20
Surrogate: 13C12-2,3,4,6,7,8-HxCDF			72.0		%		29-147	28-JAN-20
Surrogate: 13C12-1,2,3,7,8,9-HxCDF			66.0		%		28-136	28-JAN-20
Surrogate: 13C12-1,2,3,4,6,7,8-HpCDF			73.0		%		28-143	28-JAN-20
Surrogate: 13C12-1,2,3,4,7,8,9-HpCDF			75.0		%		26-138	28-JAN-20
Surrogate: 37Cl4-2,3,7,8-TCDD (Cleanup)			78.0		%		31-197	28-JAN-20

COMMENTS: Blank has low levels of select targets, no impact to data quality is expected.

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
A	Method Blank exceeds ALS DQO. Refer to narrative comments for further information.
G	QC result did not meet ALS DQO. Refer to narrative comments for further information.
J	Duplicate results and limits are expressed in terms of absolute difference.
M	A peak has been manually integrated.
M,J	A peak has been manually integrated, and the analyte was detected below the calibrated range but above the EDL.
M,J,R	A peak has been manually integrated, the analyte was detected below the calibrated range but above the EDL, and the ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
M,U	A peak has been manually integrated, and the analyte was not detected above the EDL.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
[U]	The analyte was not detected above the EDL.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

COC Number: 17 -

L2387288-COFC

Page 1 of 6

www.alsglobal.com Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting Ltd.
Contact:	Katherine Ketis
Phone:	(519) 780-8198
	Company address below will appear on the final report
Street:	70 Southgate Drive Suite 1
City/Province:	Guelph, ON
Postal Code:	N1G 4P5
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Clean Harbors
Contact:	Erica Carabott

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax Katherine.Ketis@stantec.com
Email 2
Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax carabott.erica@cleanharbors.com
Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	Q53923
Job #:	122160003
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
1	19-W2-SS-CH-001	10-Oct-19	8:30	Soil	1	R		R								R					
2	19-W2-NG-CH-003	10-Oct-19	9:00	Plant Tissue	1	R		R								R					
3	19-W2-SB-CH-005	10-Oct-19	9:30	Plant Tissue	1	R		R								R					
4	19-W4-SS-CH-007	9-Oct-19	16:00	Soil	1	R		R								R					
5	19-W4-NG-CH-009	9-Oct-19	16:15	Plant Tissue	1	R		R								R					
6	19-W4-SB-CH-011	9-Oct-19	16:30	Plant Tissue	1	R		R								R					
7	19-N2-SS-CH-013	8-Oct-19	14:00	Soil	1	R		R		R		R				R					
8	19-N2-SD-CH-015	8-Oct-19	14:30	Sediment	1	R		R		R		R									
9	19-N2-NG-CH-019	8-Oct-19	15:00	Plant Tissue	1	R		R		R		R				R					
10	19-N2-SB-CH-021	8-Oct-19	15:30	Plant Tissue	1	R		R		R		R		R		R					
11	19-N4-SS-CH-023	8-Oct-19	12:30	Soil	1	R		R								R					
12	19-N4-NG-CH-025	8-Oct-19	12:40	Plant Tissue	1	R		R								R					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☐ NO

Are samples for human consumption/ use?
☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☒
Ice Packs ☐ Ice Cubes ☒ | Custody seal intact Yes ☒ No ☐
Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.8°C							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	Nov 22, 2019	9:00	AARON BURTON	25-Nov-2019	11:15			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY NOV 2018 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

COC Number: 17 -

L2387288-COFC

www.alsglobal.com Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Stantec Consulting Ltd.	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Katherine Ketis	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days): 4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐ — EMERGENCY: 1 Business day [E - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
Phone:	(519) 780-8198	☐ Compare Results to Criteria on Report - provide details below if box checked	
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Street:	70 Southgate Drive Suite 1	Email 1 or Fax Katherine.Ketis@stantec.com	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Guelph, ON	Email 2	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	N1G 4P5	Email 3	
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Distribution**	
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:	Clean Harbors	Email 1 or Fax carabott.erica@cleanharbors.com	
Contact:	Erica Carabott	Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q53923	AFE/Cost Center:	PO#
Job #:	122160003	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
13	19-N4-SB-CH-027	8-Oct-19	13:00	Plant Tissue	1	R		R								R					
14	19-N5-SS-CH-029	14-Aug-19	13:00	Soil	1	R		R								R					
15	19-N5-SD-CH-031	14-Aug-19	13:30	Sediment	1	R		R													
16	19-N5-NG-CH-035	14-Aug-19	~~13:50~~ 15:15	Plant Tissue	1	R		R								R					
17	19-E1-SS-CH-037	9-Oct-19	9:00	Soil	1	R		R								R					
18	19-E1-NG-CH-039	9-Oct-19	9:30	Plant Tissue	1	R		R								R					
19	19-E1-SB-CHR-042	9-Oct-19	9:20	Plant Tissue	1	R		R								R					
20	19-E2-SS-CH-043	10-Oct-19	15:00	Soil	1	R		R		R		R				R					
21	19-E2-SD-CH-045	10-Oct-19	15:30	Sediment	1	R		R		R		R									
22	19-E2-NG-CH-049	10-Oct-19	16:00	Plant Tissue	1	R		R		R		R				R					
23	19-E2-FC-CH-051	10-Oct-19	16:30	Plant Tissue	2	R		R		R		R		R		R					
24 NB																					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☒

Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☒ No ☐

Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
5.8°C	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
[signature]	Nov 22, 2019	9:00	AARON BURTON	25-Nov-2019	11:15			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY NOV 2018 FRONT

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

L2387288-COFC

COC Number: 17 - 7

ALS www.alsglobal.com Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting Ltd.
Contact:	Katherine Ketis
Phone:	(519) 780-8198
	Company address below will appear on the final report
Street:	70 Southgate Drive Suite 1
City/Province:	Guelph, ON
Postal Code:	N1G 4P5
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Clean Harbors
Contact:	Erica Carabott

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Katherine.Ketis@stantec.com
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	carabott.erica@cleanharbors.com
Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q53923	AFE/Cost Center:	PO#
Job #:	122160003	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
24	19-E5-SS-CH-053	9-Oct-19	10:00	Soil	1	R		R								R					
25	19-E5-NG-CH-055	9-Oct-19	10:30	Plant Tissue	1	R		R								R					
26	19-E5-SB-CH-057	9-Oct-19	10:15	Plant Tissue	1	R		R								R					
27	19-E6-SS-CH-059	14-Aug-19	12:30	Soil	1	R		R		R		R				R					
28	19-E6-NG-CH-061	14-Aug-19	12:45	Plant Tissue	1	R		R		R		R				R					
29	19-E7-SS-CH-303	9-Oct-19	13:00	Soil	1	R		R								R					
30	19-E7-NG-CH-305	9-Oct-19	13:30	Plant Tissue	1	R		R								R					
31	19-E7-SB-CH-300	1-Oct-19	12:30	Plant Tissue	1	R		R								R					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☒

Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☒ No ☐

Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.8°C							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Katherine Ketis	Nov 22, 2019	9:00	AARON BURTON	25-Nov-2019	11:16			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY NOV 2018 FRONT

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com Canada Toll Free: 1 800 668 9878

L2387288-COFC

COC Number: 17 -

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting Ltd.
Contact:	Katherine Ketis
Phone:	(519) 780-8198
	Company address below will appear on the final report
Street:	70 Southgate Drive Suite 1
City/Province:	Guelph, ON
Postal Code:	N1G 4P5

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Katherine.Ketis@stantec.com
Email 2	
Email 3	

Invoice To		
	Same as Report To	☐ YES ☑ NO
	Copy of Invoice with Report	☑ YES ☐ NO
Company:	Clean Harbors	
Contact:	Erica Carabott	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	carabott.erica@cleanharbors.com
Email 2	

Project Information	
ALS Account # / Quote #:	Q53923
Job #:	122160003
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4-20%] ☐		1 Business day [E - 100%] ☐
	3 day [P3-25%] ☐		Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	2 day [P2-50%] ☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
32	19-S1-SS-CH-063	10-Oct-19	11:00	Soil	1	R		R								R					
33	19-S1-SD-CH-065	10-Oct-19	11:15	Sediment	1	R		R													
34	19-S1-NG-CH-069	10-Oct-19	11:30	Plant Tissue	1	R		R								R					
35	19-S1-SB-CH-071	10-Oct-19	11:45	Plant Tissue	1	R		R								R					
36	19-S2-SS-CH-073	10-Oct-19	10:00	Soil	1	R		R								R					
37	19-S2-NG-CH-075	10-Oct-19	10:30	Plant Tissue	1	R		R								R					
38	19-S2-SB-CH-077	10-Oct-19	11:00	Plant Tissue	1	R		R								R					
39	19-S4-SS-CH-087	9-Oct-19	14:00	Soil	1	R		R								R					
40	19-S4-SD-CH-089	9-Oct-19	14:45	Sediment	1	R		R													
41	19-S4-NG-CH-093	9-Oct-19	14:30	Plant Tissue	1	R		R								R					
42	19-S4-SB-CH-095	1-Oct-19	13:30	Plant Tissue	1	R		R								R					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☐ NO

Are samples for human consumption/ use?

☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☑
Ice Packs	☐ Ice Cubes ☑	Custody seal intact	Yes ☑	No	☐
Cooling Initiated	☑				

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
5.8°C	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	Nov 22, 2019	9:00	AARON POULTON	25-Nov-19	11:15			

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2387288-COFC

COC Number: 17 -

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting Ltd.
Contact:	Katherine Ketis
Phone:	(519) 780-8198
	Company address below will appear on the final report
Street:	70 Southgate Drive Suite 1
City/Province:	Guelph, ON
Postal Code:	N1G 4P5
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Clean Harbors
Contact:	Erica Carabott

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax Katherine.Ketis@stantec.com

Email 2

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax carabott.erica@cleanharbors.com

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	Q53923
Job #:	122160003
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
43	19-D1-SS-CH-200	8-Oct-19	14:10	Soil	1	R		R		R		R				R					
44	19-D2-SS-CH-201	10-Oct-19	~~15:10~~ 15:15	Soil	1	R		R		R		R				R					
45	19-D3-NG-CH-203	8-Oct-19	15:10	Plant Tissue	1	R		R		R		R				R					
46	19-D8-NG-CH-208	10-Oct-19	16:10	Plant Tissue	1	R		R		R		R				R					
47	19-D4-SD-CH-204	8-Oct-19	14:40	Sediment	1	R		R		R		R									
48	19-D5-SB-CH-206	8-Oct-19	15:40	Plant Tissue	1	R		R		R		R		R		R					
49	19-D6-FC-CH-207	10-Oct-19	16:40	Plant Tissue	2	R		R		R		R		R		R					

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO

Are samples for human consumption/ use? ☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☒

Ice Packs ☐ Ice Cubes ☒ | Custody seal intact Yes ☒ No ☐

Cooling Initiated ☒

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
5.8°C							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
	Nov 22, 2019	9:00

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
AARON BRETAU	25-Nov-2019	11:15

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2387288-COFC

COC Number: 17 -

Report To	Contact and company name below will appear on the final report
Company:	Stantec Consulting Ltd.
Contact:	Katherine Ketis
Phone:	(519) 780-8198
	Company address below will appear on the final report
Street:	70 Southgate Drive Suite 1
City/Province:	Guelph, ON
Postal Code:	N1G 4P5
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Clean Harbors
Contact:	Erica Carabott

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	Katherine.Ketis@stantec.com
Email 2	
Email 3	
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	carabott.erica@cleanharbors.com
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	Q53923	AFE/Cost Center:	PO#
Job #:	122160003	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only): | **ALS Contact:** | **Sampler:**

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals (list attached) Note: Fluoride (NEW)		Chloride		OCPs		PCBs (no arochlors)		PCP		PCDD/PCDF				SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
50	19-E6-FB-CH-211 *	14-Aug-19 *	12:05 *	Water	2	R		R													
51	19-E1-FB-CH-213 *	9-Oct-19 *	8:30 *	Water	2	R		R													
52	19-E6-RB-CH-215 *	14-Aug-19 *	12:00 *	Water	2	R		R													
53	19-E1-RB-CH-216 *	9-Oct-19 *	8:35 *	Water	2	R		R													
54	19-E6-TB-CH-220 *	14-Aug-19 *	not applicable	Water	2	R		R													
55	19-E1-TB-CH-221 *	9-Oct-19 *	not applicable	Water	2	R		R													

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☐ NO

Are samples for human consumption/ use?

☐ YES ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please do not dispose of samples until instructed to do so. Depending on results of organic samples submitted, organic analysis on all remaining held samples may be required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☑
Ice Packs	☐ Ice Cubes ☑	Custody seal intact	Yes ☑	No	☐
Cooling Initiated	☑				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
5.8°C					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
[signature]	Nov 22 2019	9:00	AARON BOLTON	25-Nov-2019	11:15			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Report

Ackred. nr 2030 Provning ISO/IEC 17025

L2002997

29DANCYI8MR

Date received **2020-01-31**
Issued **2020-02-25**

ALS Life Sciences Division
Lynne Wrona

1435 Norjohn Court, Unit 1
L7L 0E6 Burlington
Canada

Project **L2387288**

Analysis: TC-2

Your ID **L2387288-1**
19-W2-SS-CH-001

LabID U11706970

Analysis	Results	Uncertainty (±)	Unit	Method	Issuer	Sign
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**88.0**		%	2	W	TV
Si	**325000**	59300	mg/kg DW	3	H	SVS

Your ID **L2387288-4**
19-W4-SS-CH-007

LabID U11706971

Analysis	Results	Uncertainty (±)	Unit	Method	Issuer	Sign
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**81.1**		%	2	W	TV
Si	**344000**	63100	mg/kg DW	3	H	SVS

