



# **2022 Annual Surface Water Quality Monitoring Report**

**Clean Harbors Lambton Facility**

Clean Harbors Canada Inc.

March 28, 2023

**→ The Power of Commitment**



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# 1. Introduction

## 1.1 Purpose and Organization

GHD on behalf of Clean Harbors Canada, Inc. (Clean Harbors) has prepared the “2022 Annual Surface Water Quality Monitoring Report” for the Clean Harbors Lambton Facility (Lambton Facility or Site) located at 4090 Telfer Road, St. Clair Township, Ontario.

The Lambton Facility is a hazardous waste disposal facility owned and operated by Clean Harbors. The main hazardous waste disposal operations at the facility are the disposal of liquid waste in a liquid incinerator and the processing and disposal of solid waste in the landfill. The hazardous solid waste landfill component located at the Site operates in accordance with Environmental Compliance Approval No. A031806 (Waste ECA) issued by the Ministry of the Environment, Conservation and Parks (MECP).

In October of 2018, Clean Harbors applied for an amendment to the surface water management system to alter the on-site surface water ditches and ponds. Environmental Compliance Approval No. 4731-BNNT5Y dated April 20, 2020 (SW ECA) is a new ECA for the surface water management system. The SW ECA replaces ECA No. 1065-9VVJSW dated October 19, 2015, and ECA No. 2985-B9KKP2 dated September 9, 2019. Both the Waste ECA and SW ECA have conditions that relate to surface water monitoring and reporting requirements. Copies of the Waste ECA and SW ECA are provided in the 2022 Clean Harbors Lambton Facility Annual Landfill Monitoring Report (Landfill Annual Monitoring Report).

## 1.1 Purpose of this Report

The purpose of this report is to present and interpret the 2022 surface water monitoring results collected as part of the surface water monitoring program for the Lambton Facility.

## 1.2 Scope and Limitations

GHD was retained by Clean Harbors to review, summarize, and report the data provided by Clean Harbors as it relates to the assessment of surface water conditions. Clean Harbors holds the responsibility for field instrument calibration, precision and accuracy, quality assurance/quality control of the collected data, and provision of documented field observations/inspections. GHD has assumed that the data collected and provided by Clean Harbors is valid and reliable for the purposes of producing this monitoring report.

*This report: has been prepared by GHD for Clean Harbors Canada Inc. and may only be used and relied on by Clean Harbors Canada Inc. for the purpose agreed between GHD and Clean Harbors Canada Inc. as set out in section 1 of this report.*

*GHD otherwise disclaims responsibility to any person other than Clean Harbors Canada Inc. arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

*The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 6 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.*

## 1.2 Site Location

The Lambton Facility is a hazardous waste management complex on 121 hectares (ha) of land located within Lots 8 and 9, Concession 10 in St. Clair Township, Lambton County, operated by Clean Harbors. The facility location and site plan are presented on Figures 1 and 2. Geo-reference data for the Lambton Facility is presented in Table 1.

Table 1 Geo-Reference Data for the Lambton Facility

Location <sup>(1)</sup>	Northing	Easting
Northeast Corner of the Facility	4748849	394521
Southeast Corner of the Facility	4747490	394478
Northwest Corner of the Facility	4748882	393626
Southwest Corner of the Facility	4747582	393570

Notes: Geo-reference data based on digital map referencing UTM NAD83 Zone 17T (accuracy +/- 3 m). Location is in reference to the Lambton Operational Area as shown on Figure 1.

The Lambton Facility includes an analytical laboratory, transportation depot, high temperature incinerator, solid waste pre-treatment processes, and a secure landfill (waste disposal site). The solid waste pre-treatment processes at the facility include acid/alkali pre-treatment system (AAPS), thermal desorber unit (TDU), land disposal restriction building (LDR), spent pot liner treatment (SPL), and organic debris treatment.

### 1.3 Ownership and Key Personnel

The Lambton Facility is owned and operated by Clean Harbors. Any environmental issues at the Site are addressed by the following personnel:

Mackenzie Costello, Senior Environmental Compliance Manager  
 Clean Harbors Canada, Inc.  
 4090 Telfer Road, Rural Route #1  
 Corunna, Ontario N0N 1G0  
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GHD was retained by Clean Harbors to conduct the 2022 annual monitoring program. The Competent Environmental Practitioner (CEP) who reviewed the 2022 Annual Surface Water Quality Monitoring Report is:

Ben Kempel, P.Geo.  
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### 1.4 Waste Disposal Site

The secure landfill occupies a total fill area of approximately 56 ha that includes the pre-1986 fill area, Cell 16 completed in 1992, Cell 17 completed in early 1998, and Cell 18 completed in early 2016. The 2022 operational area (disposal area for landfilling at the Lambton Facility) was in Cell 20-1. The landfill disposal method and sequence is provided in the Design and Operations Report - Lambton Landfill Expansion (D&O Report) prepared by Tetra Tech WEI Inc. and dated October 8, 2015, and the most recent amendment for Waste ECA No. A031806. During the 2022 reporting period:

1. Disposal occurred in Cell 20-1 and a temporary divider berm was installed within Cell 20-1.
2. The perimeter leachate collection trench was extended in the south portion of Cell 20-1.
3. Interim cover was installed over the western fill limit of Cell 20-1. The majority of Cells 19-2 and 19-3 have received interim cover.
4. Buttresses was installed along the toe of the north and south slopes of Waste Disposal Cell 20-1.
5. The temporary waste storage cell leachate drain was constructed.
6. Cell 19-1 ditch was maintained and riprap was placed.
7. Leachate treatment system design and approval.

The 2015 vertical expansion of the Lambton Facility landfill means that the landfilled area will transition from a relatively flat/shallow grade final contour (less than 5 percent grade) to a more traditional landfill shape (25 percent side slope and 5 percent top slope grades). The amended surface water management system is presented in the October 3, 2018, report Surface Water Management Amendment prepared by GHD. The surface water management system was approved by the SW ECA No. 4731-BNNT5Y and was designed to accommodate surface water for the approved final contours.

The portion of the landfill area not directly used for landfilling contains drainage ditches, surface water ponds, access roads, and stockpiles of clay and topsoil. In the central portion of the landfill area, the Site is used for several waste processing components such as the TDU, SPL, container storage, and leachate storage (covered ponds). Undeveloped buffer land and berms separate the landfill operation from surrounding properties. The perimeter ditches and surface water ponds side slopes are routinely inspected for stability and signs of erosion. The construction of the revised surface water management system was completed by October 30, 2020. Major site features that relate to the revised surface water management system at the Site are shown on Figure 2. The SW ECA No. 4731-BNNT5Y addresses the amendments and the transition period required to address the various items.

Additional information regarding waste volumes received, landfill cell development, landfill operation and management, engineering controls, leachate management and incineration, and all other relevant waste disposal site developments during the current reporting period are presented within the 2022 Landfill Annual Monitoring Report.

## 1.5 Water Management System

The following presents a description of the Lambton Facility's water management system that includes surface water and process water. Leachate (surface water generated from the active waste disposal area) is discussed in the Landfill Annual Monitoring Report.

### 1.5.1 Surface Water Management

Surface water is generated from non-operational areas at the Lambton Facility. Non-impacted surface water runoff from undeveloped portions of the Site, perimeter berms, and capped and closed landfill cells, and waste disposal cells with interim cover is directed through a series of on-Site drainage ditches and ponds. The previous surface water management system (prior to early 2020) consisted of two on-Site surface water storage ponds (West Pond and East Pond). In 2020, the revised surface water management system was developed, and it now consists of four ponds identified as Pond A, B, C, and D (Figure 2). The four ponds are located in the southern portion of the Site and incorporated portions of the former East and West Ponds. The ponds are linked and operate as one large pond from a surface water point of view. The perimeter surface water ditches discharge to the ponds.

The Facility's Surface Water Treatment Plant (SWTP) for processing surface water pumped from Pond D is rated with a treatment capacity of 4,500 cubic metres per day (m<sup>3</sup>/day). The SWTP consists of the following:

- Two influent pumps (including one standby), each with rated capacity of 22.7 litres per second (L/s) at 310 kilopascals (kPa) (300 imperial gallons per minute [IGPM] at 45 pounds per square inch gauge [psig]).
- Two sand filters, each with 3.6 m outside diameter and 1.8 m high, containing 6.4 m<sup>3</sup> of 0.3 mm of silica sand and 3.2 m<sup>3</sup> of 1.0 mm anthracite, equipped with backwash pump rated at 49.3 L/s at 138 kPa (650 IGPM at 20 psig).
- One activated carbon filter consisting of a concrete above-ground basin with overall dimension of 2.4 m high, 4.3 m long, and 1.8 m wide containing 1.2 m<sup>3</sup> of 20 mm clear crushed stone and 14.2 m<sup>3</sup> of granular activated carbon.

The SWTP is operated when the live surface water storage across the Site needs to be increased, often driven by precipitation events and seasonal wet periods of high runoff. Each time upon start-up the SWTP operates in recirculation mode until the effluent discharge criteria established under Condition 5 of the SW ECA No. 4731-BNNT5Y are met. If an exceedance of the effluent discharge criteria is identified, the SWTP remains in recirculation mode until test results are in compliance with daily effluent discharge criteria. Likewise, if during operating mode and the daily effluent discharge criteria are exceeded, the SWTP is switched to recirculation mode.

Once the effluent from the SWTP is in compliance with the effluent discharge criteria, the treated water is discharged to the Equalization Pond. The effluent is subsequently discharged via a gated channel to the municipal drainage ditch located along the eastern side of Telfer Road.

The SWTP is maintained by Clean Harbors staff through backwashing of the filter systems, and occasionally through replacement of the filter media.

## 1.5.2 Process Water Management

Surface water runoff from the operational areas is considered to be process water and is directed to one of the four process water ponds (North Process Water Pond, South Process Water Pond, West Process Water Pond, and Process Water Pond 1402). The North and South Process Water Ponds and Process Water Pond 1402 receive process water either by ditches or through pumps, forcemains, or vacuum trucks. The West Process Water Pond, constructed in 2016, receives water from the South Process Water Pond through a forcemain and overland hosing.

The four process water ponds store the process water on-site until the process water is used for facility operations including quench water in the on-site incinerator. The incinerator requires up to 11 million L of quench water per month and 8 million L of process water for the spray dryer. When process water is low, surface water from Pond D is transferred to the process water ponds for use as quench water. This normally occurs during the dryer periods of the year (August through October).

## 1.5.3 SWTP Operation and Maintenance

Maintenance of the SWTP is conducted as required to maintain treatment flow and water quality. The timing of the maintenance depends on the amount of water treated and the performance of the SWTP. The following provides a summary of operation and maintenance activities conducted on the SWTP in the 2022 monitoring period:

- Began discharging on December 23, 2021 until January 11, 2022
- Recirculation mode was started on January 12, 2022
- Recirculation mode was stopped on January 13, 2022 to backflush sand filters and then recirculation mode was restarted
- Began discharging on January 16, 2022 until January 26, 2022. Water was directed towards the incinerator or south process water pond.
- Sand filters were backflushed and recirculation mode was started on March 18, 2022
- Began discharging on March 22, 2022 until April 3, 2022
- Sand filters were backflushed and recirculation mode was started on April 4, 2022
- Began discharging on April 6, 2022 until April 28, 2022
- Recirculation mode was started on April 29, 2022
- Discharging continued on April 30, 2022 until SWTP was shut down on May 5, 2022

# 2. Physical Setting

The Lambton Facility is a rectangular shaped piece of land situated on a 121.4 ha parcel. The Lambton Facility is bordered on all sides by rural residential and agricultural land. The Site location is provided on Figure 1.

## 2.1 Geology and Hydrogeology

The Lambton Facility lies within the Lambton Clay Plain which is a sub-region of the St. Clair Clay Plain physiographic region. The surficial geology is characterized by thick clay sediments and the area's topography is flat to slightly



undulating. The combination of relatively flat topography and the fine texture clay soil result in an area that has poor drainage. Alluvial sediments and organic deposits can be found in the local stream, stream valleys, and wetlands.

Detailed information on the geological and/or hydrogeological conditions at the Lambton Facility during the current monitoring period is presented in the 2022 Annual Groundwater Monitoring Report (Dillon, 2023).

## 2.2 Surface Water Features

The Lambton Facility resides within the Sydenham River basin watershed, which ultimately drains into Lake St. Clair. The main watercourse found in the Sydenham River watershed is Bear Creek. Bear Creek is approximately 70 kilometres (km) in length and is fed by numerous tributaries including those found in the vicinity of the Lambton Facility and the downstream catchment area.

Seasonally intermittent flow conditions occur within the eastern Telfer roadside ditch immediately downstream of the Lambton Facility’s Equalization Pond discharge occur and flow is normally related to a precipitation event or discharge from the Equalization Pond. Local drainage patterns downstream are heavily influenced by the nearby agricultural farms, in that the extensive tile drainage and ditch systems have been constructed to deal with irrigation and rainfall in soils that have low infiltration.

## 3. Monitoring Program

### 3.1 Surface Water Monitoring

The surface water monitoring program is documented in the SW ECA No. 4731-BNNT5Y and is consistent with the letter prepared by GHD titled “Surface Water Monitoring Program and Surface Water Characterization Program, Lambton Facility, Corunna, Ontario” dated December 9, 2015. The surface water monitoring program generally did not change with the amendment to the stormwater management system (dated September 9, 2019).

Surface water is stored within the ponds at the Site and treated surface water is mainly discharged during the spring/summer periods. As such, the surface water quality discharging from the Site is not influenced by a specific precipitation event.

The surface water monitoring program for the Site is summarized in Tables 2 and 3, attached. The monitoring consists of daily discharge monitoring, monthly discharge monitoring conducted during discharge periods at on-site locations, and seasonal monitoring at off-site locations. The following sections provide information regarding the surface water monitoring program.

Surface water effluent discharge criteria are presented in Table 4, below.

*Table 4 Effluent Discharge Criteria*

<b>Effluent Parameter</b>	<b>Concentration Limit (mg/L)</b>
Total Suspended Solids (TSS)	15.0
Solvent Extractables	15.0
Phenols	0.02
pH of the effluent maintained between 5.5 to 9.5, inclusive, at all times	

### 3.1.1 Daily Discharge Monitoring

Location:	Equalization Pond discharge
Frequency:	Daily when the Equalization Pond is discharging to the off-Site drainage ditch
Parameters:	pH, specific conductivity, total suspended solids (TSS), phenols, and solvent extractables (oil & grease)
Rationale:	The parameters represent routine parameters that are representative of general surface water quality during the discharge period and indicate the overall performance of the treatment plant. Four parameters have Site-specific effluent discharge criteria – pH, TSS, phenols, solvent extractables (Table 4).

### 3.1.2 Monthly Discharge Monitoring

The monthly discharge monitoring program consists of three components: chemical parameter monitoring, toxicity monitoring, and visual monitoring.

#### 3.1.2.1 Monthly Discharge Monitoring

Location:	Equalization Pond discharge, Pond D, Pond A
Frequency:	a) At start of discharge, within 25 to 35 days after discharge commencement, and within 25 to 35 days after the previous sample collection when discharge occurring.  b) If discharge ceases for less than 30 days and discharge recommences, the initial monitoring schedule shall continue. If discharge ceases for greater than 30 days, monitoring shall revert as per item a).
Parameters:	General Chemistry, total metals, volatile organic compounds (VOC), and semi-volatile organic compounds (sVOC) as specified in Table 3.
Rationale:	Provides a detailed profile of the water prior to and during discharge periods for both pre- and post-treatment of the water. Parameters represent chemical constituents that are accepted at the Lambton Facility and as such may be present in the surface water system.

#### 3.1.2.2 Toxicity Monitoring

Location:	Equalization Pond discharge
Frequency:	As per the monthly discharge monitoring program.
Parameters:	Microtox for fresh water in accordance with Environment Canada test method and protocols.
Rationale:	Monitors the overall water quality toxicity with an approved program.

Note that in the 2021 Annual Surface Water Quality Monitoring Report it was recommended that toxicity monitoring is discontinued as part of the monitoring program. This requirement has been maintained until receiving MECP concurrence.

#### 3.1.2.3 Visual Observations

Location:	Equalization Pond
Frequency:	As per the monthly discharge monitoring program.
Parameters:	Presence/absence of fish in the Equalization Pond through observation with food application at several locations around the Equalization Pond perimeter.

Rationale: Monitors whether fish are present in the pond and a general understanding of the overall health of the Equalization Pond and water quality with regard to aquatic life.

Note that in the 2021 Annual Surface Water Quality Monitoring Report it was recommended that visual observations for presence/absence of fish is discontinued as part of the monitoring program. This requirement has been maintained until receiving MECP concurrence.

### **3.1.2.4 Off-Site Surface Water Monitoring**

Location: STN6U (upstream of discharge) and STN6D (downstream of discharge). See Figure 1 for monitoring locations.

Frequency: Two samples per year, one in the spring and one in the late summer/fall period. Samples to be collected when a discharge is occurring and on the same day as the monthly discharge samples are collected. The time period between the spring and late summer/fall sampling should be a minimum of 80 days.

Parameters: General Chemistry, total metals as specified in Table 3. Analytical testing to be conducted by external Canadian certified laboratory.

Rationale: Provides a detailed chemical profile of the water in a downstream drainage system prior to and after the discharge of water from the drainage ditch that serves the facility. Parameters are consistent with the discharge monitoring parameters.

Note that in 2022, the locations of the off-site surface water monitoring locations were adjusted. The historic locations (STN6 and STN6A) were impacted by fallen trees and were dangerous for field staff to collect the samples. Options were considered to amend the sample locations, with discussions with the landowners. Permission to use private land for sample location was not provided. As such, the location for the off-site samples were adjusted to reflect collection of the samples on public lands. The sample numbers were adjusted to reflect an upstream (U) and downstream (D) location. Correspondence was sent to the MECP to notify of the change, provided in Appendix A.

## **3.2 Provincial Officer's Order No. 2681-BCPKUJ**

Provincial Officer's Order No. 2681-BCPKUJ (Order) was issued on June 5, 2019. A copy of the Order and related correspondence is provided in Appendix B.

The requirement to provide weekly reports to the MECP was removed from the order by MECP once the LCS returned to normal operating conditions in early May 2020 and the frac tanks were emptied and removed from Site in July 2020. The Provincial Officer's Order is still open.

# **4. Monitoring Results and Assessment**

## **4.1 Daily Discharge Monitoring**

The results of the daily discharge monitoring for the Equalization Pond are presented in Table 5. As shown in Table 5, effluent was discharged during the following period:

- Period 1: December 23, 2021<sup>1</sup> to January 26, 2022
- Period 2: March 22, 2022 to May 5, 2022

Data for all parameters regularly analyzed is available for Period 1 and 2. In 2022, there were no exceedances of the effluent discharge criteria for TSS, phenols, or solvent extractables specified in Condition 5 of the SW ECA No.

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<sup>1</sup> Daily discharge results from December 2021 were included in this report as the discharge extended into January 2022.

4731-BNNT5Y. Effluent discharges presented in Table 5 during the noted periods were below the maximum discharge rate for the SWTP of 4.5 million litres per day (L/d) specified in the SW ECA No. 4731-BNNT5Y.

## 4.2 Monthly Discharge Monitoring

The results of the monthly discharge monitoring are presented in Tables 6 to 8, attached, with analytical reports provided in Appendix C. An analytical data verification memo summarizing GHD's assessment of the samples, supporting quality assurance/quality control (QA/QC) procedures is included in Appendix D. Where applicable, the data summarized in the tables have been qualified accordingly.

Note that the sample from December 14, 2021 was included in this report as it was the relevant sample for Discharge Period 1, which extended into January 2022.

### 4.2.1 Monthly Discharge Monitoring

Monthly discharge samples for the Equalization Pond, Pond A, and Pond D for general chemistry, metals, and sVOCs were taken on December 14, 2021 for Discharge Period 1, and March 22, 2022 and May 2, 2022 for Discharge Period 2. Samples were taken at intervals in compliance with the SW ECA No. 4731-BNNT5Y.

There are no Site-specific compliance criteria for the monthly discharge monitoring. For a point of reference, the results have been compared to the Provincial Water Quality Objectives (PWQO). Note that the PWQO are criteria which serve as chemical and physical indicators of desirable levels for surface water in Ontario. The PWQO are often used to provide guidance in making water quality management decisions, however it is noted that "background" surface water quality in the Province of Ontario commonly exceeds the PWQO for various parameters. It is therefore necessary to account for local conditions in assessing surface water quality against the PWQO.

The surface water quality is also evaluated through a relative comparison between locations, and through a comparison to the off-Site monitoring locations.

#### 4.2.1.1 Equalization Pond

The results of the monthly discharge monitoring from the Equalization Pond are presented in Table 6.

The monthly monitoring generally showed low concentrations of general chemistry and metals parameters within the Equalization Pond. Concentrations were generally comparable to off-Site surface water collected from STN6U and STN6D.

The analytical results for Equalization Pond samples were generally below the PWQO, with the exception of total phenols (in three samples), unionized ammonia (in one sample), aluminum (in two samples), and molybdenum (in three samples). Based on local background conditions in surface water and historical results, the concentrations of these parameters reported in 2022 are interpreted to be the result of natural variability in surface water. There is no evidence of site related surface water impact within the Equalization Pond.

Note that the PWQO objective for total phenols is significantly lower than the effluent discharge criterion (0.001 mg/L compared to 0.02 mg/L). Concentrations of phenols at the equalization pond were less than the effluent discharge criteria (0.02 mg/L).

Metals are collected as total concentrations (i.e. unfiltered). Concentrations of metals can be impacted by suspended particulates within the sample. Off-Site surface water locations also had exceedances of the PWQO for aluminum and iron, indicating metals can be elevated above the PWQO naturally in the area. Concentrations of molybdenum were slightly elevated above the PWQO at the Equalization Pond and were not elevated off-Site; however, concentrations were consistent between sampling events, with historical results, and between Pond A, Pond D, and the Equalization Pond.

It was noted that a number of VOC parameters were qualified in the May 2022 sample as the sample contained >5 % headspace and the results may be biased low. No VOCs were detected. Additionally, a number of sVOC parameters

had detection limits that were above their associated PWQO, with bis(2-Ethylhexyl)phthalate (DEHP) the highest with a detection limit of 2.5 µg/L and PWQO of 0.6 µg/L. The detection limit had to be adjusted due to insufficient sample.

#### 4.2.1.2 Pond A and Pond D

The results of the monthly discharge monitoring from Pond A and Pond D are presented in Table 8 and 9, respectively.

The monthly monitoring generally showed low concentrations of general chemistry and metals parameters within Pond A and Pond D. Concentrations were generally comparable to off-Site surface water collected from STN6U and STN6D.

The analytical results for Pond A were generally below the PWQO with exception of total phenols (in two samples), phosphorus (in one sample), unionized ammonia (in one sample), aluminum (in three samples), chromium VI (in one sample), iron (in three samples), and molybdenum (in three samples).

Similar water quality was observed in Pond D. Concentrations at Pond D were below the PWQO with the exception of total phenols (in two samples), phosphorus (in two samples), aluminum (in three samples), iron (in three samples), and molybdenum (in three samples).

It is not interpreted that the PWQO exceedances within Pond A and Pond D are related to Site operations. Phenols concentrations were less than the effluent discharge criteria for the Site (0.02 mg/L). As described above, metals concentrations can naturally exceed the PWQO due to suspended particulates within the sample. Off-site location STN6U and STN6D also had PWQO exceedances for aluminum and iron.

There were no VOC or sVOC parameters detected in samples from Pond A and Pond D, although note that multiple VOC and sVOC parameters were qualified and detection limits were adjusted, similar to the samples from the Equalization Pond.

A comparison of the monitoring for Pond A and Pond D to the Equalization Pond indicates the following:

- The analytical results for total phenols and phosphorus at all three sampling locations is on approximately the same order of magnitude with no discernible trend noted between the concentrations at the three sampling locations.
- Individual concentrations of metals, including aluminum, iron, and silicon, were generally higher in Pond A and Pond D compared to the Equalization Pond.
- VOC and sVOC parameters were not detected in Pond A, Pond D, or the Equalization Pond

Generally, surface water quality is the same or slightly improves as the water moves from Pond A to Pond D and through the SWTP and the Equalization Pond.

## 4.2.2 Toxicity Monitoring

Toxicity monitoring samples from the Equalization Pond were taken on March 22, and May 3, 2022. The results of the toxicity monitoring are presented in Table 7.

All samples analyzed were within the specific limits to characterize the samples as being non-toxic.

Review of the toxicity monitoring data for the last 5 years has shown that results were non-toxic. The toxicity sample has a holding time of 72 hours and requires special shipment to a specialized laboratory. The toxicity sample is recommended to be removed from the surface water program given the samples have been non-toxic.

## 4.2.3 Visual Observation

Quarterly visual site inspections were undertaken by GHD on March 31, 2022, June 10, 2022, September 13, 2022, and December 13, 2022, including of the surface water management system.

No fish were observed in the Equalization Pond at the time of the quarterly inspections. The water is often murky at the time of the quarterly inspections, making it difficult to observe fish if they are in the deeper water.

The status of the water levels in the Equalization Pond was not noted during the quarterly inspections. Water levels were noted to be high in the SWMP during the first and second quarterly inspections, and moderate during the third and fourth quarterly inspections. A summary of the quarterly Site inspections is included in the Landfill Annual Monitoring Report.

The visual observation of fish in the Equalization Pond is difficult based on time of year, light conditions, and water temperature. The information collected with regard to whether fish are observed is not scientific in nature. It is recommended that visual observation for fish in the Equalization Pond is discontinued.

### **4.3 Supplementary Monitoring**

There was no supplementary sampling completed outside of sampling during the discharge periods in 2022.

### **4.4 Off-Site Surface Water Monitoring**

The background and downstream off-Site monitoring locations are typically monitored as part of the monitoring program if water is discharged from the Equalization Pond for an extended period. Samples are to be collected in spring and late summer/fall during discharge, with samples analyzed for general chemistry and total metals.

In 2022, the sample locations were adjusted due to fallen trees and dangerous sampling conditions (refer to Section 3.1.2.4 and Appendix B). Samples were collected from the revised upstream (STN6U) and downstream (STN6D) on May 3, 2022. There was no sample collected in fall 2022 as there was no discharge occurring.

Generally, the surface water quality showed comparable concentrations between the upstream (STN6U) and downstream (STN6D) locations. Surface water quality also showed comparable concentrations to the results from Pond A, Pond D, and the Equalization Pond.

The analytical results for off-Site locations were generally below the PWQO with exception of aluminum and iron. Aluminum and iron concentrations exceeded the PWQO at upstream and downstream locations, indicating natural elevated concentrations within the receiving waterway (i.e. municipal ditch along road). As discussed previously, concentrations of metals can be elevated due to suspended particulates within the sample.

Overall, there was no apparent impact to off-Site surface water from Discharge Period 2.

## **5. Surface Water Characterization**

Condition 9 of the SW ECA No. 4731-BNNT5Y specifies that a surface water characterization should be completed to evaluate surface water quality in relation to the vertical expansion and landfill operations. A key concern was the potential for dust/operational impacts since the active disposal cells are along the south, near the surface water ponds. A surface water characterization monitoring program was incorporated through the sampling of Ponds A and D (formerly the East Pond and West Pond) for 5 years following commencement of the landfill expansion. The landfill expansion commenced in 2016, however, the characterization was delayed for one year due to limited sample collection in 2020. The surface water characterization was provided in the 2021 Annual Surface Water Report.

It is recommended that the next review be completed in 2026 to determine if landfill-related impacts are occurring to surface water ponds. This review will cover the next 5-years of monitoring data, from 2022 to 2026. The March and May 2022 monitoring results from Pond A and Pond D will be used in the surface water characterization completed in 2026.

# 6. Conclusions and Recommendations

## 6.1 Conclusions

Based on the findings as documented in this report, the following conclusions are provided:

1. Effluent discharge criteria (TSS, solvent extractables, phenols, and flow rate) were met during each active day of discharge from the Equalization Pond.
2. Based on analysis of the daily and monthly discharge monitoring data collected during the monitoring period, no detrimental trends for surface water quality were identified.
3. Comparison between various on-site surface water monitoring locations indicate that the surface water quality is comparable or improves as the water moves from Pond A to Pond D and through the SWTP and the Equalization Pond.
4. There was no apparent impact to off-Site surface water quality from Discharge Period 2.

## 6.2 Recommendations

The following recommendations are provided for consideration:

1. The monitoring programs detailed within this report and completed in accordance with the requirements of the MECP-approved Surface Water Monitoring Program should continue in subsequent years.
2. Consider modifying the Surface Water Monitoring Program to:
  - Remove Toxicity monitoring from sampling requirements, as per Section 3.1.2.2.
  - Remove the requirement to document visual observations for presence/absence of fish in the Equalization Pond, as per Section 3.1.2.3. Continue documenting the overall visual appearance of the Equalization Pond during the Quarterly Inspections.
  - Maintain the requirement to sample off-Site surface water locations (STN6U and STN6D), as per Section 3.1.3.
3. Include an evaluation of results in future annual reports to determine if landfill-related impacts are occurring to surface water ponds from expanded landfilling operations. Data analysis is to include a 5-year period of assessment of the surface water quality. A 5-year assessment was completed in the 2021 Annual Surface Water Report. The next review should be completed in 2026.
4. Based on future monitoring results, re-evaluate the surface water monitoring program in future annual reports.

## 7. References

GHD. 2021 Annual Surface Water Report, Clean Harbors Lambton Facility. March 8, 2022.

GHD (Formerly Conestoga-Rovers and Associates). Engineering and Design, Existing Conditions Report. October 2014.

Ontario Ministry of the Environment, Conservation, and Parks (MECP). Amended Environmental Compliance Approval No. 4731-BNNT5Y dated April 20, 2020.

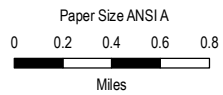
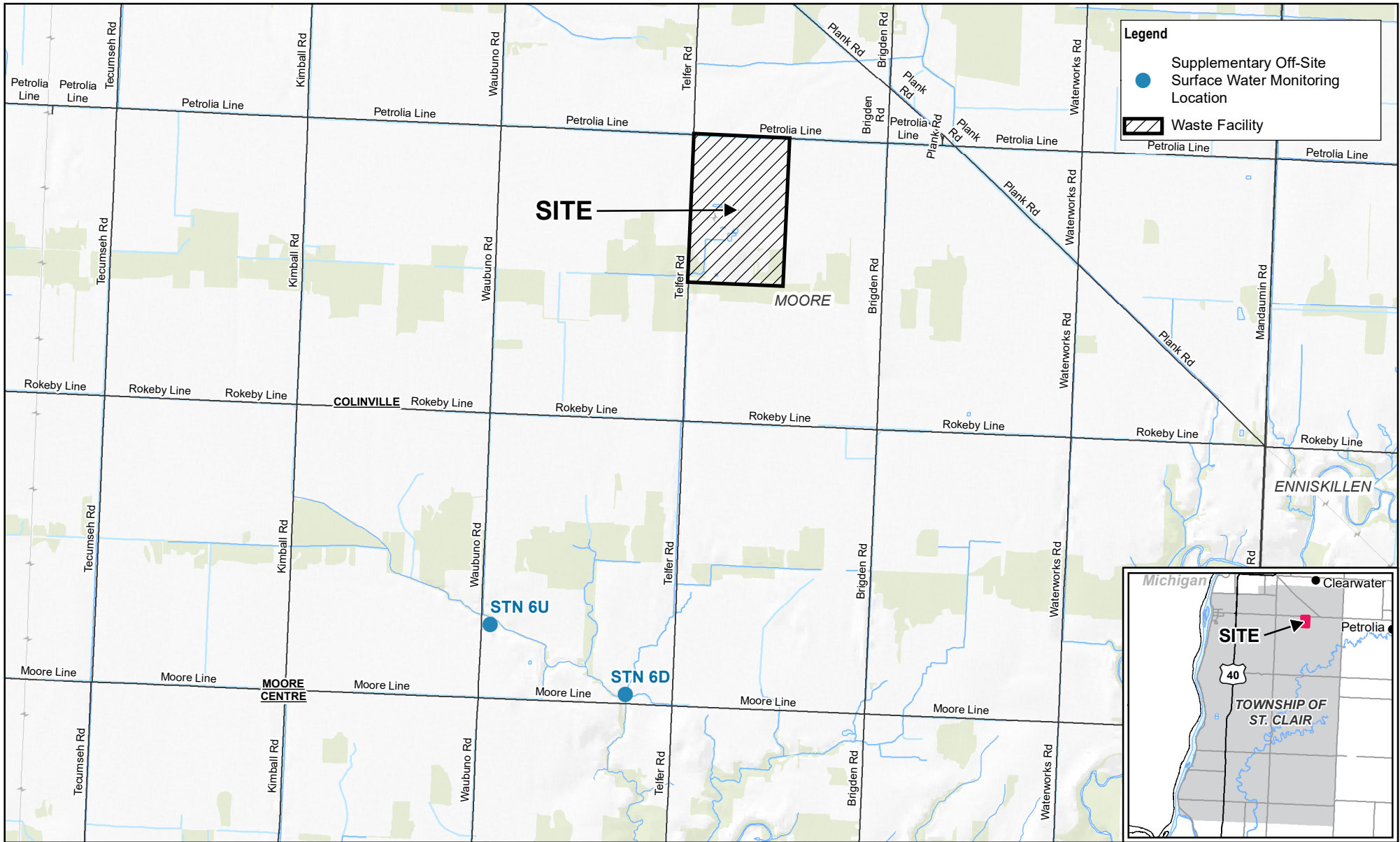
Ontario MECP. Amended Environmental Compliance Approval No. A031806 (Waste ECA) dated October 20, 2016.

Ontario MECP. Amended Environmental Compliance Approval No. 1065-9VVJSW dated October 19, 2015.

Ontario MECP. Provincial Officer's Order No. 2681-BCPKUJ (Order), dated June 5, 2019.

Tetra Tech WEI Inc. Design and Operations Report – Lambton Landfill Expansion, Clean Harbors Canada, Inc. – Lambton Landfill Site. October 2015.





Map Projection: Transverse Mercator  
 Horizontal Datum: North American 1983  
 Grid: NAD 1983 UTM Zone 17N

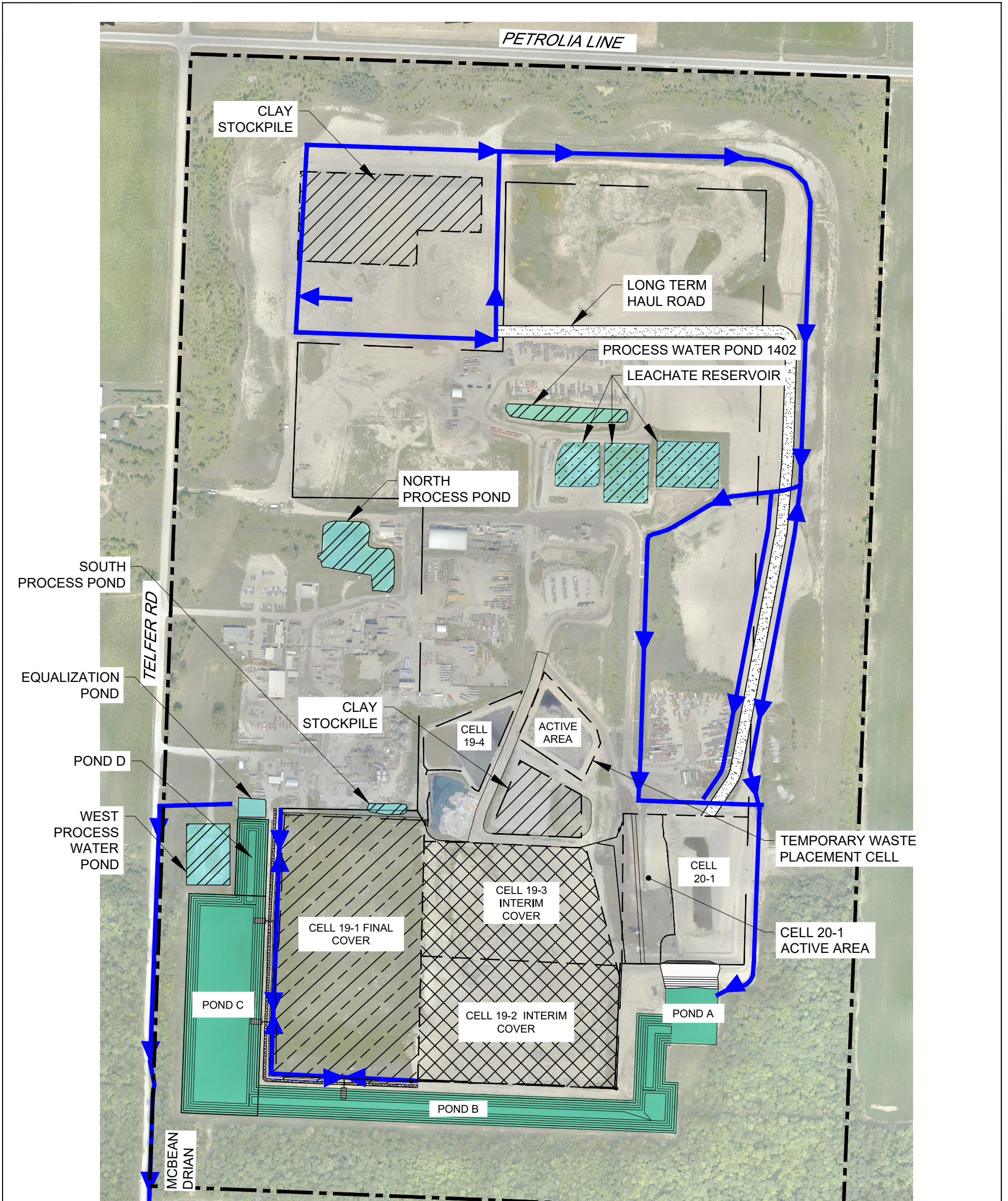


CLEAN HARBORS CANADA INC.  
 LAMBTON COUNTY, ONTARIO

**2022 ANNUAL SURFACE WATER  
 QUALITY MONITORING REPORT  
 SITE LOCATION MAP**

Project No. 44985-20  
 Revision No. -  
 Date May 11, 2022

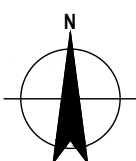
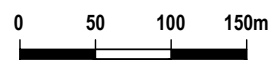
**FIGURE 1**



SOURCE:  
AERIAL IMAGE PROVIDED FROM DRAWING: C3D CLEAN HARBOURS TOPO 08-17-2022.DWG, SURVEYED AUGUST 17 2022

**LEGEND**

	PROPERTY LINE		TREATED SURFACE WATER RESERVOIR
	WATER QUALITY STATION		UNTREATED SURFACE WATER RESERVOIR
	PRE-1986 LANDFILL DITCH SYSTEM		PROCESS RESERVOIR
	POST-1988 LANDFILL DITCH SYSTEM		LEACHATE RESERVOIR
	PERMANENT STREAM		FINAL COVER
	LOCATION OF PUMPING EQUIPMENT		INTERIM COVER
			STOCKPILE



CLEAN HARBORS CANADA INC.  
LAMBTON COUNTY, ONTARIO

2022 ANNUAL SURFACE WATER  
QUALITY MONITORING REPORT  
2022 CAPITAL WORKS PLAN

Project No. 12572192  
Date February 2023

**FIGURE 2**

Table 2

**Surface Water Monitoring Program  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Monitoring Location	Previous SW ECA <sup>(1)(3)</sup>	Current SW ECA <sup>(2)(3)</sup>	Proposed Surface Water Sampling Program		
			Daily Discharge	Monthly Discharge	Spring and late Summer/Fall
<b>Equalization Reservoir Discharge</b>	pH, Conductivity, TSS, Total Phenols, Chloride, Solvent Extractables - Microtox General Chemistry Metals VOCs sVOCs	TSS, Solvent Extractables, Phenols, pH Solvent Extractables Microtox General Chemistry Metals VOCs sVOCs	■	■ <sup>(4)</sup> ■ <sup>(4)</sup> ■ <sup>(4)</sup> ■ <sup>(4)</sup> ■ <sup>(4)</sup> ■ <sup>(4)</sup>	
<b>Equalization Reservoir</b>	Fish Presence	Fish Presence		■	
<b>West Pond or Pond D</b>	General Chemistry Metals VOCs sVOCs	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
<b>East Pond or Pond A</b>	General Chemistry Metals VOCs sVOCs	General Chemistry Metals VOCs sVOCs		■ ■ ■ ■	
<b>STN6U (off-site background)</b>	General Chemistry Metals	General Chemistry Metals			■ <sup>(5)</sup> ■ <sup>(5)</sup>
<b>STN6D (off-site downstream)</b>	General Chemistry Metals	General Chemistry Metals			■ <sup>(5)</sup> ■ <sup>(5)</sup>

- Notes:
- Source: Letter to Erica Carabott, Clean Harbors Canada Inc. re: Surface Water Monitoring Program and Surface Water Characterization Program, Lambton Facility, dated December 9, 2015.
  - Source: Amended Environmental Compliance Approval No. 2985-B9KPP2 dated September 9, 2019 (Current SW ECA), Table 3.
  - General Chemistry, metals, VOC, and sVOC parameters as per detailed list provided in Table 3 of this annual report.
  - Previous SW ECA indicates that samples are to be collected prior to discharge from the Equalization Pond.  
Current SW ECA indicates that samples are to be collected during a discharge event from the Equalization Pond within 25-35 days after the previous samples were collected.
  - Samples to be collected during discharge from Site and on same day as Monthly Discharge samples.
- VOC - Volatile Organic Compounds  
SVOC - Semi-Volatile Organic Compounds  
TSS - Total Suspended Solids

**Table 3**

**Surface Water Monitoring Parameters  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

<b>Parameter</b>	<b>Analytes</b>
General Chemistry Parameters	Alkalinity (total as CaCO <sub>3</sub> ), Ammonia N, Bromide (dissolved), Chemical Oxygen Demand (COD), Chloride (dissolved), Conductivity (umhos/cm), Cyanide (total), Dissolved Organic Carbon (DOC), Fluoride, Hardness, Nitrate (as N), Nitrite (as N), pH (field), pH (lab), Phenolics (total), Phosphorus (total), Sulfate (dissolved), Temperature (field), Total Dissolved Solids (TDS), Total Kjeldahl Nitrogen (TKN), Total Suspended Solids (TSS), Un ionized Ammonia
Metals (Total)	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium (Hexavalent), Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc
Volatile Organic Compounds (VOC)	1,1,1,2 Tetrachloroethane, 1,1,1 Trichloroethane, 1,1,2,2 Tetrachloroethane, 1,1,2 Trichloroethane, 1,1 Dichloroethane, 1,2 Dibromoethane (Ethylene dibromide), 1,2 Dichlorobenzene, 1,2 Dichloroethane, 1,2 Dichloropropane, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene, 2 Butanone (Methyl ethyl ketone), 4 Methyl 2 pentanone (Methyl isobutyl ketone), Acetone, Benzene, Bromodichloromethane, Bromoform, Bromomethane (Methyl bromide), Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform (Trichloromethane), cis 1,2 Dichloroethene, cis 1,3 Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane (CFC 12), Ethylbenzene, Hexane, m&p Xylenes, Methyl tert butyl ether (MTBE), Methylene chloride, o Xylene, Styrene, Tetrachloroethene, Toluene, trans 1,2 Dichloroethene, trans 1,3 Dichloropropene, Trichloroethene, Trichlorofluoromethane (CFC 11), Vinyl Chloride, Xylenes (total)
Semi Volatile Organic Compounds (sVOC)	1,2,4 Trichlorobenzene, 1,2 Dichlorobenzene, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene, 1 Methyl naphthalene, 2,3,4,5 Tetrachlorophenol/2,3,4,6 Tetrachlorophenol, 2,3,6 Trichlorophenol, 2,4,5 Trichlorophenol, 2,4,6 Trichlorophenol, 2,4 Dichlorophenol, 2,4 Dimethylphenol, 2,4 Dinitrophenol, 2,4 Dinitrotoluene, 2,6 Dinitrotoluene, 2 Chlorophenol, 2 Methyl naphthalene, 3,3' Dichlorobenzidine, 4 Chloroaniline, Acenaphthene, Acenaphthylene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene/Benzo(j)fluoranthene, Benzo(g,h,i)perylene, Benzo(k)fluoranthene, bis(2 Chloroethoxy)ether, bis(ethylhexy)phthalate (DEHP), Chrysene, Dibenz(a,h)anthracene, Diethyl phthalate, Dimethyl phthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorobutadiene, Indeno(1,2,3 cd)pyrene, Naphthalene, Pentachlorophenol, Perylene, Phenanthrene, Pyrene

Source:

1. Source: Letter to Erica Carabott, Clean Harbors Canada Inc. re: Surface Water Monitoring Program and Surface Water Characterization Program, Lambton Facility, dated December 9, 2015.
2. Amended Environmental Compliance Approval No. 2985-B9KKP2 dated September 9, 2019 (Current SW ECA), Table 4.