Your ID **L2387288-7**
19-N2-SS-CH-013

LabID U11706972

Analysis	Results	Uncertainty (±)	Unit	Method	Issuer	Sign
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**80.1**		%	2	W	TV
Si	**289000**	52800	mg/kg DW	3	H	SVS

Your ID **L2387288-8**
19-N2-SD-CH-015

LabID U11706973

Analysis	Results	Uncertainty (±)	Unit	Method	Issuer	Sign
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**84.4**		%	2	W	TV
Si	**210000**	38300	mg/kg DW	3	H	SVS

Your ID	**L2387288-11** **19-N4-SS-CH-023**					
LabID	U11706974					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**84.4**		%	2	W	TV
Si	**316000**	58000	mg/kg DW	3	H	SVS

Your ID	**L2387288-14** **19-N5-SS-CH-029**					
LabID	U11706975					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**84.1**		%	2	W	TV
Si	**286000**	52400	mg/kg DW	3	H	SVS

Your ID	**L2387288-15** **19-N5-SD-CH-031**					
LabID	U11706976					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**40.3**		%	2	W	TV
Si	**198000**	36200	mg/kg DW	3	H	SVS

Your ID	**L2387288-17** **19-E1-SS-CH-037**					
LabID	U11706977					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**89.6**		%	2	W	TV
Si	**356000**	64500	mg/kg DW	3	H	SVS

Your ID	**L2387288-20** **19-E2-SS-CH-043**					
LabID	U11706978					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**82.6**		%	2	W	TV
Si	**305000**	55600	mg/kg DW	3	H	SVS

Your ID	**L2387288-21** **19-E2-SD-CH-045**					
LabID	U11706979					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**83.2**		%	2	W	TV
Si	**212000**	39000	mg/kg DW	3	H	SVS

Your ID	**L2387288-24** **19-E5-SS-CH-053**					
LabID	U11706980					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**87.7**		%	2	W	TV
Si	**324000**	59300	mg/kg DW	3	H	SVS

Your ID	**L2387288-27** **19-E6-SS-CH-059**					
LabID	U11706981					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**90.6**		%	2	W	TV
Si	**302000**	54900	mg/kg DW	3	H	SVS

Your ID	**L2387288-29** **19-E7-SS-CH-303**					
LabID	U11706982					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**86.7**		%	2	W	TV
Si	**317000**	57600	mg/kg DW	3	H	SVS

Your ID	**L2387288-32** **19-S1-SS-CH-063**					
LabID	U11706983					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**85.8**		%	2	W	TV
Si	**284000**	51600	mg/kg DW	3	H	SVS

Your ID	**L2387288-33** **19-S1-SD-CH-065**					
LabID	U11706984					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**71.3**		%	2	W	TV
Si	**238000**	43200	mg/kg DW	3	H	SVS

Your ID	**L2387288-36** **19-S2-SS-CH-073**					
LabID	U11706985					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**81.4**		%	2	W	TV
Si	**310000**	57400	mg/kg DW	3	H	SVS

Your ID	**L2387288-39** **19-S4-SS-CH-087**					
LabID	U11706986					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**83.4**		%	2	W	TV
Si	**253000**	46100	mg/kg DW	3	H	SVS

Your ID	**L2387288-40** **19-S4-SD-CH-089**					
LabID	U11706987					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**60.8**		%	2	W	TV
Si	**207000**	37600	mg/kg DW	3	H	SVS

Your ID	**L2387288-43** **19-D1-SS-CH-200**					
LabID	U11706988					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**82.9**		%	2	W	TV
Si	**287000**	52300	mg/kg DW	3	H	SVS

Your ID	**L2387288-44** **19-D2-SS-CH-201**					
LabID	U11706989					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**84.6**		%	2	W	TV
Si	**332000**	60300	mg/kg DW	3	H	SVS

Your ID	**L2387288-47** **19-D4-SD-CH-204**					
LabID	U11706990					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
Pulverizing mill *	**ja**		Operation	1	I	STRO
TS 105°C *	**82.8**		%	2	W	TV
Si	**210000**	39400	mg/kg DW	3	H	SVS

Your ID	**L2387288-47 - Duplicate** **19-D4-SD-CH-204**					
LabID	U11706991					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
TS 105°C	**82.8**	2.0	%	2	I	TV
Si	**197000**	35800	mg/kg DW	3	H	SVS

Your ID	**Blank**					
LabID	U11706992					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
TS 105°C	**----------**	2.0	%	2	I	TV
Si	**<400**		mg/kg DW	3	H	SVS

Your ID	**QC**					
LabID	U11706993					
Analysis	**Results**	**Uncertainty (±)**	**Unit**	**Method**	**Issuer**	**Sign**
TS 105°C	**----------**	2.0	%	2	I	TV
Si	**174000**	31600	mg/kg DW	3	H	SVS

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The document is approved and digitally signed by

	Method specification
1	Sample preparation pulverizing mill.
2	Analysed according to SS 028113.
3	The sample was dried at 105˚C according to Swedish Standard SS 28113:1981. Dried sample was fused $LiBO_2$ and dissolved in HNO_3 according to ASTM D3682:2013 and ASTM D4503:2008. LOI (loss on ignition) is done at 1000°C. The ICP-SFMS analyses were carried out according to SS EN ISO 17294- 2: 2016 and US EPA Method 200.8: 1994 Note that limits of reporting may be affected if, e.g. additional dilution was required because of matrix effects, or the sample quantity was limited.

	Approver
STRO	Stanislav Rodushkin
SVS	Svetlana Senioukh
TV	Tiina Vikeväinen

	Issuer[1]
H	ICP-SFMS
I	Man.Inm.
W	Våtkemi

* indicates unaccredited analysis.

The uncertainty is given as extended uncertainty (according to the definition in ”Guide to the Expression of Uncertainty in Measurement", JCGM 100:2008 Corrected version 2010) calculated with a coverage factor of 2, which gives a confidence level of approximately 95%.
Measurement of uncertainty is reported only for detected substances with levels above the reporting limits.

The uncertainty from subcontractors is often given as extended uncertainty calculated with a coverage factor of 2. Contact the laboratory for further information.

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The results apply only to the material that has been identified, received, and tested.
Regarding the laboratory’s liability in relation to assignment, please refer to our latest
product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

[1] The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

February 12, 2020 Service Request No:K2000799

Lynne Wrona
ALS Environmental - Canada
1435 Norjohn Court #1
Burlington, ON L7L 0E6

Laboratory Results for: CLEAN HARBORS

Dear Lynne,

Enclosed are the results of the sample(s) submitted to our laboratory January 28, 2020
For your reference, these analyses have been assigned our service request number **K2000799.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: ALS Environmental - Canada
Project: CLEAN HARBORS
Sample Matrix: Plant Tissue

Service Request: K2000799
Date Received: 01/28/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Twenty eight plant tissue samples were received for analysis at ALS Environmental on 01/28/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

Method SM 4500-F- C Modified, 02/05,10/2020:The matrix spike recoveries of Fluoride for samples 19-W2-NG-CH-003, 19-E5-NG-CH-055, and 19-S4-SB-CH-095 were outside control criteria. Recoveries in the Laboratory Control Samples (LCS) were acceptable, which indicated the analytical batches were in control. The matrix spike outliers suggested a potential low bias in this matrix. No further corrective action was appropriate.

Approved by Kelley Lovejoy Date 02/12/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: 19-W2-NG-CH-003			Lab ID: K2000799-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Fluoride	91			40	mg/Kg	SM 4500-F- C Modified
Total Solids	26.1				Percent	Freeze Dry

CLIENT ID: 19-W2-SB-CH-005			Lab ID: K2000799-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	69.7				Percent	Freeze Dry

CLIENT ID: 19-W4-NG-CH-009			Lab ID: K2000799-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Fluoride	46			40	mg/Kg	SM 4500-F- C Modified
Total Solids	32.1				Percent	Freeze Dry

CLIENT ID: 19-W4-SB-CH-011			Lab ID: K2000799-004			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	46.4				Percent	Freeze Dry

CLIENT ID: 19-N2-NG-CH-019			Lab ID: K2000799-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	45.2				Percent	Freeze Dry

CLIENT ID: 19-N2-SB-CH-021			Lab ID: K2000799-006			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	49.0				Percent	Freeze Dry

CLIENT ID: 19-N4-NG-CH-025			Lab ID: K2000799-007			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	44.6				Percent	Freeze Dry

CLIENT ID: 19-N4-SB-CH-027			Lab ID: K2000799-008			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	54.6				Percent	Freeze Dry

CLIENT ID: 19-N5-NG-CH-035			Lab ID: K2000799-009			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	45.0				Percent	Freeze Dry

CLIENT ID: 19-E1-NG-CH-039			Lab ID: K2000799-010			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	25.5				Percent	Freeze Dry

CLIENT ID: 19-E1-SB-CH-042			Lab ID: K2000799-011			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	42.9				Percent	Freeze Dry

SAMPLE DETECTION SUMMARY

CLIENT ID: 19-E2-NG-CH-049			Lab ID: K2000799-012			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	61.3				Percent	Freeze Dry

CLIENT ID: 19-E2-FC-CH-051			Lab ID: K2000799-013			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	63.6				Percent	Freeze Dry

CLIENT ID: 19-E5-NG-CH-055			Lab ID: K2000799-014			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	36.4				Percent	Freeze Dry

CLIENT ID: 19-E5-SB-CH-057			Lab ID: K2000799-015			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	43.0				Percent	Freeze Dry

CLIENT ID: 19-E6-NG-CH-061			Lab ID: K2000799-016			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	47.4				Percent	Freeze Dry

CLIENT ID: 19-E7-NG-CH-305			Lab ID: K2000799-017			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	29.6				Percent	Freeze Dry

CLIENT ID: 19-E7-SB-CH-300			Lab ID: K2000799-018			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	86.7				Percent	Freeze Dry

CLIENT ID: 19-S1-NG-CH-069			Lab ID: K2000799-019			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	52.3				Percent	Freeze Dry

CLIENT ID: 19-S1-SB-CH-071			Lab ID: K2000799-020			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	76.4				Percent	Freeze Dry

CLIENT ID: 19-S2-NG-CH-075			Lab ID: K2000799-021			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	44.0				Percent	Freeze Dry

CLIENT ID: 19-S2-SB-CH-077			Lab ID: K2000799-022			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	66.4				Percent	Freeze Dry

CLIENT ID: 19-S4-NG-CH-093			Lab ID: K2000799-023			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	35.8				Percent	Freeze Dry

SAMPLE DETECTION SUMMARY

CLIENT ID: 19-S4-SB-CH-095					Lab ID: K2000799-024	
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	82.4				Percent	Freeze Dry

CLIENT ID: 19-D3-NG-CH-203					Lab ID: K2000799-025	
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	46.0				Percent	Freeze Dry

CLIENT ID: 19-D8-NG-CH-208					Lab ID: K2000799-026	
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	52.1				Percent	Freeze Dry

CLIENT ID: 19-D5-SB-CH-206					Lab ID: K2000799-027	
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	56.0				Percent	Freeze Dry

CLIENT ID: 19-D6-FC-CH-207					Lab ID: K2000799-028	
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Total Solids	62.7				Percent	Freeze Dry

Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
K2000799-001	19-W2-NG-CH-003	10/10/2019	0900
K2000799-002	19-W2-SB-CH-005	10/10/2019	0930
K2000799-003	19-W4-NG-CH-009	10/9/2019	1615
K2000799-004	19-W4-SB-CH-011	10/9/2019	1630
K2000799-005	19-N2-NG-CH-019	10/8/2019	1500
K2000799-006	19-N2-SB-CH-021	10/8/2019	1530
K2000799-007	19-N4-NG-CH-025	10/8/2019	1240
K2000799-008	19-N4-SB-CH-027	10/8/2019	1300
K2000799-009	19-N5-NG-CH-035	8/14/2019	1515
K2000799-010	19-E1-NG-CH-039	10/9/2019	0930
K2000799-011	19-E1-SB-CH-042	10/9/2019	0920
K2000799-012	19-E2-NG-CH-049	10/10/2019	1600
K2000799-013	19-E2-FC-CH-051	10/10/2019	1630
K2000799-014	19-E5-NG-CH-055	10/9/2019	1030
K2000799-015	19-E5-SB-CH-057	10/9/2019	1015
K2000799-016	19-E6-NG-CH-061	8/14/2019	1245
K2000799-017	19-E7-NG-CH-305	10/9/2019	1330
K2000799-018	19-E7-SB-CH-300	10/1/2019	1230
K2000799-019	19-S1-NG-CH-069	10/10/2019	1130
K2000799-020	19-S1-SB-CH-071	10/10/2019	1145
K2000799-021	19-S2-NG-CH-075	10/10/2019	1030
K2000799-022	19-S2-SB-CH-077	10/10/2019	1100
K2000799-023	19-S4-NG-CH-093	10/9/2019	1430
K2000799-024	19-S4-SB-CH-095	10/1/2019	1330
K2000799-025	19-D3-NG-CH-203	10/8/2019	1510
K2000799-026	19-D8-NG-CH-208	10/10/2019	1410
K2000799-027	19-D5-SB-CH-206	10/8/2019	1540
K2000799-028	19-D6-FC-CH-207	10/10/2019	1640

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K2000799

Project Manager:	Lynne Wrona		**Bill to:**	Same as Previous	
Client Name:	ALS Environmental		**Company:**		
Address:	1435 Norjohn Court, Unit 1		**Address:**		
City, State ZIP:	Burlington, ON, Canada		**City, State ZIP:**		
Email:	lynne.wrona@alsglobal.com	**Phone:** 905-331-3111	**Email:**		
Project Name:	CLEAN HARBORS				
Project Number:	122160003				
P.O. Number:	L2387288				
Sampler's Name:	Client				

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present	
Received Intact:	Yes No N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes No N/A	Total Containers:	
Sample Custody Seals:	Yes No N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 5 Day