Table 5

**Daily Chemical Analysis - Equalization Pond**  
**2022 Annual Surface Water Quality Monitoring Report**  
**Lambton Facility**  
**Clean Harbors Canada Inc.**

**WASTE WATER TREATMENT PLANT - REPORT OF ANALYSIS (EQ POND)**

Date	Location	pH	Conductivity (mS/cm)	TSS (mg/L)	Phenol (mg/L)	Solvent Extractables (mg/L)	Flow Rate (LPM)	Daily Flow (L)	Comments
<b>Effluent Discharge Criteria</b>		<b>5.5 to 9.5</b>	<b>-</b>	<b>15</b>	<b>0.02</b>	<b>15</b>	<b>-</b>	<b>-</b>	
<b>DISCHARGE PERIOD 1</b>									
12/23/21	EQ POND	7.97	0.690	10.4	<0.002	<5	0	0	Discharging starts
12/24/21	EQ POND	8.06	0.620	10.1	<0.002	<5	802	1,154,880	
12/25/21	EQ POND	7.99	0.800	10.1	<0.002	<5	790	1,137,600	
12/26/21	EQ POND	8.02	0.720	7.7	<0.002	<5	747	1,075,680	
12/27/21	EQ POND	7.93	0.810	8.1	<0.002	<5	742	1,068,480	
12/28/21	EQ POND	7.93	0.750	4.8	<0.002	<5	733	1,055,520	
12/29/21	EQ POND	7.88	0.780	11.1	<0.002	<5	724	1,042,560	
12/30/21	EQ POND	7.92	0.730	6.1	<0.002	<5	745	1,072,800	
12/31/21	EQ POND	7.95	0.690	8.3	<0.002	<5	715	1,029,600	
1/1/22	EQ POND	7.94	0.794	7.0	<0.002	<5	743	1,069,920	
1/2/22	EQ POND	7.99	0.744	5.0	<0.002	<5	691	995,040	
1/3/22	EQ POND	8.01	0.848	10.0	<0.002	<5	675	972,000	
1/4/22	EQ POND	7.98	0.800	13.2	<0.002	<5	656	944,640	
1/5/22	EQ POND	8.06	0.850	10.3	<0.002	<5	646	930,240	
1/6/22	EQ POND	7.95	0.860	8.5	<0.002	<5	656	944,640	
1/7/22	EQ POND	8.07	0.779	7.0	<0.002	<5	625	900,000	
1/8/22	EQ POND	8.17	0.733	10.0	<0.002	<5	640	921,600	
1/9/22	EQ POND	7.88	0.832	5.0	<0.002	<5	630	907,200	
1/10/22	EQ POND	8.05	0.700	7.3	<0.002	<5	628	904,320	
1/11/22	EQ POND	8.13	0.790	10.5	<0.002	<5	622	895,680	
1/15/22	EQ POND	8.02	0.880	5.2	<0.002	<5		0	Plant on Recirculation Mode
1/16/22								0	Plant on Recirculation Mode
1/17/22	EQ POND	8.04	0.860	4.3	<0.002	5.2	850	1,224,000	
1/18/22	EQ POND	8.25	0.830	6.0	<0.002	<5	NA	-	Flow meter not working
1/19/22	EQ POND	8.29	0.820	7.1	<0.002	<5	409	588,960	
1/20/22	EQ POND	8.06	0.824	4.8	<0.002	<5	530	763,200	
1/21/22	EQ POND	8.27	0.900	10.6	<0.002	<5	690	993,600	
1/22/22	EQ POND	7.86	0.760	10.4	<0.002	<5	635	914,400	
1/23/22	EQ POND	8.12	0.860	10.7	<0.002	<5	476	685,440	
1/24/22	EQ POND	8.13	0.770	9.6	<0.002	<5	419	603,360	
1/25/22	EQ POND	7.99	0.899	8.6	<0.002	<5	360	518,400	
1/26/22	EQ POND	8.07	0.690	6.4	<0.002	<5	325	468,000	
<b>DISCHARGE PERIOD 2</b>									
3/21/22	EQ POND	8.77	0.736	3.0	<0.002	<5		0	Plant on Recirculation Mode
3/22/22	EQ POND	8.70	0.754	4.0	<0.002	<5		0	Plant on Recirculation Mode
3/23/22	EQ POND	7.98	0.800	5.5	<0.002	<5	681	980,640	
3/24/22	EQ POND	7.99	0.800	4.5	<0.002	<5	565	813,600	
3/25/22	EQ POND	7.90	0.790	5.0	<0.002	<5	530	763,200	
3/26/22	EQ POND	7.87	0.766	2.7	<0.002	<5	491	707,040	
3/27/22	EQ POND	7.91	0.790	3.6	<0.002	<5	440	633,600	
3/28/22	EQ POND	7.88	0.783	5.5	<0.002	7.2	420	604,800	
3/29/22	EQ POND	7.92	0.790	6.3	<0.002	<5	NA	-	Flow meter not working
3/30/22	EQ POND	7.97	0.770	4.9	<0.002	<5	400	576,000	
3/31/22	EQ POND	8.02	0.800	3.3	<0.002	<5	350	504,000	
4/1/22	EQ POND	8.11	0.782	<1	<0.002	<5	354	509,760	
4/2/22	EQ POND	7.66	0.766	3.2	<0.002	<5	324	466,560	
4/3/22	EQ POND	7.95	0.780	<1	<0.002	<5	309	444,960	
4/4/22	EQ POND				<0.002			0	Plant on Recirculation Mode
4/5/22	EQ POND							0	Backwashing Sand Filters
4/6/22	EQ POND	8.11	0.790	2.6	<0.002	<5	1010		Discharging starts
4/7/22	EQ POND	7.98	0.730	2.6	<0.002	<5	997	1,435,680	
4/8/22	EQ POND	7.99	0.730	5.0	<0.002	<5	994	1,431,360	
4/9/22	EQ POND	7.79	0.775	4.4	<0.002	<5	968	1,393,920	
4/10/22	EQ POND	8.06	0.780	2.8	<0.002	<5	1000	1,440,000	
4/11/22	EQ POND	8.09	0.790	3.3	<0.002	<5	1000	1,440,000	
4/12/22	EQ POND	8.07	0.780	1.6	<0.002	<5	1000	1,440,000	
4/13/22	EQ POND	7.95	0.770	<1	<0.002	<5	1036	1,491,840	
4/14/22	EQ POND	7.75	0.790	5.0	<0.002	<5	1080	1,555,200	
4/15/22	EQ POND	7.98	0.784	5.0	<0.002	<5	1075	1,548,000	
4/16/22	EQ POND	7.97	0.780	11.2	<0.002	<5	1204	1,733,760	
4/17/22	EQ POND	7.87	0.780	11.8	<0.002	<5	1220	1,756,800	
4/18/22	EQ POND	7.91	0.780	6.2	<0.002	<5	1265	1,821,600	
4/19/22	EQ POND	7.99	0.735	5.8	<0.002	<5	1240	1,785,600	

Table 5

Daily Chemical Analysis - Equalization Pond  
 2022 Annual Surface Water Quality Monitoring Report  
 Lambton Facility  
 Clean Harbors Canada Inc.

WASTE WATER TREATMENT PLANT - REPORT OF ANALYSIS (EQ POND)

Date	Location	pH	Conductivity (mS/cm)	TSS (mg/L)	Phenol (mg/L)	Solvent Extractables (mg/L)	Flow Rate (LPM)	Daily Flow (L)	Comments
4/20/22	EQ POND	7.68	0.758	4.0	<0.002	<5	1220	1,756,800	
4/21/22	EQ POND	8.03	0.786	6.6	<0.002	<5	1297	1,867,680	
4/22/22	EQ POND	7.95	0.790	3.9	<0.002	<5	1200	1,728,000	
4/23/22	EQ POND	7.98	0.800	3.0	<0.002	<5	1219	1,755,360	
4/24/22	EQ POND	7.99	0.790	3.4	<0.002	<5	1200	1,728,000	
4/25/22	EQ POND	8.13	0.770	4.0	<0.002	<5	883	1,271,520	
4/26/22	EQ POND	8.13	0.781	3.0	<0.002	<5	802	1,154,880	
4/27/22	EQ POND	8.00	0.790	7.0	<0.002	<5	807	1,162,080	
4/28/22	EQ POND	8.04	0.800	8.4	<0.002	<5	783	1,127,520	
4/29/22	EQ POND	7.78	0.790	0	<0.002	<5		0	Plant on Recirculation Mode
4/30/22	EQ POND	7.60	0.790	9.8	<0.002	<5	750	1,080,000	
5/1/22	EQ POND	7.85	0.750	9.5	<0.002	<5	820	1,180,800	
5/2/22	EQ POND	8.32	0.752	2.2	<0.002	<5	838	1,206,720	
5/3/22	EQ POND	7.45	0.755	8.6	<0.002	<5	1094	1,575,360	
5/4/22	EQ POND	8.00	0.840	4.1	<0.002	<5	NA	-	VERY LOW FLOW
5/5/22	EQ POND	7.88	0.790	6.6	<0.002	<5	1100	1,584,000	

Notes:

Data and comments provided by Clean Harbours Canada Inc.

TSS - Total Suspended Solids

Phenol - Total Phenols

LPM - litres per minute

ppm - parts per million

Table 6

**Monthly Discharge Monitoring – Equalization Pond, General Chemistry, Metals, and VOCs/sVOCs**  
**2022 Annual Surface Water Quality Monitoring Report**  
**Lambton Facility**  
**Clean Harbors Canada Inc.**

Sample Location: Sample Date: Parameters	Units	PWQO	EQ Pond 12/14/2021	EQ Pond 3/22/2022	EQ Pond 5/2/2022
<b>General Chemistry</b>					
Alkalinity, total (as CaCO <sub>3</sub> )	mg/L	-	96	93.3	112
Ammonia-N	mg/L	-	0.164	1.28 DLHC	0.163
Bromide	mg/L	-	2.56	1.66	1.39
Chemical oxygen demand (COD)	mg/L	-	14	20	11 SP
Chloride	mg/L	-	86.8	57.6	54.5
Conductivity	umhos/cm	-	842	716	805
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	4.59	4.93	4.24
Fluoride	mg/L	-	0.879	0.942	1.09
Hardness	mg/L	-	-	-	285
Nitrate (as N)	mg/L	-	0.151	0.109	0.356
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	8.11	8.52	8.15
Phenolics (total)	mg/L	0.001	0.0056	0.0011	0.0024
Phosphorus	mg/L	0.03	0.0109	0.0268	0.0121
Sulfate	mg/L	-	186	197	-
Total dissolved solids (TDS)	mg/L	-	497	428 DLDS	485 DLDS
Total kjeldahl nitrogen (TKN)	mg/L	-	0.52	2.62	0.741
Total suspended solids (TSS)	mg/L	-	5.1	3.6	4.4
Trihalomethanes	ug/L	-	ND (2.0)	ND (2.0)	-
Un-ionized ammonia	mg/L	0.02	0.003	0.132	0.005
<b>Field Parameters</b>					
pH, field	s.u.	6.5-8.5	8		
Temperature, field	Deg C	-	7.5		
<b>Metals</b>					
Aluminum	mg/L	0.075	0.063	0.11	0.29
Antimony	mg/L	0.02	0.00043	0.0004	0.00047
Arsenic	mg/L	0.005	0.00106	0.00098	0.00122
Barium	mg/L	-	0.0419	0.0322	0.0411
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)	ND (0.000020)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.141	0.104	0.112
Cadmium	mg/L	0.0002	ND (0.000030)	ND (0.000050) DLM	ND (0.000100) DLM
Calcium	mg/L	-	59.5	64.6	73.8
Chromium VI (hexavalent)	mg/L	0.001	ND (0.00050)	0.00051	0.00062
Cobalt	mg/L	0.0009	ND (0.00010)	0.0002	0.0003
Copper	mg/L	0.005	ND (0.0010)	0.002	0.00213
Iron	mg/L	0.3	0.068	0.087	0.272
Lead	mg/L	0.005	0.00018	0.00019	0.000206
Magnesium	mg/L	-	25.6	22.7	24.5
Manganese	mg/L	-	0.0116	0.00827	0.0148
Mercury	mg/L	0.0002	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)
Molybdenum	mg/L	0.04	0.0507	0.0518	0.0555
Nickel	mg/L	0.025	0.00329	0.00349	0.00387
Potassium	mg/L	-	10.8	6.76	7.17
Selenium	mg/L	0.1	0.000918	0.00219	0.00262
Silicon	mg/L	-	0.79	1.64	2.26
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000010)
Sodium	mg/L	-	59.8	40.4	40.5
Strontium	mg/L	-	0.535	0.537	0.646
Thallium	mg/L	0.0003	0.000019	0.000026	0.000045
Tin	mg/L	-	ND (0.00010)	0.00012	ND (0.00010)
Vanadium	mg/L	0.006	ND (0.00050)	ND (0.00050)	0.0009
Zinc	mg/L	0.03	ND (0.0030)	ND (0.0030)	0.0031

Table 6

**Monthly Discharge Monitoring – Equalization Pond, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

<b>Sample Location: Sample Date: Parameters</b>	<b>Units</b>	<b>PWQO</b>	<b>EQ Pond 12/14/2021</b>	<b>EQ Pond 3/22/2022</b>	<b>EQ Pond 5/2/2022</b>
<b>Volatiles</b>					
1,1,1,2-Tetrachloroethane	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,1-Trichloroethane	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2,2-Tetrachloroethane	ug/L	70	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2-Trichloroethane	ug/L	800	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1-Dichloroethane	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1-Dichloroethene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20) VOCHS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloroethane	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloropropane	ug/L	0.7	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,4-Dichlorobenzene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	400	ND (20)	ND (20)	ND (20) VOCHS
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Acetone	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Benzene	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Bromodichloromethane	ug/L	200	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromoform	ug/L	60	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromomethane (Methyl bromide)	ug/L	0.9	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Carbon tetrachloride	ug/L	-	ND (0.50)	ND (0.50)	ND (0.20) VOCHS
Chlorobenzene	ug/L	15	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Chloroethane	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Chloroform (Trichloromethane)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
cis-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
cis-1,3-Dichloropropene	ug/L	-	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Dibromochloromethane	ug/L	40	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Ethylbenzene	ug/L	8	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Hexane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
m&p-Xylenes	ug/L	2	ND (1.0)	ND (1.0)	ND (0.40) VOCHS
Methyl tert butyl ether (MTBE)	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Methylene chloride	ug/L	100	ND (2.0)	ND (2.0)	ND (1.0) VOCHS
o-Xylene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Styrene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Tetrachloroethene	ug/L	50	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Toluene	ug/L	0.8	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
trans-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
trans-1,3-Dichloropropene	ug/L	7	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Trichloroethene	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Vinyl chloride	ug/L	600	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Xylenes (total)	ug/L	-	ND (1.1)	ND (1.1)	ND (0.50)
<b>Semi-Volatiles</b>					
1,2,4-Trichlorobenzene	ug/L	0.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS



Table 6

**Monthly Discharge Monitoring – Equalization Pond, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location: Sample Date: Parameters	Units	PWQO	EQ Pond 12/14/2021	EQ Pond 3/22/2022	EQ Pond 5/2/2022
1,4-Dichlorobenzene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,3,4,5-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,4,6-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,6-Trichlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (0.20)
2,4,5-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4,6-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dichlorophenol	ug/L	0.2	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2,4-Dimethylphenol	ug/L	10	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dinitrophenol	ug/L	-	ND (1.0)	ND (2.0) DLIS	ND (2.5) DLIS
2,4-Dinitrotoluene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,6-Dinitrotoluene	ug/L	6	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2-Chlorophenol	ug/L	7	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
3,3'-Dichlorobenzidine	ug/L	0.6	ND (0.40) J	ND (0.80) DLIS	ND (1.00) DLIS
4-Chloroaniline	ug/L	-	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
Acenaphthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Acenaphthylene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Anthracene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)anthracene	ug/L	0.0004	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)pyrene	ug/L	-	ND (0.050)	ND (0.10) DLIS	ND (0.125) DLIS
Benzo(b)fluoranthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Benzo(g,h,i)perylene	ug/L	0.00002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(k)fluoranthene	ug/L	0.0002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
bis(2-Chloroethyl)ether	ug/L	200	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	ND (2.0)	ND (2.0) DLIS	ND (2.5) DLIS
Chrysene	ug/L	0.0001	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Dibenz(a,h)anthracene	ug/L	0.002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Diethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Dimethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Fluoranthene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Fluorene	ug/L	0.2	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Hexachlorobenzene	ug/L	0.0065	ND (0.040)	ND (0.080) DLIS	ND (0.100) DLIS
Hexachlorobutadiene	ug/L	0.009	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Naphthalene	ug/L	7	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pentachlorophenol	ug/L	0.5	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
Perylene	ug/L	0.00007	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Phenanthrene	ug/L	0.03	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS

## Notes:

**0.01** Analytical results above the Provincial Water Quality Objectives (PWQO)

ND= Not detected at the associated reporting limit.

J= Estimated concentration.

- = Not Applicable

DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

DLHC - Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

DLIS - Detection Limit Adjusted due to insufficient sample.

DLM - Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

DLUI - Detection Limit Raised: Unknown interference generated an apparent false positive test result.

ND - Not detected at the associated reporting limit.

PEHT - Parameter exceeded recommended holding time prior to analysis.

SP - Sample was preserved at the laboratory.

VOCHS - VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.

> - Greater than reported value.

-- Not applicable.

Table 7

Monthly Discharge Monitoring – Equalization Pond, Microtox  
 2022 Annual Surface Water Quality Monitoring Report  
 Lambton Facility  
 Clean Harbors Canada Inc.

Sample Location:		EQ Pond	EQ Pond
Sample ID:		EQ POND DISCHARGE	EQ POND DISCHARGE
Sample Date:		3/22/2022	5/03/2022
Parameters	Units		
Color (true)	none	Colorless	Colorless
Color Correction		No	No
MTX IC20 (15 min)	%	>100	> 90
MTX IC20 (30 Min)	%	-	> 90
MTX IC20 (5 min)	%	80.7	> 90
MTX IC50 (15 min)	%	>100	> 90
MTX IC50 (30 Min)	%	-	> 90
MTX IC50 (5 min)	%	>100	> 90
Odor		Mild	Mild
Initial pH	s.u.	8.6	7.81
Interpretation	none	NON TOXIC	NON TOXIC
Turbidity	none	-	Low

Table 8

**Monthly Discharge Monitoring – Pond A, General Chemistry, Metals, and VOCs/sVOCs**  
**2022 Annual Surface Water Quality Monitoring Report**  
**Lambton Facility**  
**Clean Harbors Canada Inc.**

Sample Location: Sample Date: Parameters	Units	PWQO	Pond A 12/14/2021	Pond A 3/22/2022	Pond A 5/2/2022
<b>General Chemistry</b>					
Alkalinity, total (as CaCO <sub>3</sub> )	mg/L	-	115	97.2	110
Ammonia-N	mg/L	-	0.065	1.43 DLHC	0.353
Bromide	mg/L	-	1.22	1.43	1.88
Chemical oxygen demand (COD)	mg/L	-	20	19	13 SP
Chloride	mg/L	-	36	49.9	54.7
Conductivity	umhos/cm	-	748	722	798
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	3.9	4.46	4.6
Fluoride	mg/L	-	0.891	1.12	1.12
Hardness	mg/L	-	-	-	288
Nitrate (as N)	mg/L	-	0.758	0.241	0.186
Nitrite (as N)	mg/L	-	0.011	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	7.95	8.18	8.33
Phenolics (total)	mg/L	0.001	ND (0.010)	<b>0.0014</b>	<b>0.0031</b>
Phosphorus	mg/L	0.03	<b>0.0387</b>	0.0238	0.0165
Sulfate	mg/L	-	225	197	209
Total dissolved solids (TDS)	mg/L	-	488	431 DLDS	468 DLDS
Total kjeldahl nitrogen (TKN)	mg/L	-	0.44	2.11	0.491
Total suspended solids (TSS)	mg/L	-	15.8	7.1	6.2
Trihalomethanes	ug/L	-	ND (2.0)	ND (2.0)	-
Un-ionized ammonia	mg/L	0.02	0.000125	<b>0.0399</b>	0.0086
<b>Field Parameters</b>					
pH, field	s.u.	6.5-8.5	7	8.1	-
Temperature, field	Deg C	-	7.9	10	7.9
<b>Metals</b>					
Aluminum	mg/L	0.075	<b>1.05</b>	<b>0.678</b>	<b>0.432</b>
Antimony	mg/L	0.02	0.00058	0.0005	0.00048
Arsenic	mg/L	0.005	0.00138	0.00126	0.00132
Barium	mg/L	-	0.0422	0.0351	0.0398
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)	ND (0.000020)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.101	0.107	0.11
Cadmium	mg/L	0.0002	ND (0.00030)	ND (0.00020) DLM	ND (0.0000500) DLM
Calcium	mg/L	-	75.3	69.6	75.4
Chromium VI (hexavalent)	mg/L	0.001	0.00085	<b>0.00118</b>	0.00067
Cobalt	mg/L	0.0009	0.00079	0.00069	0.00041
Copper	mg/L	0.005	0.0034	0.0033	0.00265
Iron	mg/L	0.3	<b>1.12</b>	<b>0.702</b>	<b>0.45</b>
Lead	mg/L	0.005	0.00198	0.00088	0.000377
Magnesium	mg/L	-	24.2	22.6	24.2
Manganese	mg/L	-	0.0275	0.0611	0.0331
Mercury	mg/L	0.0002	0.0000256	0.0000059	ND (0.0000050)
Molybdenum	mg/L	0.04	<b>0.0707</b>	<b>0.0513</b>	<b>0.0558</b>
Nickel	mg/L	0.025	0.00461	0.00473	0.00415
Potassium	mg/L	-	8.19	6.6	7.13
Selenium	mg/L	0.1	0.00666	0.00295	0.00268
Silicon	mg/L	-	3.92	2.93	2.51
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000010)
Sodium	mg/L	-	30.6	36.3	40.7
Strontium	mg/L	-	0.754	0.555	0.656
Thallium	mg/L	0.0003	0.000075	0.000043	0.000026
Tin	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.0024	0.00159	0.00123
Zinc	mg/L	0.03	0.0116	0.0114	0.0031
<b>Volatiles</b>					
1,1,1,2-Tetrachloroethane	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,1-Trichloroethane	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2,2-Tetrachloroethane	ug/L	70	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2-Trichloroethane	ug/L	800	ND (0.50)	ND (0.50)	ND (0.50) VOCHS

Table 8

**Monthly Discharge Monitoring – Pond A, General Chemistry, Metals, and VOCs/sVOCs**  
**2022 Annual Surface Water Quality Monitoring Report**  
**Lambton Facility**  
**Clean Harbors Canada Inc.**

<b>Sample Location:</b>			<b>Pond A</b>	<b>Pond A</b>	<b>Pond A</b>
<b>Sample Date:</b>			<b>12/14/2021</b>	<b>3/22/2022</b>	<b>5/2/2022</b>
<b>Parameters</b>	<b>Units</b>	<b>PWQO</b>			
1,1-Dichloroethane	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1-Dichloroethene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dibromoethane (Ethylene dibromide)	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20) VOCHS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloroethane	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloropropane	ug/L	0.7	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,4-Dichlorobenzene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	400	ND (20)	ND (20)	ND (20) VOCHS
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Acetone	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Benzene	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Bromodichloromethane	ug/L	200	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromoform	ug/L	60	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromomethane (Methyl bromide)	ug/L	0.9	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Carbon tetrachloride	ug/L	-	ND (0.50)	ND (0.50)	ND (0.20) VOCHS
Chlorobenzene	ug/L	15	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Chloroethane	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Chloroform (Trichloromethane)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
cis-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
cis-1,3-Dichloropropene	ug/L	-	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Dibromochloromethane	ug/L	40	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Ethylbenzene	ug/L	8	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Hexane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
m&p-Xylenes	ug/L	2	ND (1.0)	ND (1.0)	ND (0.40) VOCHS
Methyl tert butyl ether (MTBE)	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Methylene chloride	ug/L	100	ND (2.0)	ND (2.0)	ND (1.0) VOCHS
o-Xylene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Styrene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Tetrachloroethene	ug/L	50	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Toluene	ug/L	0.8	0.55	ND (0.50)	ND (0.50) VOCHS
trans-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
trans-1,3-Dichloropropene	ug/L	7	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Trichloroethene	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Vinyl chloride	ug/L	600	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Xylenes (total)	ug/L	-	ND (1.1)	ND (1.1)	ND (0.50) VOCHS
<b>Semi-Volatiles</b>					
1,2,4-Trichlorobenzene	ug/L	0.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,4-Dichlorobenzene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,3,4,5-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,4,6-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,6-Trichlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (0.20)
2,4,5-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4,6-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dichlorophenol	ug/L	0.2	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2,4-Dimethylphenol	ug/L	10	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dinitrophenol	ug/L	-	ND (1.0)	ND (2.0) DLIS	ND (2.5) DLIS
2,4-Dinitrotoluene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,6-Dinitrotoluene	ug/L	6	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2-Chlorophenol	ug/L	7	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
3,3'-Dichlorobenzidine	ug/L	0.6	ND (0.40) J	ND (0.80) DLIS	ND (1.00) DLIS

Table 8

**Monthly Discharge Monitoring – Pond A, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location: Sample Date:			Pond A 12/14/2021	Pond A 3/22/2022	Pond A 5/2/2022
<b>Parameters</b>	<b>Units</b>	<b>PWQO</b>			
4-Chloroaniline	ug/L	-	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
Acenaphthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Acenaphthylene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Anthracene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)anthracene	ug/L	0.0004	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)pyrene	ug/L	-	ND (0.050)	ND (0.10) DLIS	ND (0.125) DLIS
Benzo(b)fluoranthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Benzo(g,h,i)perylene	ug/L	0.00002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(k)fluoranthene	ug/L	0.0002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
bis(2-Chloroethyl)ether	ug/L	200	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	ND (2.0)	ND (2.0) DLIS	ND (2.5) DLIS
Chrysene	ug/L	0.0001	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Dibenz(a,h)anthracene	ug/L	0.002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Diethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Dimethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Fluoranthene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Fluorene	ug/L	0.2	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Hexachlorobenzene	ug/L	0.0065	ND (0.040)	ND (0.080) DLIS	ND (0.100) DLIS
Hexachlorobutadiene	ug/L	0.009	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Naphthalene	ug/L	7	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pentachlorophenol	ug/L	0.5	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
Perylene	ug/L	0.00007	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Phenanthrene	ug/L	0.03	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS

## Notes:

**0.01** Analytical results above the Provincial Water Quality Objectives (PWQO)

ND= Not detected at the associated reporting limit.

J= Estimated concentration.

- = Not Applicable

DLDS - Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

DLHC - Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

DLIS - Detection Limit Adjusted due to insufficient sample.

DLM - Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

DLUI - Detection Limit Raised: Unknown interference generated an apparent false positive test result.

ND - Not detected at the associated reporting limit.

PEHT - Parameter exceeded recommended holding time prior to analysis.

SP - Sample was preserved at the laboratory.

VOCHS - VOC analysis was conducted for a water sample that contained > 5% headspace. Results may be biased low.

> - Greater than reported value.

Table 9

**Monthly Discharge Monitoring – Pond D, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location:			Pond D	Pond D	Pond D
Sample ID:			POND D WEST POND	POND D WEST POND	Pond D
Sample Date:			12/14/2021	3/22/2022	5/2/2022
Parameters	Units	PWQO			
<b>General Chemistry</b>					
Alkalinity, total (as CaCO <sub>3</sub> )	mg/L	-	105	101	112
Ammonia-N	mg/L	-	2.87	0.595 DLHC	0.319
Bromide	mg/L	-	2.03	1.61	1.87
Chemical oxygen demand (COD)	mg/L	-	24	21	14 SP
Chloride	mg/L	-	66.5	56.2	55.4
Conductivity	umhos/cm	-	835	737	798
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (di:	mg/L	-	5.79	4.87	4.83
Fluoride	mg/L	-	1.05	1.06	1.13
Hardness	mg/L	-	-	-	288
Nitrate (as N)	mg/L	-	0.13	0.18	0.187
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	ND (0.010)
pH, lab	s.u.	6.5-8.5	8.01	8.02	8.29
Phenolics (total)	mg/L	0.001	ND (0.010)	<b>0.0013</b>	<b>0.0024</b>
Phosphorus	mg/L	0.03	<b>0.0407</b>	<b>0.0325</b>	0.0148
Sulfate	mg/L	-	219	202	210
Total dissolved solids (TDS)	mg/L	-	518	459 DLDS	484 DLDS
Total kjeldahl nitrogen (TKN)	mg/L	-	3.4	1.43	0.783
Total suspended solids (TSS)	mg/L	-	16.7	13.4	5.6
Trihalomethanes	ug/L	-	ND (2.0)	ND (2.0)	-
Un-ionized ammonia	mg/L	0.02	0.00554	0.00838	0.0118
<b>Field Parameters</b>					
pH, field	s.u.	6.5-8.5	7	7.8	-
Temperature, field	Deg C	-	8	10	7.5
<b>Metals</b>					
Aluminum	mg/L	0.075	<b>1.34</b>	<b>0.66</b>	<b>0.325</b>
Antimony	mg/L	0.02	0.00046	0.00046	0.00052
Arsenic	mg/L	0.005	0.00179	0.00141	0.00144
Barium	mg/L	-	0.0443	0.0377	0.0404
Beryllium	mg/L	0.011	ND (0.00010)	ND (0.00010)	ND (0.000020)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.131	0.114	0.117
Cadmium	mg/L	0.0002	ND (0.00020)	ND (0.000080) DLM	ND (0.000100) DLM
Calcium	mg/L	-	71.5	68.1	75.3
Chromium VI (hexavalent)	mg/L	0.001	ND (0.00050)	0.00075	0.00085
Cobalt	mg/L	0.0009	0.00073	0.00057	0.00041
Copper	mg/L	0.005	0.003	0.0028	0.003
Iron	mg/L	0.3	<b>1.25</b>	<b>0.849</b>	<b>0.358</b>
Lead	mg/L	0.005	0.00084	0.00063	0.000365
Magnesium	mg/L	-	26.5	24.1	24.4
Manganese	mg/L	-	0.0226	0.051	0.0247
Mercury	mg/L	0.0002	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)
Molybdenum	mg/L	0.04	<b>0.0552</b>	<b>0.051</b>	<b>0.0583</b>
Nickel	mg/L	0.025	0.0053	0.00438	0.00428
Potassium	mg/L	-	7.2	7.04	7.11
Selenium	mg/L	0.1	0.00275	0.00268	0.00294
Silicon	mg/L	-	4.09	2.93	2.17
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050)	ND (0.000010)
Sodium	mg/L	-	49.3	40.5	41.4
Strontium	mg/L	-	0.591	0.591	0.637
Thallium	mg/L	0.0003	0.000036	0.000039	0.000031
Tin	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00277	0.00154	0.00099

Table 9

**Monthly Discharge Monitoring – Pond D, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date: Parameters	Units	PWQO	Pond D POND D WEST POND 12/14/2021	Pond D POND D WEST POND 3/22/2022	Pond D Pond D 5/2/2022
Zinc	mg/L	0.03	0.0049	0.0072	0.0031
<b>Volatiles</b>					
1,1,1,2-Tetrachloroethane	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,1-Trichloroethane	ug/L	10	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2,2-Tetrachloroethane	ug/L	70	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1,2-Trichloroethane	ug/L	800	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1-Dichloroethane	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,1-Dichloroethene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dibromoethane (Ethylene dibror	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20) VOCHS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloroethane	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,2-Dichloropropane	ug/L	0.7	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
1,4-Dichlorobenzene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
2-Butanone (Methyl ethyl ketone) (M	ug/L	400	ND (20)	ND (20)	ND (20) VOCHS
4-Methyl-2-pentanone (Methyl isobu	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Acetone	ug/L	-	ND (20)	ND (20)	ND (20) VOCHS
Benzene	ug/L	100	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Bromodichloromethane	ug/L	200	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromoform	ug/L	60	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Bromomethane (Methyl bromide)	ug/L	0.9	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Carbon tetrachloride	ug/L	-	ND (0.50)	ND (0.50)	ND (0.20) VOCHS
Chlorobenzene	ug/L	15	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Chloroethane	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Chloroform (Trichloromethane)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
cis-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
cis-1,3-Dichloropropene	ug/L	-	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Dibromochloromethane	ug/L	40	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Dichlorodifluoromethane (CFC-12)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Ethylbenzene	ug/L	8	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Hexane	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
m&p-Xylenes	ug/L	2	ND (1.0)	ND (1.0)	ND (0.40) VOCHS
Methyl tert butyl ether (MTBE)	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Methylene chloride	ug/L	100	ND (2.0)	ND (2.0)	ND (1.0) VOCHS
o-Xylene	ug/L	40	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Styrene	ug/L	4	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Tetrachloroethene	ug/L	50	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Toluene	ug/L	0.8	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
trans-1,2-Dichloroethene	ug/L	200	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
trans-1,3-Dichloropropene	ug/L	7	ND (0.50)	ND (0.50)	ND (0.30) VOCHS
Trichloroethene	ug/L	20	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Trichlorofluoromethane (CFC-11)	ug/L	-	ND (1.0)	ND (1.0)	ND (0.50) VOCHS
Vinyl chloride	ug/L	600	ND (0.50)	ND (0.50)	ND (0.50) VOCHS
Xylenes (total)	ug/L	-	ND (1.1)	ND (1.1)	ND (0.50)
<b>Semi-Volatiles</b>					
1,2,4-Trichlorobenzene	ug/L	0.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,2-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,3-Dichlorobenzene	ug/L	2.5	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1,4-Dichlorobenzene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
1-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,3,4,5-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,4,6-Tetrachlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,3,6-Trichlorophenol	ug/L	-	ND (0.50)	ND (1.0) DLIS	ND (0.20)
2,4,5-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS

Table 9

**Monthly Discharge Monitoring – Pond D, General Chemistry, Metals, and VOCs/sVOCs  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location: Sample ID: Sample Date: Parameters	Units	PWQO	Pond D POND D WEST POND 12/14/2021	Pond D POND D WEST POND 3/22/2022	Pond D Pond D 5/2/2022
2,4,6-Trichlorophenol	ug/L	18	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dichlorophenol	ug/L	0.2	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2,4-Dimethylphenol	ug/L	10	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
2,4-Dinitrophenol	ug/L	-	ND (1.0)	ND (2.0) DLIS	ND (2.5) DLIS
2,4-Dinitrotoluene	ug/L	4	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2,6-Dinitrotoluene	ug/L	6	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
2-Chlorophenol	ug/L	7	ND (0.30)	ND (0.60) DLIS	ND (0.75) DLIS
2-Methylnaphthalene	ug/L	2	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
3,3'-Dichlorobenzidine	ug/L	0.6	ND (0.40) J	ND (0.80) DLIS	ND (1.00) DLIS
4-Chloroaniline	ug/L	-	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
Acenaphthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Acenaphthylene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Anthracene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)anthracene	ug/L	0.0004	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(a)pyrene	ug/L	-	ND (0.050)	ND (0.10) DLIS	ND (0.125) DLIS
Benzo(b)fluoranthene	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Benzo(g,h,i)perylene	ug/L	0.00002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Benzo(k)fluoranthene	ug/L	0.0002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
bis(2-Chloroethyl)ether	ug/L	200	ND (0.40)	ND (0.80) DLIS	ND (1.00) DLIS
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	ND (2.0)	ND (2.0) DLIS	ND (2.5) DLIS
Chrysene	ug/L	0.0001	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Dibenz(a,h)anthracene	ug/L	0.002	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Diethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Dimethyl phthalate	ug/L	-	ND (0.20)	ND (0.40) DLIS	-
Fluoranthene	ug/L	0.0008	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Fluorene	ug/L	0.2	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Hexachlorobenzene	ug/L	0.0065	ND (0.040)	ND (0.080) DLIS	ND (0.100) DLIS
Hexachlorobutadiene	ug/L	0.009	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Indeno(1,2,3-cd)pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Naphthalene	ug/L	7	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pentachlorophenol	ug/L	0.5	ND (0.50)	ND (1.0) DLIS	ND (1.25) DLIS
Perylene	ug/L	0.00007	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Phenanthrene	ug/L	0.03	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS
Pyrene	ug/L	-	ND (0.20)	ND (0.40) DLIS	ND (0.50) DLIS

## Notes:

**0.01** Analytical results above the Provincial Water Quality Objectives (PWQO)

ND= Not detected at the associated reporting limit.

J= Estimated concentration.