*** Please call for availability

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Fluoride via SM4500F-C including Bellack Distillation	Freeze Dry	Comments
19-W2-NG-CH-003	Plant Tissue	10-Oct-19	9:00 AM	1	1	X	X	
19-W2-SB-CH-005	Plant Tissue	10-Oct-19	9:30 AM	2	1	X	X	
19-W4-NG-CH-009	Plant Tissue	9-Oct-19	4:15 PM	3	1	X	X	
19-W4-SB-CH-011	Plant Tissue	9-Oct-19	4:30 PM	4	1	X	X	
19-N2-NG-CH-019	Plant Tissue	8-Oct-19	3:00 PM	5	1	X	X	
19-N2-SB-CH-021	Plant Tissue	8-Oct-19	3:30 PM	6	1	X	X	
19-N4-NG-CH-025	Plant Tissue	8-Oct-19	12:40 PM	7	1	X	X	
19-N4-SB-CH-027	Plant Tissue	8-Oct-19	1:00 PM	8	1	X	X	
19-N5-NG-CH-035	Plant Tissue	14-Aug-19	3:15 PM	9	1	X	X	
19-E1-NG-CH-039	Plant Tissue	9-Oct-19	9:30 AM	10	1	X	X	
19-E1-SB-CH-042	Plant Tissue	9-Oct-19	9:20 AM	11	1	X	X	

Please freeze dry all tissues before analysis.
Samples have been stored frozen.

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Aaron Burton		27-Jan-2020	Cody Graves		1/28/2020 0940

Revised: 1/24/2020

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K2000799

Project Manager:	Lynne Wrona			**Bill to:**	Same as Previous
Client Name:	ALS Environmental			**Company:**	
Address:	1435 Norjohn Court, Unit 1			**Address:**	
City, State ZIP:	Burlington, ON, Canada			**City, State ZIP:**	
Email:	lynne.wrona@alsglobal.com	**Phone:**	905-331-3111	**Email:**	
Project Name:	CLEAN HARBORS				
Project Number:	122160003				
P.O. Number:	L2387288				
Sampler's Name:	Client				

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present	
Received Intact:	Yes No N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes No N/A	Total Containers:	
Sample Custody Seals:	Yes No N/A		

REQUESTED ANALYSIS

TAT

- Routine
- Same Day ***
- Next Day ***
- 3 Day
- 5 Day

*** Please call for availability

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Fluoride via SM4500F-C including Bellack Distillation	Freeze Dry	Comments
19-E2-NG-CH-049	Plant Tissue	10-Oct-19	4:00 PM	12	1	X	X	
19-E2-FC-CH-051	Plant Tissue	10-Oct-19	4:30 PM	13	1	X	X	
19-E5-NG-CH-055	Plant Tissue	9-Oct-19	10:30 AM	14	1	X	X	
19-E5-SB-CH-057	Plant Tissue	9-Oct-19	10:15 AM	15	1	X	X	
19-E6-NG-CH-061	Plant Tissue	14-Aug-19	12:45 PM	16	1	X	X	
19-E7-NG-CH-305	Plant Tissue	9-Oct-19	1:30 PM	17	1	X	X	
19-E7-SB-CH-300	Plant Tissue	1-Oct-19	12:30 PM	18	1	X	X	
19-S1-NG-CH-069	Plant Tissue	10-Oct-19	11:30 AM	19	1	X	X	
19-S1-SB-CH-071	Plant Tissue	10-Oct-19	11:45 AM	20	1	X	X	
19-S2-NG-CH-075	Plant Tissue	10-Oct-19	10:30 AM	21	1	X	X	
19-S2-SB-CH-077	Plant Tissue	10-Oct-19	11:00 AM	22	1	X	X	

Please freeze dry all tissues before analysis.

Samples have been stored frozen.

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Aaron Burton		27-Jan-2020	Cody Graves		1/28/2020 0940

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068

Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K2000799

Project Manager:	Lynne Wrona		**Bill to:**	Same as Previous	
Client Name:	ALS Environmental		**Company:**		
Address:	1435 Norjohn Court, Unit 1		**Address:**		
City, State ZIP:	Burlington, ON, Canada		**City, State ZIP:**		
Email:	lynne.wrona@alsglobal.com	**Phone:** 905-331-3111	**Email:**		
Project Name:	CLEAN HARBORS				
Project Number:	122160003				
P.O. Number:	L2387288				
Sampler's Name:	Client				

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present	
Received Intact:	Yes No N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes No N/A	Total Containers:	
Sample Custody Seals:	Yes No N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day
- [ ] 5 Day

*** Please call for availability

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Fluoride via SM4500F-C including Bellack Distillation	Freeze Dry	Comments
19-S4-NG-CH-093	Plant Tissue	9-Oct-19	2:30 PM	23	1	X	X	
19-S4-SB-CH-095	Plant Tissue	1-Oct-19	1:30 PM	24	1	X	X	
19-D3-NG-CH-203	Plant Tissue	8-Oct-19	3:10 PM	25	1	X	X	
19-D8-NG-CH-208	Plant Tissue	10-Oct-19	4:10 PM	26	1	X	X	
19-D5-SB-CH-206	Plant Tissue	8-Oct-19	3:40 PM	27	1	X	X	
19-D6-FC-CH-207	Plant Tissue	10-Oct-19	4:40 PM	28	1	X	X	

Please freeze dry all tissues before analysis.
Samples have been stored frozen.

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Aaron Burton		27-Jan-2020	Cody Graves		1/28/2020 0940

Revised: 1/24/2020

PC KL

Cooler Receipt and Preservation Form

Client ALS/Canada Service Request K2000799

Received: 1/28/20 Opened: 1/28/20 By: [signature] Unloaded: 1/28/20 By: [signature]

1. Samples were received via? *USPS* *(Fed Ex)* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *(Cooler)* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
-8.1	-8.1	—	—	0	385		7776 1033 4173	

4. Packing material: *Inserts* *Baggies* *(Bubble Wrap)* *Gel Packs* *Wet Ice* *(Dry Ice)* *Sleeves* paper
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *(Frozen)* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-W2-NG-CH-003 **Date Collected:** 10/10/19
Lab Code: K2000799-001 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-W2-SB-CH-005 **Date Collected:** 10/10/19
Lab Code: K2000799-002 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-W4-NG-CH-009 **Date Collected:** 10/9/19
Lab Code: K2000799-003 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-W4-SB-CH-011 **Date Collected:** 10/9/19
Lab Code: K2000799-004 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-N2-NG-CH-019 **Date Collected:** 10/8/19
Lab Code: K2000799-005 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-N2-SB-CH-021 **Date Collected:** 10/8/19
Lab Code: K2000799-006 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-N4-NG-CH-025 **Date Collected:** 10/8/19
Lab Code: K2000799-007 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-N4-SB-CH-027 **Date Collected:** 10/8/19
Lab Code: K2000799-008 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-N5-NG-CH-035 **Date Collected:** 08/14/19
Lab Code: K2000799-009 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E1-NG-CH-039 **Date Collected:** 10/9/19
Lab Code: K2000799-010 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E1-SB-CH-042 **Date Collected:** 10/9/19
Lab Code: K2000799-011 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E2-NG-CH-049 **Date Collected:** 10/10/19
Lab Code: K2000799-012 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-E2-FC-CH-051 **Date Collected:** 10/10/19
Lab Code: K2000799-013 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E5-NG-CH-055 **Date Collected:** 10/9/19
Lab Code: K2000799-014 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E5-SB-CH-057 **Date Collected:** 10/9/19
Lab Code: K2000799-015 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E6-NG-CH-061 **Date Collected:** 08/14/19
Lab Code: K2000799-016 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-E7-NG-CH-305 **Date Collected:** 10/9/19
Lab Code: K2000799-017 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-E7-SB-CH-300 **Date Collected:** 10/1/19
Lab Code: K2000799-018 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-S1-NG-CH-069 **Date Collected:** 10/10/19
Lab Code: K2000799-019 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-S1-SB-CH-071 **Date Collected:** 10/10/19
Lab Code: K2000799-020 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-S2-NG-CH-075 **Date Collected:** 10/10/19
Lab Code: K2000799-021 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-S2-SB-CH-077 **Date Collected:** 10/10/19
Lab Code: K2000799-022 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-S4-NG-CH-093 **Date Collected:** 10/9/19
Lab Code: K2000799-023 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-S4-SB-CH-095 **Date Collected:** 10/1/19
Lab Code: K2000799-024 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Client: ALS Environmental - Canada **Service Request:** K2000799
Project: CLEAN HARBORS/122160003

Sample Name: 19-D3-NG-CH-203 **Date Collected:** 10/8/19
Lab Code: K2000799-025 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-D8-NG-CH-208 **Date Collected:** 10/10/19
Lab Code: K2000799-026 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-D5-SB-CH-206 **Date Collected:** 10/8/19
Lab Code: K2000799-027 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Name: 19-D6-FC-CH-207 **Date Collected:** 10/10/19
Lab Code: K2000799-028 **Date Received:** 01/28/20
Sample Matrix: Plant Tissue

Analysis Method	Extracted/Digested By	Analyzed By
Frz Dry		CLUKKEN
SM 4500-F- C Modified	ACHEATLEY	ACHEATLEY

Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 09:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W2-NG-CH-003	**Basis:**	Wet
Lab Code:	K2000799-001		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**26.1**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 09:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W2-SB-CH-005	**Basis:**	Wet
Lab Code:	K2000799-002		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**69.7**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 16:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W4-NG-CH-009	**Basis:**	Wet
Lab Code:	K2000799-003		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**32.1**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 16:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W4-SB-CH-011	**Basis:**	Wet
Lab Code:	K2000799-004		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**46.4**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N2-NG-CH-019	**Basis:**	Wet
Lab Code:	K2000799-005		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**45.2**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N2-SB-CH-021	**Basis:**	Wet
Lab Code:	K2000799-006		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**49.0**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 12:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N4-NG-CH-025	**Basis:**	Wet
Lab Code:	K2000799-007		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**44.6**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 13:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N4-SB-CH-027	**Basis:**	Wet
Lab Code:	K2000799-008		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**54.6**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	08/14/19 15:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N5-NG-CH-035	**Basis:**	Wet
Lab Code:	K2000799-009		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**45.0**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 09:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E1-NG-CH-039	**Basis:**	Wet
Lab Code:	K2000799-010		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**25.5**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 09:20
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E1-SB-CH-042	**Basis:**	Wet
Lab Code:	K2000799-011		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**42.9**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E2-NG-CH-049	**Basis:**	Wet
Lab Code:	K2000799-012		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**61.3**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E2-FC-CH-051	**Basis:**	Wet
Lab Code:	K2000799-013		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**63.6**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 10:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E5-NG-CH-055	**Basis:**	Wet
Lab Code:	K2000799-014		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**36.4**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 10:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E5-SB-CH-057	**Basis:**	Wet
Lab Code:	K2000799-015		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**43.0**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	08/14/19 12:45
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E6-NG-CH-061	**Basis:**	Wet
Lab Code:	K2000799-016		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**47.4**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 13:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E7-NG-CH-305	**Basis:**	Wet
Lab Code:	K2000799-017		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**29.6**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19 12:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E7-SB-CH-300	**Basis:**	Wet
Lab Code:	K2000799-018		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**86.7**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S1-NG-CH-069	**Basis:**	Wet
Lab Code:	K2000799-019		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**52.3**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:45
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S1-SB-CH-071	**Basis:**	Wet
Lab Code:	K2000799-020		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**76.4**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 10:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S2-NG-CH-075	**Basis:**	Wet
Lab Code:	K2000799-021		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**44.0**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S2-SB-CH-077	**Basis:**	Wet
Lab Code:	K2000799-022		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**66.4**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 14:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S4-NG-CH-093	**Basis:**	Wet
Lab Code:	K2000799-023		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**35.8**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19 13:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S4-SB-CH-095	**Basis:**	Wet
Lab Code:	K2000799-024		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**82.4**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:10
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D3-NG-CH-203	**Basis:**	Wet
Lab Code:	K2000799-025		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**46.0**	Percent	-	-	1	01/31/20 16:34	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 14:10
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D8-NG-CH-208	**Basis:**	Wet
Lab Code:	K2000799-026		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**52.1**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D5-SB-CH-206	**Basis:**	Wet
Lab Code:	K2000799-027		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**56.0**	Percent	-	-	1	01/31/20 16:34	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D6-FC-CH-207	**Basis:**	Wet
Lab Code:	K2000799-028		

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Total Solids	Freeze Dry	**62.7**	Percent	-	-	1	01/31/20 16:34	