- = Not Applicable



Table 10

**Off Site Surface Water Monitoring  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location:			STN6U	STN6D
Sample ID:			STN6	STN6A
Sample Date:			5/3/2022	5/3/2022
Parameters	Units	PWQO		
<b>General Chemistry</b>				
Alkalinity, total (as CaCO <sub>3</sub> )	mg/L	-		
Ammonia-N	mg/L	-	280	283
Bromide	mg/L	-	0.0136 SP	0.0121 SP
Chemical oxygen demand (COD)	mg/L	-	ND (0.10)	ND (0.10)
Chloride	mg/L	-	21 SP	23 SP
Conductivity	umhos/cm	-	53.0	54.7
Cyanide (total)	mg/L	0.005	ND (0.0020)	ND (0.0020)
Dissolved organic carbon (DOC) (di:	mg/L	-	7.65	9.15
Fluoride	mg/L	-	0.317	0.204
Hardness	mg/L	-	364	364
Nitrate (as N)	mg/L	-	2.35	2.91
Nitrite (as N)	mg/L	-	0.021	0.021
pH, lab	s.u.	6.5-8.5	8.42 PEHT	8.38 PEHT
Phenolics (total)	mg/L	0.001	ND (0.0010) SP	ND (0.0010) SP
Phosphorus	mg/L	0.03	0.0151	0.0256
Sulfate	mg/L	-	92.4	63.2
Total dissolved solids (TDS)	mg/L	-	450 DLDS	433 DLDS
Total kjeldahl nitrogen (TKN)	mg/L	-	0.662 SP	0.857 SP
Total suspended solids (TSS)	mg/L	-	7.6	6.2
Trihalomethanes	ug/L	-	-	-
Un-ionized ammonia	mg/L	0.02	0.0003	0.0002
<b>Field Parameters</b>				
pH, field	s.u.	6.5-8.5	-	-
Temperature, field	Deg C	-	8.00	8.00
<b>Metals</b>				
Aluminum	mg/L	0.075	0.369	0.351
Antimony	mg/L	0.02	0.00017	0.00012
Arsenic	mg/L	0.005	0.00091	0.00086
Barium	mg/L	-	0.0322	0.0276
Beryllium	mg/L	0.011	ND (0.000020)	ND (0.000020)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.047	0.037
Cadmium	mg/L	0.0002	0.0000256	0.0000207
Calcium	mg/L	-	81.6	84.2
Chromium VI (hexavalent)	mg/L	0.001	ND (0.00050)	ND (0.00050)

Table 10

**Off Site Surface Water Monitoring  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

<b>Sample Location:</b>			<b>STN6U</b>	<b>STN6D</b>
<b>Sample ID:</b>			<b>STN6</b>	<b>STN6A</b>
<b>Sample Date:</b>			<b>5/3/2022</b>	<b>5/3/2022</b>
<b>Parameters</b>	<b>Units</b>	<b>PWQO</b>		
Cobalt	mg/L	0.0009	0.00031	0.00027
Copper	mg/L	0.005	0.00185	0.00173
Iron	mg/L	0.3	<b>0.397</b>	<b>0.367</b>
Lead	mg/L	0.005	0.000216	0.000176
Magnesium	mg/L	-	38.9	37.3
Manganese	mg/L	-	0.0301	0.0309
Mercury	mg/L	0.0002	ND (0.0000050)	ND (0.0000050)
Molybdenum	mg/L	0.04	0.00875	0.00355
Nickel	mg/L	0.025	0.00181	0.00152
Potassium	mg/L	-	2.55	2.03
Selenium	mg/L	0.1	0.000898	0.000900
Silicon	mg/L	-	1.36	1.54
Silver	mg/L	0.0001	ND (0.000010)	ND (0.000010)
Sodium	mg/L	-	28.3	27.8
Strontium	mg/L	-	0.433	0.402
Thallium	mg/L	0.0003	0.000016	ND (0.000010)
Tin	mg/L	-	ND (0.00010)	ND (0.00010)
Vanadium	mg/L	0.006	0.00149	0.00143
Zinc	mg/L	0.03	ND (0.0030)	ND (0.0030)
<b>Volatiles</b>				
1,1,1,2-Tetrachloroethane	ug/L	20	-	-
1,1,1-Trichloroethane	ug/L	10	-	-
1,1,2,2-Tetrachloroethane	ug/L	70	-	-
1,1,2-Trichloroethane	ug/L	800	-	-
1,1-Dichloroethane	ug/L	200	-	-
1,1-Dichloroethene	ug/L	40	-	-
1,2-Dibromoethane (Ethylene dibror	ug/L	5	-	-
1,2-Dichlorobenzene	ug/L	2.5	-	-
1,2-Dichloroethane	ug/L	100	-	-
1,2-Dichloropropane	ug/L	0.7	-	-
1,3-Dichlorobenzene	ug/L	2.5	-	-
1,4-Dichlorobenzene	ug/L	4	-	-
2-Butanone (Methyl ethyl ketone) (N	ug/L	400	-	-
4-Methyl-2-pentanone (Methyl isobu	ug/L	-	-	-
Acetone	ug/L	-	-	-
Benzene	ug/L	100	-	-
Bromodichloromethane	ug/L	200	-	-

Table 10

**Off Site Surface Water Monitoring  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

<b>Sample Location:</b>			<b>STN6U</b>	<b>STN6D</b>
<b>Sample ID:</b>			<b>STN6</b>	<b>STN6A</b>
<b>Sample Date:</b>			<b>5/3/2022</b>	<b>5/3/2022</b>
<b>Parameters</b>	<b>Units</b>	<b>PWQO</b>		
Bromoform	ug/L	60	-	-
Bromomethane (Methyl bromide)	ug/L	0.9	-	-
Carbon tetrachloride	ug/L	-	-	-
Chlorobenzene	ug/L	15	-	-
Chloroethane	ug/L	-	-	-
Chloroform (Trichloromethane)	ug/L	-	-	-
cis-1,2-Dichloroethene	ug/L	200	-	-
cis-1,3-Dichloropropene	ug/L	-	-	-
Dibromochloromethane	ug/L	40	-	-
Dichlorodifluoromethane (CFC-12)	ug/L	-	-	-
Ethylbenzene	ug/L	8	-	-
Hexane	ug/L	-	-	-
m&p-Xylenes	ug/L	2	-	-
Methyl tert butyl ether (MTBE)	ug/L	200	-	-
Methylene chloride	ug/L	100	-	-
o-Xylene	ug/L	40	-	-
Styrene	ug/L	4	-	-
Tetrachloroethene	ug/L	50	-	-
Toluene	ug/L	0.8	-	-
trans-1,2-Dichloroethene	ug/L	200	-	-
trans-1,3-Dichloropropene	ug/L	7	-	-
Trichloroethene	ug/L	20	-	-
Trichlorofluoromethane (CFC-11)	ug/L	-	-	-
Vinyl chloride	ug/L	600	-	-
Xylenes (total)	ug/L	-	-	-
<b>Semi-Volatiles</b>				
1,2,4-Trichlorobenzene	ug/L	0.5	-	-
1,2-Dichlorobenzene	ug/L	2.5	-	-
1,3-Dichlorobenzene	ug/L	2.5	-	-
1,4-Dichlorobenzene	ug/L	4	-	-
1-Methylnaphthalene	ug/L	2	-	-
2,3,4,5-Tetrachlorophenol	ug/L	-	-	-
2,3,4,6-Tetrachlorophenol	ug/L	-	-	-
2,3,6-Trichlorophenol	ug/L	-	-	-
2,4,5-Trichlorophenol	ug/L	18	-	-
2,4,6-Trichlorophenol	ug/L	18	-	-
2,4-Dichlorophenol	ug/L	0.2	-	-

Table 10

**Off Site Surface Water Monitoring  
2022 Annual Surface Water Quality Monitoring Report  
Lambton Facility  
Clean Harbors Canada Inc.**

Sample Location:			STN6U	STN6D
Sample ID:			STN6	STN6A
Sample Date:			5/3/2022	5/3/2022
Parameters	Units	PWQO		
2,4-Dimethylphenol	ug/L	10	-	-
2,4-Dinitrophenol	ug/L	-	-	-
2,4-Dinitrotoluene	ug/L	4	-	-
2,6-Dinitrotoluene	ug/L	6	-	-
2-Chlorophenol	ug/L	7	-	-
2-Methylnaphthalene	ug/L	2	-	-
3,3'-Dichlorobenzidine	ug/L	0.6	-	-
4-Chloroaniline	ug/L	-	-	-
Acenaphthene	ug/L	-	-	-
Acenaphthylene	ug/L	-	-	-
Anthracene	ug/L	0.0008	-	-
Benzo(a)anthracene	ug/L	0.0004	-	-
Benzo(a)pyrene	ug/L	-	-	-
Benzo(b)fluoranthene	ug/L	-	-	-
Benzo(g,h,i)perylene	ug/L	0.00002	-	-
Benzo(k)fluoranthene	ug/L	0.0002	-	-
bis(2-Chloroethyl)ether	ug/L	200	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	ug/L	0.6	-	-
Chrysene	ug/L	0.0001	-	-
Dibenz(a,h)anthracene	ug/L	0.002	-	-
Diethyl phthalate	ug/L	-	-	-
Dimethyl phthalate	ug/L	-	-	-
Fluoranthene	ug/L	0.0008	-	-
Fluorene	ug/L	0.2	-	-
Hexachlorobenzene	ug/L	0.0065	-	-
Hexachlorobutadiene	ug/L	0.009	-	-
Indeno(1,2,3-cd)pyrene	ug/L	-	-	-
Naphthalene	ug/L	7	-	-
Pentachlorophenol	ug/L	0.5	-	-
Perylene	ug/L	0.00007	-	-
Phenanthrene	ug/L	0.03	-	-
Pyrene	ug/L	-	-	-

## Notes:

**0.01**

Analytical results above the Provincial Water Quality Objectives (PWQO)

ND= Not detected at the associated reporting limit.

J= Estimated concentration.

- = Not Applicable

# Appendices

# **Appendix A**

**Amendment to Off-Site Surface Water  
Locations**

Our ref: 044985

May 11, 2022

**Heather Mitchell**  
Ministry of the Environment, Conservation and Parks  
Sarnia District Office  
1094 London Road  
Sarnia, Ontario  
N7S 1P1

**Amendment to Off-Site Surface Water Locations, Lambton Landfill**

Dear Heather Mitchell,

The historic location for the off-Site surface water locations was located in the confluence of two streams that are located on private property. The area has several fallen trees and branches and is dangerous for staff to collect the surface water samples. As well, the quality of the samples was impacted by getting to the sample location.

Based on the above, options were considered with regard to amending the sample location and discussions occurred with landowners. Use of private land for sample location was not provided. As such, the location for the off-site samples were adjusted to reflect collection of the samples on public lands.

The attached figure presents the two new sample locations. The sample numbers have been adjusted to reflect an upstream (U) and downstream (D) location.

This letter provides notice of the change in location to the Ministry of the Environment, Conservation and Parks. The most recent samples collected in April 2022 were as per the locations noted on the figure.

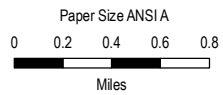
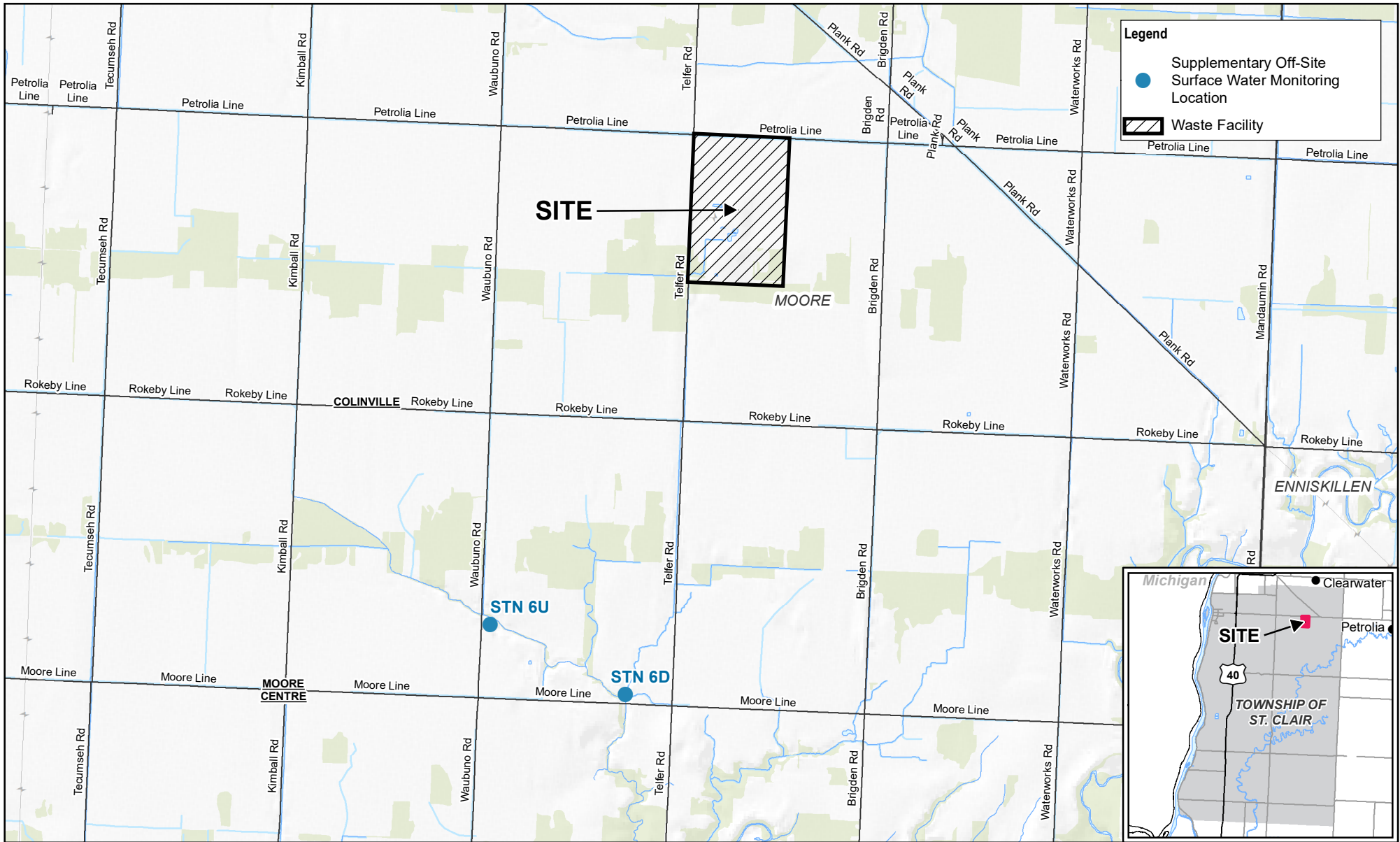
Regards



**James R. Yardley, P.Eng**  
Senior Engineer

519-340-4265  
jim.yardley@ghd.com

Copy to: Mackenzie Costello, Clean Harbors  
Meghan O'Brien, GHD



Map Projection: Transverse Mercator  
 Horizontal Datum: North American 1983  
 Grid: NAD 1983 UTM Zone 17N



CLEAN HARBORS CANADA INC.  
 LAMBTON COUNTY, ONTARIO

Project No. 44985-20  
 Revision No. -  
 Date May 11, 2022

**SUPPLEMENTARY OFF-SITE  
 MONITORING LOCATIONS AND  
 SITE LOCATION MAP**

**FIGURE 1**



# **Appendix B**

**Provincial Officer's Order No. 2681 BCPKUJ**

## Provincial Officer's Order

Environmental Protection Act, R.S.O. 1990, c. E.19 (EPA)  
Ontario Water Resources Act, R.S.O. 1990, c. O.40 (OWRA)  
Pesticides Act, R.S.O. 1990, c. P.11 (PA)  
Safe Drinking Water Act, 2002, S.O. 2002, c.32 (SDWA)  
Nutrient Management Act, 2002, S.O. 2002, c.4 (NMA)

**Order Number**  
2681-BCPKUJ

**Incident Report No.**  
5210-BAWQQ3

**To:** Clean Harbors Canada Inc.  
4090 Telfer Rd  
St. Clair, Ontario, N0N 1G0  
Canada

**Site:** 4090 Telfer Rd  
St. Clair, County of Lambton

Pursuant to my authority under OWRA Section 16.2, I order you to do the following:

### Work Ordered

Item No. 1	Compliance Date	2019/06/06 (YYYY/MM/DD)
------------	-----------------	----------------------------

Upon service of this Order, implement the Updated Leachate Management Plan, in accordance with the timelines specified therein.

Item No. 2	Compliance Date	2019/11/01 (YYYY/MM/DD)
------------	-----------------	----------------------------

By June 7, 2019, and continuing for the duration of this Order, submit to the Provincial Officer a written report every seven (7) days that includes, but is not limited to, the following:

- (a) a description of all work related to the Updated Leachate Management Plan performed in the previous seven days;
- (b) a description of any work to be carried out in relation to the Updated Leachate Management Plan during the next seven days; and
- (c) a summary of all available sampling results taken in the previous seven days; and
- (d) a description and rationale for any proposed change or modification to the Updated Leachate Management Plan.

Item No. 3	Compliance Date	2019/11/01
------------	-----------------	------------

(YYYY/MM/DD)

Upon service of this Order, no modifications, amendments or variation to the work described in the Updated Leachate Management Plan shall be implemented without prior written consent of the Provincial Officer.

**Item No. 4**

**Compliance Date**

2019/11/01

(YYYY/MM/DD)

Upon service of this Order, written notice shall be provided forthwith to the Provincial Officer upon receiving any sampling results from the Equalization Pond that indicate that any treatment system is not adequately managing leachate as described in the Updated Leachate Management Plan.

**Item No. 5**

**Compliance Date**

2019/11/01

(YYYY/MM/DD)

Upon service of this Order, copies of all documents, records and information required under this Order shall immediately be made available to the Provincial Officer or the District Manager upon request.

- A. While this Order is in effect, a copy or copies of this order shall be posted in a conspicuous place.
- B. While this Order is in effect, report in writing, to the District or Area office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.
- C. Unless otherwise specified, all requirements of this Order are effective upon service of this Order.

This Order is being issued for the reasons set out in the annexed Provincial Officers Report which forms part of this Order.

Issued at Sarnia this 5th day of June, 2019.



Maisa Fumagalli  
Badge No:  
Sarnia District Office  
Tel: (519) 336-4743

## REQUEST FOR REVIEW

You may request that this Order be reviewed by a Director.

Your request must be made (i) in writing (or if made orally, with written confirmation) and (ii) served on the Director at the address below within seven (7) calendar days after being served with a copy of this Order.

In the written request or written confirmation of an oral request, you must include:

- (a) the portions of the Order in respect of which the review is requested;
- (b) any submissions that you wish the Director to consider; and
- (c) an address for service to be used by the Director.

In response to your request for review, the Director may confirm, alter or revoke this Order and will serve you with a copy of the Director's decision or Order.

A request for review does not automatically stay this Order. If you wish to have the Director stay the Order you must also include this in your request and the Order is not stayed unless the Director makes an order granting a stay.

### DEEMED CONFIRMATION OF THIS ORDER

If you do not receive oral or written notice of the Director's decision on your request for review within (7) calendar days of receipt of your request, and the Director has not stayed the Order, this Order shall be deemed to be confirmed by order of the Director and deemed to be served upon you.

In the case of a deemed confirmation, you may require a hearing before the Environmental Review Tribunal (Tribunal), if, within fifteen (15) calendar days from the deemed date of service of the Director's order, you serve written notice of your appeal on the Tribunal and the Director. Your notice must state:

- (a) the portion(s) of the Order in respect of which the hearing is required; and
- (b) the grounds on which you intend to rely at the hearing.

Except with leave of the Tribunal, you are not entitled to appeal a portion of the Order or to rely on a ground that is not stated in the notice requiring the hearing. Unless stayed by the Tribunal, the Order remains in effect from the date of service.

Written notice requiring a hearing can be served upon:

The Secretary  
Environmental Review Tribunal  
655 Bay Street, 15th Floor  
Toronto ON  
M5G 1E5  
Fax: (416) 326-5370  
Email: ERTTribunalsecretary@ontario.ca

and

Director  
Ministry of the Environment, Conservation and Parks  
Sarnia District Office  
1094 London Rd  
Sarnia ON N7S 1P1  
Fax: (519) 336-4280  
Tel: (519)336-4030

Further information on the Tribunal and requirements for an appeal can be obtained directly from the Tribunal by:

Tel: (416) 212-6349 or 1(866) 448-2248  
TTY 1-800-855-1155 via Bell Relay

Fax: (416) 326-5370 or 1(844) 213-3474  
Web: [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

### FOR YOUR INFORMATION

The following is for your information:

Service of the documentation referred to above can be made personally, by mail, by fax, by commercial courier or by email in accordance with the legislation under which the Order is made and any corresponding Service Regulation. Further information can be obtained from e-Laws at [www.e-laws.gov.on.ca](http://www.e-laws.gov.on.ca). Please note that choosing service by mail does not extend any of the above mentioned timelines.

Unless stayed, this Order is effective from the date of service. Non-compliance with the requirements of this Order constitutes an offence.

The requirements of this Order are minimum requirements only and do not relieve you from complying with the following:

- (a) any applicable federal legislation,
- (b) any applicable provincial legislation or requirements that are not addressed in this Order, and
- (c) any applicable municipal law.

The requirements of this Order are severable. If any requirement of this Order or the application of any requirement to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of the Order are not affected.

Further orders may be issued in accordance with the legislation as circumstances require.

The procedures and other information provided above are intended as a guide. The legislation and/or regulations should be consulted for additional details and accurate reference.



**Clean Harbors - Consolidated Management Plan (June 4, 2019).pdf**

## Provincial Officer's Report

**Order Number**  
2681-BCPKUJ

Clean Harbors Canada Inc.  
4090 Telfer Rd  
St. Clair, Ontario, N0N 1G0  
Canada

**Site**  
4090 Telfer Rd  
St. Clair, County of Lambton

### **Observations**

#### PROVINCIAL OFFICER'S REPORT

##### 1. Authority to Issue Order

I have authority as a provincial officer to issue Orders under the EPA to further the purpose of the EPA, namely, to provide for the protection and conservation of the natural environment. I also have authority as a provincial officer to issue Orders under the OWRA, to further the purpose of the OWRA, namely, to provide for the conservation, protection and management of Ontario's waters.

##### 2. Definitions

For the purposes of this Order, the following terms shall have the meanings described below:

“Adverse effect” has the same meaning as in the EPA.

“Company” means Clean Harbors Canada, Inc.

“Design and Operations Report” means the report entitled “Revised Design and Operations Report – Lambton Landfill Expansion, Clean Harbors Canada Inc.” authored by Tetra Tech and

dated October 8, 2015. This report is included as Item 26 of Schedule A of Landfill ECA Amendment No. 9, issued October 19, 2015.

“ECA” means an Environmental Compliance Approval (formerly known as a Certificate of Approval) issued under Part II.1 of the EPA.

“EPA” means the Environmental Protection Act, R.S.O. 1990, c. E 19, as amended.

“Equalization Pond” refers to the Equalization Pond that is part of the Surface Water System and has the same meaning as that term is described in the Sewage Works ECA.

“Fractionalization Tank” or “Frac Tank” means a fractionalization tank brought to the Site to temporarily store leachate or leachate contaminated water; or water from the south ditch for batch treatment.

“Incinerator ECA” means Amended ECA No. 8-1030-94-006 issued April 19, 1994, and includes the Operating Manual referenced in Condition 11, as required by section 9 of the EPA.

“Landfill” means the waste disposal site authorized in Amended Environmental Compliance Approval No. A031806, dated September 5, 1997 and last amended September 22, 2017, including the landfill pre-treatment system and temporary storage and transfer activities as described therein.

“Landfill ECA” means Amended ECA No. A031806 issued September 5, 1997 and last amended September 22, 2017, as required by section 27 of the EPA.

"LDR" means Land Disposal Restrictions and has the same meaning as in the Landfill ECA.

“LDR Storage Report” means the weekly report required by Condition 23v of the Landfill ECA.

“Leachate Collection System” means all components and equipment for the collection and management of leachate approved under the Landfill ECA.

“Leachate Pond Cover ECA” means ECA No. 2005-8RHJL6 issued February 27, 2012, as required by section 53 of the OWRA.

“Maintenance Yard” means the yard area immediately outside the Vehicle Maintenance Building.

“Ministry” or “MECP” means the Ontario Ministry of the Environment, Conservation and Parks.

“Mobile Sewage ECA” means ECA No. 2423-B6CN2D issued December 19, 2018, as required by section 53 of the OWRA.

“Mobile Treatment Unit” means the mobile sewage works and related equipment approved under

the Mobile Sewage ECA.

“Order” means this Provincial Officer’s Order Number No. 2681-BCPKUJ, as may be amended, or 8210-BBCPS2.

“Provincial Officer” means the undersigned Provincial Officer, or in the event the undersigned person is unable to act, any other provincial officer with the MECP Sarnia District Office authorized to act under the EPA and OWRA. Any document that is required to be submitted to the Provincial Officer under this Order shall be sent to the attention of Maisa Fumagalli, either via email to Maisa.Fumagalli@ontario.ca or via mail to the MECP Sarnia District Office, 1094 London Road, Sarnia ON N7S 1P1.

“Provincial Officer’s Report” means this Provincial Officer’s Report, which comprises part of this Order.

“Regulation 347” means General – Waste Management, R.R.O. 1990, Regulation 347 under the EPA.

“Sewage Works ECA” means Amended ECA No. 1065-9VVJSW, issued October 19, 2015, as required by section 53 of the OWRA.

“Site” means the property legally described as Part of Lots 8 and 9, Concession 10, and Part of Lots 8 and 9, Concession 9, formerly Township of Moore and now part of Township of St. Clair, County of Lambton, Ontario and being all of PINS 43293-0053, 43293-0055, 43293-0056, 43293-0065 and 43293-0066; and municipally known as 4090 Telfer Road, Rural Route No. 1, Corunna, St. Clair Township, County of Lambton, Ontario N0N 1G0.

“South Ditch” means the Waste Dump Ditch and the Southwest Perimeter Ditch as those terms are described in the Sewage Works ECA, both of which are part of the Surface Water System.

"Surface Water System" means the contact stormwater collection, management, and treatment system approved in the Sewage Works ECA, and includes the Waste Dump Ditch, Southwest Perimeter Ditch, West Pond, East Pond, Equalization Pond, and Wastewater Treatment Plant as those terms are described in the Sewage Works ECA.

“Tribunal” means the Environmental Review Tribunal.

“Updated Leachate Management Plan” means the document entitled “Clean Harbors South Ditch, Water and Leachate Management Plan,” originally dated May 23, 2019, amended on June 4, 2019; and prepared by Clean Harbors; a copy of the most recent Plan is attached to this Order as Schedule “A”.

### 3. Site Description

#### **Site Description**



The Company owns and operates an integrated hazardous waste management facility site consisting of a secure landfill and a liquid waste incinerator. Waste disposal operations have been carried out at the Site since the early 1960s under a series of successive owners. The Company acquired the Site in 2002.

The land adjacent to the Site is primarily used for agriculture. The Site's north drainage outlet drains to Perch Creek, which in turn drains to Lake Huron. The south drainage outlet drains to Bear Creek, which in turn drains to the Sydenham River and Lake St. Clair. The natural environment at and surrounding the Site includes fish and amphibian habitat, and woodlots which provide habitat for wildlife.

### **Surface Water Management**

The Sewage Works ECA authorizes an industrial sewage works for the collection, treatment and disposal of contact stormwater, process wastewater, and sanitary sewage from the Site. The works consists of the Surface Water System, a non-contact stormwater management system, a process wastewater treatment system, and a sanitary sewage system.

The Surface Water System includes the Waste Dump Ditch, Southwest Perimeter Ditch, West Pond, East Pond, Equalization Pond, and Wastewater Treatment Plant all as described in the Sewage Works ECA.

The Surface Water System discharges offsite from the Equalization Pond through an outlet into the Telfer Side Road ditch. The ditch drains into the watercourse Bear Creek, which then drains into Sydenham River and Lake St. Clair.

### **Leachate Management**

The existing Leachate Collection System (LCS) is authorized by the Landfill ECA. Pursuant to the Landfill ECA, leachate is captured in a perimeter leachate collection trench. Sumps equipped with pumps transfer leachate collected in the perimeter trench via a forcemain to a leachate pumping station and central storage unit. The leachate pumping station in turn pumps the accumulated leachate to an above ground storage tank and three leachate storage ponds.

The three ponds are covered with floating membranes that can be vented pursuant to the Leachate Pond Cover ECA. Discharge from the vents is sent to a scrubber to remove harmful compounds, followed by an activated carbon bed for treatment. The treated discharge from the carbon bed exhausts into the atmosphere through a stack.

Leachate is transferred from the active disposal areas to the leachate ponds primarily by pumping through an underground pipeline. Leachate is transferred from the covered ponds to an incinerator for disposal through an underground pipeline.

#### **4. Events Leading to the Provincial Officer's Order**

I have been the assigned Environmental Officer for Clean Harbors since May 2019. Provincial Officer Don Hayes was previously assigned to conduct inspections of the Site and reported weather and other conditions that resulted in the generation of hazardous waste leachate at a rate of approximately 35 liters per minute. The Site's incinerator is currently able to incinerate leachate generated by the landfill at a rate of 20 to 30 liters per minute. Since 2015, the rate of leachate generation at the Site has outpaced the rate at which it could be disposed of. These conditions have led to the Site's leachate storage ponds nearing maximum storage capacity.

On April 4, 2019 the Company reported that a seep from the Leachate Collection System was allowing landfill leachate to enter the Surface Water System. On April 5, 2019, the Company reported that the leachate levels within the Leachate Collection System perimeter trench were measured at 201.3 meters above sea level ("mASL"). In accordance with the Design and Operations Report, the maximum leachate level for the Leachate Collection System is 196 mASL. The presence of leachate exceeding 196 mASL results in a risk that the leachate will be discharged to the natural environment.

The Landfill ECA allows for a total leachate storage capacity at the Site of 41,159,610 litres, comprised of specifically approved storage containers. As of March 31, 2019, Officer Hayes notes that the Ministry was aware that the Site's leachate storage contained well over 90% of its approved storage capacity. On May 2, 2019, a meeting was held at the Site and attended by six Ministry officials, including myself and representatives for the Company. Officer Hayes noted that the Company's consultant, Jim Yardley, reported that the Leachate Collection System was not being operated in accordance with the Design and Operations Report. The notes continue that an additional 4 to 5 million litres of previously unreported leachate is currently being stored within the Leachate Collection System. This additional leachate is the reason that the leachate level within the system was measured to be 201.3 mASL in April 2019.

Pursuant to Regulation 347, landfill leachate is a designated hazardous waste. Officer Hayes reports that the Ministry has conducted sampling of the leachate from the Site which indicated that the leachate contains high levels of volatile organic compounds, hydrogen sulphides, and other harmful chemicals. Seepage of the leachate into the Surface Water System may result in the discharge of material onsite and potentially offsite, that may impair the quality of water.

In addition, the Equalization Pond and West Pond that make up part of the Surface Water System contain aquatic organisms including fish. Currently, there is no evidence of any adverse impacts to aquatic organisms, however, the risk of impairment exists if leachate continues to seep into the Surface Water System.

To prevent leachate seeps from the Leachate Collection System into the Surface Water System, the leachate levels within the Leachate Collection System must be lowered, as required under the Company's approvals. To prevent or reduce the risk of a discharge from the Leachate Collection System to the natural environment, additional temporary leachate storage is needed at the Site.

One significant leachate seep had been identified and was contaminating a portion of the Surface Water System along the South Ditch and flowing into the West Pond. Under Order No.

8210-BBCPS2, the seep was isolated with berms, the water within it was pumped to the Leachate Control System, and the section was filled with clay on May 14, 2019. On May 14, 2019, I attended the site and the Company advised of potential minor seepage into the rest of the South Ditch. It is necessary to ensure the South Ditch is not connected to, nor receiving leachate from the Leachate Control System and any newly identified seeps must be dealt with swiftly to prevent impairment to the natural environment.

The East Pond normally conveys water through the South Ditch into the West Pond prior to reaching the Equalization Pond and discharged to the Telfer Side Road ditch. To prevent or reduce the risk of further surface water from being contaminated by leachate, it is necessary for the surface water from the East Pond to be directed to the Equalization Pond in a manner that will bypass the location of the seepage and ensure the contaminated area is isolated.

On April 10, 2019, the Company submitted the an abatement plan to the Ministry, which contained a proposal intended to address the seep from the Leachate Collection System to the Surface Water System. On May 7, 2019, the Company submitted the Surface Water Management Strategy, which was an updated abatement plan intended to further address the seep from the Leachate Collection System to the Surface Water System.

On May 23, 2019, the Company submitted the Updated Leachate Management Plan, which consolidates and further updates the previous leachate abatement plans. The Updated Leachate Management Plan forms the basis for this Order, and takes precedence over any previously discussed work or arrangements between the Ministry and the Company, including but not limited to any of the work described above. In the event of a conflict between the requirements of this Order and the Updated Leachate Management Plan, the requirements of the Order take precedence and prevail to the extent of any conflict.

In addition, the Company has been advised on April 18, 2019, May 3, 2019, and May 21, 2019 that carrying out the work further to the discussions between the Ministry and the Company did not and does not exempt the Company from any applicable legal requirements.

## 5. Legal Authority and Reasons

This Order is issued pursuant to sections 157.1, and 196 of the EPA and sections 16.1, 16.2 and 104 of the OWRA.

I reasonably believe the requirements of the Order are necessary or advisable to prevent or reduce the risk of a discharge of a contaminant, namely landfill leachate, into the natural environment from the undertaking or the property, or to prevent, decrease or eliminate an adverse effect, namely impairment of the quality of the natural environment for any use that may be made of it, and/or injury or damage to animal or plant life, that may result from (i) the discharge of the contaminant from the undertaking, or (ii) the presence or discharge of the contaminant in, on or under the property.

I reasonably believe that the requirements of this Order are generally in the public interest, and

necessary to prevent a discharge of material, namely landfill leachate, into Bear Creek that may impair the quality of water.

8. Attachments

The attachments listed below form a part of this Provincial Officer's Report:

1. Schedule "A" - Updated Leachate Management Plan

**Offence(s)**

<b>Suspected Violation(s)/Offence(s):</b>	
<b>Act - Regulation - Section, Description {General Offence}</b>	



Maisa Fumagalli  
Provincial Officer  
Badge Number:  
Date: 2019/06/05  
District Office: Sarnia District Office



**June 4, 2019**

## **Clean Harbors South Ditch, Water and Leachate Management Plan**

### **1. Introduction**

The following is a consolidated remedial work program to address the seepage of leachate at several locations along the South Ditch at the Clean Harbors Lambton Landfill. The work program addresses items that have been impacted by the seep either directly or indirectly by the leachate seeps and the removal of the South Ditch from the sites stormwater management system. The work program addresses surface water management, South Ditch remediation, leachate management, sampling plan, contingency plans, and reporting.

### **2. Surface Water Management**

#### **2.1 East Retention Pond Surface Water Management**

The East Retention Pond water normally discharges to the West Retention Pond via the South Ditch. The construction of berms, B2 and B7, located at the east and west end of the South Ditch were installed to contain the water in the ditch and isolated the East Retention Pond from transfer to the West Retention Pond for surface water treatment and discharge.

Analytical results from the East Retention Pond and East Ditch showed that the surface water was not impacted by the leachate seeps.

The current approach for surface water management for the East Retention Pond includes the following:

- Water from East Retention Pond is treated by a mobile carbon filtration system
- Following water treatment with the mobile carbon filtration system, the effluent water is piped overland to the Equalization Pond (EQ Pond). The temporary pipe system extends south to the security fence, west along the security fence, and then along the western limit of the West Retention Pond to the discharge point at the Equalization Pond.
- Water within the EQ Pond is sampled for ECA compliance parameters and additional for volatile organic compounds (VOCs) daily during discharge events to Telfer Road ditch.

#### **2.2 West Retention Pond Surface Water Management**

The West Retention Pond is the final surface water retention pond with all surface water from the site stored in this pond for treatment and discharge. The surface water quality in the West Retention Pond indicated a minor impact due to the leachate seepage event and as such the Site's Surface Water Treatment Plant (SWTP) was turned off and the west ditch inlet to the pond was bermed off through the construction of berm B1. The most recent water testing (April 30<sup>th</sup>) for the West Retention Pond indicated

that the primary VOC parameter detected, acetone, was 59 ug/L. Due to rain events, the West Retention Pond has back-flowed into the west ditch (over flowed berm B1).

The SWTP retrofit, which included new activated carbon and some minor repairs to the distribution pipes in the carbon filter unit, was completed on May 22, 2019. The amount and type of carbon are in accordance with the ECA approval for the facility.

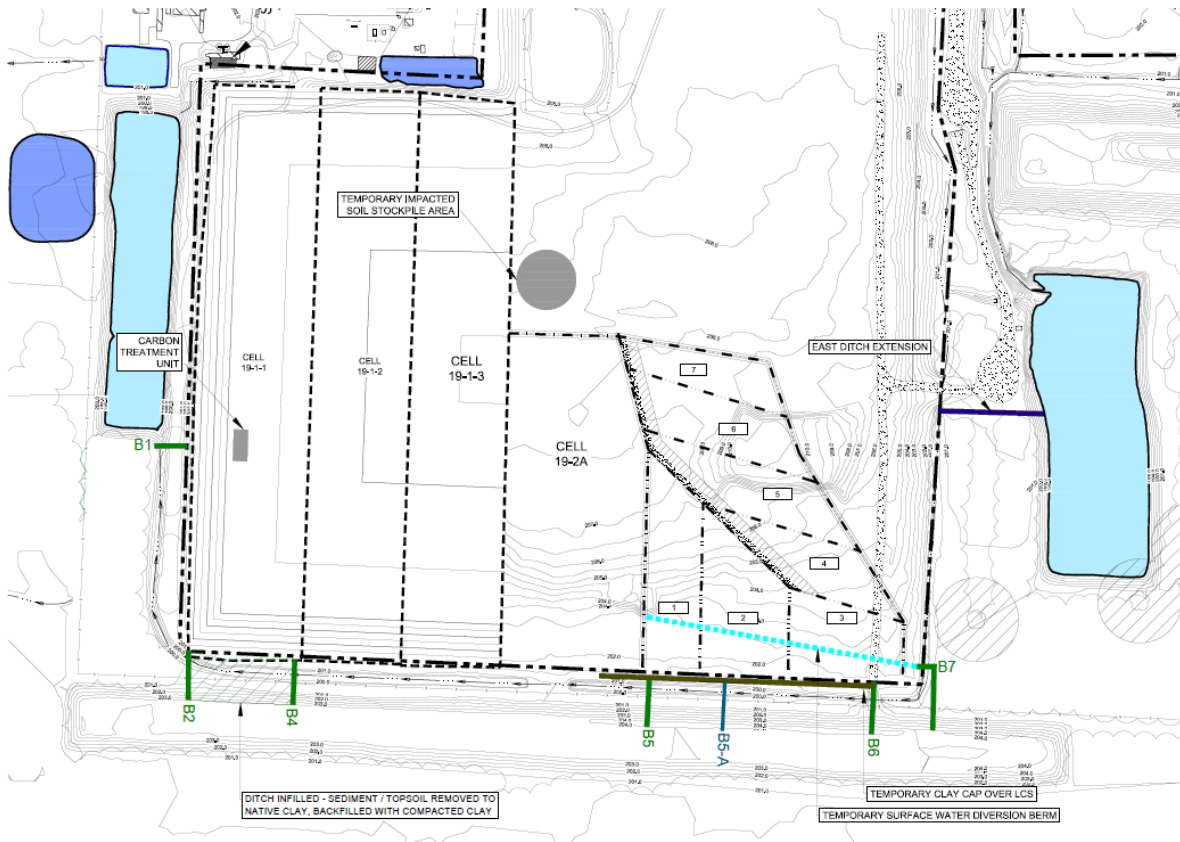
The sand filter has been backwashed for a minimum of two hours (normally requires routine backwash for 15 to 20 minutes to remove sediment from the filter). The SWTP is now ready for return to service. As per normal protocol, the SWTP will be operated in recirculation mode until test samples confirm that the unit is operating within the ECA compliance parameters.

When the SWTP testing has concluded that the SWTP is operating within compliance requirements, the surface water management for the Site will consist of the following:

- Water from the West Retention Pond will be treated by the on-Site SWTP and discharged to the EQ Pond
- The mobile treatment system that is currently treating the East Retention Pond water will be removed and the temporary piping system will be adjusted to extend from the East Retention Pond pumphouse to the south end of the West Retention Pond
- Water within the EQ Pond will be sampled for ECA compliance parameters and VOCs daily during discharge to Telfer Road. Section 5 provides additional details with regards to sample locations, schedule, and completion period.

### **2.3 South Ditch Water Management**

The South Ditch has been separated with a series of berms to contain the impacted surface water. In addition, temporary diversion berms have been installed to redirect overland surface water flow from the South Ditch and the east ditch has been connected to the East Retention Pond. The following figure provides an overview of the key remedial works that have been or are currently being installed at the Site and provides a base for the remedial work plan.



The portion of the South Ditch from Berm B2 to B4 has been remediated at this time in accordance with procedure outline in later sections. This remediated section drains to the west ditch.

### 2.3.1 Water Treatment

#### 2.3.1.1 Water Treatment Pilot Testing

A pilot test for treating the surface water within the South Ditch was conducted, which involved treating 200,000 L of water from the South Ditch with a mobile carbon filtration system. The mobile carbon filtration system includes a bag filter to remove sediment and two activated carbon filters operated in series. The pilot test was conducted from water that was located between B4 and B6 and the intake was close to B4. The water tested is considered representative of water that is located within the South Ditch.

The pilot test treatment successfully treated the water to reduce the primary VOC detected, acetone, to non-detect levels. The following table provides the influent and effluent test results for the pilot test program. The treated water was returned to the South Ditch following treatment. Based on the pilot test results, the mobile treatment system has demonstrated that it is capable to treat the South Ditch water to VOC levels that are below the Provincial Water Quality Objectives (PWQO).