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 09:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W2-NG-CH-003	**Basis:**	Dry, per Method
Lab Code:	K2000799-001		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	**91**	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 09:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W2-SB-CH-005	**Basis:**	Dry, per Method
Lab Code:	K2000799-002		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 16:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W4-NG-CH-009	**Basis:**	Dry, per Method
Lab Code:	K2000799-003		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	**46**	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 16:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-W4-SB-CH-011	**Basis:**	Dry, per Method
Lab Code:	K2000799-004		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N2-NG-CH-019	**Basis:**	Dry, per Method
Lab Code:	K2000799-005		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N2-SB-CH-021	**Basis:**	Dry, per Method
Lab Code:	K2000799-006		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 12:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N4-NG-CH-025	**Basis:**	Dry, per Method
Lab Code:	K2000799-007		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 13:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N4-SB-CH-027	**Basis:**	Dry, per Method
Lab Code:	K2000799-008		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	08/14/19 15:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-N5-NG-CH-035	**Basis:**	Dry, per Method
Lab Code:	K2000799-009		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 09:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E1-NG-CH-039	**Basis:**	Dry, per Method
Lab Code:	K2000799-010		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 09:20
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E1-SB-CH-042	**Basis:**	Dry, per Method
Lab Code:	K2000799-011		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E2-NG-CH-049	**Basis:**	Dry, per Method
Lab Code:	K2000799-012		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E2-FC-CH-051	**Basis:**	Dry, per Method
Lab Code:	K2000799-013		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 10:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E5-NG-CH-055	**Basis:**	Dry, per Method
Lab Code:	K2000799-014		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 10:15
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E5-SB-CH-057	**Basis:**	Dry, per Method
Lab Code:	K2000799-015		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	08/14/19 12:45
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E6-NG-CH-061	**Basis:**	Dry, per Method
Lab Code:	K2000799-016		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 13:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E7-NG-CH-305	**Basis:**	Dry, per Method
Lab Code:	K2000799-017		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19 12:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-E7-SB-CH-300	**Basis:**	Dry, per Method
Lab Code:	K2000799-018		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S1-NG-CH-069	**Basis:**	Dry, per Method
Lab Code:	K2000799-019		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:45
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S1-SB-CH-071	**Basis:**	Dry, per Method
Lab Code:	K2000799-020		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 10:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S2-NG-CH-075	**Basis:**	Dry, per Method
Lab Code:	K2000799-021		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 11:00
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S2-SB-CH-077	**Basis:**	Dry, per Method
Lab Code:	K2000799-022		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19 14:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S4-NG-CH-093	**Basis:**	Dry, per Method
Lab Code:	K2000799-023		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19 13:30
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-S4-SB-CH-095	**Basis:**	Dry, per Method
Lab Code:	K2000799-024		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:10
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D3-NG-CH-203	**Basis:**	Dry, per Method
Lab Code:	K2000799-025		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 14:10
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D8-NG-CH-208	**Basis:**	Dry, per Method
Lab Code:	K2000799-026		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/08/19 15:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D5-SB-CH-206	**Basis:**	Dry, per Method
Lab Code:	K2000799-027		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19 16:40
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20 09:20
Sample Name:	19-D6-FC-CH-207	**Basis:**	Dry, per Method
Lab Code:	K2000799-028		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	*

QC Summary Forms

ALS Environmental—Kelso Laboratory
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General Chemistry

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Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	NA
Sample Matrix:	Plant Tissue	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry, per Method
Lab Code:	K2000799-MB1		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/05/20 11:00	02/04/20	

Analytical Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	NA
Sample Matrix:	Plant Tissue	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry, per Method
Lab Code:	K2000799-MB2		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/06/20	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	NA
Sample Matrix:	Plant Tissue	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry, per Method
Lab Code:	K2000799-MB3		

General Chemistry Parameters

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Fluoride	SM 4500-F- C Modified	ND U	mg/Kg	40	1	02/10/20 16:35	02/10/20	

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/5/20
		Date Extracted:	02/4/20

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	19-W2-NG-CH-003	**Units:**	mg/Kg
Lab Code:	K2000799-001	**Basis:**	Dry, per Method
Analysis Method:	SM 4500-F- C Modified		
Prep Method:	ALS SOP		

		Matrix Spike			Duplicate Matrix Spike					
		K2000799-001MS			K2000799-001DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	91	1270	3050	39 *	1290	3110	38 *	56-130	1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/10/20
		Date Extracted:	02/6/20

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	19-E5-NG-CH-055	**Units:**	mg/Kg
Lab Code:	K2000799-014	**Basis:**	Dry, per Method
Analysis Method:	SM 4500-F- C Modified		
Prep Method:	ALS SOP		

		Matrix Spike			Duplicate Matrix Spike					
		K2000799-014MS			K2000799-014DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	1470	3310	45 *	1390	3330	42 *	56-130	6	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/10/20
		Date Extracted:	02/10/20

Duplicate Matrix Spike Summary
Fluoride

Sample Name:	19-S4-SB-CH-095	**Units:**	mg/Kg
Lab Code:	K2000799-024	**Basis:**	Dry, per Method
Analysis Method:	SM 4500-F- C Modified		
Prep Method:	ALS SOP		

		Matrix Spike			**Duplicate Matrix Spike**					
		K2000799-024MS			K2000799-024DMS					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Fluoride	ND U	481	988	49 *	425	985	43 *	56-130	12	20

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ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project	CLEAN HARBORS/122160003	**Date Collected:**	10/10/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/05/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	19-W2-NG-CH-003	**Units:**	mg/Kg
Lab Code:	K2000799-001	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K2000799-001DUP Result	Average	RPD	RPD Limit
Fluoride	SM 4500-F- C Modified	40	91	94	92.6	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project	CLEAN HARBORS/122160003	**Date Collected:**	10/09/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/10/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	19-E5-NG-CH-055	**Units:**	mg/Kg
Lab Code:	K2000799-014	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K2000799-014DUP Result	Average	RPD	RPD Limit
Fluoride	SM 4500-F- C Modified	40	ND U	ND U	NC	NC	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project	CLEAN HARBORS/122160003	**Date Collected:**	10/01/19
Sample Matrix:	Plant Tissue	**Date Received:**	01/28/20
		Date Analyzed:	02/10/20

Replicate Sample Summary
General Chemistry Parameters

Sample Name:	19-S4-SB-CH-095	**Units:**	mg/Kg
Lab Code:	K2000799-024	**Basis:**	Dry, per Method

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K2000799-024DUP Result	Average	RPD	RPD Limit
Fluoride	SM 4500-F- C Modified	40	ND U	ND U	NC	NC	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Analyzed:**	02/05/20
Sample Matrix:	Plant Tissue	**Date Extracted:**	02/04/20

Lab Control Sample Summary
Fluoride

Analysis Method:	SM 4500-F- C Modified	**Units:**	mg/Kg
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	669072

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2000799-LCS1	573	639	90	85-115

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QA/QC Report

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Analyzed:**	02/10/20
Sample Matrix:	Plant Tissue	**Date Extracted:**	02/06/20

Lab Control Sample Summary
Fluoride

Analysis Method:	SM 4500-F- C Modified	**Units:**	mg/Kg
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	669573

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2000799-LCS2	599	612	98	85-115

Client:	ALS Environmental - Canada	**Service Request:**	K2000799
Project:	CLEAN HARBORS/122160003	**Date Analyzed:**	02/10/20
Sample Matrix:	Plant Tissue	**Date Extracted:**	02/10/20

Lab Control Sample Summary
Fluoride

Analysis Method:	SM 4500-F- C Modified	**Units:**	mg/Kg
Prep Method:	ALS SOP	**Basis:**	Dry, per Method
		Analysis Lot:	669572

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2000799-LCS3	612	612	100	85-115

Report

L2002998

28FI7IS5LPS

Date received **2020-01-31**
Issued **2020-02-14**

ALS Life Sciences Division
Lynne Wrona

1435 Norjohn Court, Unit 1
L7L 0E6 Burlington
Canada

Project **L2387288**

Analysis: M4-CM

Your ID **L2387288-2**
19-W2-NG-CH-003

LabID U11706994

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**49.5**	%	1	W	TV
Si *	**7900**	mg/kg DW	2	S	IR

Your ID **L2387288-3**
19-W2-SB-CH-005

LabID U11706995

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**66.1**	%	1	W	TV
Si *	**56.1**	mg/kg DW	2	S	IR