Appendix A has VOC analytical results from May 17<sup>th</sup> that indicate the VOC levels have significantly reduced since May 7<sup>th</sup>. With the reduced VOC levels in the South Ditch area B4 to B6 the carbon treatment systems should have no problem with treating the ditch water to acceptable discharge standards.

Client Sample ID			SOUTH DITCH BEFORE CARBON (BC)	SOUTH DITCH AFTER CARBON (AC)	Client Sample ID			SOUTH DITCH BEFORE CARBON (BC)	SOUTH DITCH AFTER CARBON (AC)
Date Sampled			7-May-2019	7-May-2019	Date Sampled			7-May-2019	7-May-2019
Time Sampled			13:15	13:15	Time Sampled			13:15	13:15
ALS Sample ID			L2268948-1	L2268948-2	ALS Sample ID			L2268948-1	L2268948-2
Parameter	Lowest Detection Limit	Units	Water	Water	Parameter	Lowest Detection Limit	Units	Water	Water
Volatile Organic Compounds (Water)									
Acetone	20	ug/L	7530	<20	Dichloromethane	2.0	ug/L	18.7	<2.0
Benzene	0.50	ug/L	1.02	<0.50	1,2-Dichloropropane	0.50	ug/L	<0.50	<0.50
Bromodichloromethane	1.0	ug/L	<1.0	<1.0	cis-1,3-Dichloropropene	0.50	ug/L	<0.50	<0.50
Bromoform	1.0	ug/L	<1.0	<1.0	trans-1,3-Dichloropropene	0.50	ug/L	<0.50	<0.50
Bromomethane	0.50	ug/L	<0.50	<0.50	Ethylbenzene	0.50	ug/L	3.89	<0.50
Carbon Disulfide	1.0	ug/L	2.2	<1.0	n-Hexane	0.50	ug/L	<0.50	<0.50
Carbon tetrachloride	0.50	ug/L	<0.50	<0.50	2-Hexanone	20	ug/L	<20	<20
Chlorobenzene	0.50	ug/L	<0.50	<0.50	Methyl Ethyl Ketone	20	ug/L	2540	<20
Dibromochloromethane	1.0	ug/L	<1.0	<1.0	Methyl Isobutyl Ketone	20	ug/L	<500	<20
Chloroethane	1.0	ug/L	<1.0	<1.0	MTBE	0.50	ug/L	22.9	<0.50
Chloroform	1.0	ug/L	<1.0	<1.0	Styrene	0.50	ug/L	0.81	<0.50
Chloromethane	1.0	ug/L	<1.0	<1.0	1,1,1,2-Tetrachloroethane	0.50	ug/L	<0.50	<0.50
1,2-Dibromoethane	0.20	ug/L	<0.20	<0.20	1,1,2,2-Tetrachloroethane	0.50	ug/L	<0.50	<0.50
1,2-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	Tetrachloroethylene	0.50	ug/L	<0.50	<0.50
1,3-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	Toluene	0.50	ug/L	54.9	<0.50
1,4-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	1,1,1-Trichloroethane	0.50	ug/L	<0.50	<0.50
Dichlorodifluoromethane	1.0	ug/L	<1.0	<1.0	1,1,2-Trichloroethane	0.50	ug/L	<0.50	<0.50
1,1-Dichloroethane	0.50	ug/L	<0.50	<0.50	Trichloroethylene	0.50	ug/L	9.49	<0.50
1,2-Dichloroethane	0.50	ug/L	0.91	<0.50	Trichlorofluoromethane	1.0	ug/L	<1.0	<1.0
1,1-Dichloroethylene	0.50	ug/L	<0.50	<0.50	Vinyl chloride	0.50	ug/L	<0.50	<0.50
cis-1,2-Dichloroethylene	0.50	ug/L	39.9	<0.50	o-Xylene	0.50	ug/L	12.1	<0.50
trans-1,2-Dichloroethylene	0.50	ug/L	<0.50	<0.50	m+p-Xylenes	1.0	ug/L	19.5	<1.0
					Xylenes (Total)	1.1	ug/L	31.6	<1.1



### 2.3.1.2 Proposed Water Treatment for the South Ditch

Water from the South Ditch is proposed for treatment using a mobile carbon filtration system with the same configuration as the pilot test program. The proposed approach for water treatment includes the following:

- The mobile carbon filtration system will be installed on Cell 19-1.
- Initially, ten (10) frac tanks will be installed on Cell 19-1 to temporarily receive the treated water for confirmation testing. At Clean Harbors discretion, an additional ten (10) frac tanks (20 in total) may be used as temporary treated water storage on Cell 19-1. The additional frac tanks will be used to optimize the volume of treated water.
- Water from between berms B4 to B5 will be pumped directly into the mobile carbon filtration system. The effluent from the mobile carbon filtration system will be discharged to the frac tanks for confirmation testing.
- Water will be treated in batches and will be stored in 5 frac tanks per batch (the batch volume will depend on the frac tanks available). In general, a treated batch will represent approximately 450,000 L.
- Samples will be collected from the influent and effluent water from the mobile carbon filtration system during the final stage of filling the fifth and final frac tank of each batch. The effluent samples will be tested for VOC parameters. The influent sample will be held pending the effluent results. If the effluent results are acceptable, the influent sample will be disposed of. If the effluent result is unacceptable, the influent sample that was held will be analyzed by the laboratory. Pending the results, Clean Harbor may sample the individual frac tanks to assess treatment performance and discharge acceptability.
- Effluent water will be stored in the 5 frac tanks until analytical results are obtained.
  - If the results indicate adequate treatment to concentrations lower than the VOC PWQOs (including 280 ug/L for acetone), the frac tanks will be discharged via overland hose/pipe to the West Retention Pond.
  - If the results indicate elevated concentrations still exist above the PWQO, the effluent water stored in the frac tanks will be redirected for re-treatment.
  - Additionally, the influent sample will be analyzed, the mobile carbon filtration system will be assessed for carbon breakthrough.
- The treatment operation will be managed in a manner to allow continuous treatment of the South Ditch water, i.e. the next five frac tanks will be filled with treated water while testing from the previous batch is occurring.

Ten frac tanks, to a maximum of 20 frac tanks, will be used to store effluent water. This will allow for treating multiple batches while waiting for analytical results. The use of frac tanks for effluent storage may be increased to 20 based on operational capability.

Carbon in the mobile treatment system will be replaced as required based on testing. The mobile treatment plant that is currently treating the East Retention Pond water will provide a back-up treatment system for the South Ditch water during carbon change out or will be used to provide additional treatment by running the two plants in parallel.

In the event the two carbon treatment systems are run in parallel each system would complete their own separate batching and sampling program.

Water from berm B5 to B6 of the ditch will be transferred to berm B4 to B5 area as required by the South Ditch remediation.

### 3. South Ditch Remediation

The South Ditch will be remediated in sections based on the existing berms. Sections may be subdivided further based on the size that can be effectively managed and based on observations during the work and site conditions. The work program to infill the South Ditch has commenced and the section between B2 and B4 has been infilled through the procedures presented herein. The South Ditch will be remediated in four major sections.

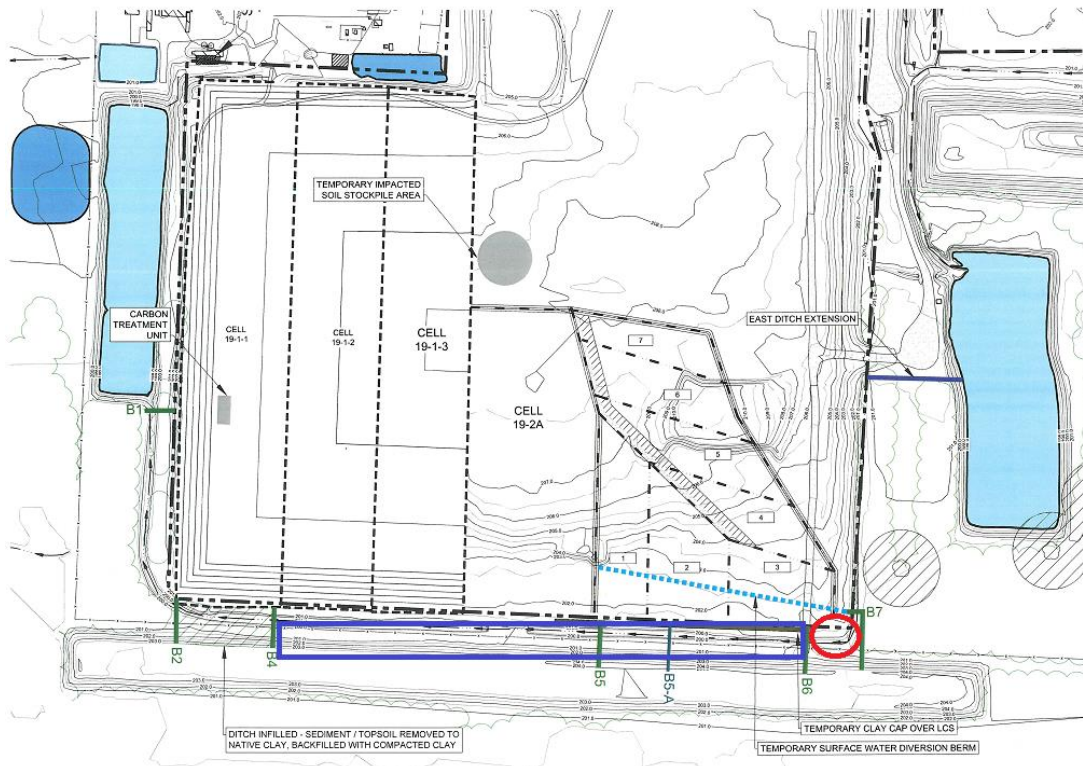
#### 3.1 Between berm B6-B7:

Berms B6-B7 are located at the southeast corner of the South Ditch. Water from between B6-B7 will be managed separately from other portions of South Ditch due to a leachate seep in the bank.

Water was pumped from this area into the LCS via the southeast cleanout. Sump 4 was operated to lower the leachate level within southeast area of LCS by transfer of the leachate to the leachate holding tank located prior to incineration.

The area has been temporarily remediated by installing a temporary clay plug in the area. Clay was stockpiled on the south side of ditch. As the water level was lowered within ditch, clay was placed within ditch and compacted.

Once the LCS is operating with the normal operational range (196 to 197 mASL), the temporary clay plug will be removed, along with any sediment/vegetation/root growth zone, and the excavation filled with compacted clay. The method of final infill will be based on the experience and lessons learned during the infill of B2 to B6.



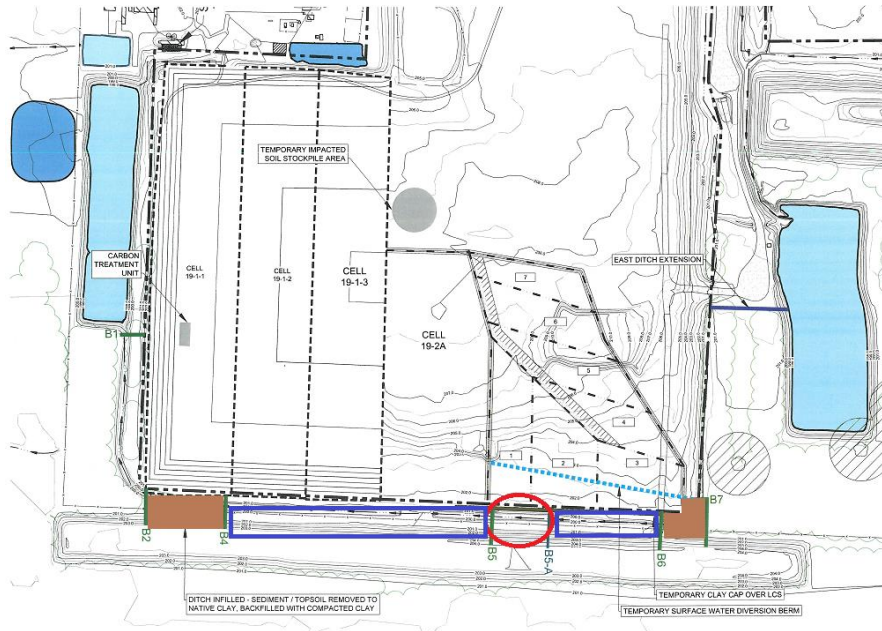
### 3.2 Between berms B5-B6:

The area between berms B5-B6 represents the section of the east ditch that located adjacent to the LCS that does not contain the landfill perimeter berm above the LCS. Minor leachate seepage/staining was visually noted directly above the LCS when the LCS was at the peak hydraulic pressure. Currently, there are no visual observations of leachate seeps within this area. It is anticipated the risk for potential leachate seepage during remediation is low if the LCS hydraulic pressure is managed. Currently water from the South Ditch has flooded the vertical projection of the LCS trench.

Berm B5A has been constructed to provide the initial remediation zone for the B5 to B6 area. The remediation for the area will consist of the following:

- Water from Berm 5 to 5A will be pumped to berm B4 to B5
- Temporary berm above the LCS has been constructed for the section and will be installed along the complete B5 to B6 section.
- The excavation and clay placement will be conducted in a manner to ensure that at the end of the work day the bulk of the excavated area has been backfilled with compacted clay to above the LCS level (approximately 201 mASL). The overall section will take several days to complete the excavation and infill work.
- After water removal, the area will be excavated to remove the sediment, vegetation, and root growth zone for the daily work area. The excavation will extend to the native undisturbed clay. The excavated material will be trucked to the disposal area north of Cell 19-2A and shown on the following plan.
- Clay (free of vegetation and roots) from the South Berm will be will be excavated and trucked to the area, placed and compacted.
- During remediation activities, the LCS will be pumped in accordance with the leachate management plan (Section 4)

The section between berms B5A and B6 will be remediated as per berm B5 and B5A. Depending on site conditions and water level, a temporary berm(s) may or may not be installed to create a manageable work area. Any lessons learned will be incorporated into the infilling of the next section. The following figure provides the B5 to B6 zone for reference.

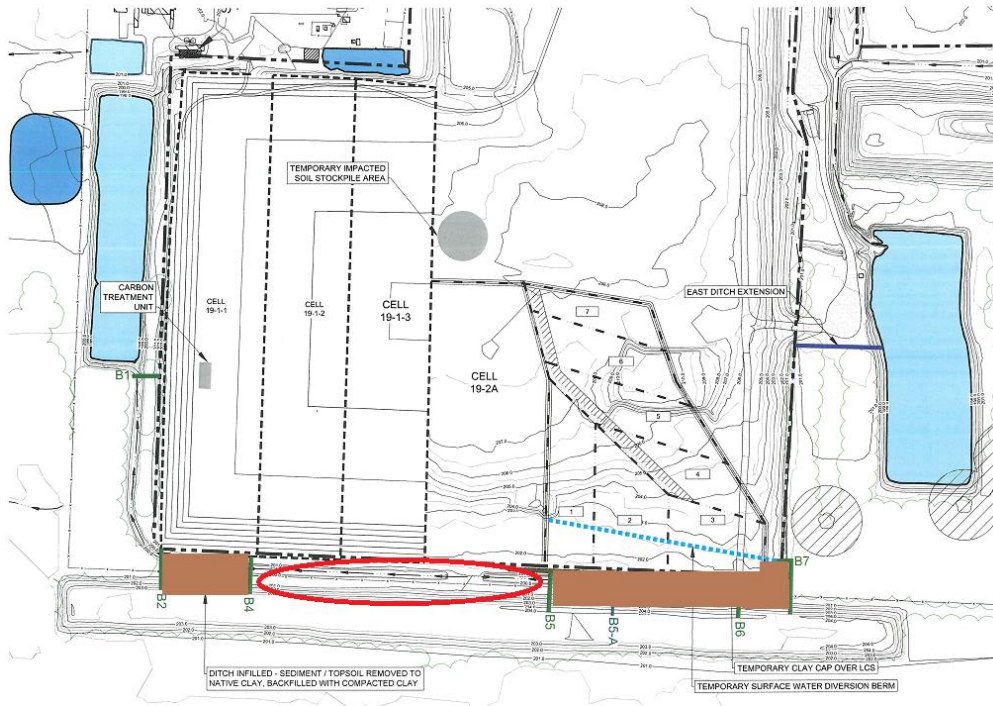


### 3.3 Between berms B4-B5:

Berms B4-B5 are located in the area that has the perimeter berm constructed above the LCS and is currently landfilled or currently being landfilled. No leachate seeps have been observed within this area. This area is proposed to be used to store water prior to treatment due to its current status and that an increased water level in this section will have minimal inflow to the LCS if the South Ditch water elevation is higher than the LCS leachate elevation.

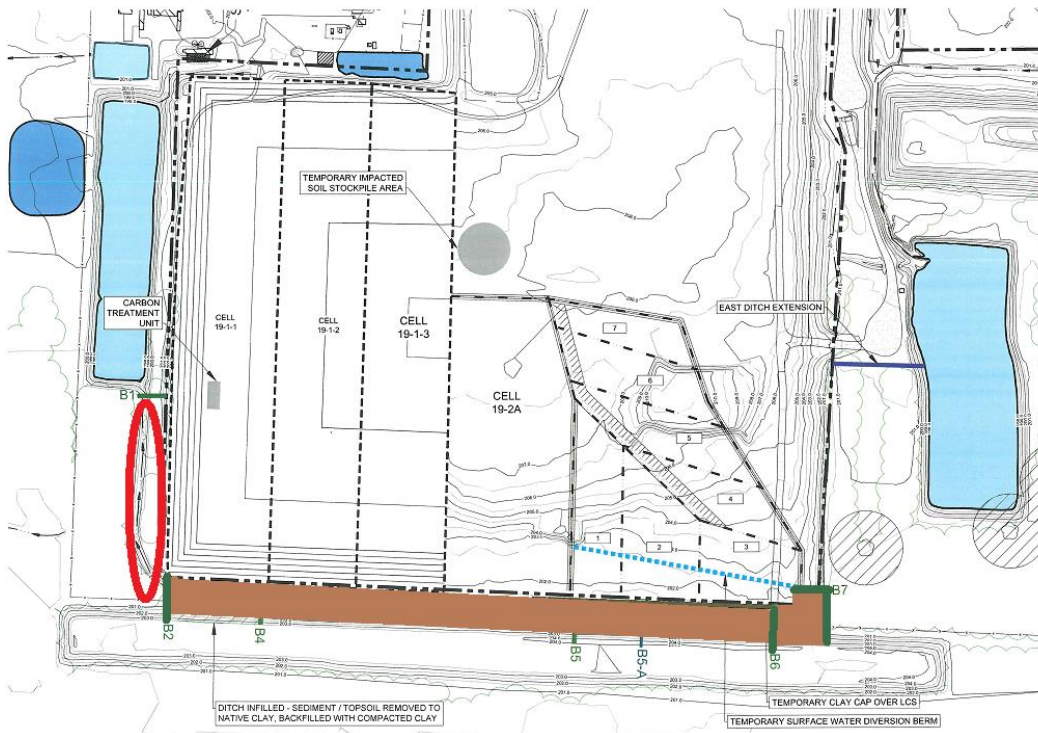
Water from between B4-B5 will be pumped to the mobile carbon filtration system. The water located in the B4-B5 area will be the source water for the temporary water treatment plant. Remediation and infilling of the ditch between berms B4-B5 will occur after remediation is complete between berms B5-B6.

The remediation of the area between berms B4 and B5 will be conducted in a manner that is similar to the B5 to B6 zone. Any lessons learned will be used to optimize the remediation for this section. The use of temporary berms to create workable zones will be assessed prior to filling the overall section and the amount of water that remains in the zone and that requires treatment. The LCS will be controlled in accordance with the leachate management section.



### 3.4 Between B1 and B2

Analytical results within this section of the ditch shows that this water does not require any prior treatment prior to being moved to the West Retention Pond. There does not appear to be any risk for potential leachate seeps in this area due to the distance between B1 - B2 ditch and the LCS. Therefore, this area will be remediated by moving the water to the West Retention Pond, and installing a clay plug and the anchor trench. This section will be the last section to be completed.



### **3.5 Final Cover Anchor Trench**

Once the remedial South Ditch infill work has been completed and the LCS leachate level is approaching the normal operating range (196 to 197 mASL), the final cover anchor trench will be installed. The anchor trench is current being designed in preparation for the installation of final cover on Cell 19-1. The anchor trench will extend along the total length of the South Ditch. The anchor trench will in accordance with the concept and dimensions provided in the approved Design and Operations Report.

### **3.6 West Process Pond**

The company will empty the West Process Pond, and once empty will have the pond liner mended by a contractor. Once the liner is mended, the south ditch water will be moved into this pond. This will facilitate the timely remediation of the south ditch and installation of the clay plug.

The water collected in the West Process Pond will then be treated as per section 2.3.1.2.

## **4. Leachate Collection System**

### **4.1 Leachate Frac Tanks**

To handle the high levels within the LCS the company proposes to use up to 20 Frac tanks onsite for temporary storage. Leachate from the LCS would be pumped into the Frac tanks to reduce leachate levels within in the LCS. Throughout this the company will continue to dispose of leachate through the incinerator secondary zone. The Frac tanks would be stored within individual containment provided by the vendor. The Frac tanks will be managed to the following requirements:

- 1) No more than 20 Frac Tanks shall be installed at the Site for temporary leachate storage;
- 2) All Frac tanks shall; have secondary containment supplied by the vendor
- 3) Operate, use and maintain the frac tanks in accordance with the incinerator ECA;
- 4) Store all Frac tanks in the maintenance yard at the site;
- 5) All frac tank vents will be connected in series and vented through a caustic scrubber (as approved in the leachate pond cover ECA) and a carbon bed;
- 6) Monitor and record the pressure of the frac tanks on the inlet to the caustic scrubber once daily;
- 7) Monitor the volume of leachate added or removed from the frac tanks on a daily basis; provide this information to MECP weekly on a separate tab of the LDR storage report;
- 8) By June 28, 2019 provide a plan to the Provincial Officer with a plan for the removal of the frac tanks from the site. The plan needs to include the removal of leachate, the cleaning of the frac tanks and timelines.

### **4.2 Operation During Remediation Activities**

During the remediation period, the objective is to maintain the LCS leachate elevation at a level that is lower than the South Ditch water elevation. This will maintain an inward gradient from the South Ditch to the LCS and minimize the potential for leachate to seep to the South Ditch.

During active remediation in an area (excavation and initial filling), the LCS sump that is closest to the remediation zone will be pumped and the leachate transferred to the main leachate holding tank prior to incineration or to the frac tanks for storage. This will minimize the potential for localized leachate seepage into the dewatered area. During the remediation period on May 14<sup>th</sup>, Sump No. 3 was pumped to lower the leachate head in the area of the work. The following table provides hourly results related to volume pumped during the hour and the leachate head at Sump 3 (south west corner) and Sump 4 (mid-point of South Ditch). The results indicated that the LCS leachate elevation can be lowered by 0.5 to 0.7 m in the local area and by 0.2 m about 200 m along the trench. The reduction in leachate elevation successfully prevented the seep from draining and allowed the seep area to be excavated and sealed with compacted clay.

<b>Date and Time (Start of Period)</b>	<b>Sump 3 Volume Pumped (L)</b>	<b>Sump 3 Leachate Elevation (m ASL)</b>	<b>Sump 4 Leachate Elevation (m ASL)</b>
5/14/2019 8:00	0	201.53	201.82
5/14/2019 9:00	9979	201.18	201.82
5/14/2019 10:00	14273	201.05	201.82
5/14/2019 11:00	14320	201.00	201.80
5/14/2019 12:00	14515	200.95	201.78
5/14/2019 13:00	14727	200.93	201.76
5/14/2019 14:00	14456	200.89	201.73
5/14/2019 15:00	14325	200.86	201.71
5/14/2019 16:00	14548	200.83	201.68
5/14/2019 17:00	14645	201.16	201.60
5/14/2019 18:00	4375	201.31	201.63
5/14/2019 19:00	155	201.33	201.66

### **4.3 Leachate Management**

Clean Harbors is committed to destroy a minimum of 1.3 million litres of leachate each month. In addition to committing to the leachate destruction rate, the following actions will be conducted:

- The size of the active subcells for Cell 19-2 will be reduced from 12,000 m<sup>2</sup> to be approximately 5,000 m<sup>2</sup>/subcell to reduce leachate generation. This size of active subcell will supply about 4 to 6 weeks of waste disposal capacity. The implementation of smaller cells should provide on average an 800,000 liters of surplus leachate volume which can be utilized to reduce the LCS, elimination of the leachate Frac tanks and eventually leachate within the three leachate ponds.
- Interim cover will be installed once a subcell reaches finished waste grades (subject to weather conditions)
- Final cover will be installed on Cell 19-1 (approximately 6 hectares) in 2019.
- The final cover anchor trench will be installed along the full length of the South Ditch to minimize stormwater infiltration to the LCS.
- Leachate destruction will be focused on returning the LCS to the normal operating elevations, then to destruction of leachate that is stored in the frac tanks, and finally to the destruction of the leachate that is stored in the on-site leachate storage ponds. The rate of destruction will depend on weather conditions, and the timing Long Term Leachate Management Strategy submitted to the MECP.
- Clean Harbors will continue to discuss with MECP approvals staff the options proposed for increasing the leachate destruction rate.



## 5. Sampling Plan

The sampling program will consist of the routine samples required of the EQ Pond, the West Retention Pond and the East Retention Pond and as specified in the storm water management plan ECA. This testing is not discussed further. The time period for request the laboratory to provide the results will be determined by Clean Harbors. Initial or critical samples will be requested for rush analysis, the other samples will be normal turn-around time. The additional sampling plan is summarized as follows:

Location	Parameter	Rate	Comments
EQ Pond Discharge	VOC (standard list)	Daily (regular third-party laboratory turn-around time)	Until South Ditch is infilled and one week after the last of the South Ditch treated water has been discharged to West Pond
South Ditch Treatment Plant Discharge	VOC (standard list)	Every 5 <sup>th</sup> frac tank (third-party laboratory rush 24-hour turn-around time)	Required until South Ditch Water treated.
	Metals (standard list)	One sample monthly (regular third-party laboratory turn-around time)	Required until South Ditch Water treated. To be sampled on the same day as the monthly surface water monitoring samples.
South Ditch Treatment Plant Influent	VOC (standard list)	Every 5 <sup>th</sup> frac tank	Sample held pending result and only tested if effluent shows an impact
	Metals (standard list)	One sample monthly (regular third-party laboratory turn-around time)	Required until South Ditch Water treated. To be sampled on the same day as the monthly surface water monitoring samples.

On May 23, 2019 the company will conduct another south ditch treatment test through the carbon treatment unit. Samples will be collected of the influent and effluent and submitted to the ALS analysis for metal and VOC analysis. Samples will be requested for rush analysis and results will be submitted to MECP for their review.

Clean Harbors will collect additional samples of the South Ditch or pond water on an as required basis to assess the general strength of the water, potential concerns, or obtaining general knowledge and confirmation.

Water elevations will be collected by Clean Harbors at minimum of twice per week of the pond and ditch levels, and the LCS levels. These levels will allow the water levels to be assessed and to assess the potential water movement direction for various sections/locations.

## **6. Contingency Plans**

### **6.1 Leachate Seeps**

During remedial work in an area, the LCS will be pumped at Sumps 3 and/or 4 to provide a localized reduction in the LCS during the active remedial work. This LCS level management will reduce the potential for a leachate seep to be present, especially in the upper surface zone, and to reduce the hydraulic pressure on the LCS side wall.

Should a leachate seep be identified the remedial response will be as follows:

- Isolate the seep location with clay berms or other materials that will contain the seep and minimize/reduce the impact area.
- Pump the collected leachate to the local LCS clean-out. If volume is small and quickly controlled a site vacuum truck may be used to remove the leachate.
- Assess the ability of the LCS system to control the seep discharge
- Take steps to the reduce the seep flow and seal the seep area with a clay plug and additional compacted clay material

### **6.2 Carbon Breakthrough**

Assess the VOC analytical results for treatment effluent samples and EQ Pond samples when received to determine if VOC results show VOC levels that are below the PWQO including acetone level. If sample results are unacceptable as noted in this plan, assess influent results to assess breakthrough and need to replace activated carbon.

## **7. Schedule and Reporting**

The work program provided represents the current discussions. Clean Harbors will provide a weekly email update to the MECP on Friday afternoons. The weekly update will include information documenting work performed in the previous week and plans for the future week. An update on sampling results will be provided if available. Minor amendments to the work program based on lessons learned and data collected will be provided as part of the weekly email.

Clean Harbors will contact the MECP immediately upon receiving EQ sampling results that indicate any of the treatment system are not performing as intended in the document (i.e. unacceptable VOC levels).

## APPENDIX A

### Results Summary L2276181

**Job Reference** 44985-30-10  
**Report To** LAURA ERMETA, GHD Limited (Waterloo)  
**Date Received** 21-May-2019 14:36  
**Report Date** 22-May-2019 12:31  
**Report Version** 1

Client Sample ID			BD#1	BD#2	BD#3
Date Sampled			17-May-2019	17-May-2019	17-May-2019
Time Sampled			15:00	15:00	15:00
ALS Sample ID			L2276181-1	L2276181-2	L2276181-3
Parameter	Lowest Detection Limit	Units	B4 - B5 Water	B5 - B6 Water	B6 - B7 Water

#### Volatile Organic Compounds (Water)

Parameter	Lowest Detection Limit	Units	B4 - B5 Water	B5 - B6 Water	B6 - B7 Water
Acetone	20	ug/L	1720	650	11400
Benzene	0.50	ug/L	<0.50	<0.50	1.29
Bromodichloromethane	1.0	ug/L	<1.0	<1.0	<1.0
Bromoform	1.0	ug/L	<1.0	<1.0	<1.0
Bromomethane	0.50	ug/L	<0.50	<0.50	<0.50
Carbon Disulfide	1.0	ug/L	<1.0	<1.0	14.5
Carbon tetrachloride	0.50	ug/L	<0.50	<0.50	<0.50
Chlorobenzene	0.50	ug/L	<0.50	<0.50	<0.50
Dibromochloromethane	1.0	ug/L	<1.0	<1.0	<1.0
Chloroethane	1.0	ug/L	<1.0	<1.0	<1.0
Chloroform	1.0	ug/L	<1.0	<1.0	<1.0
Chloromethane	1.0	ug/L	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.20	ug/L	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	0.50	ug/L	<0.50	<0.50	<0.50
Dichlorodifluoromethane	1.0	ug/L	<1.0	<1.0	<1.0
1,1-Dichloroethane	0.50	ug/L	<0.50	<0.50	0.73
1,2-Dichloroethane	0.50	ug/L	<0.50	<0.50	1.31
1,1-Dichloroethylene	0.50	ug/L	<0.50	<0.50	<0.50
cis-1,2-Dichloroethylene	0.50	ug/L	1.56	1.44	42.2
trans-1,2-Dichloroethylene	0.50	ug/L	<0.50	<0.50	<0.90
Dichloromethane	2.0	ug/L	<2.0	<2.0	24.0
1,2-Dichloropropane	0.50	ug/L	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene	0.50	ug/L	<0.50	<0.50	<0.50
trans-1,3-Dichloropropene	0.50	ug/L	<0.50	<0.50	<0.50
Ethylbenzene	0.50	ug/L	<0.50	<0.50	2.27
n-Hexane	0.50	ug/L	<0.50	<0.50	<0.50
2-Hexanone	20	ug/L	<20	<20	<20
Methyl Ethyl Ketone	20	ug/L	370	130	4900
Methyl Isobutyl Ketone	20	ug/L	<20	<20	279
MTBE	0.50	ug/L	1.64	1.40	32.9
Styrene	0.50	ug/L	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	0.50	ug/L	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	0.50	ug/L	<0.50	<0.50	<0.50
Tetrachloroethylene	0.50	ug/L	<0.50	<0.50	<0.50
Toluene	0.50	ug/L	1.49	<0.50	58.3
1,1,1-Trichloroethane	0.50	ug/L	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	0.50	ug/L	<0.50	<0.50	<0.50
Trichloroethylene	0.50	ug/L	<0.50	<0.50	1.59
Trichlorofluoromethane	1.0	ug/L	<1.0	<1.0	<1.0
Vinyl chloride	0.50	ug/L	<0.50	<0.50	<0.50
o-Xylene	0.50	ug/L	<0.50	<0.50	6.20
m+p-Xylenes	1.0	ug/L	<1.0	<1.0	10.5
Xylenes (Total)	1.1	ug/L	<1.1	<1.1	16.7

# **Appendix C**

**Analytical Data Reports Collected During  
Effluent Discharge**



GHD Limited (Waterloo)  
ATTN: Kory Ozgun  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Date Received: 23-MAR-22  
Report Date: 30-MAR-22 15:02 (MT)  
Version: FINAL

Client Phone: 519-884-0510

## Certificate of Analysis

Lab Work Order #: L2694108  
Project P.O. #: 73506479-1  
Job Reference: 44985-20-21  
C of C Numbers:  
Legal Site Desc:

Rick Hawthorne  
Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2694108-1 EQ POND DISCHARGE							
Sampled By: CLIENT on 22-MAR-22 @ 11:00							
Matrix: WATER							
<b>Field Tests</b>							
pH, Client Supplied	8.70		0.10	pH		24-MAR-22	R5749751
Temperature, Client	10.0		-50	Deg. C		24-MAR-22	R5749751
<b>Physical Tests</b>							
Conductivity	716		1.0	umhos/cm		24-MAR-22	R5750260
pH	8.52		0.10	pH units		24-MAR-22	R5750260
Total Suspended Solids	3.6		3.0	mg/L	25-MAR-22	26-MAR-22	R5750898
Total Dissolved Solids	428	DLDS	20	mg/L		25-MAR-22	R5750678
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	93.3		1.0	mg/L		24-MAR-22	R5750260
Unionized ammonia	0.132		0.0052	mg/L		28-MAR-22	
Ammonia, Total (as N)	1.28	DLHC	0.050	mg/L		25-MAR-22	R5750741
Bromide (Br)	1.66		0.10	mg/L		24-MAR-22	R5750162
Chloride (Cl)	57.6		0.50	mg/L		24-MAR-22	R5750162
Fluoride (F)	0.942		0.020	mg/L		24-MAR-22	R5750162
Nitrate (as N)	0.109		0.020	mg/L		24-MAR-22	R5750162
Nitrite (as N)	<0.010		0.010	mg/L		24-MAR-22	R5750162
Total Kjeldahl Nitrogen	2.62		0.050	mg/L	28-MAR-22	28-MAR-22	R5750843
Phosphorus, Total	0.0268		0.0030	mg/L	29-MAR-22	30-MAR-22	R5751788
Sulfate (SO4)	197		0.30	mg/L		24-MAR-22	R5750162
<b>Cyanides</b>							
Cyanide, Total	<0.0020		0.0020	mg/L		24-MAR-22	R5750210
<b>Organic / Inorganic Carbon</b>							
Dissolved Carbon Filtration Location	LAB					24-MAR-22	R5749698
Dissolved Organic Carbon	4.93		0.50	mg/L	24-MAR-22	24-MAR-22	R5750251
<b>Total Metals</b>							
Aluminum (Al)-Total	0.110		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Antimony (Sb)-Total	0.00040		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Arsenic (As)-Total	0.00098		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Barium (Ba)-Total	0.0322		0.00020	mg/L	23-MAR-22	24-MAR-22	R5749909
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Boron (B)-Total	0.104		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Cadmium (Cd)-Total	<0.000050	DLM	0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Calcium (Ca)-Total	64.6		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Cobalt (Co)-Total	0.00020		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Copper (Cu)-Total	0.0020		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Iron (Fe)-Total	0.087		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Lead (Pb)-Total	0.00019		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Magnesium (Mg)-Total	22.7		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Manganese (Mn)-Total	0.00827		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAR-22	R5750023
Molybdenum (Mo)-Total	0.0518		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909

\* 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
L2694108-1 EQ POND DISCHARGE							
Sampled By: CLIENT on 22-MAR-22 @ 11:00							
Matrix: WATER							
<b>Total Metals</b>							
Nickel (Ni)-Total	0.00349		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Potassium (K)-Total	6.76		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Selenium (Se)-Total	0.00219		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Silicon (Si)-Total	1.64		0.10	mg/L	23-MAR-22	24-MAR-22	R5749909
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Sodium (Na)-Total	40.4		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Strontium (Sr)-Total	0.537		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Thallium (Tl)-Total	0.000026		0.000010	mg/L	23-MAR-22	24-MAR-22	R5749909
Tin (Sn)-Total	0.00012		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Vanadium (V)-Total	<0.00050		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	23-MAR-22	24-MAR-22	R5749909
<b>Speciated Metals</b>							
Chromium, Hexavalent	0.00051		0.00050	mg/L		24-MAR-22	R5750232
<b>Aggregate Organics</b>							
COD	20		10	mg/L		24-MAR-22	R5750062
Phenols (4AAP)	0.0011		0.0010	mg/L		25-MAR-22	R5750872
<b>Volatile Organic Compounds</b>							
Acetone	<20		20	ug/L		28-MAR-22	R5750995
Benzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Bromodichloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Bromoform	<1.0		1.0	ug/L		28-MAR-22	R5750995
Bromomethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Carbon tetrachloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
Chlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dibromochloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroform	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,2-Dibromoethane	<0.20		0.20	ug/L		28-MAR-22	R5750995
1,2-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,3-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,4-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichlorodifluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,1-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,2-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichloromethane	<2.0		2.0	ug/L		28-MAR-22	R5750995
1,2-Dichloropropane	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Ethylbenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995

\* 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
L2694108-1 EQ POND DISCHARGE							
Sampled By: CLIENT on 22-MAR-22 @ 11:00							
Matrix: WATER							
<b>Volatile Organic Compounds</b>							
n-Hexane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Methyl Ethyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
Methyl Isobutyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
MTBE	<0.50		0.50	ug/L		28-MAR-22	R5750995
Styrene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Tetrachloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Toluene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,2-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichlorofluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Vinyl chloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
o-Xylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
m+p-Xylenes	<1.0		1.0	ug/L		28-MAR-22	R5750995
Xylenes (Total)	<1.1		1.1	ug/L		28-MAR-22	
Surrogate: 4-Bromofluorobenzene	97.9		70-130	%		28-MAR-22	R5750995
Surrogate: 1,4-Difluorobenzene	101.5		70-130	%		28-MAR-22	R5750995
<b>Trihalomethanes</b>							
Total THMs	<2.0		2.0	ug/L		28-MAR-22	
<b>Acid Extractables</b>							
2,3,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751680
Surrogate: 2,4,6-Tribromophenol	113.2		40-150	%	29-MAR-22	30-MAR-22	R5751680
<b>Semi-Volatile Organics</b>							
Acenaphthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Acenaphthylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)pyrene	<0.10	DLIS	0.10	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(b)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(ghi)perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(k)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
4-Chloroaniline	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-chloroethyl)ether	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Chlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Chrysene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dibenz(a,h)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,3-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,4-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
3,3-Dichlorobenzidine	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579

\* 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
L2694108-1 EQ POND DISCHARGE Sampled By: CLIENT on 22-MAR-22 @ 11:00 Matrix: WATER							
<b>Semi-Volatile Organics</b>							
2,4-Dichlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Diethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dimethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dimethylphenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrophenol	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,6-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-ethylhexyl)phthalate	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluorene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Hexachlorobenzene	<0.080	DLIS	0.080	ug/L	29-MAR-22	30-MAR-22	R5751579
Hexachlorobutadiene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Indeno(1,2,3-cd)pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Naphthalene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Pentachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Phenanthrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,5-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,6-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2,4-Trichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,5-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Surrogate: 2-Fluorobiphenyl	84.3		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: Nitrobenzene d5	86.5		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: d14-Terphenyl	85.5		40-130	%	29-MAR-22	30-MAR-22	R5751579
L2694108-2 POND D WEST POND Sampled By: CLIENT on 22-MAR-22 @ 11:00 Matrix: WATER							
<b>Field Tests</b>							
pH, Client Supplied	7.80		0.10	pH		24-MAR-22	R5749751
Temperature, Client	10.0		-50	Deg. C		24-MAR-22	R5749751
<b>Physical Tests</b>							
Conductivity	737		1.0	umhos/cm		24-MAR-22	R5750260
pH	8.02		0.10	pH units		24-MAR-22	R5750260
Total Suspended Solids	13.4		3.0	mg/L	25-MAR-22	26-MAR-22	R5750898
Total Dissolved Solids	459	DLDS	20	mg/L		25-MAR-22	R5750678
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	101		1.0	mg/L		24-MAR-22	R5750260
Unionized ammonia	0.00838		0.00070	mg/L		28-MAR-22	

\* 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
L2694108-2 POND D WEST POND Sampled By: CLIENT on 22-MAR-22 @ 11:00 Matrix: WATER							
<b>Anions and Nutrients</b>							
Ammonia, Total (as N)	0.595	DLHC	0.050	mg/L		25-MAR-22	R5750741
Bromide (Br)	1.61		0.10	mg/L		24-MAR-22	R5750162
Chloride (Cl)	56.2		0.50	mg/L		24-MAR-22	R5750162
Fluoride (F)	1.06		0.020	mg/L		24-MAR-22	R5750162
Nitrate (as N)	0.180		0.020	mg/L		24-MAR-22	R5750162
Nitrite (as N)	<0.010		0.010	mg/L		24-MAR-22	R5750162
Total Kjeldahl Nitrogen	1.43		0.050	mg/L	28-MAR-22	28-MAR-22	R5750843
Phosphorus, Total	0.0325		0.0030	mg/L	29-MAR-22	30-MAR-22	R5751788
Sulfate (SO4)	202		0.30	mg/L		24-MAR-22	R5750162
<b>Cyanides</b>							
Cyanide, Total	<0.0020		0.0020	mg/L		24-MAR-22	R5750210
<b>Organic / Inorganic Carbon</b>							
Dissolved Carbon Filtration Location	LAB					24-MAR-22	R5749698
Dissolved Organic Carbon	4.87		0.50	mg/L	24-MAR-22	24-MAR-22	R5750251
<b>Total Metals</b>							
Aluminum (Al)-Total	0.660		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Antimony (Sb)-Total	0.00046		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Arsenic (As)-Total	0.00141		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Barium (Ba)-Total	0.0377		0.00020	mg/L	23-MAR-22	24-MAR-22	R5749909
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Boron (B)-Total	0.114		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Cadmium (Cd)-Total	<0.000080	DLM	0.000080	mg/L	23-MAR-22	24-MAR-22	R5749909
Calcium (Ca)-Total	68.1		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Cobalt (Co)-Total	0.00057		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Copper (Cu)-Total	0.0028		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Iron (Fe)-Total	0.849		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Lead (Pb)-Total	0.00063		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Magnesium (Mg)-Total	24.1		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Manganese (Mn)-Total	0.0510		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		24-MAR-22	R5750023
Molybdenum (Mo)-Total	0.0510		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Nickel (Ni)-Total	0.00438		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Potassium (K)-Total	7.04		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Selenium (Se)-Total	0.00268		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Silicon (Si)-Total	2.93		0.10	mg/L	23-MAR-22	24-MAR-22	R5749909
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Sodium (Na)-Total	40.5		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Strontium (Sr)-Total	0.591		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Thallium (Tl)-Total	0.000039		0.000010	mg/L	23-MAR-22	24-MAR-22	R5749909
Tin (Sn)-Total	<0.00010		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Vanadium (V)-Total	0.00154		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909

\* 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
L2694108-2 POND D WEST POND							
Sampled By: CLIENT on 22-MAR-22 @ 11:00							
Matrix: WATER							
<b>Total Metals</b>							
Zinc (Zn)-Total	0.0072		0.0030	mg/L	23-MAR-22	24-MAR-22	R5749909
<b>Speciated Metals</b>							
Chromium, Hexavalent	0.00075		0.00050	mg/L		24-MAR-22	R5750232
<b>Aggregate Organics</b>							
COD	21		10	mg/L		24-MAR-22	R5750062
Phenols (4AAP)	0.0013		0.0010	mg/L		25-MAR-22	R5750872
<b>Volatile Organic Compounds</b>							
Acetone	<20		20	ug/L		28-MAR-22	R5750995
Benzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Bromodichloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Bromoform	<1.0		1.0	ug/L		28-MAR-22	R5750995
Bromomethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Carbon tetrachloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
Chlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dibromochloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroform	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,2-Dibromoethane	<0.20		0.20	ug/L		28-MAR-22	R5750995
1,2-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,3-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,4-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichlorodifluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,1-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,2-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichloromethane	<2.0		2.0	ug/L		28-MAR-22	R5750995
1,2-Dichloropropane	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Ethylbenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
n-Hexane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Methyl Ethyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
Methyl Isobutyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
MTBE	<0.50		0.50	ug/L		28-MAR-22	R5750995
Styrene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Tetrachloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Toluene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995

\* 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
L2694108-2 POND D WEST POND Sampled By: CLIENT on 22-MAR-22 @ 11:00 Matrix: WATER							
<b>Volatile Organic Compounds</b>							
1,1,2-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichlorofluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Vinyl chloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
o-Xylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
m+p-Xylenes	<1.0		1.0	ug/L		28-MAR-22	R5750995
Xylenes (Total)	<1.1		1.1	ug/L		28-MAR-22	R5750995
Surrogate: 4-Bromofluorobenzene	97.9		70-130	%		28-MAR-22	R5750995
Surrogate: 1,4-Difluorobenzene	101.3		70-130	%		28-MAR-22	R5750995
<b>Trihalomethanes</b>							
Total THMs	<2.0		2.0	ug/L		28-MAR-22	R5750995
<b>Acid Extractables</b>							
2,3,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751680
Surrogate: 2,4,6-Tribromophenol	122.3		40-150	%	29-MAR-22	30-MAR-22	R5751680
<b>Semi-Volatile Organics</b>							
Acenaphthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Acenaphthylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)pyrene	<0.10	DLIS	0.10	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(b)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(ghi)perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(k)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
4-Chloroaniline	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-chloroethyl)ether	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Chlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Chrysene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dibenz(a,h)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,3-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,4-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
3,3-Dichlorobenzidine	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dichlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Diethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dimethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dimethylphenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrophenol	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,6-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-ethylhexyl)phthalate	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluorene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579

\* 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
L2694108-2 POND D WEST POND Sampled By: CLIENT on 22-MAR-22 @ 11:00 Matrix: WATER							
<b>Semi-Volatile Organics</b>							
Hexachlorobenzene	<0.080	DLIS	0.080	ug/L	29-MAR-22	30-MAR-22	R5751579
Hexachlorobutadiene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Indeno(1,2,3-cd)pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Naphthalene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Pentachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Phenanthrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,5-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,6-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2,4-Trichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,5-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Surrogate: 2-Fluorobiphenyl	83.7		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: Nitrobenzene d5	87.0		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: d14-Terphenyl	82.5		40-130	%	29-MAR-22	30-MAR-22	R5751579
L2694108-3 POND A EAST POND Sampled By: CLIENT on 22-MAR-22 @ 12:30 Matrix: WATER							
<b>Field Tests</b>							
pH, Client Supplied	8.10		0.10	pH		24-MAR-22	R5749751
Temperature, Client	10.0		-50	Deg. C		24-MAR-22	R5749751
<b>Physical Tests</b>							
Conductivity	722		1.0	umhos/cm		24-MAR-22	R5750260
pH	8.18		0.10	pH units		24-MAR-22	R5750260
Total Suspended Solids	7.1		3.0	mg/L	25-MAR-22	26-MAR-22	R5750898
Total Dissolved Solids	431	DLDS	20	mg/L		25-MAR-22	R5750678
<b>Anions and Nutrients</b>							
Alkalinity, Total (as CaCO3)	97.2		1.0	mg/L		24-MAR-22	R5750260
Unionized ammonia	0.0399		0.0014	mg/L		28-MAR-22	
Ammonia, Total (as N)	1.43	DLHC	0.050	mg/L		25-MAR-22	R5750741
Bromide (Br)	1.43		0.10	mg/L		24-MAR-22	R5750162
Chloride (Cl)	49.9		0.50	mg/L		24-MAR-22	R5750162
Fluoride (F)	1.12		0.020	mg/L		24-MAR-22	R5750162
Nitrate (as N)	0.241		0.020	mg/L		24-MAR-22	R5750162
Nitrite (as N)	<0.010		0.010	mg/L		24-MAR-22	R5750162
Total Kjeldahl Nitrogen	2.11		0.050	mg/L	28-MAR-22	28-MAR-22	R5750843
Phosphorus, Total	0.0238		0.0030	mg/L	29-MAR-22	30-MAR-22	R5751788
Sulfate (SO4)	197		0.30	mg/L		24-MAR-22	R5750162
<b>Cyanides</b>							

\* 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
L2694108-3 POND A EAST POND Sampled By: CLIENT on 22-MAR-22 @ 12:30 Matrix: WATER							
<b>Cyanides</b>							
Cyanide, Total	<0.0020		0.0020	mg/L		24-MAR-22	R5750210
<b>Organic / Inorganic Carbon</b>							
Dissolved Carbon Filtration Location	LAB					24-MAR-22	R5749698
Dissolved Organic Carbon	4.46		0.50	mg/L	24-MAR-22	24-MAR-22	R5750251
<b>Total Metals</b>							
Aluminum (Al)-Total	0.678		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Antimony (Sb)-Total	0.00050		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Arsenic (As)-Total	0.00126		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Barium (Ba)-Total	0.0351		0.00020	mg/L	23-MAR-22	24-MAR-22	R5749909
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Boron (B)-Total	0.107		0.010	mg/L	23-MAR-22	24-MAR-22	R5749909
Cadmium (Cd)-Total	<0.00020	DLM	0.00020	mg/L	23-MAR-22	24-MAR-22	R5749909
Calcium (Ca)-Total	69.6		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Cobalt (Co)-Total	0.00069		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Copper (Cu)-Total	0.0033		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Iron (Fe)-Total	0.702		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Lead (Pb)-Total	0.00088		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Magnesium (Mg)-Total	22.6		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Manganese (Mn)-Total	0.0611		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Mercury (Hg)-Total	0.0000059		0.0000050	mg/L		24-MAR-22	R5750023
Molybdenum (Mo)-Total	0.0513		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Nickel (Ni)-Total	0.00473		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Potassium (K)-Total	6.60		0.050	mg/L	23-MAR-22	24-MAR-22	R5749909
Selenium (Se)-Total	0.00295		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Silicon (Si)-Total	2.93		0.10	mg/L	23-MAR-22	24-MAR-22	R5749909
Silver (Ag)-Total	<0.000050		0.000050	mg/L	23-MAR-22	24-MAR-22	R5749909
Sodium (Na)-Total	36.3		0.50	mg/L	23-MAR-22	24-MAR-22	R5749909
Strontium (Sr)-Total	0.555		0.0010	mg/L	23-MAR-22	24-MAR-22	R5749909
Thallium (Tl)-Total	0.000043		0.000010	mg/L	23-MAR-22	24-MAR-22	R5749909
Tin (Sn)-Total	<0.00010		0.00010	mg/L	23-MAR-22	24-MAR-22	R5749909
Vanadium (V)-Total	0.00159		0.00050	mg/L	23-MAR-22	24-MAR-22	R5749909
Zinc (Zn)-Total	0.0114		0.0030	mg/L	23-MAR-22	24-MAR-22	R5749909
<b>Speciated Metals</b>							
Chromium, Hexavalent	0.00118		0.00050	mg/L		24-MAR-22	R5750232
<b>Aggregate Organics</b>							
COD	19		10	mg/L		24-MAR-22	R5750062
Phenols (4AAP)	0.0014		0.0010	mg/L		25-MAR-22	R5750872
<b>Volatile Organic Compounds</b>							
Acetone	<20		20	ug/L		28-MAR-22	R5750995
Benzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Bromodichloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995

\* 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
L2694108-3 POND A EAST POND Sampled By: CLIENT on 22-MAR-22 @ 12:30 Matrix: WATER							
<b>Volatile Organic Compounds</b>							
Bromoform	<1.0		1.0	ug/L		28-MAR-22	R5750995
Bromomethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Carbon tetrachloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
Chlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dibromochloromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Chloroform	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,2-Dibromoethane	<0.20		0.20	ug/L		28-MAR-22	R5750995
1,2-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,3-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,4-Dichlorobenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichlorodifluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
1,1-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,2-Dichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,2-Dichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Dichloromethane	<2.0		2.0	ug/L		28-MAR-22	R5750995
1,2-Dichloropropane	<0.50		0.50	ug/L		28-MAR-22	R5750995
cis-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
trans-1,3-Dichloropropene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Ethylbenzene	<0.50		0.50	ug/L		28-MAR-22	R5750995
n-Hexane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Methyl Ethyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
Methyl Isobutyl Ketone	<20		20	ug/L		28-MAR-22	R5750995
MTBE	<0.50		0.50	ug/L		28-MAR-22	R5750995
Styrene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Tetrachloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Toluene	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,1-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
1,1,2-Trichloroethane	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichloroethylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
Trichlorofluoromethane	<1.0		1.0	ug/L		28-MAR-22	R5750995
Vinyl chloride	<0.50		0.50	ug/L		28-MAR-22	R5750995
o-Xylene	<0.50		0.50	ug/L		28-MAR-22	R5750995
m+p-Xylenes	<1.0		1.0	ug/L		28-MAR-22	R5750995
Xylenes (Total)	<1.1		1.1	ug/L		28-MAR-22	R5750995
Surrogate: 4-Bromofluorobenzene	98.4		70-130	%		28-MAR-22	R5750995
Surrogate: 1,4-Difluorobenzene	101.5		70-130	%		28-MAR-22	R5750995

\* 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
L2694108-3 POND A EAST POND Sampled By: CLIENT on 22-MAR-22 @ 12:30 Matrix: WATER							
<b>Volatile Organic Compounds</b>							
<b>Trihalomethanes</b>							
Total THMs	<2.0		2.0	ug/L		28-MAR-22	
<b>Acid Extractables</b>							
2,3,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751680
Surrogate: 2,4,6-Tribromophenol	138.8		40-150	%	29-MAR-22	30-MAR-22	R5751680
<b>Semi-Volatile Organics</b>							
Acenaphthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Acenaphthylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(a)pyrene	<0.10	DLIS	0.10	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(b)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(ghi)perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Benzo(k)fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
4-Chloroaniline	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-chloroethyl)ether	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Chlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Chrysene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dibenz(a,h)anthracene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,3-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
1,4-Dichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
3,3-Dichlorobenzidine	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dichlorophenol	<0.60	DLIS	0.60	ug/L	29-MAR-22	30-MAR-22	R5751579
Diethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Dimethylphthalate	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dimethylphenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrophenol	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,6-Dinitrotoluene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Bis(2-ethylhexyl)phthalate	<2.0	DLIS	2.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluoranthene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Fluorene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Hexachlorobenzene	<0.080	DLIS	0.080	ug/L	29-MAR-22	30-MAR-22	R5751579
Hexachlorobutadiene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Indeno(1,2,3-cd)pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
1-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2-Methylnaphthalene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
Naphthalene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Pentachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Perylene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
Phenanthrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579

\* 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
L2694108-3 POND A EAST POND Sampled By: CLIENT on 22-MAR-22 @ 12:30 Matrix: WATER							
<b>Semi-Volatile Organics</b>							
Pyrene	<0.40	DLIS	0.40	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,5-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,3,4,6-Tetrachlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
1,2,4-Trichlorobenzene	<0.80	DLIS	0.80	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,5-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
2,4,6-Trichlorophenol	<1.0	DLIS	1.0	ug/L	29-MAR-22	30-MAR-22	R5751579
Surrogate: 2-Fluorobiphenyl	94.7		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: Nitrobenzene d5	100.7		40-130	%	29-MAR-22	30-MAR-22	R5751579
Surrogate: d14-Terphenyl	101.7		40-130	%	29-MAR-22	30-MAR-22	R5751579

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

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Laboratory Control Sample	Pentachlorophenol	LCS-H	L2694108-1, -2, -3
Matrix Spike	Dichlorodifluoromethane	MES	L2694108-1, -2, -3
Matrix Spike	Bromide (Br)	MS-B	L2694108-1, -2, -3
Matrix Spike	Fluoride (F)	MS-B	L2694108-1, -2, -3
Matrix Spike	Aluminum (Al)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Barium (Ba)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Calcium (Ca)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Manganese (Mn)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Zinc (Zn)-Total	MS-B	L2694108-1, -2, -3
Matrix Spike	Sulfate (SO <sub>4</sub> )	MS-B	L2694108-1, -2, -3
Method Blank	Phosphorus, Total	RRQC	L2694108-1, -2, -3

**Comments:** RRQC:RRQC: Reported Total Phosphorus samples are not affected by observed Method Blank background

### Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLIS	Detection Limit Adjusted: Insufficient Sample
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRQC	Refer to report remarks for information regarding this QC result.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
625-ACID-EXTRA-WT	Water	EPA 8270 Acid Extractables	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD.			
625-WT	Water	EPA 8270 Extractables	SW846 8270
Aqueous samples are extracted and extracts are analyzed on GC/MSD. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.			
N-nitrosodiphenylamine is reported as diphenylamine. N-nitrosodiphenylamine decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine. (EPA 8270D)			
ALK-WT	Water	Alkalinity, Total (as CaCO <sub>3</sub> )	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

CN-TOT-WT	Water	Cyanide, Total	ISO 14403-2
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## Reference Information

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

COD-T-WT	Water	Chemical Oxygen Demand	APHA 5220 D
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This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method.

CR-CR6-IC-WT	Water	Chromium +6	EPA 7199
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This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B
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Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510
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Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B
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Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-NH3-UNION-CLI-WT	Water	Un-ionized ammonia	CALCULATION
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F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
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Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
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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.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.

PH,TEMP-CLIENT-WT	Water	pH & Temperature	Results supplied by client
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## Reference Information

PH-WT                      Water              pH    APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PHENOLS-4AAP-WT              Water              Phenol (4AAP)    EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.

SO4-IC-N-WT                      Water              Sulfate in Water by IC    EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT                      Water              Total Dissolved Solids    APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SOLIDS-TSS-WT                      Water              Suspended solids    APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104–1°C for a minimum of four hours or until a constant weight is achieved.

THM-SUM-PPB-CALC-WT              Water              Total Trihalomethanes (THMs)    CALCULATION

Total Trihalomethanes (THMs) represents the sum of bromodichloromethane, bromoform, chlorodibromomethane and chloroform. For the purpose of calculation, results less than the detection limit (DL) are treated as zero.

TKN-F-WT                      Water              TKN in Water by Fluorescence    J. ENVIRON. MONIT., 2005,7,37-42,RSC

Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection

VOC-ROU-HS-WT                      Water              Volatile Organic Compounds    SW846 8260

Aqueous samples are analyzed by headspace-GC/MS.

XYLENES-SUM-CALC-              Water              Sum of Xylene Isomer    CALCULATION  
WT    Concentrations

Total xylenes represents the sum of o-xylene and m&p-xylene.

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\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

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*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:*

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Laboratory Definition Code	Laboratory Location
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WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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### 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 weight of sample

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

Workorder: L2694108

Report Date: 30-MAR-22

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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>625-ACID-EXTRA-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5751680</b>							
<b>WG3710971-2</b>	<b>LCS</b>							
2,3,6-Trichlorophenol			95.4		%		50-130	30-MAR-22
<b>WG3710971-1</b>	<b>MB</b>							
2,3,6-Trichlorophenol			<0.20		ug/L		0.2	30-MAR-22
Surrogate: 2,4,6-Tribromophenol			95.3		%		40-150	30-MAR-22
<b>625-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5751579</b>							
<b>WG3710971-2</b>	<b>LCS</b>							
1-Methylnaphthalene			78.9		%		50-140	30-MAR-22
1,2-Dichlorobenzene			73.0		%		40-130	30-MAR-22
1,2,4-Trichlorobenzene			67.2		%		50-130	30-MAR-22
1,3-Dichlorobenzene			64.2		%		50-140	30-MAR-22
1,4-Dichlorobenzene			67.9		%		40-130	30-MAR-22
2-Chlorophenol			99.9		%		65-130	30-MAR-22
2-Methylnaphthalene			85.2		%		50-140	30-MAR-22
2,3,4,5-Tetrachlorophenol			125.2		%		50-130	30-MAR-22
2,3,4,6-Tetrachlorophenol			129.3		%		65-130	30-MAR-22
2,4-Dichlorophenol			114.0		%		65-130	30-MAR-22
2,4-Dimethylphenol			118.4		%		30-130	30-MAR-22
2,4-Dinitrophenol			111.0		%		40-140	30-MAR-22
2,4-Dinitrotoluene			111.5		%		50-140	30-MAR-22
2,4,5-Trichlorophenol			124.2		%		65-130	30-MAR-22
2,4,6-Trichlorophenol			126.3		%		65-130	30-MAR-22
2,6-Dinitrotoluene			107.9		%		50-140	30-MAR-22
3,3-Dichlorobenzidine			77.3		%		50-140	30-MAR-22
4-Chloroaniline			59.6		%		30-140	30-MAR-22
Acenaphthene			91.1		%		50-140	30-MAR-22
Acenaphthylene			87.4		%		50-140	30-MAR-22
Anthracene			96.5		%		50-140	30-MAR-22
Benzo(a)anthracene			105.4		%		50-140	30-MAR-22
Benzo(a)pyrene			88.5		%		60-130	30-MAR-22
Benzo(b)fluoranthene			83.1		%		50-140	30-MAR-22
Benzo(ghi)perylene			100.1		%		50-140	30-MAR-22
Benzo(k)fluoranthene			107.8		%		50-140	30-MAR-22
Bis(2-chloroethyl)ether			94.9		%		50-140	30-MAR-22



### Quality Control Report

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Client: GHD Limited (Waterloo)  
 455 PHILLIP STREET  
 WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>625-WT</b>	<b>Water</b>							
<b>Batch</b>	<b>R5751579</b>							
<b>WG3710971-2 LCS</b>								
Bis(2-ethylhexyl)phthalate			114.6		%		50-140	30-MAR-22
Chrysene			106.2		%		50-140	30-MAR-22
Dibenz(a,h)anthracene			96.3		%		50-140	30-MAR-22
Diethylphthalate			96.9		%		50-140	30-MAR-22
Dimethylphthalate			95.0		%		50-140	30-MAR-22
Fluoranthene			101.3		%		50-140	30-MAR-22
Fluorene			96.3		%		50-140	30-MAR-22
Hexachlorobenzene			92.2		%		40-130	30-MAR-22
Hexachlorobutadiene			52.3		%		40-130	30-MAR-22
Indeno(1,2,3-cd)pyrene			92.2		%		50-140	30-MAR-22
Naphthalene			86.4		%		50-140	30-MAR-22
Pentachlorophenol			146.5	LCS-H	%		60-130	30-MAR-22
Perylene			94.2		%		50-140	30-MAR-22
Phenanthrene			95.2		%		50-140	30-MAR-22
Pyrene			99.6		%		50-140	30-MAR-22
<b>WG3710971-1 MB</b>								
1-Methylnaphthalene			<0.40		ug/L		0.4	30-MAR-22
1,2-Dichlorobenzene			<0.40		ug/L		0.4	30-MAR-22
1,2,4-Trichlorobenzene			<0.40		ug/L		0.4	30-MAR-22
1,3-Dichlorobenzene			<0.40		ug/L		0.4	30-MAR-22
1,4-Dichlorobenzene			<0.40		ug/L		0.4	30-MAR-22
2-Chlorophenol			<0.30		ug/L		0.3	30-MAR-22
2-Methylnaphthalene			<0.40		ug/L		0.4	30-MAR-22
2,3,4,5-Tetrachlorophenol			<0.50		ug/L		0.5	30-MAR-22
2,3,4,6-Tetrachlorophenol			<0.50		ug/L		0.5	30-MAR-22
2,4-Dichlorophenol			<0.30		ug/L		0.3	30-MAR-22
2,4-Dimethylphenol			<0.50		ug/L		0.5	30-MAR-22
2,4-Dinitrophenol			<1.0		ug/L		1	30-MAR-22
2,4-Dinitrotoluene			<0.40		ug/L		0.4	30-MAR-22
2,4,5-Trichlorophenol			<0.50		ug/L		0.5	30-MAR-22
2,4,6-Trichlorophenol			<0.50		ug/L		0.5	30-MAR-22
2,6-Dinitrotoluene			<0.40		ug/L		0.4	30-MAR-22
3,3-Dichlorobenzidine			<0.40		ug/L		0.4	30-MAR-22
4-Chloroaniline			<0.40		ug/L		0.4	30-MAR-22



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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
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**625-WT** Water

Batch R5751579

**WG3710971-1 MB**

Acenaphthene			<0.20		ug/L		0.2	30-MAR-22
Acenaphthylene			<0.20		ug/L		0.2	30-MAR-22
Anthracene			<0.20		ug/L		0.2	30-MAR-22
Benzo(a)anthracene			<0.20		ug/L		0.2	30-MAR-22
Benzo(a)pyrene			<0.050		ug/L		0.05	30-MAR-22
Benzo(b)fluoranthene			<0.20		ug/L		0.2	30-MAR-22
Benzo(ghi)perylene			<0.20		ug/L		0.2	30-MAR-22
Benzo(k)fluoranthene			<0.20		ug/L		0.2	30-MAR-22
Bis(2-chloroethyl)ether			<0.40		ug/L		0.4	30-MAR-22
Bis(2-ethylhexyl)phthalate			<1.0		ug/L		1	30-MAR-22
Chrysene			<0.20		ug/L		0.2	30-MAR-22
Dibenz(a,h)anthracene			<0.20		ug/L		0.2	30-MAR-22
Diethylphthalate			<0.20		ug/L		0.2	30-MAR-22
Dimethylphthalate			<0.20		ug/L		0.2	30-MAR-22
Fluoranthene			<0.20		ug/L		0.2	30-MAR-22
Fluorene			<0.20		ug/L		0.2	30-MAR-22
Hexachlorobenzene			<0.040		ug/L		0.04	30-MAR-22
Hexachlorobutadiene			<0.20		ug/L		0.2	30-MAR-22
Indeno(1,2,3-cd)pyrene			<0.20		ug/L		0.2	30-MAR-22
Naphthalene			<0.20		ug/L		0.2	30-MAR-22
Pentachlorophenol			<0.50		ug/L		0.5	30-MAR-22
Perylene			<0.20		ug/L		0.2	30-MAR-22
Phenanthrene			<0.20		ug/L		0.2	30-MAR-22
Pyrene			<0.20		ug/L		0.2	30-MAR-22
Surrogate: 2-Fluorobiphenyl			89.8		%		40-130	30-MAR-22
Surrogate: Nitrobenzene d5			92.7		%		40-130	30-MAR-22
Surrogate: d14-Terphenyl			109.0		%		40-130	30-MAR-22

**ALK-WT** Water

Batch R5750260

**WG3709560-4 DUP**

**WG3709560-3**

Alkalinity, Total (as CaCO3)		222	219		mg/L	1.2	20	24-MAR-22
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**WG3709560-2 LCS**

Alkalinity, Total (as CaCO3)			100.5		%		85-115	24-MAR-22
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**WG3709560-1 MB**



### Quality Control Report

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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>ALK-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750260</b>							
<b>WG3709560-1</b>	<b>MB</b>							
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	24-MAR-22
<b>BR-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750162</b>							
<b>WG3709675-19</b>	<b>DUP</b>	<b>L2694108-3</b>						
Bromide (Br)		1.43	1.44		mg/L	0.5	20	24-MAR-22
<b>WG3709675-17</b>	<b>LCS</b>							
Bromide (Br)			103.5		%		85-115	24-MAR-22
<b>WG3709675-16</b>	<b>MB</b>							
Bromide (Br)			<0.10		mg/L		0.1	24-MAR-22
<b>WG3709675-20</b>	<b>MS</b>	<b>L2694108-3</b>						
Bromide (Br)			N/A	MS-B	%		-	24-MAR-22
<b>CL-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750162</b>							
<b>WG3709675-19</b>	<b>DUP</b>	<b>L2694108-3</b>						
Chloride (Cl)		49.9	49.9		mg/L	0.0	20	24-MAR-22
<b>WG3709675-17</b>	<b>LCS</b>							
Chloride (Cl)			103.4		%		90-110	24-MAR-22
<b>WG3709675-16</b>	<b>MB</b>							
Chloride (Cl)			<0.50		mg/L		0.5	24-MAR-22
<b>WG3709675-20</b>	<b>MS</b>	<b>L2694108-3</b>						
Chloride (Cl)			103.2		%		75-125	24-MAR-22
<b>CN-TOT-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750210</b>							
<b>WG3709724-3</b>	<b>DUP</b>	<b>WG3709724-5</b>						
Cyanide, Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	24-MAR-22
<b>WG3709724-2</b>	<b>LCS</b>							
Cyanide, Total			100.2		%		80-120	24-MAR-22
<b>WG3709724-1</b>	<b>MB</b>							
Cyanide, Total			<0.0020		mg/L		0.002	24-MAR-22
<b>WG3709724-4</b>	<b>MS</b>	<b>WG3709724-5</b>						
Cyanide, Total			97.7		%		70-130	24-MAR-22
<b>COD-T-WT</b>		<b>Water</b>						





### Quality Control Report

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Report Date: 30-MAR-22

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Client: GHD Limited (Waterloo)  
 455 PHILLIP STREET  
 WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>COD-T-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750062</b>							
<b>WG3709727-7</b>	<b>DUP</b>	<b>L2694101-3</b>						
COD		15	17		mg/L	12	20	24-MAR-22
<b>WG3709727-6</b>	<b>LCS</b>		105.0		%		85-115	24-MAR-22
COD								
<b>WG3709727-5</b>	<b>MB</b>		<10		mg/L		10	24-MAR-22
COD								
<b>WG3709727-8</b>	<b>MS</b>	<b>L2694101-3</b>	107.8		%		75-125	24-MAR-22
COD								
<b>CR-CR6-IC-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750232</b>							
<b>WG3709612-4</b>	<b>DUP</b>	<b>WG3709612-3</b>						
Chromium, Hexavalent		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-MAR-22
<b>WG3709612-2</b>	<b>LCS</b>		102.4		%		80-120	24-MAR-22
Chromium, Hexavalent								
<b>WG3709612-1</b>	<b>MB</b>		<0.00050		mg/L		0.0005	24-MAR-22
Chromium, Hexavalent								
<b>WG3709612-5</b>	<b>MS</b>	<b>WG3709612-3</b>	102.2		%		70-130	24-MAR-22
Chromium, Hexavalent								
<b>DOC-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750251</b>							
<b>WG3709449-3</b>	<b>DUP</b>	<b>L2694108-1</b>						
Dissolved Organic Carbon		4.93	5.10		mg/L	3.5	20	24-MAR-22
<b>WG3709449-2</b>	<b>LCS</b>		103.1		%		80-120	24-MAR-22
Dissolved Organic Carbon								
<b>WG3709449-1</b>	<b>MB</b>		<0.50		mg/L		0.5	24-MAR-22
Dissolved Organic Carbon								
<b>WG3709449-4</b>	<b>MS</b>	<b>L2694108-1</b>	103.2		%		70-130	24-MAR-22
Dissolved Organic Carbon								
<b>EC-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750260</b>							
<b>WG3709560-4</b>	<b>DUP</b>	<b>WG3709560-3</b>						
Conductivity		643	646		umhos/cm	0.5	10	24-MAR-22
<b>WG3709560-2</b>	<b>LCS</b>		95.9		%		90-110	24-MAR-22
Conductivity								
<b>WG3709560-1</b>	<b>MB</b>		<1.0		umhos/cm		1	24-MAR-22
Conductivity								
<b>F-IC-N-WT</b>								
	<b>Water</b>							



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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>F-IC-N-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750162</b>							
<b>WG3709675-19</b>	<b>DUP</b>	<b>L2694108-3</b>						
Fluoride (F)		1.12	1.12		mg/L	0.3	20	24-MAR-22
<b>WG3709675-17</b>	<b>LCS</b>							
Fluoride (F)			106.6		%		90-110	24-MAR-22
<b>WG3709675-16</b>	<b>MB</b>							
Fluoride (F)			<0.020		mg/L		0.02	24-MAR-22
<b>WG3709675-20</b>	<b>MS</b>	<b>L2694108-3</b>						
Fluoride (F)			N/A	MS-B	%		-	24-MAR-22
<b>HG-T-CVAA-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750023</b>							
<b>WG3709561-3</b>	<b>DUP</b>	<b>L2694108-1</b>						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-MAR-22
<b>WG3709561-2</b>	<b>LCS</b>							
Mercury (Hg)-Total			97.4		%		80-120	24-MAR-22
<b>WG3709561-1</b>	<b>MB</b>							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	24-MAR-22
<b>WG3709561-4</b>	<b>MS</b>	<b>L2694108-2</b>						
Mercury (Hg)-Total			91.0		%		70-130	24-MAR-22
<b>MET-T-CCMS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5749909</b>							
<b>WG3709388-4</b>	<b>DUP</b>	<b>WG3709388-3</b>						
Aluminum (Al)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	24-MAR-22
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-MAR-22
Arsenic (As)-Total		0.00015	0.00016		mg/L	4.5	20	24-MAR-22
Barium (Ba)-Total		0.00045	0.00047		mg/L	3.4	20	24-MAR-22
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-MAR-22
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-MAR-22
Boron (B)-Total		0.025	0.026		mg/L	2.7	20	24-MAR-22
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	24-MAR-22
Calcium (Ca)-Total		0.341	0.336		mg/L	1.2	20	24-MAR-22
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	24-MAR-22
Copper (Cu)-Total		0.0242	0.0241		mg/L	0.4	20	24-MAR-22
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-MAR-22
Lead (Pb)-Total		0.000365	0.000362		mg/L	0.6	20	24-MAR-22
Magnesium (Mg)-Total		0.115	0.116		mg/L	0.4	20	24-MAR-22
Manganese (Mn)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-MAR-22



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Client: GHD Limited (Waterloo)  
 455 PHILLIP STREET  
 WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5749909</b>							
<b>WG3709388-4</b>	<b>DUP</b>	<b>WG3709388-3</b>						
Molybdenum (Mo)-Total		0.000238	0.000225		mg/L	5.8	20	24-MAR-22
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-MAR-22
Potassium (K)-Total		0.109	0.110		mg/L	0.4	20	24-MAR-22
Selenium (Se)-Total		0.000429	0.000445		mg/L	3.8	20	24-MAR-22
Silicon (Si)-Total		3.04	3.04		mg/L	0.0	20	24-MAR-22
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	24-MAR-22
Sodium (Na)-Total		179	181		mg/L	1.4	20	24-MAR-22
Strontium (Sr)-Total		0.0022	0.0021		mg/L	5.5	20	24-MAR-22
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	24-MAR-22
Tin (Sn)-Total		0.00014	0.00013		mg/L	6.6	20	24-MAR-22
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	24-MAR-22
Zinc (Zn)-Total		0.0038	0.0039		mg/L	2.9	20	24-MAR-22
<b>WG3709388-2</b>	<b>LCS</b>							
Aluminum (Al)-Total			95.7		%		80-120	24-MAR-22
Antimony (Sb)-Total			98.2		%		80-120	24-MAR-22
Arsenic (As)-Total			96.5		%		80-120	24-MAR-22
Barium (Ba)-Total			97.3		%		80-120	24-MAR-22
Beryllium (Be)-Total			91.9		%		80-120	24-MAR-22
Bismuth (Bi)-Total			96.9		%		80-120	24-MAR-22
Boron (B)-Total			95.9		%		80-120	24-MAR-22
Cadmium (Cd)-Total			97.2		%		80-120	24-MAR-22
Calcium (Ca)-Total			97.6		%		80-120	24-MAR-22
Cobalt (Co)-Total			91.2		%		80-120	24-MAR-22
Copper (Cu)-Total			90.2		%		80-120	24-MAR-22
Iron (Fe)-Total			94.3		%		80-120	24-MAR-22
Lead (Pb)-Total			97.6		%		80-120	24-MAR-22
Magnesium (Mg)-Total			101.5		%		80-120	24-MAR-22
Manganese (Mn)-Total			93.7		%		80-120	24-MAR-22
Molybdenum (Mo)-Total			91.2		%		80-120	24-MAR-22
Nickel (Ni)-Total			91.5		%		80-120	24-MAR-22
Potassium (K)-Total			95.6		%		80-120	24-MAR-22
Selenium (Se)-Total			98.1		%		80-120	24-MAR-22
Silicon (Si)-Total			96.0		%		60-140	24-MAR-22



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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5749909</b>							
<b>WG3709388-2</b>	<b>LCS</b>							
Silver (Ag)-Total			87.6		%		80-120	24-MAR-22
Sodium (Na)-Total			98.0		%		80-120	24-MAR-22
Strontium (Sr)-Total			96.8		%		80-120	24-MAR-22
Thallium (Tl)-Total			99.1		%		80-120	24-MAR-22
Tin (Sn)-Total			96.8		%		80-120	24-MAR-22
Vanadium (V)-Total			95.9		%		80-120	24-MAR-22
Zinc (Zn)-Total			95.6		%		80-120	24-MAR-22
<b>WG3709388-1</b>	<b>MB</b>							
Aluminum (Al)-Total			<0.0050		mg/L		0.005	24-MAR-22
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Arsenic (As)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Barium (Ba)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	24-MAR-22
Boron (B)-Total			<0.010		mg/L		0.01	24-MAR-22
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	24-MAR-22
Calcium (Ca)-Total			<0.050		mg/L		0.05	24-MAR-22
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Copper (Cu)-Total			<0.00050		mg/L		0.0005	24-MAR-22
Iron (Fe)-Total			<0.010		mg/L		0.01	24-MAR-22
Lead (Pb)-Total			<0.000050		mg/L		0.00005	24-MAR-22
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	24-MAR-22
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	24-MAR-22
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	24-MAR-22
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	24-MAR-22
Potassium (K)-Total			<0.050		mg/L		0.05	24-MAR-22
Selenium (Se)-Total			<0.000050		mg/L		0.00005	24-MAR-22
Silicon (Si)-Total			<0.10		mg/L		0.1	24-MAR-22
Silver (Ag)-Total			<0.000050		mg/L		0.00005	24-MAR-22
Sodium (Na)-Total			<0.050		mg/L		0.05	24-MAR-22
Strontium (Sr)-Total			<0.0010		mg/L		0.001	24-MAR-22
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	24-MAR-22
Tin (Sn)-Total			<0.00010		mg/L		0.0001	24-MAR-22
Vanadium (V)-Total			<0.00050		mg/L		0.0005	24-MAR-22



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 455 PHILLIP STREET  
 WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>MET-T-CCMS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5749909</b>							
<b>WG3709388-1</b>	<b>MB</b>							
Zinc (Zn)-Total			<0.0030		mg/L		0.003	24-MAR-22
<b>WG3709388-5</b>	<b>MS</b>	<b>WG3709388-6</b>						
Aluminum (Al)-Total			N/A	MS-B	%		-	24-MAR-22
Antimony (Sb)-Total			101.6		%		70-130	24-MAR-22
Arsenic (As)-Total			97.5		%		70-130	24-MAR-22
Barium (Ba)-Total			N/A	MS-B	%		-	24-MAR-22
Beryllium (Be)-Total			90.7		%		70-130	24-MAR-22
Bismuth (Bi)-Total			91.5		%		70-130	24-MAR-22
Boron (B)-Total			91.9		%		70-130	24-MAR-22
Cadmium (Cd)-Total			96.2		%		70-130	24-MAR-22
Calcium (Ca)-Total			N/A	MS-B	%		-	24-MAR-22
Cobalt (Co)-Total			92.1		%		70-130	24-MAR-22
Copper (Cu)-Total			89.0		%		70-130	24-MAR-22
Iron (Fe)-Total			N/A	MS-B	%		-	24-MAR-22
Lead (Pb)-Total			94.0		%		70-130	24-MAR-22
Magnesium (Mg)-Total			N/A	MS-B	%		-	24-MAR-22
Manganese (Mn)-Total			N/A	MS-B	%		-	24-MAR-22
Molybdenum (Mo)-Total			94.4		%		70-130	24-MAR-22
Nickel (Ni)-Total			90.8		%		70-130	24-MAR-22
Potassium (K)-Total			94.4		%		70-130	24-MAR-22
Selenium (Se)-Total			98.1		%		70-130	24-MAR-22
Silicon (Si)-Total			N/A	MS-B	%		-	24-MAR-22
Silver (Ag)-Total			87.8		%		70-130	24-MAR-22
Sodium (Na)-Total			N/A	MS-B	%		-	24-MAR-22
Strontium (Sr)-Total			N/A	MS-B	%		-	24-MAR-22
Thallium (Tl)-Total			97.5		%		70-130	24-MAR-22
Tin (Sn)-Total			97.6		%		70-130	24-MAR-22
Vanadium (V)-Total			98.9		%		70-130	24-MAR-22
Zinc (Zn)-Total			N/A	MS-B	%		-	24-MAR-22
<b>NH3-F-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750741</b>							
<b>WG3709534-3</b>	<b>DUP</b>	<b>WG3709534-5</b>						
Ammonia, Total (as N)		0.031	0.031		mg/L	1.0	20	25-MAR-22
<b>WG3709534-2</b>	<b>LCS</b>							