Your ID **L2387288-5**
19-W4-NG-CH-009

LabID U11706996

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**27.0**	%	1	W	TV
Si *	**8740**	mg/kg DW	2	S	IR

Your ID **L2387288-6**
19-W4-SB-CH-011

LabID U11706997

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**43.7**	%	1	W	TV
Si *	**47.2**	mg/kg DW	2	S	IR

Your ID **L2387288-9**
19-N2-NG-CH-019

LabID U11706998

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**51.9**	%	1	W	TV
Si *	**6650**	mg/kg DW	2	S	IR

Your ID	**L2387288-10** **19-N2-SB-CH-021**				
LabID	U11706999				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**47.7**	%	1	W	TV
Si *	**34.9**	mg/kg DW	2	S	IR

Your ID	**L2387288-12** **19-N4-NG-CH-025**				
LabID	U11707000				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**44.6**	%	1	W	TV
Si *	**8940**	mg/kg DW	2	S	IR

Your ID	**L2387288-13** **19-N4-SB-CH-027**				
LabID	U11707001				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**51.8**	%	1	W	TV
Si *	**59.5**	mg/kg DW	2	S	IR

Your ID	**L2387288-16** **19-N5-NG-CH-035**				
LabID	U11707002				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**49.8**	%	1	W	TV
Si *	**8590**	mg/kg DW	2	S	IR

Your ID	**L2387288-18** **19-E1-NG-CH-039**				
LabID	U11707003				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**27.6**	%	1	W	TV
Si *	**9130**	mg/kg DW	2	S	IR

Your ID	**L2387288-19** **19-E1-SB-CH-042**				
LabID	U11707004				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**41.5**	%	1	W	TV
Si *	**176**	mg/kg DW	2	S	IR

Your ID	**L2387288-22** **19-E2-NG-CH-049**
LabID	U11707005

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**61.0**	%	1	W	TV
Si *	**8080**	mg/kg DW	2	S	IR

Your ID	**L2387288-23** **19-E2-FC-CH-051**
LabID	U11707006

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**64.4**	%	1	W	TV
Si *	**77.6**	mg/kg DW	2	S	IR

Your ID	**L2387288-25** **19-E5-NG-CH-055**
LabID	U11707007

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**58.7**	%	1	W	TV
Si *	**6940**	mg/kg DW	2	S	IR

Your ID	**L2387288-26** **19-E5-SB-CH-057**
LabID	U11707008

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**49.4**	%	1	W	TV
Si *	**77.1**	mg/kg DW	2	S	IR

Your ID	**L2387288-28** **19-E6-NG-CH-061**
LabID	U11707009

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**57.8**	%	1	W	TV
Si *	**7670**	mg/kg DW	2	S	IR

Your ID	**L2387288-30** **19-E7-NG-CH-305**
LabID	U11707010

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**31.0**	%	1	W	TV
Si *	**8450**	mg/kg DW	2	S	IR

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Your ID	L2387288-31 19-E7-SB-CH-300				
LabID	U11707011				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**91.3**	%	1	W	TV
Si *	**78.9**	mg/kg DW	2	S	IR

Your ID	L2387288-34 19-S1-NG-CH-069				
LabID	U11707012				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**52.1**	%	1	W	TV
Si *	**6340**	mg/kg DW	2	S	IR

Your ID	L2387288-35 19-S1-SB-CH-071				
LabID	U11707013				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**74.6**	%	1	W	TV
Si *	**57.3**	mg/kg DW	2	S	IR

Your ID	L2387288-37 19-S2-NG-CH-075				
LabID	U11707014				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**59.3**	%	1	W	TV
Si *	**9000**	mg/kg DW	2	S	IR

Your ID	L2387288-38 19-S2-SB-CH-077				
LabID	U11707015				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**63.1**	%	1	W	TV
Si *	**112**	mg/kg DW	2	S	IR

Your ID	L2387288-41 19-S4-NG-CH-093				
LabID	U11707016				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Dry matter *	**30.3**	%	1	W	TV
Si *	**7650**	mg/kg DW	2	S	IR

Your ID	**L2387288-42** **19-S4-SB-CH-095**
LabID	U11707017

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**83.9**	%	1	W	TV
Si *	**76.9**	mg/kg DW	2	S	IR

Your ID	**L2387288-45** **19-D3-NG-CH-203**
LabID	U11707018

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**57.4**	%	1	W	TV
Si *	**7400**	mg/kg DW	2	S	IR

Your ID	**L2387288-46** **19-D8-NG-CH-208**
LabID	U11707019

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**72.2**	%	1	W	TV
Si *	**8050**	mg/kg DW	2	S	IR

Your ID	**L2387288-46 - Duplicate** **19-D8-NG-CH-208**
LabID	U11707020

Analysis	Results	Uncertainty (±)	Unit	Method	Issuer	Sign
Dry matter	**72.2**	2.0	%	1	I	TV
Si *	**7270**		mg/kg DW	2	S	IR

Your ID	**L2387288-48** **19-D5-SB-CH-206**
LabID	U11707021

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**56.5**	%	1	W	TV
Si *	**56.3**	mg/kg DW	2	S	IR

Your ID	**L2387288-49** **19-D6-FC-CH-207**
LabID	U11707022

Analysis	Results	Unit	Method	Issuer	Sign
Dry matter *	**67.6**	%	1	W	TV
Si *	**77.5**	mg/kg DW	2	S	IR

Your ID	**Blank**				
LabID	U11707023				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Si *	**5.8**	mg/kg DW	2	S	IR

Your ID	**QC**				
LabID	U11707024				
Analysis	**Results**	**Unit**	**Method**	**Issuer**	**Sign**
Si *	**1310**	mg/kg DW	2	S	IR

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	Method specification
1	Analysed according to SS 02 81 13-1 Torrsubstansbestämning.
2	An aliquot of the sample was dried at 105°C according to Swedish Standard SS028113 for determination of dry matter. The analytical sample was dried at 50°C and the elemental concentrations were corrected to dry weight (TS) from dry matter content. For description of the digestion method used, please contact the laboratory. The ICP-SFMS analyses were carried out according to SS EN ISO 17294-1, 2 (modified) and US EPA Method 200.8 (modified). The ICP-AES analyses were carried out according to SS EN ISO 11885 (modified) and US EPA Method 200.7 (modified). Note that limits of reporting may be affected if, e.g. additional dilution was required because of matrix effects, or the sample quantity was limited.

	Approver
IR	Ilia Rodushkin
TV	Tiina Vikeväinen

	Issuer[1]
I	Man.Inm.
S	ICP-SFMS
W	Våtkemi

* indicates unaccredited analysis.

The uncertainty is given as extended uncertainty (according to the definition in ”Guide to the Expression of Uncertainty in Measurement", JCGM 100:2008 Corrected version 2010) calculated with a coverage factor of 2, which gives a confidence level of approximately 95%.
Measurement of uncertainty is reported only for detected substances with levels above the reporting limits.

The uncertainty from subcontractors is often given as extended uncertainty calculated with a coverage factor of 2. Contact the laboratory for further information.

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[1] The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.