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 WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>NH3-F-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750741</b>							
<b>WG3709534-2</b>	<b>LCS</b>							
Ammonia, Total (as N)			104.8		%		85-115	25-MAR-22
<b>WG3709534-1</b>	<b>MB</b>							
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-MAR-22
<b>WG3709534-4</b>	<b>MS</b>	<b>WG3709534-5</b>						
Ammonia, Total (as N)			101.8		%		75-125	25-MAR-22
<b>NO2-IC-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750162</b>							
<b>WG3709675-19</b>	<b>DUP</b>	<b>L2694108-3</b>						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	24-MAR-22
<b>WG3709675-17</b>	<b>LCS</b>							
Nitrite (as N)			102.4		%		90-110	24-MAR-22
<b>WG3709675-16</b>	<b>MB</b>							
Nitrite (as N)			<0.010		mg/L		0.01	24-MAR-22
<b>WG3709675-20</b>	<b>MS</b>	<b>L2694108-3</b>						
Nitrite (as N)			103.5		%		75-125	24-MAR-22
<b>NO3-IC-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750162</b>							
<b>WG3709675-19</b>	<b>DUP</b>	<b>L2694108-3</b>						
Nitrate (as N)		0.241	0.241		mg/L	0.1	20	24-MAR-22
<b>WG3709675-17</b>	<b>LCS</b>							
Nitrate (as N)			102.3		%		90-110	24-MAR-22
<b>WG3709675-16</b>	<b>MB</b>							
Nitrate (as N)			<0.020		mg/L		0.02	24-MAR-22
<b>WG3709675-20</b>	<b>MS</b>	<b>L2694108-3</b>						
Nitrate (as N)			103.4		%		75-125	24-MAR-22
<b>P-T-COL-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5751788</b>							
<b>WG3711031-3</b>	<b>DUP</b>	<b>L2694590-3</b>						
Phosphorus, Total		0.0189	0.0182		mg/L	3.9	20	30-MAR-22
<b>WG3711031-2</b>	<b>LCS</b>							
Phosphorus, Total			96.8		%		80-120	30-MAR-22
<b>WG3711031-1</b>	<b>MB</b>							
Phosphorus, Total			0.0032	RRQC	mg/L		0.003	30-MAR-22
COMMENTS: RRQC:RRQC: Reported Total Phosphorus samples are not affected by observed Method Blank background								
<b>WG3711031-4</b>	<b>MS</b>	<b>L2694590-3</b>						
Phosphorus, Total			72.4		%		70-130	30-MAR-22



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Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PH-WT</b>		<b>Water</b>						
Batch	R5750260							
WG3709560-4	DUP	WG3709560-3						
pH		7.85	7.83	J	pH units	0.02	0.2	24-MAR-22
WG3709560-2	LCS							
pH			7.05		pH units		6.9-7.1	24-MAR-22
<b>PHENOLS-4AAP-WT</b>		<b>Water</b>						
Batch	R5750872							
WG3710102-3	DUP	L2694356-1						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	25-MAR-22
WG3710102-2	LCS							
Phenols (4AAP)			95.3		%		85-115	25-MAR-22
WG3710102-1	MB							
Phenols (4AAP)			<0.0010		mg/L		0.001	25-MAR-22
WG3710102-4	MS	L2694356-1						
Phenols (4AAP)			106.1		%		75-125	25-MAR-22
<b>SO4-IC-N-WT</b>		<b>Water</b>						
Batch	R5750162							
WG3709675-19	DUP	L2694108-3						
Sulfate (SO4)		197	197		mg/L	0.1	20	24-MAR-22
WG3709675-17	LCS							
Sulfate (SO4)			104.9		%		90-110	24-MAR-22
WG3709675-16	MB							
Sulfate (SO4)			<0.30		mg/L		0.3	24-MAR-22
WG3709675-20	MS	L2694108-3						
Sulfate (SO4)			N/A	MS-B	%		-	24-MAR-22
<b>SOLIDS-TDS-WT</b>		<b>Water</b>						
Batch	R5750678							
WG3710119-3	DUP	L2694590-23						
Total Dissolved Solids		225	229		mg/L	1.8	20	25-MAR-22
WG3710119-2	LCS							
Total Dissolved Solids			91.9		%		85-115	25-MAR-22
WG3710119-1	MB							
Total Dissolved Solids			<10		mg/L		10	25-MAR-22
<b>SOLIDS-TSS-WT</b>		<b>Water</b>						
Batch	R5750898							
WG3710117-3	DUP	L2694590-23						
Total Suspended Solids		10.7	8.7	J	mg/L	2.0	6	26-MAR-22
WG3710117-2	LCS							



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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>SOLIDS-TSS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750898</b>							
<b>WG3710117-2</b>	<b>LCS</b>							
Total Suspended Solids			87.8		%		85-115	26-MAR-22
<b>WG3710117-1</b>	<b>MB</b>							
Total Suspended Solids			<3.0		mg/L		3	26-MAR-22
<b>TKN-F-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750843</b>							
<b>WG3710402-3</b>	<b>DUP</b>	<b>L2694275-1</b>						
Total Kjeldahl Nitrogen		0.362	0.383		mg/L	5.6	20	28-MAR-22
<b>WG3710402-2</b>	<b>LCS</b>							
Total Kjeldahl Nitrogen			109.1		%		75-125	28-MAR-22
<b>WG3710402-1</b>	<b>MB</b>							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	28-MAR-22
<b>WG3710402-4</b>	<b>MS</b>	<b>L2694275-1</b>						
Total Kjeldahl Nitrogen			117.5		%		70-130	28-MAR-22
<b>VOC-ROU-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-4</b>	<b>DUP</b>	<b>WG3710531-3</b>						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	28-MAR-22
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Acetone		65	65		ug/L	0.6	30	28-MAR-22
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Bromodichloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Bromoform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	28-MAR-22





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Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-ROU-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-4</b>	<b>DUP</b>	<b>WG3710531-3</b>						
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Chloroethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	28-MAR-22
Dibromochloromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Dichlorodifluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Dichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Ethylbenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	28-MAR-22
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	28-MAR-22
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	28-MAR-22
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
MTBE		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	28-MAR-22
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Toluene		<0.40	<0.40	RPD-NA	ug/L	N/A	30	28-MAR-22
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	28-MAR-22
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
Trichlorofluoromethane		<1.0	<1.0	RPD-NA	ug/L	N/A	30	28-MAR-22
Vinyl chloride		<0.50	<0.50	RPD-NA	ug/L	N/A	30	28-MAR-22
<b>WG3710531-1</b>	<b>LCS</b>							
1,1,1,2-Tetrachloroethane			96.9		%		70-130	28-MAR-22
1,1,2,2-Tetrachloroethane			99.7		%		70-130	28-MAR-22
1,1,1-Trichloroethane			91.5		%		70-130	28-MAR-22
1,1,2-Trichloroethane			97.8		%		70-130	28-MAR-22
1,2-Dibromoethane			95.1		%		70-130	28-MAR-22
1,1-Dichloroethane			89.6		%		70-130	28-MAR-22
1,1-Dichloroethylene			86.6		%		70-130	28-MAR-22
1,2-Dichlorobenzene			95.3		%		70-130	28-MAR-22
1,2-Dichloroethane			102.2		%		70-130	28-MAR-22



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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-ROU-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-1</b>	<b>LCS</b>							
1,2-Dichloropropane			101.2		%		70-130	28-MAR-22
1,3-Dichlorobenzene			96.1		%		70-130	28-MAR-22
1,4-Dichlorobenzene			96.2		%		70-130	28-MAR-22
Acetone			102.8		%		60-140	28-MAR-22
Benzene			90.0		%		70-130	28-MAR-22
Bromodichloromethane			107.0		%		70-130	28-MAR-22
Bromoform			103.6		%		70-130	28-MAR-22
Bromomethane			79.2		%		60-140	28-MAR-22
Carbon tetrachloride			101.5		%		70-130	28-MAR-22
Chlorobenzene			93.0		%		70-130	28-MAR-22
Chloroethane			88.9		%		70-130	28-MAR-22
Chloroform			94.7		%		70-130	28-MAR-22
cis-1,2-Dichloroethylene			90.5		%		70-130	28-MAR-22
cis-1,3-Dichloropropene			92.6		%		70-130	28-MAR-22
Dibromochloromethane			100.2		%		70-130	28-MAR-22
Dichlorodifluoromethane			57.7		%		50-140	28-MAR-22
Dichloromethane			94.7		%		70-130	28-MAR-22
Ethylbenzene			87.5		%		70-130	28-MAR-22
m+p-Xylenes			90.8		%		70-130	28-MAR-22
Methyl Ethyl Ketone			95.8		%		60-140	28-MAR-22
Methyl Isobutyl Ketone			85.5		%		50-150	28-MAR-22
n-Hexane			82.2		%		70-130	28-MAR-22
MTBE			93.8		%		70-130	28-MAR-22
o-Xylene			87.2		%		70-130	28-MAR-22
Styrene			87.1		%		70-130	28-MAR-22
Tetrachloroethylene			95.2		%		70-130	28-MAR-22
Toluene			87.1		%		70-130	28-MAR-22
trans-1,2-Dichloroethylene			93.0		%		70-130	28-MAR-22
trans-1,3-Dichloropropene			87.7		%		70-130	28-MAR-22
Trichloroethylene			103.8		%		70-130	28-MAR-22
Trichlorofluoromethane			84.6		%		60-140	28-MAR-22
Vinyl chloride			72.7		%		60-140	28-MAR-22
<b>WG3710531-2</b>	<b>MB</b>							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	28-MAR-22



## Quality Control Report

Workorder: L2694108

Report Date: 30-MAR-22

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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-ROU-HS-WT</b>		<b>Water</b>						
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-2 MB</b>								
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	28-MAR-22
1,1,1-Trichloroethane			<0.50		ug/L		0.5	28-MAR-22
1,1,2-Trichloroethane			<0.50		ug/L		0.5	28-MAR-22
1,2-Dibromoethane			<0.20		ug/L		0.2	28-MAR-22
1,1-Dichloroethane			<0.50		ug/L		0.5	28-MAR-22
1,1-Dichloroethylene			<0.50		ug/L		0.5	28-MAR-22
1,2-Dichlorobenzene			<0.50		ug/L		0.5	28-MAR-22
1,2-Dichloroethane			<0.50		ug/L		0.5	28-MAR-22
1,2-Dichloropropane			<0.50		ug/L		0.5	28-MAR-22
1,3-Dichlorobenzene			<0.50		ug/L		0.5	28-MAR-22
1,4-Dichlorobenzene			<0.50		ug/L		0.5	28-MAR-22
Acetone			<20		ug/L		20	28-MAR-22
Benzene			<0.50		ug/L		0.5	28-MAR-22
Bromodichloromethane			<1.0		ug/L		1	28-MAR-22
Bromoform			<1.0		ug/L		1	28-MAR-22
Bromomethane			<0.50		ug/L		0.5	28-MAR-22
Carbon tetrachloride			<0.20		ug/L		0.2	28-MAR-22
Chlorobenzene			<0.50		ug/L		0.5	28-MAR-22
Chloroethane			<1.0		ug/L		1	28-MAR-22
Chloroform			<1.0		ug/L		1	28-MAR-22
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-MAR-22
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	28-MAR-22
Dibromochloromethane			<1.0		ug/L		1	28-MAR-22
Dichlorodifluoromethane			<1.0		ug/L		1	28-MAR-22
Dichloromethane			<2.0		ug/L		2	28-MAR-22
Ethylbenzene			<0.50		ug/L		0.5	28-MAR-22
m+p-Xylenes			<0.40		ug/L		0.4	28-MAR-22
Methyl Ethyl Ketone			<20		ug/L		20	28-MAR-22
Methyl Isobutyl Ketone			<20		ug/L		20	28-MAR-22
n-Hexane			<0.50		ug/L		0.5	28-MAR-22
MTBE			<0.50		ug/L		0.5	28-MAR-22
o-Xylene			<0.30		ug/L		0.3	28-MAR-22
Styrene			<0.50		ug/L		0.5	28-MAR-22



## Quality Control Report

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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-ROU-HS-WT</b>								
	<b>Water</b>							
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-2 MB</b>								
Tetrachloroethylene			<0.50		ug/L		0.5	28-MAR-22
Toluene			<0.40		ug/L		0.4	28-MAR-22
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	28-MAR-22
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	28-MAR-22
Trichloroethylene			<0.50		ug/L		0.5	28-MAR-22
Trichlorofluoromethane			<1.0		ug/L		1	28-MAR-22
Vinyl chloride			<0.50		ug/L		0.5	28-MAR-22
Surrogate: 1,4-Difluorobenzene			101.6		%		70-130	28-MAR-22
Surrogate: 4-Bromofluorobenzene			98.9		%		70-130	28-MAR-22
<b>WG3710531-5 MS</b>		<b>WG3710531-3</b>						
1,1,1,2-Tetrachloroethane			93.8		%		50-150	28-MAR-22
1,1,1,2,2-Tetrachloroethane			100.3		%		50-150	28-MAR-22
1,1,1-Trichloroethane			86.2		%		50-150	28-MAR-22
1,1,2-Trichloroethane			97.3		%		50-150	28-MAR-22
1,2-Dibromoethane			95.2		%		50-150	28-MAR-22
1,1-Dichloroethane			85.6		%		50-150	28-MAR-22
1,1-Dichloroethylene			79.3		%		50-150	28-MAR-22
1,2-Dichlorobenzene			92.3		%		50-150	28-MAR-22
1,2-Dichloroethane			101.3		%		50-150	28-MAR-22
1,2-Dichloropropane			99.0		%		50-150	28-MAR-22
1,3-Dichlorobenzene			91.7		%		50-150	28-MAR-22
1,4-Dichlorobenzene			92.0		%		50-150	28-MAR-22
Acetone			97.5		%		50-150	28-MAR-22
Benzene			86.2		%		50-150	28-MAR-22
Bromodichloromethane			104.5		%		50-150	28-MAR-22
Bromoform			103.6		%		50-150	28-MAR-22
Bromomethane			73.9		%		50-150	28-MAR-22
Carbon tetrachloride			94.7		%		50-150	28-MAR-22
Chlorobenzene			89.7		%		50-150	28-MAR-22
Chloroethane			82.1		%		50-150	28-MAR-22
Chloroform			91.3		%		50-150	28-MAR-22
cis-1,2-Dichloroethylene			103.9		%		50-150	28-MAR-22
cis-1,3-Dichloropropene			91.4		%		50-150	28-MAR-22
Dibromochloromethane			99.2		%		50-150	28-MAR-22



### Quality Control Report

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Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

Contact: Kory Ozgun

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>VOC-ROU-HS-WT</b>	<b>Water</b>							
<b>Batch</b>	<b>R5750995</b>							
<b>WG3710531-5 MS</b>		<b>WG3710531-3</b>						
Dichlorodifluoromethane			48.4	MES	%		50-150	28-MAR-22
Dichloromethane			91.5		%		50-150	28-MAR-22
Ethylbenzene			82.7		%		50-150	28-MAR-22
m+p-Xylenes			85.9		%		50-150	28-MAR-22
Methyl Ethyl Ketone			95.8		%		50-150	28-MAR-22
Methyl Isobutyl Ketone			87.8		%		50-150	28-MAR-22
n-Hexane			74.0		%		50-150	28-MAR-22
MTBE			91.6		%		50-150	28-MAR-22
o-Xylene			83.4		%		50-150	28-MAR-22
Styrene			83.7		%		50-150	28-MAR-22
Tetrachloroethylene			87.9		%		50-150	28-MAR-22
Toluene			82.8		%		50-150	28-MAR-22
trans-1,2-Dichloroethylene			86.5		%		50-150	28-MAR-22
trans-1,3-Dichloropropene			87.2		%		50-150	28-MAR-22
Trichloroethylene			97.7		%		50-150	28-MAR-22
Trichlorofluoromethane			76.5		%		50-150	28-MAR-22
Vinyl chloride			65.0		%		50-150	28-MAR-22

# Quality Control Report

Workorder: L2694108

Report Date: 30-MAR-22

Client: GHD Limited (Waterloo)  
455 PHILLIP STREET  
WATERLOO ON N2L 3X2

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Contact: Kory Ozgun

## Legend:

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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:

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Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

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## Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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.

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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.



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Chain



L2694108-COFC

COC Number: 20 -

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**Report To** Contact and company name below will appear on the final report

Company: GHD Ltd. (Acct 13791)  
 Contact: Stephanie Berton  
 Phone: 519-884-0510

Company address below will appear on the final report

Street: 455 Philip St.  
 City/Province: Waterloo, ON  
 Postal Code: N2L 3X2

Select Report Format:  PDF  EXCEL  EDD (DIGITAL)  
 Merge QC/QCI Reports with COA  YES  NO  N/A  
 Compare Results to Criteria on Report - provide details below if box checked

Select Distribution:  EMAIL  MAIL  FAX

Email 1 or Fax: stephanie.berton@ghd.com  
 Email 2: See SSOW/PO  
 Email 3:

**Turnaround Time (TAT) Requested**

Routine [R] if received by 3pm M-F - no surcharges apply  
 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum  
 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum  
 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum  
 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum  
 Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

**Date and Time Required for all E&P TATs:**

**AFFIX ALS BARCODE LABEL HERE (ALS use only)**

**Invoice To** Same as Report To  YES  NO  
 Copy of Invoice with Report  YES  NO

**Invoice Recipients**

Select Invoice Distribution:  EMAIL  MAIL  FAX

Email 1 or Fax: Invoicing-Canada@ghd.com  
 Email 2:

For tests that can not be performed according to the TAT requested, you will be contacted.

**Project Information**

ALS Account # / Quote #: 44985-20-21  
 Job #: 44985-20-21  
 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): L2694108

ALS Contact: Rick H  
 Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
	EQ Pond Discharge	22-03-22	1100	Water
	POND D West Pond	22-03-22	1100	Water
	PONDA East Pond	22-03-22	1230	Water

**Analysis Request**

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)		
	SVOCs (SVOCC-44985-P-WT)	VOCs (VOC-ROU-HS-WT)	ALK, Conductivity, pH, TDS, TSS	Anions (Br, N2, N3, Cl, F, BR, SO4)	Phenols-4AAP, COD, TKN, TTP	DOC	NH3-Unionized Ammonia	Total Metals, Hardness-Calc-T-WT	Mercury Total	Total Cyanide, Total Cr6	REP: WT-44985-VOC	REP: WT-44985-Metals	Field Temp	Field Ph							
11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	10	8.1		
11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	10	7.8		
11	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	10	8.1		

**Drinking Water (DW) Samples<sup>1</sup> (client use)**

Are samples taken from a Regulated DW System?  
 YES  NO

Are samples for human consumption/ use?  
 YES  NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please provide field temp and field pH for unionized calculation.

**SAMPLE RECEIPT DETAILS (lab use only)**

Cooling Method:  NONE  ICE  ICE PACKS  FROZEN  COOLING INITIATED

Submission Comments identified on Sample Receipt Notification:  YES  NO

Cooler Custody Seals Intact:  YES  N/A Sample Custody Seals Intact:  YES  N/A

INITIAL COOLER TEMPERATURES °C: 4.0  
 FINAL COOLER TEMPERATURES °C:

**SHIPMENT RELEASE (client use)**

Released by: [Signature] Date: Mar 22 / 22 Time: 1500

**INITIAL SHIPMENT RECEPTION (lab use only)**

Received by: [Signature] Date: [Blank] Time: [Blank]

**FINAL SHIPMENT RECEPTION (lab use only)**

Received by: [Signature] Date: 3/22/22 Time: 1000



## CERTIFICATE OF ANALYSIS

Work Order	: <b>WT2203263</b>	Page	: 1 of 5
Client	: <b>Clean Harbors Environmental Services, Inc.</b>	Laboratory	: Waterloo - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 RR1 Corunna ON Canada N0N 1G0	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 519 864 3815	Telephone	: +1 519 886 6910
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 10:15
PO	: 735-002833	Date Analysis	: 03-May-2022
C-O-C number	: ----	Commenced	
Sampler	: Client	Issue Date	: 10-May-2022 14:48
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Khairul Intiar	Login	Administration, Waterloo, Ontario





## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
°C	degrees Celsius
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHT	Parameter exceeded recommended holding time prior to analysis.
SP	Sample was preserved at the laboratory.



## Analytical Results

WT2203263-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: STN6 - STN6 Discharge

Client sampling date / time: [03-May-2022]

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Field Tests</b>								
pH, field	----	8.10	0.01	pH units	EF001	-	04-May-2022	-
temperature, field	----	8.00	0.01	°C	EF001	-	04-May-2022	-
<b>Physical Tests</b>								
conductivity	----	810	2.0	µS/cm	E100	07-May-2022	07-May-2022	480132
hardness (as CaCO3), from total Ca/Mg	----	364	0.50	mg/L	EC100A	-	04-May-2022	-
pH	----	8.42	0.10	pH units	E108	07-May-2022	07-May-2022	480130
solids, total dissolved [TDS]	----	450	20	mg/L	E162	-	04-May-2022	476771
solids, total suspended [TSS]	----	7.6	3.0	mg/L	E160	-	04-May-2022	476784
alkalinity, total (as CaCO3)	----	280	2.0	mg/L	E290	07-May-2022	07-May-2022	480131
<b>Anions and Nutrients</b>								
ammonia, total (as N)	7664-41-7	0.0136	0.0050	mg/L	E298	06-May-2022	06-May-2022	479030
ammonia, un-ionized (as N), field	7664-41-7	0.0003	0	mg/L	EC298A	-	04-May-2022	-
bromide	24959-67-9	<0.10	0.10	mg/L	E235.Br	07-May-2022	09-May-2022	480129
chloride	16887-00-6	53.0	0.50	mg/L	E235.Cl	07-May-2022	09-May-2022	480125
fluoride	16984-48-8	0.317	0.020	mg/L	E235.F	07-May-2022	09-May-2022	480126
Kjeldahl nitrogen, total [TKN]	----	0.662	0.050	mg/L	E318	06-May-2022	06-May-2022	479031
nitrate (as N)	14797-55-8	2.35	0.020	mg/L	E235.NO3	07-May-2022	09-May-2022	480127
nitrite (as N)	14797-65-0	0.021	0.010	mg/L	E235.NO2	07-May-2022	09-May-2022	480128
phosphorus, total	7723-14-0	0.0151	0.0020	mg/L	E372-U	06-May-2022	09-May-2022	479029
sulfate (as SO4)	14808-79-8	92.4	0.30	mg/L	E235.SO4	07-May-2022	09-May-2022	480124
<b>Cyanides</b>								
cyanide, strong acid dissociable (total)	----	<0.0020	0.0020	mg/L	E333	04-May-2022	04-May-2022	477421
<b>Organic / Inorganic Carbon</b>								
carbon, dissolved organic [DOC]	----	7.65	0.50	mg/L	E358-L	04-May-2022	04-May-2022	476256
<b>Total Metals</b>								
aluminum, total	7429-90-5	0.369	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
antimony, total	7440-36-0	0.00017	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
arsenic, total	7440-38-2	0.00091	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
barium, total	7440-39-3	0.0322	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
beryllium, total	7440-41-7	<0.000020	0.000020	mg/L	E420	03-May-2022	04-May-2022	476011
bismuth, total	7440-69-9	<0.000050	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
boron, total	7440-42-8	0.047	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
cadmium, total	7440-43-9	0.0000256	0.0000050	mg/L	E420	03-May-2022	04-May-2022	476011
calcium, total	7440-70-2	81.6	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
cobalt, total	7440-48-4	0.00031	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
copper, total	7440-50-8	0.00185	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
iron, total	7439-89-6	0.397	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
lead, total	7439-92-1	0.000216	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
magnesium, total	7439-95-4	38.9	0.0050	mg/L	E420	03-May-2022	04-May-2022	476011
manganese, total	7439-96-5	0.0301	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
mercury, total	7439-97-6	<0.0000050	0.0000050	mg/L	E508	04-May-2022	04-May-2022	476234
molybdenum, total	7439-98-7	0.00875	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
nickel, total	7440-02-0	0.00181	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
potassium, total	7440-09-7	2.55	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
selenium, total	7782-49-2	0.000898	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
silicon, total	7440-21-3	1.36	0.10	mg/L	E420	03-May-2022	04-May-2022	476011
silver, total	7440-22-4	<0.000010	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
sodium, total	7440-23-5	28.3	0.050	mg/L	E420	03-May-2022	04-May-2022	476011



## Analytical Results

WT2203263-001

Sub-Matrix: **Water**  
 (Matrix: **Water**)

Client sample ID: STN6 - STN6 Discharge  
 Client sampling date / time: [03-May-2022]

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Total Metals</b>								
strontium, total	7440-24-6	0.433	0.00020	mg/L	E420	03-May-2022	04-May-2022	476011
thallium, total	7440-28-0	0.000016	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
tin, total	7440-31-5	<0.00010	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
vanadium, total	7440-62-2	0.00149	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
zinc, total	7440-66-6	<0.0030	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
<b>Speciated Metals</b>								
chromium, hexavalent [Cr VI], total	18540-29-9	<0.00050	0.00050	mg/L	E532	-	04-May-2022	476554
<b>Aggregate Organics</b>								
chemical oxygen demand [COD]	----	21 <sup>SP</sup>	10	mg/L	E559-L	-	05-May-2022	478083
phenols, total (4AAP)	----	<0.0010 <sup>SP</sup>	0.0010	mg/L	E562	06-May-2022	06-May-2022	479032

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

WT2203263-002

Sub-Matrix: **Water**  
 (Matrix: **Water**)

Client sample ID: STN6A - STN6A Discharge  
 Client sampling date / time: [03-May-2022]

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Field Tests</b>								
pH, field	----	8.10	0.01	pH units	EF001	-	04-May-2022	-
temperature, field	----	8.00	0.01	°C	EF001	-	04-May-2022	-
<b>Physical Tests</b>								
conductivity	----	788	2.0	µS/cm	E100	07-May-2022	07-May-2022	480132
hardness (as CaCO3), from total Ca/Mg	----	364	0.50	mg/L	EC100A	-	04-May-2022	-
pH	----	8.38 <sup>PEHT</sup>	0.10	pH units	E108	07-May-2022	07-May-2022	480130
solids, total dissolved [TDS]	----	433 <sup>DLDS</sup>	20	mg/L	E162	-	04-May-2022	476771
solids, total suspended [TSS]	----	6.2	3.0	mg/L	E160	-	04-May-2022	476784
alkalinity, total (as CaCO3)	----	283	2.0	mg/L	E290	07-May-2022	07-May-2022	480131
<b>Anions and Nutrients</b>								
ammonia, total (as N)	7664-41-7	0.0121 <sup>SP</sup>	0.0050	mg/L	E298	06-May-2022	06-May-2022	479030
ammonia, un-ionized (as N), field	7664-41-7	0.0002	0	mg/L	EC298A	-	04-May-2022	-
bromide	24959-67-9	<0.10	0.10	mg/L	E235.Br	07-May-2022	09-May-2022	480129
chloride	16887-00-6	54.7	0.50	mg/L	E235.Cl	07-May-2022	09-May-2022	480125
fluoride	16984-48-8	0.204	0.020	mg/L	E235.F	07-May-2022	09-May-2022	480126
Kjeldahl nitrogen, total [TKN]	----	0.857 <sup>SP</sup>	0.050	mg/L	E318	06-May-2022	06-May-2022	479031
nitrate (as N)	14797-55-8	2.91	0.020	mg/L	E235.NO3	07-May-2022	09-May-2022	480127
nitrite (as N)	14797-65-0	0.021	0.010	mg/L	E235.NO2	07-May-2022	09-May-2022	480128
phosphorus, total	7723-14-0	0.0256	0.0020	mg/L	E372-U	06-May-2022	09-May-2022	479029
sulfate (as SO4)	14808-79-8	63.2	0.30	mg/L	E235.SO4	07-May-2022	09-May-2022	480124
<b>Cyanides</b>								
cyanide, strong acid dissociable (total)	----	<0.0020	0.0020	mg/L	E333	04-May-2022	04-May-2022	477421
<b>Organic / Inorganic Carbon</b>								
carbon, dissolved organic [DOC]	----	9.15	0.50	mg/L	E358-L	04-May-2022	04-May-2022	476256
<b>Total Metals</b>								
aluminum, total	7429-90-5	0.351	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
antimony, total	7440-36-0	0.00012	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011



## Analytical Results

WT2203263-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: STN6A - STN6A Discharge

Client sampling date / time: [03-May-2022]

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Total Metals</b>								
arsenic, total	7440-38-2	0.00086	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
barium, total	7440-39-3	0.0276	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
beryllium, total	7440-41-7	<0.000020	0.000020	mg/L	E420	03-May-2022	04-May-2022	476011
bismuth, total	7440-69-9	<0.000050	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
boron, total	7440-42-8	0.037	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
cadmium, total	7440-43-9	0.0000207	0.0000050	mg/L	E420	03-May-2022	04-May-2022	476011
calcium, total	7440-70-2	84.2	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
cobalt, total	7440-48-4	0.00027	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
copper, total	7440-50-8	0.00173	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
iron, total	7439-89-6	0.367	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
lead, total	7439-92-1	0.000176	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
magnesium, total	7439-95-4	37.3	0.0050	mg/L	E420	03-May-2022	04-May-2022	476011
manganese, total	7439-96-5	0.0309	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
mercury, total	7439-97-6	<0.0000050	0.0000050	mg/L	E508	04-May-2022	04-May-2022	476234
molybdenum, total	7439-98-7	0.00355	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
nickel, total	7440-02-0	0.00152	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
potassium, total	7440-09-7	2.03	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
selenium, total	7782-49-2	0.000900	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
silicon, total	7440-21-3	1.54	0.10	mg/L	E420	03-May-2022	04-May-2022	476011
silver, total	7440-22-4	<0.000010	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
sodium, total	7440-23-5	27.8	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
strontium, total	7440-24-6	0.402	0.00020	mg/L	E420	03-May-2022	04-May-2022	476011
thallium, total	7440-28-0	<0.000010	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
tin, total	7440-31-5	<0.00010	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
vanadium, total	7440-62-2	0.00143	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
zinc, total	7440-66-6	<0.0030	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
<b>Speciated Metals</b>								
chromium, hexavalent [Cr VI], total	18540-29-9	<0.00050	0.00050	mg/L	E532	-	04-May-2022	476554
<b>Aggregate Organics</b>								
chemical oxygen demand [COD]	----	23 <sup>SP</sup>	10	mg/L	E559-L	-	05-May-2022	478083
phenols, total (4AAP)	----	<0.0010 <sup>SP</sup>	0.0010	mg/L	E562	06-May-2022	06-May-2022	479032

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>WT2203263</b>	Page	: 1 of 14
Client	: <b>Clean Harbors Environmental Services, Inc.</b>	Laboratory	: Waterloo - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 Corunna ON Canada N0N 1G0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 864 3815	Telephone	: +1 519 886 6910
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 10:15
PO	: 735-002833	Issue Date	: 10-May-2022 14:49
C-O-C number	: ----		
Sampler	: Client		
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- No Analysis Holding Time Outliers exist.

## ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> STN6A - STN6A Discharge	E559-L	03-May-2022	----	----	----		05-May-2022	28 days	3 days	✓
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>										
<b>Amber glass total (sulfuric acid)</b> STN6 - STN6 Discharge	E559-L	03-May-2022	----	----	----		05-May-2022	28 days	3 days	✓
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>										
<b>Amber glass total (sulfuric acid)</b> STN6A - STN6A Discharge	E562	03-May-2022	----	----	----		06-May-2022	28 days	4 days	✓
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>										
<b>Amber glass total (sulfuric acid)</b> STN6 - STN6 Discharge	E562	03-May-2022	----	----	----		06-May-2022	28 days	4 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> STN6A - STN6A Discharge	E298	03-May-2022	06-May-2022	----	----		06-May-2022	28 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> STN6 - STN6 Discharge	E298	03-May-2022	06-May-2022	----	----		06-May-2022	28 days	3 days	✓
<b>Anions and Nutrients : Bromide in Water by IC</b>										
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.Br	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Bromide in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.Br	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.Cl	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.Cl	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.F	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.F	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.NO3	03-May-2022	----	----	----		09-May-2022	7 days	6 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.NO3	03-May-2022	----	----	----		09-May-2022	7 days	6 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.NO2	03-May-2022	----	----	----		09-May-2022	7 days	6 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.NO2	03-May-2022	----	----	----		09-May-2022	7 days	6 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E235.SO4	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E235.SO4	03-May-2022	----	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> STN6A - STN6A Discharge	E318	03-May-2022	06-May-2022	----	----		06-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> STN6 - STN6 Discharge	E318	03-May-2022	06-May-2022	----	----		06-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> STN6A - STN6A Discharge	E372-U	03-May-2022	06-May-2022	----	----		09-May-2022	28 days	6 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> STN6 - STN6 Discharge	E372-U	03-May-2022	06-May-2022	----	----		09-May-2022	28 days	6 days	✔	
<b>Cyanides : Total Cyanide</b>											
<b>HDPE - total (sodium hydroxide)</b> STN6A - STN6A Discharge	E333	03-May-2022	----	----	----		04-May-2022	14 days	2 days	✔	
<b>Cyanides : Total Cyanide</b>											
<b>HDPE - total (sodium hydroxide)</b> STN6 - STN6 Discharge	E333	03-May-2022	----	----	----		04-May-2022	14 days	2 days	✔	
<b>Field Tests : Field pH,EC,Salinity,Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>											
<b>Glass vial total (hydrochloric acid)</b> STN6A - STN6A Discharge	EF001	03-May-2022	----	----	----		04-May-2022	----	----		



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Field Tests : Field pH,EC,Salinity,Ci2,CiO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>											
<b>Glass vial total (hydrochloric acid)</b> STN6 - STN6 Discharge	EF001	03-May-2022	----	----	----		04-May-2022	----	----		
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (lab preserved)</b> STN6A - STN6A Discharge	E358-L	03-May-2022	04-May-2022	3 days	1 days	✔	04-May-2022	28 days	0 days	✔	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>											
<b>Amber glass dissolved (lab preserved)</b> STN6 - STN6 Discharge	E358-L	03-May-2022	04-May-2022	3 days	1 days	✔	04-May-2022	28 days	0 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E290	03-May-2022	----	----	----		07-May-2022	14 days	5 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E290	03-May-2022	----	----	----		07-May-2022	14 days	5 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E100	03-May-2022	----	----	----		07-May-2022	28 days	5 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E100	03-May-2022	----	----	----		07-May-2022	28 days	5 days	✔	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E108	03-May-2022	----	----	----		07-May-2022	4 days	5 days	✔	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E108	03-May-2022	----	----	----		07-May-2022	4 days	5 days	✔	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E162	03-May-2022	----	----	----		04-May-2022	7 days	2 days	✓	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E162	03-May-2022	----	----	----		04-May-2022	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> STN6A - STN6A Discharge	E160	03-May-2022	----	----	----		04-May-2022	7 days	2 days	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> STN6 - STN6 Discharge	E160	03-May-2022	----	----	----		04-May-2022	7 days	2 days	✓	
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - total (sodium hydroxide)</b> STN6A - STN6A Discharge	E532	03-May-2022	----	----	----		04-May-2022	28 days	2 days	✓	
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - total (sodium hydroxide)</b> STN6 - STN6 Discharge	E532	03-May-2022	----	----	----		04-May-2022	28 days	2 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> STN6A - STN6A Discharge	E508	03-May-2022	----	----	----		04-May-2022	28 days	1 days	✓	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> STN6 - STN6 Discharge	E508	03-May-2022	----	----	----		04-May-2022	28 days	1 days	✓	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> STN6A - STN6A Discharge	E420	03-May-2022	----	----	----		04-May-2022	180 days	1 days	✓	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
<b>HDPE total (nitric acid)</b> STN6 - STN6 Discharge	E420	03-May-2022	----	----	----		04-May-2022	180 days	1 days	✔

**Legend & Qualifier Definitions**

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity Species by Titration	E290	480131	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	480129	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	480125	1	13	7.6	5.0	✓
Conductivity in Water	E100	480132	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	480126	1	8	12.5	5.0	✓
Nitrate in Water by IC	E235.NO3	480127	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	480128	1	7	14.2	5.0	✓
pH by Meter	E108	480130	1	19	5.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	480124	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity Species by Titration	E290	480131	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	480129	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	480125	1	13	7.6	5.0	✓
Conductivity in Water	E100	480132	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	480126	1	8	12.5	5.0	✓
Nitrate in Water by IC	E235.NO3	480127	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	480128	1	7	14.2	5.0	✓
pH by Meter	E108	480130	1	19	5.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	480124	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
<b>Method Blanks (MB)</b>							
Alkalinity Species by Titration	E290	480131	1	5	20.0	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	480129	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	480125	1	13	7.6	5.0	✓
Conductivity in Water	E100	480132	1	6	16.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	480126	1	8	12.5	5.0	✓
Nitrate in Water by IC	E235.NO3	480127	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	480128	1	7	14.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	480124	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	480129	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	480125	1	13	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	480126	1	8	12.5	5.0	✓
Nitrate in Water by IC	E235.NO3	480127	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	480128	1	7	14.2	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	480124	1	9	11.1	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Waterloo - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Waterloo - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Waterloo - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Waterloo - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC	E235.Br Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.





Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Waterloo - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Waterloo - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis.  Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Waterloo - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 Waterloo - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Waterloo - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  Results are based on an un-filtered, field-preserved sample.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L Waterloo - Environmental	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Phenols (4AAP) in Water by Colorimetry	E562 Waterloo - Environmental	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K <sub>3</sub> Fe(CN) <sub>6</sub> ) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
Hardness (Calculated) from Total Ca/Mg	EC100A Waterloo - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized and Ionized Ammonia (Calculation) (Field Temperature and pH)	EC298A Waterloo - Environmental	Water	CCME CWQG Ammonia	Un-ionized ammonia is calculated from test results for total ammonia, field temperature and pH, and is expressed in units of mg/L "as N".
Field pH,EC,Salinity,Cl <sub>2</sub> ,ClO <sub>2</sub> ,ORP,DO, Turbidity,T,T-P,o-PO <sub>4</sub> ,NH <sub>3</sub> ,Chloramine	EF001 Waterloo - Environmental	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,Cl <sub>2</sub> ,ClO <sub>2</sub> ,ORP,DO, Turbidity,T,T-P,o-PO <sub>4</sub> ,NH <sub>3</sub> or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Waterloo - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Dissolved Organic Carbon for Combustion	EP358 Waterloo - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Waterloo - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.



## QUALITY CONTROL REPORT

Work Order : **WT2203263**

Page : 1 of 11

Client : Clean Harbors Environmental Services, Inc.  
 Contact : Rob Girard  
 Address : 455 Phillip Street  
 Waterloo ON Canada N2L 3X2  
 Telephone : 519 864 3815  
 Project : 12572192-20.22  
 PO : 735-002833  
 C-O-C number : ----  
 Sampler : Client  
 Site : 4090 Telfer Road, RR#1, Corunna  
 Quote number : 12572192-20.22-SSOW-735-002833  
 No. of samples received : 2  
 No. of samples analysed : 2

Laboratory : Waterloo - Environmental  
 Account Manager : Rick Hawthorne  
 Address : 60 Northland Road, Unit 1  
 Waterloo, Ontario Canada N2V 2B8  
 Telephone : +1 519 886 6910  
 Date Samples Received : 03-May-2022 10:15  
 Date Analysis Commenced : 03-May-2022  
 Issue Date : 10-May-2022 14:48

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Khairul Intiar	Login	Administration, Waterloo, Ontario

Page : 2 of 11  
Work Order : WT2203263  
Client : Clean Harbors Environmental Services, Inc.  
Project : 12572192-20.22

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.

## **Workorder Comments**

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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## Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 476771)</b>											
WT2203261-003	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	484	491	1.44%	20%	----
<b>Physical Tests (QC Lot: 476784)</b>											
WT2203261-003	Anonymous	solids, total suspended [TSS]	----	E160	3.0	mg/L	5.6	6.8	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 480130)</b>											
WT2203263-001	STN6 STN6 Discharge	pH	----	E108	0.10	pH units	8.42	8.41	0.01	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 480131)</b>											
WT2203263-001	STN6 STN6 Discharge	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	280	277	1.27%	20%	----
<b>Physical Tests (QC Lot: 480132)</b>											
WT2203263-001	STN6 STN6 Discharge	conductivity	----	E100	2.0	µS/cm	810	820	1.23%	10%	----
<b>Anions and Nutrients (QC Lot: 479029)</b>											
WT2203193-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0107	0.0088	0.0019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 479030)</b>											
WT2203193-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	0.0079	0.0026	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 479031)</b>											
WT2203193-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.848	0.869	2.39%	20%	----
<b>Anions and Nutrients (QC Lot: 480124)</b>											
WT2203263-001	STN6 STN6 Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	92.4	92.3	0.133%	20%	----
<b>Anions and Nutrients (QC Lot: 480125)</b>											
WT2203263-001	STN6 STN6 Discharge	chloride	16887-00-6	E235.Cl	0.50	mg/L	53.0	53.0	0.120%	20%	----
<b>Anions and Nutrients (QC Lot: 480126)</b>											
WT2203263-001	STN6 STN6 Discharge	fluoride	16984-48-8	E235.F	0.020	mg/L	0.317	0.306	3.36%	20%	----
<b>Anions and Nutrients (QC Lot: 480127)</b>											
WT2203263-001	STN6 STN6 Discharge	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	2.35	2.34	0.384%	20%	----
<b>Anions and Nutrients (QC Lot: 480128)</b>											
WT2203263-001	STN6 STN6 Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.021	0.020	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 480129)</b>											
WT2203263-001	STN6 STN6 Discharge	bromide	24959-67-9	E235.Br	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
<b>Cyanides (QC Lot: 477421)</b>											
FC2200824-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 476256)</b>											
WT2203050-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	15.5	16.6	7.05%	20%	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Total Metals (QC Lot: 476011)</b>											
WT2203249-001	Anonymous	aluminum, total	7429-90-5	E420	0.0300	mg/L	0.0428	0.0581	0.0153	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00100	mg/L	0.00168	0.00172	0.00004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00100	mg/L	0.00135	0.00116	0.00019	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00100	mg/L	0.295	0.303	2.69%	20%	----
		beryllium, total	7440-41-7	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.100	mg/L	0.136	0.143	0.007	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.500	mg/L	156	161	3.48%	20%	----
		cobalt, total	7440-48-4	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00500	mg/L	0.0332	0.0338	0.00059	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.100	mg/L	0.830	0.854	0.024	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000500	mg/L	0.00357	0.00355	0.000023	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0500	mg/L	37.4	38.7	3.33%	20%	----
		manganese, total	7439-96-5	E420	0.00100	mg/L	0.233	0.239	2.84%	20%	----
		molybdenum, total	7439-98-7	E420	0.000500	mg/L	0.0101	0.0105	3.81%	20%	----
		nickel, total	7440-02-0	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.500	mg/L	40.4	42.5	5.01%	20%	----
		selenium, total	7782-49-2	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	1.00	mg/L	8.06	8.32	0.26	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.500	mg/L	330	334	1.18%	20%	----
		strontium, total	7440-24-6	E420	0.00200	mg/L	7.29	7.57	3.73%	20%	----
		thallium, total	7440-28-0	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0300	mg/L	0.377	0.386	2.25%	20%	----
<b>Total Metals (QC Lot: 476234)</b>											
WT2203237-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000078	0.0000057	0.0000021	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 476554)</b>											
WT2203249-001	Anonymous	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	0.00140	0.00145	0.00005	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 478083)</b>											
WT2203252-001	Anonymous	chemical oxygen demand [COD]	----	E559-L	10	mg/L	16	15	2	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 479032)</b>											
WT2203193-004	Anonymous	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 476771)</b>						
solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Physical Tests (QCLot: 476784)</b>						
solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Physical Tests (QCLot: 480131)</b>						
alkalinity, total (as CaCO3)	---	E290	1	mg/L	<1.0	---
<b>Physical Tests (QCLot: 480132)</b>						
conductivity	---	E100	1	µS/cm	<1.0	---
<b>Anions and Nutrients (QCLot: 479029)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 479030)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 479031)</b>						
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 480124)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 480125)</b>						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
<b>Anions and Nutrients (QCLot: 480126)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 480127)</b>						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 480128)</b>						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	---
<b>Anions and Nutrients (QCLot: 480129)</b>						
bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	---
<b>Cyanides (QCLot: 477421)</b>						
cyanide, strong acid dissociable (total)	---	E333	0.002	mg/L	<0.0020	---
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>						
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Total Metals (QCLot: 476011)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	---
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	---
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 476011) - continued</b>						
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	---
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	---
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	---
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	---
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 476234)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Speciated Metals (QCLot: 476554)</b>						
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	---
<b>Aggregate Organics (QCLot: 478083)</b>						
chemical oxygen demand [COD]	---	E559-L	10	mg/L	<10	---
<b>Aggregate Organics (QCLot: 479032)</b>						
phenols, total (4AAP)	---	E562	0.001	mg/L	<0.0010	---





## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 476771)</b>									
solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	85.6	85.0	115	---
<b>Physical Tests (QCLot: 476784)</b>									
solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	94.0	85.0	115	---
<b>Physical Tests (QCLot: 480130)</b>									
pH	---	E108	---	pH units	7 pH units	100	98.0	102	---
<b>Physical Tests (QCLot: 480131)</b>									
alkalinity, total (as CaCO3)	---	E290	1	mg/L	150 mg/L	103	85.0	115	---
<b>Physical Tests (QCLot: 480132)</b>									
conductivity	---	E100	1	µS/cm	1409 µS/cm	99.6	90.0	110	---
<b>Anions and Nutrients (QCLot: 479029)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.431 mg/L	95.1	80.0	120	---
<b>Anions and Nutrients (QCLot: 479030)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	---
<b>Anions and Nutrients (QCLot: 479031)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	99.4	75.0	125	---
<b>Anions and Nutrients (QCLot: 480124)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	106	90.0	110	---
<b>Anions and Nutrients (QCLot: 480125)</b>									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	105	90.0	110	---
<b>Anions and Nutrients (QCLot: 480126)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 480127)</b>									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	103	90.0	110	---
<b>Anions and Nutrients (QCLot: 480128)</b>									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	104	90.0	110	---
<b>Anions and Nutrients (QCLot: 480129)</b>									
bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	102	85.0	115	---
<b>Cyanides (QCLot: 477421)</b>									
cyanide, strong acid dissociable (total)	---	E333	0.002	mg/L	0.25 mg/L	95.5	80.0	120	---
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>									
carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	---



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Total Metals (QCLot: 476011)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	99.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	95.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	95.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	0.05 mg/L	90.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	2.5 mg/L	94.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	99.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	2.5 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	99.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	99.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	2.5 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	0.5 mg/L	98.3	60.0	140	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	2.5 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.0125 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	0.05 mg/L	98.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 476234)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
<b>Speciated Metals (QCLot: 476554)</b>									
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	99.3	80.0	120	----
<b>Aggregate Organics (QCLot: 478083)</b>									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	99.7	85.0	115	----
<b>Aggregate Organics (QCLot: 479032)</b>									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	103	85.0	115	----





### Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 479029)</b>										
WT2203193-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0874 mg/L	0.1 mg/L	87.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 479030)</b>										
WT2203193-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 479031)</b>										
WT2203193-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.37 mg/L	2.5 mg/L	94.9	70.0	130	----
<b>Anions and Nutrients (QCLot: 480124)</b>										
WT2203263-001	STN6 STN6 Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	108 mg/L	100 mg/L	108	75.0	125	----
<b>Anions and Nutrients (QCLot: 480125)</b>										
WT2203263-001	STN6 STN6 Discharge	chloride	16887-00-6	E235.Cl	107 mg/L	100 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 480126)</b>										
WT2203263-001	STN6 STN6 Discharge	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 480127)</b>										
WT2203263-001	STN6 STN6 Discharge	nitrate (as N)	14797-55-8	E235.NO3	2.64 mg/L	2.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 480128)</b>										
WT2203263-001	STN6 STN6 Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.529 mg/L	0.5 mg/L	106	75.0	125	----
<b>Anions and Nutrients (QCLot: 480129)</b>										
WT2203263-001	STN6 STN6 Discharge	bromide	24959-67-9	E235.Br	0.50 mg/L	0.5 mg/L	101	75.0	125	----
<b>Cyanides (QCLot: 477421)</b>										
FC2200824-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.231 mg/L	0.25 mg/L	92.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>										
WT2203050-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 476011)</b>										
WT2203250-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0551 mg/L	0.05 mg/L	110	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0560 mg/L	0.05 mg/L	112	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.00499 mg/L	0.005 mg/L	99.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0507 mg/L	0.05 mg/L	101	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 476011) - continued</b>										
WT2203250-001	Anonymous	boron, total	7440-42-8	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00543 mg/L	0.005 mg/L	109	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0128 mg/L	0.0125 mg/L	102	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0242 mg/L	0.025 mg/L	96.7	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0130 mg/L	0.0125 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0252 mg/L	0.025 mg/L	101	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0566 mg/L	0.05 mg/L	113	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	0.5 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00488 mg/L	0.005 mg/L	97.7	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.0495 mg/L	0.05 mg/L	99.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0256 mg/L	0.025 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0259 mg/L	0.025 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	ND mg/L	0.025 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 476234)</b>										
WT2203249-001	Anonymous	mercury, total	7439-97-6	E508	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
<b>Speciated Metals (QCLot: 476554)</b>										
WT2203249-001	Anonymous	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
<b>Aggregate Organics (QCLot: 478083)</b>										
WT2203252-001	Anonymous	chemical oxygen demand [COD]	----	E559-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Aggregate Organics (QCLot: 479032)</b>										
WT2203193-004	Anonymous	phenols, total (4AAP)	----	E562	0.0196 mg/L	0.02 mg/L	98.1	75.0	125	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20

Page

Environmental Division  
Waterloo  
Work Order Reference  
WT2203263

Contact and company name below will appear on the final report

Company: GHD Ltd. (Acct 13791)

Contact: Stephanie Berton

Phone: 519-884-0510

Company address below will appear on the final report

Street: 455 Phillip St

City/Province: Waterloo, ON

Postal Code: N2L 3X2

Invoice To: Same as Report To

Copy of Invoice with Report: YES NO

Company: GHD Ltd. (Acct 13791)

Contact:

ALS Account # / Quote #: 44985-20-21

Job #: 44985-20-21

PO / AFE:

LSD:

ALS Lab Work Order # (lab use only):

Sample Identification and/or Coordinates (This description will appear on the report):

ALS Sample # (lab use only):

STN6

STN6A

STN6

STN6A

STN6

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STN6

STN6A

Reports / Recipients

Select Report Format: PDF EXCEL EDD (DIGITAL)

Merge QC/QCI Reports with COA YES NO N/A

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: EMAIL MAIL FAX

Email 1 or Fax: stephanie.berton@ghd.com

Email 2: See SSO/W/PO

Email 3:

Invoice Recipients

Select Invoice Distribution: EMAIL MAIL FAX

Email 1 or Fax Invoicing-Canada@ghd.com

Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center:

Major/Minor Code:

Requisitioner:

Location:

ALS Contact:

Rick H

Sampler:

Date (dd-mm-yy)

Time (hh:mm)

Sample Type

Water

Water

Water

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Turnaround Time (TAT) Requested

Routine [R] if received by 3pm M-F - no surcharges apply

4 day [P4] if received by 3pm M-F - 20% rush surcharge apply

3 day [P3] if received by 3pm M-F - 25% rush surcharge apply

2 day [P2] if received by 3pm M-F - 50% rush surcharge apply

1 day [E] if received by 3pm M-F - 100% rush surcharge apply

Same day [E2] if received by 10am M-S - 200% rush surcharge apply

rush surcharges on weekends, statutory holidays

routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the TAT requested, you will be contacted.

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below

Analysis Request

ALK, Conductivity, pH, TDS, TSS

Anions6 (Br, N2N3, CL, F, BR, SO4)

Phenols-4AAP, COD, TKN, TTP

DOC

NH3-Unionized Ammonia

Total Metals, Hardness-Calc-T-WT

Mercury Total

Total Cyanide, Total Cr6

REP: WT-44985-Metals

Field Temp

Field Ph

SAMPLES ON HOLD

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see notes)

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System?

YES NO

Are samples for human consumption/ use?

YES NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: NONE ICE PACKS FROZEN COOLING INITIATED

Submission Comments Identified on Sample Receipt/Notification: YES NO

Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A

INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C

SHIPPING RELEASE (client use)

INITIAL SHIPMENT RECEPTION (lab use only)

FINAL SHIPMENT RECEPTION (lab use only)

Released by: Date: May 2/2022 Time: 1:50

Received by: Date: May 22 Time: 10:15

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.



Telephone: +1 519 886 8910



## CERTIFICATE OF ANALYSIS

Work Order	: WT2203261	Page	: 1 of 13
Amendment	: 1		
Client	: Clean Harbors Environmental Services, Inc.	Laboratory	: Waterloo - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 Corunna ON Canada N0N 1G0	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 519 864 3815	Telephone	: +1 519 886 6910
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 10:15
PO	: 735-002833	Date Analysis	: 03-May-2022
		Commenced	
C-O-C number	: ----	Issue Date	: 16-May-2022 08:31
Sampler	: Client		
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Greg Pokocky	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Greg Pokocky	Supervisor - Inorganic	Metals, Waterloo, Ontario
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Jon Fisher	Department Manager - Inorganics	Inorganics, Waterloo, Ontario
Khairul Intiar	Login	Administration, Waterloo, Ontario
Sarah Birch	Team Leader - Volatiles	Organics, Waterloo, Ontario



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
°C	degrees Celsius
µg/L	micrograms per litre
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

>: greater than.

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

With dinitrophenol-2,4

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	<i>Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.</i>
DLIS	<i>Detection Limit Adjusted due to insufficient sample.</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>
SP	<i>Sample was preserved at the laboratory.</i>
SUR-ND	<i>Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.</i>
VOCHS	<i>VOC analysis was conducted for a water sample that contained &gt; 5% headspace. Results may be biased low.</i>





## Analytical Results

WT2203261-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EQ Pond - EQ Pond Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Field Tests</b>								
pH, field	----	8.30	0.01	pH units	EF001	-	04-May-2022	-
temperature, field	----	8.00	0.01	°C	EF001	-	04-May-2022	-
<b>Physical Tests</b>								
conductivity	----	805	2.0	µS/cm	E100	04-May-2022	04-May-2022	476311
hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	----	285	0.50	mg/L	EC100A	-	04-May-2022	-
pH	----	8.15	0.10	pH units	E108	04-May-2022	04-May-2022	476310
solids, total dissolved [TDS]	----	485	20	mg/L	E162	-	04-May-2022	476771
solids, total suspended [TSS]	----	4.4	3.0	mg/L	E160	-	04-May-2022	476784
alkalinity, total (as CaCO <sub>3</sub> )	----	112	2.0	mg/L	E290	04-May-2022	04-May-2022	476309
<b>Anions and Nutrients</b>								
ammonia, total (as N)	7664-41-7	0.163	0.0050	mg/L	E298	06-May-2022	09-May-2022	479030
ammonia, un-ionized (as N), field	7664-41-7	0.0050	0	mg/L	EC298A	-	04-May-2022	-
bromide	24959-67-9	1.39	0.10	mg/L	E235.Br	04-May-2022	04-May-2022	476315
chloride	16887-00-6	54.5	0.50	mg/L	E235.Cl	04-May-2022	04-May-2022	476317
fluoride	16984-48-8	1.09	0.020	mg/L	E235.F	04-May-2022	04-May-2022	476316
Kjeldahl nitrogen, total [TKN]	----	0.741	0.050	mg/L	E318	06-May-2022	06-May-2022	479031
nitrate (as N)	14797-55-8	0.356	0.020	mg/L	E235.NO3	04-May-2022	04-May-2022	476312
nitrite (as N)	14797-65-0	Not Detected	0.010	mg/L	E235.NO2	04-May-2022	04-May-2022	476313
phosphorus, total	7723-14-0	0.0121	0.0020	mg/L	E372-U	06-May-2022	09-May-2022	479029
sulfate (as SO <sub>4</sub> )	14808-79-8	206	0.30	mg/L	E235.SO4	04-May-2022	04-May-2022	476314
<b>Cyanides</b>								
cyanide, strong acid dissociable (total)	----	Not Detected	0.0020	mg/L	E333	04-May-2022	04-May-2022	477421
<b>Organic / Inorganic Carbon</b>								
carbon, dissolved organic [DOC]	----	4.24	0.50	mg/L	E358-L	04-May-2022	04-May-2022	476256
<b>Total Metals</b>								
aluminum, total	7429-90-5	0.290	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
antimony, total	7440-36-0	0.00047	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
arsenic, total	7440-38-2	0.00122	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
barium, total	7440-39-3	0.0411	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
beryllium, total	7440-41-7	Not Detected	0.000020	mg/L	E420	03-May-2022	04-May-2022	476011
bismuth, total	7440-69-9	Not Detected	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
boron, total	7440-42-8	0.112	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
cadmium, total	7440-43-9	Not Detected	0.000100	mg/L	E420	03-May-2022	04-May-2022	476011
calcium, total	7440-70-2	73.8	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
cobalt, total	7440-48-4	0.00030	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
copper, total	7440-50-8	0.00213	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
iron, total	7439-89-6	0.272	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
lead, total	7439-92-1	0.000206	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
magnesium, total	7439-95-4	24.5	0.0050	mg/L	E420	03-May-2022	04-May-2022	476011
manganese, total	7439-96-5	0.0148	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
mercury, total	7439-97-6	Not Detected	0.0000050	mg/L	E508	04-May-2022	04-May-2022	476234
molybdenum, total	7439-98-7	0.0555	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
nickel, total	7440-02-0	0.00387	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
potassium, total	7440-09-7	7.17	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
selenium, total	7782-49-2	0.00262	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
silicon, total	7440-21-3	2.26	0.10	mg/L	E420	03-May-2022	04-May-2022	476011
silver, total	7440-22-4	Not Detected	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
sodium, total	7440-23-5	40.5	0.050	mg/L	E420	03-May-2022	04-May-2022	476011



## Analytical Results

WT2203261-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EQ Pond - EQ Pond Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Total Metals</b>								
strontium, total	7440-24-6	0.646	0.00020	mg/L	E420	03-May-2022	04-May-2022	476011
thallium, total	7440-28-0	0.000045	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
tin, total	7440-31-5	Not Detected	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
vanadium, total	7440-62-2	0.00090	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
zinc, total	7440-66-6	0.0031	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
<b>Speciated Metals</b>								
chromium, hexavalent [Cr VI], total	18540-29-9	0.00062	0.00050	mg/L	E532	-	04-May-2022	476554
<b>Aggregate Organics</b>								
chemical oxygen demand [COD]	----	11 <sup>SP</sup>	10	mg/L	E559-L	-	05-May-2022	478083
phenols, total (4AAP)	----	0.0024	0.0010	mg/L	E562	06-May-2022	06-May-2022	479032
<b>Volatile Organic Compounds</b>								
acetone	67-64-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
benzene	71-43-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromodichloromethane	75-27-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromoform	75-25-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromomethane	74-83-9	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon disulfide	75-15-0	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon tetrachloride	56-23-5	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
chlorobenzene	108-90-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloroethane	75-00-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloroform	67-66-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloromethane	74-87-3	Not Detected	2.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromochloromethane	124-48-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromoethane, 1,2-	106-93-4	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,2-	95-50-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,3-	541-73-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,4-	106-46-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorodifluoromethane	75-71-8	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,1-	75-34-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,2-	107-06-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, 1,1-	75-35-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, cis-1,2-	156-59-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, trans-1,2-	156-60-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloromethane	75-09-2	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropane, 1,2-	78-87-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis+trans-1,3-	542-75-6	Not Detected	0.5	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis-1,3-	10061-01-5	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, trans-1,3-	10061-02-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
ethylbenzene	100-41-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexane, n-	110-54-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexanone, 2-	591-78-6	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl ethyl ketone [MEK]	78-93-3	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl isobutyl ketone [MIBK]	108-10-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl-tert-butyl ether [MTBE]	1634-04-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
styrene	100-42-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethane, 1,1,1,2-	630-20-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethane, 1,1,1,2,2-	79-34-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethylene	127-18-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095



## Analytical Results

WT2203261-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EQ Pond - EQ Pond Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC/Lot
<b>Volatile Organic Compounds</b>								
toluene	108-88-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,1-	71-55-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,2-	79-00-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethylene	79-01-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichlorofluoromethane	75-69-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
vinyl chloride	75-01-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, m+p-	179601-23-1	Not Detected	0.40	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, o-	95-47-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
xylenes, total	1330-20-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
BTEX, total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
trihalomethanes [THMs], total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
<b>Volatile Organic Compounds Surrogates</b>								
bromofluorobenzene, 4-	460-00-4	9.0	1.0	%	E611D	05-May-2022	05-May-2022	478095
difluorobenzene, 1,4-	540-36-3	9.8	1.0	%	E611D	05-May-2022	05-May-2022	478095
<b>Polycyclic Aromatic Hydrocarbons</b>								
acenaphthene	83-32-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
acenaphthylene	208-96-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
anthracene	120-12-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benz(a)anthracene	56-55-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(a)pyrene	50-32-8	Not Detected	0.125	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(b+j)fluoranthene	n/a	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(g,h,i)perylene	191-24-2	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(k)fluoranthene	207-08-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
chrysene	218-01-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
dibenz(a,h)anthracene	53-70-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluoranthene	206-44-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluorene	86-73-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
indeno(1,2,3-c,d)pyrene	193-39-5	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 1-	90-12-0	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 2-	91-57-6	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
naphthalene	91-20-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
perylene	198-55-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
phenanthrene	85-01-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
pyrene	129-00-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phthalate Esters</b>								
bis(2-ethylhexyl) phthalate [DEHP]	117-81-7	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Semi-Volatile Organics</b>								
bis(2-chloroethyl) ether	111-44-4	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
chloroaniline, 4-	106-47-8	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,2-	95-50-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,3-	541-73-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,4-	106-46-7	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzidine, 3,3'-	91-94-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,4-	121-14-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,6-	606-20-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachlorobenzene	118-74-1	Not Detected	0.100	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachlorobutadiene	87-68-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorobenzene, 1,2,4-	120-82-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287



## Analytical Results

WT2203261-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EQ Pond - EQ Pond Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Semi-Volatile Organics Surrogates</b>								
fluorobiphenyl, 2-nitrobenzene-d5	321-60-8	3.5 <sup>D.L.S.</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
terphenyl-d14, p-	4165-60-0	3.8 <sup>D.L.S.</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
	1718-51-0	3.9 <sup>D.L.S.</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
<b>Chlorinated Phenolics</b>								
chlorophenol, 2-dichlorophenol, 2,4-pentachlorophenol [PCP]	95-57-8	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
tetrachlorophenol, 2,3,4,5-tetrachlorophenol, 2,3,4,6-trichlorophenol, 2,3,6-trichlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol	120-83-2	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
	87-86-5	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
	4901-51-3	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
	58-90-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
	933-75-5	Not Detected	0.20	µg/L	E651E	04-May-2022	05-May-2022	476289
	95-95-4	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
	88-06-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Non-Chlorinated Phenolics</b>								
dimethylphenol, 2,4-dinitrophenol, 2,4-	105-67-9	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
	51-28-5	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phenolics Surrogates</b>								
tribromophenol, 2,4,6-tribromophenol, 2,4,6-	118-79-6	12.3 <sup>SUR-N.D.</sup>	1.0	%	E651E	04-May-2022	05-May-2022	476289
	118-79-6	4.16 <sup>D.L.S.</sup>	0.50	%	E655B	04-May-2022	05-May-2022	476287

Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

WT2203261-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond A - Pond A Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Field Tests</b>								
pH, field	----	8.20	0.01	pH units	EF001	-	04-May-2022	-
temperature, field	----	7.90	0.01	°C	EF001	-	04-May-2022	-
<b>Physical Tests</b>								
conductivity	----	798	2.0	µS/cm	E100	05-May-2022	05-May-2022	477591
hardness (as CaCO3), from total Ca/Mg	----	288	0.50	mg/L	EC100A	-	04-May-2022	-
pH	----	8.33	0.10	pH units	E108	05-May-2022	05-May-2022	477590
solids, total dissolved [TDS]	----	468 <sup>D.L.S.</sup>	20	mg/L	E162	-	04-May-2022	476771
solids, total suspended [TSS]	----	6.2	3.0	mg/L	E160	-	04-May-2022	476784
alkalinity, total (as CaCO3)	----	110	2.0	mg/L	E290	05-May-2022	06-May-2022	477589
<b>Anions and Nutrients</b>								
ammonia, total (as N)	7664-41-7	0.353	0.0050	mg/L	E298	06-May-2022	09-May-2022	479030
ammonia, un-ionized (as N), field	7664-41-7	0.0086	0	mg/L	EC298A	-	04-May-2022	-
bromide	24959-67-9	1.88	0.10	mg/L	E235.Br	05-May-2022	05-May-2022	477597
chloride	16887-00-6	54.7	0.50	mg/L	E235.Cl	05-May-2022	05-May-2022	477593
fluoride	16984-48-8	1.12	0.020	mg/L	E235.F	05-May-2022	05-May-2022	477595
Kjeldahl nitrogen, total [TKN]	----	0.491	0.050	mg/L	E318	06-May-2022	06-May-2022	479031
nitrate (as N)	14797-55-8	0.186	0.020	mg/L	E235.NO3	05-May-2022	05-May-2022	477592
nitrite (as N)	14797-65-0	Not Detected	0.010	mg/L	E235.NO2	05-May-2022	05-May-2022	477596
phosphorus, total	7723-14-0	0.0165	0.0020	mg/L	E372-U	06-May-2022	09-May-2022	479029



## Analytical Results

WT2203261-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond A - Pond A Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Anions and Nutrients</b>								
sulfate (as SO4)	14808-79-8	209	0.30	mg/L	E235.SO4	05-May-2022	05-May-2022	477594
<b>Cyanides</b>								
cyanide, strong acid dissociable (total)	----	Not Detected	0.0020	mg/L	E333	04-May-2022	04-May-2022	477421
<b>Organic / Inorganic Carbon</b>								
carbon, dissolved organic [DOC]	----	4.60	0.50	mg/L	E358-L	04-May-2022	04-May-2022	476256
<b>Total Metals</b>								
aluminum, total	7429-90-5	0.432	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
antimony, total	7440-36-0	0.00048	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
arsenic, total	7440-38-2	0.00132	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
barium, total	7440-39-3	0.0398	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
beryllium, total	7440-41-7	Not Detected	0.000020	mg/L	E420	03-May-2022	04-May-2022	476011
bismuth, total	7440-69-9	Not Detected	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
boron, total	7440-42-8	0.110	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
cadmium, total	7440-43-9	Not Detected	0.0000500	mg/L	E420	03-May-2022	04-May-2022	476011
calcium, total	7440-70-2	75.4	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
cobalt, total	7440-48-4	0.00041	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
copper, total	7440-50-8	0.00265	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
iron, total	7439-89-6	0.450	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
lead, total	7439-92-1	0.000377	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
magnesium, total	7439-95-4	24.2	0.0050	mg/L	E420	03-May-2022	04-May-2022	476011
manganese, total	7439-96-5	0.0331	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
mercury, total	7439-97-6	Not Detected	0.0000050	mg/L	E508	04-May-2022	04-May-2022	476234
molybdenum, total	7439-98-7	0.0558	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
nickel, total	7440-02-0	0.00415	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
potassium, total	7440-09-7	7.13	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
selenium, total	7782-49-2	0.00268	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
silicon, total	7440-21-3	2.51	0.10	mg/L	E420	03-May-2022	04-May-2022	476011
silver, total	7440-22-4	Not Detected	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
sodium, total	7440-23-5	40.7	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
strontium, total	7440-24-6	0.656	0.00020	mg/L	E420	03-May-2022	04-May-2022	476011
thallium, total	7440-28-0	0.000026	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
tin, total	7440-31-5	Not Detected	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
vanadium, total	7440-62-2	0.00123	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
zinc, total	7440-66-6	0.0031	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
<b>Speciated Metals</b>								
chromium, hexavalent [Cr VI], total	18540-29-9	0.00067	0.00050	mg/L	E532	-	04-May-2022	476554
<b>Aggregate Organics</b>								
chemical oxygen demand [COD]	----	13 <sup>SP</sup>	10	mg/L	E559-L	-	05-May-2022	478083
phenols, total (4AAP)	----	0.0031	0.0010	mg/L	E562	06-May-2022	06-May-2022	479032
<b>Volatile Organic Compounds</b>								
acetone	67-64-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
benzene	71-43-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromodichloromethane	75-27-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromoform	75-25-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromomethane	74-83-9	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon disulfide	75-15-0	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon tetrachloride	56-23-5	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
chlorobenzene	108-90-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095



## Analytical Results

WT2203261-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond A - Pond A Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QC/Lot
<b>Volatile Organic Compounds</b>								
chloroethane	75-00-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloroform	67-66-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloromethane	74-87-3	Not Detected	2.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromochloromethane	124-48-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromoethane, 1,2-	106-93-4	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,2-	95-50-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,3-	541-73-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,4-	106-46-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorodifluoromethane	75-71-8	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,1-	75-34-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,2-	107-06-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, 1,1-	75-35-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, cis-1,2-	156-59-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, trans-1,2-	156-60-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloromethane	75-09-2	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropane, 1,2-	78-87-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis+trans-1,3-	542-75-6	Not Detected	0.5	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis-1,3-	10061-01-5	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, trans-1,3-	10061-02-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
ethylbenzene	100-41-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexane, n-	110-54-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexanone, 2-	591-78-6	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl ethyl ketone [MEK]	78-93-3	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl isobutyl ketone [MIBK]	108-10-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl-tert-butyl ether [MTBE]	1634-04-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
styrene	100-42-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethane, 1,1,1,2-	630-20-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethane, 1,1,2,2-	79-34-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethylene	127-18-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
toluene	108-88-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,1-	71-55-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,2-	79-00-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethylene	79-01-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichlorofluoromethane	75-69-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
vinyl chloride	75-01-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, m+p-	179601-23-1	Not Detected	0.40	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, o-	95-47-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
xylenes, total	1330-20-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
BTEX, total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
trihalomethanes [THMs], total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
<b>Volatile Organic Compounds Surrogates</b>								
bromofluorobenzene, 4-	460-00-4	9.0	1.0	%	E611D	05-May-2022	05-May-2022	478095
difluorobenzene, 1,4-	540-36-3	9.8	1.0	%	E611D	05-May-2022	05-May-2022	478095
<b>Polycyclic Aromatic Hydrocarbons</b>								
acenaphthene	83-32-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
acenaphthylene	208-96-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
anthracene	120-12-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benz(a)anthracene	56-55-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287



## Analytical Results

WT2203261-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond A - Pond A Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Polycyclic Aromatic Hydrocarbons</b>								
benzo(a)pyrene	50-32-8	Not Detected	0.125	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(b+j)fluoranthene	n/a	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(g,h,i)perylene	191-24-2	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(k)fluoranthene	207-08-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
chrysene	218-01-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
dibenz(a,h)anthracene	53-70-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluoranthene	206-44-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluorene	86-73-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
indeno(1,2,3-c,d)pyrene	193-39-5	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 1-	90-12-0	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 2-	91-57-6	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
naphthalene	91-20-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
perylene	198-55-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
phenanthrene	85-01-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
pyrene	129-00-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phthalate Esters</b>								
bis(2-ethylhexyl) phthalate [DEHP]	117-81-7	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Semi-Volatile Organics</b>								
bis(2-chloroethyl) ether	111-44-4	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
chloroaniline, 4-	106-47-8	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,2-	95-50-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,3-	541-73-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,4-	106-46-7	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzidine, 3,3'-	91-94-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,4-	121-14-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,6-	606-20-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachlorobenzene	118-74-1	Not Detected	0.100	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachlorobutadiene	87-68-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorobenzene, 1,2,4-	120-82-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Semi-Volatile Organics Surrogates</b>								
fluorobiphenyl, 2-	321-60-8	3.3 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
nitrobenzene-d5	4165-60-0	3.7 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
terphenyl-d14, p-	1718-51-0	4.0 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
<b>Chlorinated Phenolics</b>								
chlorophenol, 2-	95-57-8	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorophenol, 2,4-	120-83-2	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
pentachlorophenol [PCP]	87-86-5	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
tetrachlorophenol, 2,3,4,5-	4901-51-3	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
tetrachlorophenol, 2,3,4,6-	58-90-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorophenol, 2,3,6-	933-75-5	Not Detected	0.20	µg/L	E651E	04-May-2022	05-May-2022	476289
trichlorophenol, 2,4,5-	95-95-4	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorophenol, 2,4,6-	88-06-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Non-Chlorinated Phenolics</b>								
dimethylphenol, 2,4-	105-67-9	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrophenol, 2,4-	51-28-5	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phenolics Surrogates</b>								
tribromophenol, 2,4,6-	118-79-6	12.2 <sup>SUR-N D</sup>	1.0	%	E651E	04-May-2022	05-May-2022	476289
tribromophenol, 2,4,6-	118-79-6	4.16 <sup>DLIS</sup>	0.50	%	E655B	04-May-2022	05-May-2022	476287



Please refer to the General Comments section for an explanation of any qualifiers detected.

## Analytical Results

WT2203261-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond D - Pond D Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Field Tests</b>								
pH, field	----	8.40	0.01	pH units	EF001	-	04-May-2022	-
temperature, field	----	7.50	0.01	°C	EF001	-	04-May-2022	-
<b>Physical Tests</b>								
conductivity	----	798	2.0	µS/cm	E100	06-May-2022	06-May-2022	478994
hardness (as CaCO3), from total Ca/Mg	----	288	0.50	mg/L	EC100A	-	04-May-2022	-
pH	----	8.29	0.10	pH units	E108	06-May-2022	06-May-2022	478992
solids, total dissolved [TDS]	----	484	20	mg/L	E162	-	04-May-2022	476771
solids, total suspended [TSS]	----	5.6	3.0	mg/L	E160	-	04-May-2022	476784
alkalinity, total (as CaCO3)	----	112	2.0	mg/L	E290	06-May-2022	06-May-2022	478993
<b>Anions and Nutrients</b>								
ammonia, total (as N)	7664-41-7	0.319	0.0050	mg/L	E298	06-May-2022	09-May-2022	479030
ammonia, un-ionized (as N), field	7664-41-7	0.0118	0	mg/L	EC298A	-	04-May-2022	-
bromide	24959-67-9	1.87	0.10	mg/L	E235.Br	06-May-2022	06-May-2022	478987
chloride	16887-00-6	55.4	0.50	mg/L	E235.Cl	06-May-2022	06-May-2022	478989
fluoride	16984-48-8	1.13	0.020	mg/L	E235.F	06-May-2022	06-May-2022	478986
Kjeldahl nitrogen, total [TKN]	----	0.783	0.050	mg/L	E318	06-May-2022	06-May-2022	479031
nitrate (as N)	14797-55-8	0.187	0.020	mg/L	E235.NO3	06-May-2022	06-May-2022	478990
nitrite (as N)	14797-65-0	Not Detected	0.010	mg/L	E235.NO2	06-May-2022	06-May-2022	478991
phosphorus, total	7723-14-0	0.0148	0.0020	mg/L	E372-U	06-May-2022	09-May-2022	479029
sulfate (as SO4)	14808-79-8	210	0.30	mg/L	E235.SO4	06-May-2022	06-May-2022	478988
<b>Cyanides</b>								
cyanide, strong acid dissociable (total)	----	Not Detected	0.0020	mg/L	E333	04-May-2022	04-May-2022	477421
<b>Organic / Inorganic Carbon</b>								
carbon, dissolved organic [DOC]	----	4.83	0.50	mg/L	E358-L	04-May-2022	04-May-2022	476256
<b>Total Metals</b>								
aluminum, total	7429-90-5	0.325	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
antimony, total	7440-36-0	0.00052	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
arsenic, total	7440-38-2	0.00144	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
barium, total	7440-39-3	0.0404	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
beryllium, total	7440-41-7	Not Detected	0.000020	mg/L	E420	03-May-2022	04-May-2022	476011
bismuth, total	7440-69-9	Not Detected	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
boron, total	7440-42-8	0.117	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
cadmium, total	7440-43-9	Not Detected	0.000100	mg/L	E420	03-May-2022	04-May-2022	476011
calcium, total	7440-70-2	75.3	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
cobalt, total	7440-48-4	0.00041	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
copper, total	7440-50-8	0.00300	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
iron, total	7439-89-6	0.358	0.010	mg/L	E420	03-May-2022	04-May-2022	476011
lead, total	7439-92-1	0.000365	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
magnesium, total	7439-95-4	24.4	0.0050	mg/L	E420	03-May-2022	04-May-2022	476011
manganese, total	7439-96-5	0.0247	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
mercury, total	7439-97-6	Not Detected	0.0000050	mg/L	E508	04-May-2022	04-May-2022	476234
molybdenum, total	7439-98-7	0.0583	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
nickel, total	7440-02-0	0.00428	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
potassium, total	7440-09-7	7.11	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
selenium, total	7782-49-2	0.00294	0.000050	mg/L	E420	03-May-2022	04-May-2022	476011
silicon, total	7440-21-3	2.17	0.10	mg/L	E420	03-May-2022	04-May-2022	476011





## Analytical Results

WT2203261-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond D - Pond D Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Total Metals</b>								
silver, total	7440-22-4	Not Detected	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
sodium, total	7440-23-5	41.4	0.050	mg/L	E420	03-May-2022	04-May-2022	476011
strontium, total	7440-24-6	0.637	0.00020	mg/L	E420	03-May-2022	04-May-2022	476011
thallium, total	7440-28-0	0.000031	0.000010	mg/L	E420	03-May-2022	04-May-2022	476011
tin, total	7440-31-5	Not Detected	0.00010	mg/L	E420	03-May-2022	04-May-2022	476011
vanadium, total	7440-62-2	0.00099	0.00050	mg/L	E420	03-May-2022	04-May-2022	476011
zinc, total	7440-66-6	0.0031	0.0030	mg/L	E420	03-May-2022	04-May-2022	476011
<b>Speciated Metals</b>								
chromium, hexavalent [Cr VI], total	18540-29-9	0.00085	0.00050	mg/L	E532	-	04-May-2022	476554
<b>Aggregate Organics</b>								
chemical oxygen demand [COD]	----	14 <sup>SP</sup>	10	mg/L	E559-L	-	05-May-2022	478083
phenols, total (4AAP)	----	0.0024	0.0010	mg/L	E562	06-May-2022	06-May-2022	479032
<b>Volatile Organic Compounds</b>								
acetone	67-64-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
benzene	71-43-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromodichloromethane	75-27-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromoform	75-25-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
bromomethane	74-83-9	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon disulfide	75-15-0	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
carbon tetrachloride	56-23-5	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
chlorobenzene	108-90-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloroethane	75-00-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloroform	67-66-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
chloromethane	74-87-3	Not Detected	2.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromochloromethane	124-48-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dibromoethane, 1,2-	106-93-4	Not Detected	0.20	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,2-	95-50-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,3-	541-73-1	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorobenzene, 1,4-	106-46-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichlorodifluoromethane	75-71-8	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,1-	75-34-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethane, 1,2-	107-06-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, 1,1-	75-35-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, cis-1,2-	156-59-2	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloroethylene, trans-1,2-	156-60-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloromethane	75-09-2	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropane, 1,2-	78-87-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis+trans-1,3-	542-75-6	Not Detected	0.5	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, cis-1,3-	10061-01-5	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
dichloropropylene, trans-1,3-	10061-02-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
ethylbenzene	100-41-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexane, n-	110-54-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
hexanone, 2-	591-78-6	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl ethyl ketone [MEK]	78-93-3	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl isobutyl ketone [MIBK]	108-10-1	Not Detected	20	µg/L	E611D	05-May-2022	05-May-2022	478095
methyl-tert-butyl ether [MTBE]	1634-04-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
styrene	100-42-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethane, 1,1,1,2-	630-20-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095



## Analytical Results

WT2203261-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Pond D - Pond D Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Volatile Organic Compounds</b>								
tetrachloroethane, 1,1,2,2-	79-34-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
tetrachloroethylene	127-18-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
toluene	108-88-3	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,1-	71-55-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethane, 1,1,2-	79-00-5	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichloroethylene	79-01-6	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
trichlorofluoromethane	75-69-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
vinyl chloride	75-01-4	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, m+p-	179601-23-1	Not Detected	0.40	µg/L	E611D	05-May-2022	05-May-2022	478095
xylene, o-	95-47-6	Not Detected	0.30	µg/L	E611D	05-May-2022	05-May-2022	478095
xylenes, total	1330-20-7	Not Detected	0.50	µg/L	E611D	05-May-2022	05-May-2022	478095
BTEX, total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
trihalomethanes [THMs], total	----	Not Detected	1.0	µg/L	E611D	05-May-2022	05-May-2022	478095
<b>Volatile Organic Compounds Surrogates</b>								
bromofluorobenzene, 4-	460-00-4	9.0	1.0	%	E611D	05-May-2022	05-May-2022	478095
difluorobenzene, 1,4-	540-36-3	9.7	1.0	%	E611D	05-May-2022	05-May-2022	478095
<b>Polycyclic Aromatic Hydrocarbons</b>								
acenaphthene	83-32-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
acenaphthylene	208-96-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
anthracene	120-12-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benz(a)anthracene	56-55-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(a)pyrene	50-32-8	Not Detected	0.125	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(b+j)fluoranthene	n/a	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(g,h,i)perylene	191-24-2	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
benzo(k)fluoranthene	207-08-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
chrysene	218-01-9	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
dibenz(a,h)anthracene	53-70-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluoranthene	206-44-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
fluorene	86-73-7	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
indeno(1,2,3-c,d)pyrene	193-39-5	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 1-	90-12-0	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
methylnaphthalene, 2-	91-57-6	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
naphthalene	91-20-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
perylene	198-55-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
phenanthrene	85-01-8	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
pyrene	129-00-0	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phthalate Esters</b>								
bis(2-ethylhexyl) phthalate [DEHP]	117-81-7	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Semi-Volatile Organics</b>								
bis(2-chloroethyl) ether	111-44-4	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
chloroaniline, 4-	106-47-8	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,2-	95-50-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,3-	541-73-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzene, 1,4-	106-46-7	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorobenzidine, 3,3'-	91-94-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,4-	121-14-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrotoluene, 2,6-	606-20-2	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachlorobenzene	118-74-1	Not Detected	0.100	µg/L	E655B	04-May-2022	05-May-2022	476287



## Analytical Results

WT2203261-003

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: Pond D - Pond D Discharge

Client sampling date / time: 02-May-2022 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Semi-Volatile Organics</b>								
hexachlorobutadiene	87-68-3	Not Detected	0.50	µg/L	E655B	04-May-2022	05-May-2022	476287
hexachloroethane	67-72-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorobenzene, 1,2,4-	120-82-1	Not Detected	1.00	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Semi-Volatile Organics Surrogates</b>								
fluorobiphenyl, 2-	321-60-8	3.5 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
nitrobenzene-d5	4165-60-0	3.8 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
terphenyl-d14, p-	1718-51-0	4.1 <sup>DLIS</sup>	1.0	%	E655B	04-May-2022	05-May-2022	476287
<b>Chlorinated Phenolics</b>								
chlorophenol, 2-	95-57-8	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
dichlorophenol, 2,4-	120-83-2	Not Detected	0.75	µg/L	E655B	04-May-2022	05-May-2022	476287
pentachlorophenol [PCP]	87-86-5	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
tetrachlorophenol, 2,3,4,5-	4901-51-3	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
tetrachlorophenol, 2,3,4,6-	58-90-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorophenol, 2,3,6-	933-75-5	Not Detected	0.20	µg/L	E651E	04-May-2022	05-May-2022	476289
trichlorophenol, 2,4,5-	95-95-4	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
trichlorophenol, 2,4,6-	88-06-2	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Non-Chlorinated Phenolics</b>								
dimethylphenol, 2,4-	105-67-9	Not Detected	1.25	µg/L	E655B	04-May-2022	05-May-2022	476287
dinitrophenol, 2,4-	51-28-5	Not Detected	2.5	µg/L	E655B	04-May-2022	05-May-2022	476287
<b>Phenolics Surrogates</b>								
tribromophenol, 2,4,6-	118-79-6	12.4 <sup>SUR-N<sub>D</sub></sup>	1.0	%	E651E	04-May-2022	05-May-2022	476289
tribromophenol, 2,4,6-	118-79-6	4.22	0.50	%	E655B	04-May-2022	05-May-2022	476287

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>WT2203261</b>	Page	: 1 of 21
Amendment	: 1		
Client	: <b>Clean Harbors Environmental Services, Inc.</b>	Laboratory	: Waterloo - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 Corunna ON Canada N0N 1G0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 864 3815	Telephone	: +1 519 886 6910
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 10:15
PO	: 735-002833	Issue Date	: 16-May-2022 08:31
C-O-C number	: ----		
Sampler	: Client		
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.

**CAS Number:** Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

**DQO:** Data Quality Objective.

**LOR:** Limit of Reporting (detection limit).

**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- No Analysis Holding Time Outliers exist.

#### **Outliers : Frequency of Quality Control Samples**

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Laboratory Control Sample (LCS) Recoveries</b>								
Chlorinated Phenolics	QC-476289-002	----	trichlorophenol, 2,3,6-	933-75-5	E651E	139 % LCS-H	50.0-130%	Recovery greater than upper control limit
Non-Chlorinated Phenolics	QC-MRG3-47628602	----	dinitrophenol, 2,4-	51-28-5	E655B	148 % LCS-H	40.0-140%	Recovery greater than upper control limit

**Result Qualifiers**

Qualifier	Description
LCS-H	Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



**Regular Sample Surrogates**

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
<b>Samples Submitted</b>							
Semi-Volatile Organics Surrogates	WT2203261-001	EQ Pond EQ Pond Discharge	fluorobiphenyl, 2-	321-60-8	44.0 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-002	Pond A Pond A Discharge	fluorobiphenyl, 2-	321-60-8	41.8 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-003	Pond D Pond D Discharge	fluorobiphenyl, 2-	321-60-8	44.3 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-001	EQ Pond EQ Pond Discharge	nitrobenzene-d5	4165-60-0	47.6 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-002	Pond A Pond A Discharge	nitrobenzene-d5	4165-60-0	46.5 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-003	Pond D Pond D Discharge	nitrobenzene-d5	4165-60-0	48.2 %	50.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-001	EQ Pond EQ Pond Discharge	terphenyl-d14, p-	1718-51-0	49.1 %	60.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-002	Pond A Pond A Discharge	terphenyl-d14, p-	1718-51-0	49.6 %	60.0-140 %	Recovery less than lower data quality objective
Semi-Volatile Organics Surrogates	WT2203261-003	Pond D Pond D Discharge	terphenyl-d14, p-	1718-51-0	50.8 %	60.0-140 %	Recovery less than lower data quality objective
Phenolics Surrogates	WT2203261-001	EQ Pond EQ Pond Discharge	tribromophenol, 2,4,6-	118-79-6	154 %	40.0-150 %	Recovery greater than upper data quality objective
Phenolics Surrogates	WT2203261-002	Pond A Pond A Discharge	tribromophenol, 2,4,6-	118-79-6	153 %	40.0-150 %	Recovery greater than upper data quality objective
Phenolics Surrogates	WT2203261-003	Pond D Pond D Discharge	tribromophenol, 2,4,6-	118-79-6	155 %	40.0-150 %	Recovery greater than upper data quality objective



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EQ Pond - EQ Pond Discharge	E559-L	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✓	
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond A - Pond A Discharge	E559-L	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✓	
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond D - Pond D Discharge	E559-L	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✓	
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>											
<b>Amber glass total (sulfuric acid)</b> EQ Pond - EQ Pond Discharge	E562	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✓	
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>											
<b>Amber glass total (sulfuric acid)</b> Pond A - Pond A Discharge	E562	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✓	
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>											
<b>Amber glass total (sulfuric acid)</b> Pond D - Pond D Discharge	E562	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> EQ Pond - EQ Pond Discharge	E298	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✓	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> Pond A - Pond A Discharge	E298	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> Pond D - Pond D Discharge	E298	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.Br	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.Br	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.Br	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.Cl	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.Cl	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.Cl	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.F	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.F	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.F	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.NO3	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.NO3	02-May-2022	----	----	----		05-May-2022	7 days	3 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.NO3	02-May-2022	----	----	----		06-May-2022	7 days	4 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.NO2	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.NO2	02-May-2022	----	----	----		05-May-2022	7 days	3 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.NO2	02-May-2022	----	----	----		06-May-2022	7 days	4 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E235.SO4	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E235.SO4	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E235.SO4	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> EQ Pond - EQ Pond Discharge	E318	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond A - Pond A Discharge	E318	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond D - Pond D Discharge	E318	02-May-2022	06-May-2022	----	----		06-May-2022	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> EQ Pond - EQ Pond Discharge	E372-U	02-May-2022	06-May-2022	----	----		09-May-2022	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond A - Pond A Discharge	E372-U	02-May-2022	06-May-2022	----	----		09-May-2022	28 days	7 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> Pond D - Pond D Discharge	E372-U	02-May-2022	06-May-2022	----	----		09-May-2022	28 days	7 days	✔	
<b>Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> EQ Pond - EQ Pond Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond A - Pond A Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond D - Pond D Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Chlorinated Phenolics : Phenolics (Ontario Extra List) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> EQ Pond - EQ Pond Discharge	E651E	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Chlorinated Phenolics : Phenolics (Ontario Extra List) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond A - Pond A Discharge	E651E	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Chlorinated Phenolics : Phenolics (Ontario Extra List) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond D - Pond D Discharge	E651E	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Cyanides : Total Cyanide</b>											
<b>HDPE - total (sodium hydroxide)</b> EQ Pond - EQ Pond Discharge	E333	02-May-2022	----	----	----		04-May-2022	14 days	3 days	✔	
<b>Cyanides : Total Cyanide</b>											
<b>HDPE - total (sodium hydroxide)</b> Pond A - Pond A Discharge	E333	02-May-2022	----	----	----		04-May-2022	14 days	3 days	✔	
<b>Cyanides : Total Cyanide</b>											
<b>HDPE - total (sodium hydroxide)</b> Pond D - Pond D Discharge	E333	02-May-2022	----	----	----		04-May-2022	14 days	3 days	✔	
<b>Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>											
<b>Glass vial total (hydrochloric acid)</b> EQ Pond - EQ Pond Discharge	EF001	02-May-2022	----	----	----		04-May-2022	----	----		



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Field Tests : Field pH,EC,Salinity,Ci2,CiO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>										
<b>Glass vial total (hydrochloric acid)</b> Pond A - Pond A Discharge	EF001	02-May-2022	----	----	----		04-May-2022	----	----	
<b>Field Tests : Field pH,EC,Salinity,Ci2,CiO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>										
<b>Glass vial total (hydrochloric acid)</b> Pond D - Pond D Discharge	EF001	02-May-2022	----	----	----		04-May-2022	----	----	
<b>Non-Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>										
<b>Amber glass/Teflon lined cap [ON MECPP]</b> EQ Pond - EQ Pond Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----	
<b>Non-Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>										
<b>Amber glass/Teflon lined cap [ON MECPP]</b> Pond A - Pond A Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----	
<b>Non-Chlorinated Phenolics : BNA (ON 625 list) by GC-MS</b>										
<b>Amber glass/Teflon lined cap [ON MECPP]</b> Pond D - Pond D Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (sulfuric acid)</b> Pond A - Pond A Discharge	E358-L	02-May-2022	04-May-2022	----	----		04-May-2022	28 days	2 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (lab preserved)</b> EQ Pond - EQ Pond Discharge	E358-L	02-May-2022	04-May-2022	3 days	2 days	✓	04-May-2022	28 days	0 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
<b>Amber glass dissolved (lab preserved)</b> Pond D - Pond D Discharge	E358-L	02-May-2022	04-May-2022	3 days	2 days	✓	04-May-2022	28 days	0 days	✓
<b>Phthalate Esters : BNA (ON 625 list) by GC-MS</b>										
<b>Amber glass/Teflon lined cap [ON MECPP]</b> EQ Pond - EQ Pond Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Phthalate Esters : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond A - Pond A Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Phthalate Esters : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond D - Pond D Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E290	02-May-2022	----	----	----		04-May-2022	14 days	2 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E290	02-May-2022	----	----	----		05-May-2022	14 days	3 days	✔	
<b>Physical Tests : Alkalinity Species by Titration</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E290	02-May-2022	----	----	----		06-May-2022	14 days	4 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E100	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E100	02-May-2022	----	----	----		05-May-2022	28 days	3 days	✔	
<b>Physical Tests : Conductivity in Water</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E100	02-May-2022	----	----	----		06-May-2022	28 days	4 days	✔	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E108	02-May-2022	----	----	----		04-May-2022	4 days	2 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Physical Tests : pH by Meter</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E108	02-May-2022	----	----	----		05-May-2022	4 days	3 days	✔	
<b>Physical Tests : pH by Meter</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E108	02-May-2022	----	----	----		06-May-2022	4 days	4 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E162	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E162	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Physical Tests : TDS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E162	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> EQ Pond - EQ Pond Discharge	E160	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> Pond A - Pond A Discharge	E160	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE [ON MECP]</b> Pond D - Pond D Discharge	E160	02-May-2022	----	----	----		04-May-2022	7 days	2 days	✔	
<b>Polycyclic Aromatic Hydrocarbons : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> EQ Pond - EQ Pond Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Polycyclic Aromatic Hydrocarbons : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond A - Pond A Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Polycyclic Aromatic Hydrocarbons : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond D - Pond D Discharge	E655B	02-May-2022	04-May-2022	----	----		05-May-2022	----	----		
<b>Semi-Volatile Organics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> EQ Pond - EQ Pond Discharge	E655B	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Semi-Volatile Organics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond A - Pond A Discharge	E655B	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Semi-Volatile Organics : BNA (ON 625 list) by GC-MS</b>											
<b>Amber glass/Teflon lined cap [ON MECP]</b> Pond D - Pond D Discharge	E655B	02-May-2022	04-May-2022	14 days	2 days	✔	05-May-2022	40 days	1 days	✔	
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE - total (sodium hydroxide)</b> EQ Pond - EQ Pond Discharge	E532	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE (sodium hydroxide+ammonium hydroxide+ammonium sulfate)</b> Pond A - Pond A Discharge	E532	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>											
<b>HDPE (sodium hydroxide+ammonium hydroxide+ammonium sulfate)</b> Pond D - Pond D Discharge	E532	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> EQ Pond - EQ Pond Discharge	E508	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> Pond A - Pond A Discharge	E508	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Total Metals : Total Mercury in Water by CVAAS</b>											
<b>Glass vial total (hydrochloric acid)</b> Pond D - Pond D Discharge	E508	02-May-2022	----	----	----		04-May-2022	28 days	2 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> EQ Pond - EQ Pond Discharge	E420	02-May-2022	----	----	----		04-May-2022	180 days	2 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> Pond A - Pond A Discharge	E420	02-May-2022	----	----	----		04-May-2022	180 days	2 days	✔	
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>											
<b>HDPE total (nitric acid)</b> Pond D - Pond D Discharge	E420	02-May-2022	----	----	----		04-May-2022	180 days	2 days	✔	
<b>Volatile Organic Compounds : VOCs (ON List) by Headspace GC-MS</b>											
<b>Glass vial (sodium bisulfate)</b> EQ Pond - EQ Pond Discharge	E611D	02-May-2022	05-May-2022	----	----		05-May-2022	14 days	3 days	✔	
<b>Volatile Organic Compounds : VOCs (ON List) by Headspace GC-MS</b>											
<b>Glass vial (sodium bisulfate)</b> Pond A - Pond A Discharge	E611D	02-May-2022	05-May-2022	----	----		05-May-2022	14 days	3 days	✔	
<b>Volatile Organic Compounds : VOCs (ON List) by Headspace GC-MS</b>											
<b>Glass vial (sodium bisulfate)</b> Pond D - Pond D Discharge	E611D	02-May-2022	05-May-2022	----	----		05-May-2022	14 days	3 days	✔	

**Legend & Qualifier Definitions**

Rec. HT: ALS recommended hold time (see units).



## Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity Species by Titration	E290	476309	3	22	13.6	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	476315	3	4	75.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	476317	3	20	15.0	5.0	✓
Conductivity in Water	E100	476311	3	12	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	476316	3	10	30.0	5.0	✓
Nitrate in Water by IC	E235.NO3	476312	3	34	8.8	5.0	✓
Nitrite in Water by IC	E235.NO2	476313	3	25	12.0	5.0	✓
pH by Meter	E108	476310	2	33	6.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	476314	3	19	15.7	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
VOCs (ON List) by Headspace GC-MS	E611D	478095	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity Species by Titration	E290	476309	3	22	13.6	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
BNA (ON 625 list) by GC-MS	E655B	476287	1	7	14.2	5.0	✓
Bromide in Water by IC	E235.Br	476315	3	4	75.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	476317	3	20	15.0	5.0	✓
Conductivity in Water	E100	476311	3	12	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	476316	3	10	30.0	5.0	✓
Nitrate in Water by IC	E235.NO3	476312	3	34	8.8	5.0	✓
Nitrite in Water by IC	E235.NO2	476313	3	25	12.0	5.0	✓
pH by Meter	E108	476310	3	33	9.0	5.0	✓
Phenolics (Ontario Extra List) by GC-MS	E651E	476289	1	3	33.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓



Matrix: **Water**

Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Sulfate in Water by IC	E235.SO4	476314	3	19	15.7	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
VOCs (ON List) by Headspace GC-MS	E611D	478095	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Alkalinity Species by Titration	E290	476309	3	22	13.6	5.0	✓
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
BNA (ON 625 list) by GC-MS	E655B	476287	1	7	14.2	5.0	✓
Bromide in Water by IC	E235.Br	476315	3	4	75.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	476317	3	20	15.0	5.0	✓
Conductivity in Water	E100	476311	3	12	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	476316	3	10	30.0	5.0	✓
Nitrate in Water by IC	E235.NO3	476312	3	34	8.8	5.0	✓
Nitrite in Water by IC	E235.NO2	476313	3	25	12.0	5.0	✓
Phenolics (Ontario Extra List) by GC-MS	E651E	476289	1	3	33.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	476314	3	19	15.7	5.0	✓
TDS by Gravimetry	E162	476771	1	6	16.6	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	476784	1	6	16.6	4.7	✓
VOCs (ON List) by Headspace GC-MS	E611D	478095	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	479030	1	17	5.8	5.0	✓
Bromide in Water by IC	E235.Br	476315	3	4	75.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	478083	1	12	8.3	5.0	✓
Chloride in Water by IC	E235.Cl	476317	3	20	15.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	476256	1	20	5.0	5.0	✓



Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	476316	3	10	30.0	5.0	✓
Nitrate in Water by IC	E235.NO3	476312	3	34	8.8	5.0	✓
Nitrite in Water by IC	E235.NO2	476313	3	25	12.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	479032	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	476314	3	19	15.7	5.0	✓
Total Cyanide	E333	477421	1	12	8.3	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	476554	1	14	7.1	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	479031	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	476234	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	476011	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	479029	1	17	5.8	5.0	✓
VOCs (ON List) by Headspace GC-MS	E611D	478095	1	20	5.0	5.0	✓



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Waterloo - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Waterloo - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Waterloo - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Waterloo - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC	E235.Br Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Waterloo - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Waterloo - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Waterloo - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Total Kjeldahl Nitrogen is determined using block digestion followed by flow-injection analysis with fluorescence detection.
Total Cyanide	E333 Waterloo - Environmental	Water	ISO 14403 (mod)	Total or Strong Acid Dissociable (SAD) Cyanide is determined by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis.  Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Waterloo - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <sub>2</sub> . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Waterloo - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Metals in Water by CRC ICPMS	E420 Waterloo - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.  Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 Waterloo - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Total Hexavalent Chromium (Cr VI) by IC	E532 Waterloo - Environmental	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  Results are based on an un-filtered, field-preserved sample.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L Waterloo - Environmental	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Phenols (4AAP) in Water by Colorimetry	E562 Waterloo - Environmental	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K <sub>3</sub> Fe(CN) <sub>6</sub> ) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VOCs (ON List) by Headspace GC-MS	E611D Waterloo - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Phenolics (Ontario Extra List) by GC-MS	E651E Waterloo - Environmental	Water	EPA 8270E (mod)	Phenolics are analyzed by GC-MS.
BNA (ON 625 list) by GC-MS	E655B Waterloo - Environmental	Water	EPA 8270E (mod)	BNA are analyzed by GC-MS.
Hardness (Calculated) from Total Ca/Mg	EC100A Waterloo - Environmental	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized and Ionized Ammonia (Calculation) (Field Temperature and pH)	EC298A Waterloo - Environmental	Water	CCME CWQG Ammonia	Un-ionized ammonia is calculated from test results for total ammonia, field temperature and pH, and is expressed in units of mg/L "as N".
Field pH, EC, Salinity, Cl <sub>2</sub> , ClO <sub>2</sub> , ORP, DO, Turbidity, T, T-P, o-PO <sub>4</sub> , NH <sub>3</sub> , Chloramine	EF001 Waterloo - Environmental	Water	Field Measurement (Client Supplied)	Field pH, EC, Salinity, Cl <sub>2</sub> , ClO <sub>2</sub> , ORP, DO, Turbidity, T, T-P, o-PO <sub>4</sub> , NH <sub>3</sub> or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Waterloo - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Waterloo - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested using block digestion with Copper Sulfate Digestion Reagent.
Preparation for Dissolved Organic Carbon for Combustion	EP358 Waterloo - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Digestion for Total Phosphorus in water	EP372 Waterloo - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
VOCs Preparation for Headspace Analysis	EP581 Waterloo - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
Phenolics Extraction	EP651 Waterloo - Environmental	Water	EPA 3511 (mod)	Phenolics are extracted from acidic aqueous sample using DCM liquid-liquid extraction.
BNA Extraction	EP655 Waterloo - Environmental	Water	EPA 3510C (mod)	SVOCs are extracted from aqueous sample using DCM liquid-liquid extraction.





QUALITY CONTROL REPORT

Work Order : WT2203261

Page : 1 of 24

Amendment : 1

Client : Clean Harbors Environmental Services, Inc.
Contact : Rob Girard
Address : 455 Phillip Street
Waterloo ON Canada N2L 3X2
Telephone : 519 864 3815
Project : 12572192-20.22
PO : 735-002833
C-O-C number : ----
Sampler : Client
Site : 4090 Telfer Road, RR#1, Corunna
Quote number : 12572192-20.22-SSOW-735-002833
No. of samples received : 3
No. of samples analysed : 3

Laboratory : Waterloo - Environmental
Account Manager : Rick Hawthorne
Address : 60 Northland Road, Unit 1
Waterloo, Ontario Canada N2V 2B8
Telephone : +1 519 886 6910
Date Samples Received : 03-May-2022 10:15
Date Analysis Commenced : 03-May-2022
Issue Date : 16-May-2022 08:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
● Matrix Spike (MS) Report; Recovery and Data Quality Objectives
● Method Blank (MB) Report; Recovery and Data Quality Objectives
● Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Table with 3 columns: Signatories, Position, Laboratory Department. Rows include Greg Pokocky, Jocelyn Kennedy, Jon Fisher, Khairul Intiar, and Sarah Birch.

Page : 2 of 24  
Work Order : WT2203261 Amendment 1  
Client : Clean Harbors Environmental Services, Inc.  
Project : 12572192-20.22

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## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

# = Indicates a QC result that did not meet the ALS DQO.

## **Workorder Comments**

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Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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### Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: <b>Water</b>					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 476309)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	112	111	0.376%	20%	----
<b>Physical Tests (QC Lot: 476310)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	pH	----	E108	0.10	pH units	8.15	8.09	0.06	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 476311)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	conductivity	----	E100	2.0	µS/cm	805	796	1.12%	10%	----
<b>Physical Tests (QC Lot: 476771)</b>											
WT2203261-003	Pond D Pond D Discharge	solids, total dissolved [TDS]	----	E162	20	mg/L	484	491	1.44%	20%	----
<b>Physical Tests (QC Lot: 476784)</b>											
WT2203261-003	Pond D Pond D Discharge	solids, total suspended [TSS]	----	E160	3.0	mg/L	5.6	6.8	1.2	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 477589)</b>											
WT2203261-002	Pond A Pond A Discharge	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	110	109	1.44%	20%	----
<b>Physical Tests (QC Lot: 477591)</b>											
WT2203261-002	Pond A Pond A Discharge	conductivity	----	E100	2.0	µS/cm	798	800	0.250%	10%	----
<b>Physical Tests (QC Lot: 478992)</b>											
WT2203261-003	Pond D Pond D Discharge	pH	----	E108	0.10	pH units	8.29	8.19	0.10	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 478993)</b>											
WT2203261-003	Pond D Pond D Discharge	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	112	109	2.87%	20%	----
<b>Physical Tests (QC Lot: 478994)</b>											
WT2203261-003	Pond D Pond D Discharge	conductivity	----	E100	2.0	µS/cm	798	791	0.881%	10%	----
<b>Anions and Nutrients (QC Lot: 476312)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.356	0.354	0.293%	20%	----
<b>Anions and Nutrients (QC Lot: 476313)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 476314)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	206	206	0.0633%	20%	----
<b>Anions and Nutrients (QC Lot: 476315)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	bromide	24959-67-9	E235.Br	0.10	mg/L	1.39	1.39	0.187%	20%	----
<b>Anions and Nutrients (QC Lot: 476316)</b>											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Anions and Nutrients (QC Lot: 476316) - continued</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	fluoride	16984-48-8	E235.F	0.020	mg/L	1.09	1.09	0.282%	20%	----
<b>Anions and Nutrients (QC Lot: 476317)</b>											
WT2203261-001	EQ Pond EQ Pond Discharge	chloride	16887-00-6	E235.Cl	0.50	mg/L	54.5	54.7	0.301%	20%	----
<b>Anions and Nutrients (QC Lot: 477592)</b>											
WT2203261-002	Pond A Pond A Discharge	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.186	0.186	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 477593)</b>											
WT2203261-002	Pond A Pond A Discharge	chloride	16887-00-6	E235.Cl	0.50	mg/L	54.7	54.8	0.144%	20%	----
<b>Anions and Nutrients (QC Lot: 477594)</b>											
WT2203261-002	Pond A Pond A Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	209	209	0.0858%	20%	----
<b>Anions and Nutrients (QC Lot: 477595)</b>											
WT2203261-002	Pond A Pond A Discharge	fluoride	16984-48-8	E235.F	0.020	mg/L	1.12	1.12	0.0469%	20%	----
<b>Anions and Nutrients (QC Lot: 477596)</b>											
WT2203261-002	Pond A Pond A Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 477597)</b>											
WT2203261-002	Pond A Pond A Discharge	bromide	24959-67-9	E235.Br	0.10	mg/L	1.88	1.89	0.601%	20%	----
<b>Anions and Nutrients (QC Lot: 478986)</b>											
WT2203261-003	Pond D Pond D Discharge	fluoride	16984-48-8	E235.F	0.020	mg/L	1.13	1.13	0.311%	20%	----
<b>Anions and Nutrients (QC Lot: 478987)</b>											
WT2203261-003	Pond D Pond D Discharge	bromide	24959-67-9	E235.Br	0.10	mg/L	1.87	1.90	1.26%	20%	----
<b>Anions and Nutrients (QC Lot: 478988)</b>											
WT2203261-003	Pond D Pond D Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	210	210	0.234%	20%	----
<b>Anions and Nutrients (QC Lot: 478989)</b>											
WT2203261-003	Pond D Pond D Discharge	chloride	16887-00-6	E235.Cl	0.50	mg/L	55.4	55.3	0.220%	20%	----
<b>Anions and Nutrients (QC Lot: 478990)</b>											
WT2203261-003	Pond D Pond D Discharge	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.187	0.190	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 478991)</b>											
WT2203261-003	Pond D Pond D Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 479029)</b>											
WT2203193-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0107	0.0088	0.0019	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 479030)</b>											
WT2203193-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0053	0.0079	0.0026	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 479031)</b>											
WT2203193-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.848	0.869	2.39%	20%	----
<b>Cyanides (QC Lot: 477421)</b>											



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Cyanides (QC Lot: 477421) - continued</b>											
FC2200824-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 476256)</b>											
WT2203050-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	15.5	16.6	7.05%	20%	----
<b>Total Metals (QC Lot: 476011)</b>											
WT2203249-001	Anonymous	aluminum, total	7429-90-5	E420	0.0300	mg/L	0.0428	0.0581	0.0153	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00100	mg/L	0.00168	0.00172	0.00004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00100	mg/L	0.00135	0.00116	0.00019	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00100	mg/L	0.295	0.303	2.69%	20%	----
		beryllium, total	7440-41-7	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.100	mg/L	0.136	0.143	0.007	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000500	mg/L	<0.0000500	<0.0000500	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.500	mg/L	156	161	3.48%	20%	----
		cobalt, total	7440-48-4	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00500	mg/L	0.0332	0.0338	0.00059	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.100	mg/L	0.830	0.854	0.024	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000500	mg/L	0.00357	0.00355	0.000023	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0500	mg/L	37.4	38.7	3.33%	20%	----
		manganese, total	7439-96-5	E420	0.00100	mg/L	0.233	0.239	2.84%	20%	----
		molybdenum, total	7439-98-7	E420	0.000500	mg/L	0.0101	0.0105	3.81%	20%	----
		nickel, total	7440-02-0	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.500	mg/L	40.4	42.5	5.01%	20%	----
		selenium, total	7782-49-2	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	1.00	mg/L	8.06	8.32	0.26	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.500	mg/L	330	334	1.18%	20%	----
		strontium, total	7440-24-6	E420	0.00200	mg/L	7.29	7.57	3.73%	20%	----
		thallium, total	7440-28-0	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0300	mg/L	0.377	0.386	2.25%	20%	----
<b>Total Metals (QC Lot: 476234)</b>											
WT2203237-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000078	0.0000057	0.0000021	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 476554)</b>											
WT2203249-001	Anonymous	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	0.00140	0.00145	0.00005	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Aggregate Organics (QC Lot: 478083)</b>											
WT2203252-001	Anonymous	chemical oxygen demand [COD]	----	E559-L	10	mg/L	16	15	2	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 479032)</b>											
WT2203193-004	Anonymous	phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Volatile Organic Compounds (QC Lot: 478095)</b>											
WT2203274-001	Anonymous	acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		carbon disulfide	75-15-0	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroethane	75-00-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		chloromethane	74-87-3	E611D	2.0	µg/L	<2.0	<2.0	0	Diff <2x LOR	----
		dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		hexanone, 2-	591-78-6	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Volatile Organic Compounds (QC Lot: 478095) - continued</b>											
WT2203274-001	Anonymous	methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



## Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

### Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 476309)</b>						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.1	----
<b>Physical Tests (QCLot: 476311)</b>						
conductivity	----	E100	1	µS/cm	1.2	----
<b>Physical Tests (QCLot: 476771)</b>						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Physical Tests (QCLot: 476784)</b>						
solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Physical Tests (QCLot: 477589)</b>						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 477591)</b>						
conductivity	----	E100	1	µS/cm	<1.0	----
<b>Physical Tests (QCLot: 478993)</b>						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 478994)</b>						
conductivity	----	E100	1	µS/cm	1.0	----
<b>Anions and Nutrients (QCLot: 476312)</b>						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 476313)</b>						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
<b>Anions and Nutrients (QCLot: 476314)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 476315)</b>						
bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 476316)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 476317)</b>						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 477592)</b>						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 477593)</b>						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 477594)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Anions and Nutrients (QCLot: 477595)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 477596)</b>						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
<b>Anions and Nutrients (QCLot: 477597)</b>						
bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 478986)</b>						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 478987)</b>						
bromide	24959-67-9	E235.Br	0.1	mg/L	<0.10	----
<b>Anions and Nutrients (QCLot: 478988)</b>						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 478989)</b>						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 478990)</b>						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 478991)</b>						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
<b>Anions and Nutrients (QCLot: 479029)</b>						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 479030)</b>						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 479031)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Cyanides (QCLot: 477421)</b>						
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	<0.0020	----
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 476011)</b>						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 476011) - continued</b>						
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	---
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	---
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	---
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	---
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	---
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	---
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	---
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	---
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	---
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	---
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	---
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	---
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	---
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	---
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	---
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	---
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	---
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	---
<b>Total Metals (QCLot: 476234)</b>						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Speciated Metals (QCLot: 476554)</b>						
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	---
<b>Aggregate Organics (QCLot: 478083)</b>						
chemical oxygen demand [COD]	---	E559-L	10	mg/L	<10	---
<b>Aggregate Organics (QCLot: 479032)</b>						
phenols, total (4AAP)	---	E562	0.001	mg/L	<0.0010	---
<b>Volatile Organic Compounds (QCLot: 478095)</b>						
acetone	67-64-1	E611D	20	µg/L	<20	---
benzene	71-43-2	E611D	0.5	µg/L	<0.50	---
bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	---
bromoform	75-25-2	E611D	0.5	µg/L	<0.50	---
bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	---
carbon disulfide	75-15-0	E611D	1	µg/L	<1.0	---
carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	---
chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 478095) - continued</b>						
chloroethane	75-00-3	E611D	0.5	µg/L	<0.50	----
chloroform	67-66-3	E611D	0.5	µg/L	<0.50	----
chloromethane	74-87-3	E611D	2	µg/L	<2.0	----
dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	----
dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	----
dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	----
dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	----
dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	----
dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	----
dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	----
dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	----
dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	----
dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	----
dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	----
dichloromethane	75-09-2	E611D	1	µg/L	<1.0	----
dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	----
dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	----
dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	----
ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	----
hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	----
hexanone, 2-	591-78-6	E611D	20	µg/L	<20	----
methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	----
methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	----
styrene	100-42-5	E611D	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	----
tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	----
toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 476287)</b>						
acenaphthene	83-32-9	E655B	0.2	µg/L	<0.20	----
acenaphthylene	208-96-8	E655B	0.2	µg/L	<0.20	----
anthracene	120-12-7	E655B	0.2	µg/L	<0.20	----
benz(a)anthracene	56-55-3	E655B	0.2	µg/L	<0.20	----
benzo(a)pyrene	50-32-8	E655B	0.05	µg/L	<0.050	----
benzo(g,h,i)perylene	191-24-2	E655B	0.2	µg/L	<0.20	----
benzo(k)fluoranthene	207-08-9	E655B	0.2	µg/L	<0.20	----
chrysene	218-01-9	E655B	0.2	µg/L	<0.20	----
dibenz(a,h)anthracene	53-70-3	E655B	0.2	µg/L	<0.20	----
fluoranthene	206-44-0	E655B	0.2	µg/L	<0.20	----
fluorene	86-73-7	E655B	0.2	µg/L	<0.20	----
indeno(1,2,3-c,d)pyrene	193-39-5	E655B	0.2	µg/L	<0.20	----
methylnaphthalene, 1-	90-12-0	E655B	0.4	µg/L	<0.40	----
methylnaphthalene, 2-	91-57-6	E655B	0.4	µg/L	<0.40	----
naphthalene	91-20-3	E655B	0.2	µg/L	<0.20	----
perylene	198-55-0	E655B	0.2	µg/L	<0.20	----
phenanthrene	85-01-8	E655B	0.2	µg/L	<0.20	----
pyrene	129-00-0	E655B	0.2	µg/L	<0.20	----
<b>Phthalate Esters (QCLot: 476287)</b>						
bis(2-ethylhexyl) phthalate [DEHP]	117-81-7	E655B	1	µg/L	<1.0	----
<b>Semi-Volatile Organics (QCLot: 476287)</b>						
bis(2-chloroethyl) ether	111-44-4	E655B	0.4	µg/L	<0.40	----
chloroaniline, 4-	106-47-8	E655B	0.4	µg/L	<0.40	----
dichlorobenzene, 1,2-	95-50-1	E655B	0.4	µg/L	<0.40	----
dichlorobenzene, 1,3-	541-73-1	E655B	0.4	µg/L	<0.40	----
dichlorobenzene, 1,4-	106-46-7	E655B	0.4	µg/L	<0.40	----
dichlorobenzidine, 3,3'-	91-94-1	E655B	0.4	µg/L	<0.40	----
dinitrotoluene, 2,4-	121-14-2	E655B	0.4	µg/L	<0.40	----
dinitrotoluene, 2,6-	606-20-2	E655B	0.4	µg/L	<0.40	----
hexachlorobenzene	118-74-1	E655B	0.04	µg/L	<0.040	----
hexachlorobutadiene	87-68-3	E655B	0.2	µg/L	<0.20	----
hexachloroethane	67-72-1	E655B	0.4	µg/L	<0.40	----
trichlorobenzene, 1,2,4-	120-82-1	E655B	0.4	µg/L	<0.40	----
<b>Chlorinated Phenolics (QCLot: 476287)</b>						
chlorophenol, 2-	95-57-8	E655B	0.3	µg/L	<0.30	----
dichlorophenol, 2,4-	120-83-2	E655B	0.3	µg/L	<0.30	----



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Chlorinated Phenolics (QCLot: 476287) - continued</b>						
pentachlorophenol [PCP]	87-86-5	E655B	0.5	µg/L	<0.50	----
tetrachlorophenol, 2,3,4,5-	4901-51-3	E655B	0.5	µg/L	<0.50	----
tetrachlorophenol, 2,3,4,6-	58-90-2	E655B	0.5	µg/L	<0.50	----
trichlorophenol, 2,4,5-	95-95-4	E655B	0.5	µg/L	<0.50	----
trichlorophenol, 2,4,6-	88-06-2	E655B	0.5	µg/L	<0.50	----
<b>Chlorinated Phenolics (QCLot: 476289)</b>						
trichlorophenol, 2,3,6-	933-75-5	E651E	0.2	µg/L	<0.20	----
<b>Non-Chlorinated Phenolics (QCLot: 476287)</b>						
dimethylphenol, 2,4-	105-67-9	E655B	0.5	µg/L	<0.50	----
dinitrophenol, 2,4-	51-28-5	E655B	1	µg/L	<1.0	----



## Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 476309)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	150 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 476310)</b>									
pH	----	E108	----	pH units	7 pH units	99.6	98.0	102	----
<b>Physical Tests (QCLot: 476311)</b>									
conductivity	----	E100	1	µS/cm	1409 µS/cm	99.8	90.0	110	----
<b>Physical Tests (QCLot: 476771)</b>									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	85.6	85.0	115	----
<b>Physical Tests (QCLot: 476784)</b>									
solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.0	85.0	115	----
<b>Physical Tests (QCLot: 477589)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	150 mg/L	101	85.0	115	----
<b>Physical Tests (QCLot: 477590)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
<b>Physical Tests (QCLot: 477591)</b>									
conductivity	----	E100	1	µS/cm	1409 µS/cm	100	90.0	110	----
<b>Physical Tests (QCLot: 478992)</b>									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
<b>Physical Tests (QCLot: 478993)</b>									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	150 mg/L	102	85.0	115	----
<b>Physical Tests (QCLot: 478994)</b>									
conductivity	----	E100	1	µS/cm	1409 µS/cm	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 476312)</b>									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 476313)</b>									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 476314)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 476315)</b>									
bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 476316)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 476317)</b>									



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
						Low	High		
<b>Anions and Nutrients (QCLot: 476317) - continued</b>									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 477592)</b>									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	99.9	90.0	110	----
<b>Anions and Nutrients (QCLot: 477593)</b>									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 477594)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 477595)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 477596)</b>									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 477597)</b>									
bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	99.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 478986)</b>									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 478987)</b>									
bromide	24959-67-9	E235.Br	0.1	mg/L	0.5 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 478988)</b>									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 478989)</b>									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 478990)</b>									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 478991)</b>									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 479029)</b>									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.431 mg/L	95.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 479030)</b>									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	----
<b>Anions and Nutrients (QCLot: 479031)</b>									
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	4 mg/L	99.4	75.0	125	----
<b>Cyanides (QCLot: 477421)</b>									
cyanide, strong acid dissociable (total)	----	E333	0.002	mg/L	0.25 mg/L	95.5	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 476011)</b>									
aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	99.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.0125 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	95.4	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	95.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	0.05 mg/L	90.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	2.5 mg/L	94.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.0125 mg/L	99.4	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.0125 mg/L	99.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	2.5 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.0125 mg/L	99.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.0125 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	99.5	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	2.5 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	108	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	0.5 mg/L	98.3	60.0	140	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	95.9	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	2.5 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.0125 mg/L	104	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	0.05 mg/L	98.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	109	80.0	120	----
<b>Total Metals (QCLot: 476234)</b>									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.3	80.0	120	----
<b>Speciated Metals (QCLot: 476554)</b>									
chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	99.3	80.0	120	----
<b>Aggregate Organics (QCLot: 478083)</b>									
chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	99.7	85.0	115	----
<b>Aggregate Organics (QCLot: 479032)</b>									
phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	103	85.0	115	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Volatile Organic Compounds (QCLot: 478095)</b>									
acetone	67-64-1	E611D	20	µg/L	100 µg/L	116	70.0	130	----
benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	93.4	70.0	130	----
carbon disulfide	75-15-0	E611D	1	µg/L	100 µg/L	96.2	70.0	130	----
carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	104	70.0	130	----
chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	102	70.0	130	----
chloroethane	75-00-3	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
chloromethane	74-87-3	E611D	2	µg/L	100 µg/L	96.4	70.0	130	----
dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	100	70.0	130	----
dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	113	70.0	130	----
dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	113	70.0	130	----
dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	87.8	70.0	130	----
dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	106	70.0	130	----
dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	111	70.0	130	----
dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	106	70.0	130	----
dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	92.4	70.0	130	----
dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	93.2	70.0	130	----
ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	110	70.0	130	----
hexanone, 2-	591-78-6	E611D	20	µg/L	100 µg/L	82.2	70.0	130	----
methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	105	70.0	130	----
methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	86.3	70.0	130	----
methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	90.2	70.0	130	----
tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	108	70.0	130	----
tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	107	70.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 478095) - continued</b>									
trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	101	70.0	130	----
trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	104	70.0	130	----
trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	97.5	70.0	130	----
vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	94.7	70.0	130	----
xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	108	70.0	130	----
xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	108	70.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 476287)</b>									
acenaphthene	83-32-9	E655B	0.2	µg/L	1.6 µg/L	90.5	50.0	140	----
acenaphthylene	208-96-8	E655B	0.2	µg/L	1.6 µg/L	86.4	50.0	140	----
anthracene	120-12-7	E655B	0.2	µg/L	1.6 µg/L	97.1	50.0	140	----
benz(a)anthracene	56-55-3	E655B	0.2	µg/L	1.6 µg/L	103	50.0	140	----
benzo(a)pyrene	50-32-8	E655B	0.05	µg/L	1.6 µg/L	86.6	50.0	140	----
benzo(g,h,i)perylene	191-24-2	E655B	0.2	µg/L	1.6 µg/L	99.6	50.0	140	----
benzo(k)fluoranthene	207-08-9	E655B	0.2	µg/L	1.6 µg/L	100	50.0	140	----
chrysene	218-01-9	E655B	0.2	µg/L	1.6 µg/L	97.2	50.0	140	----
dibenz(a,h)anthracene	53-70-3	E655B	0.2	µg/L	1.6 µg/L	102	50.0	140	----
fluoranthene	206-44-0	E655B	0.2	µg/L	1.6 µg/L	105	50.0	140	----
fluorene	86-73-7	E655B	0.2	µg/L	1.6 µg/L	93.9	50.0	140	----
indeno(1,2,3-c,d)pyrene	193-39-5	E655B	0.2	µg/L	1.6 µg/L	95.4	50.0	140	----
methylnaphthalene, 1-	90-12-0	E655B	0.4	µg/L	1.6 µg/L	78.8	50.0	140	----
methylnaphthalene, 2-	91-57-6	E655B	0.4	µg/L	1.6 µg/L	84.4	50.0	140	----
naphthalene	91-20-3	E655B	0.2	µg/L	1.6 µg/L	86.1	50.0	140	----
perylene	198-55-0	E655B	0.2	µg/L	1.6 µg/L	95.7	50.0	140	----
phenanthrene	85-01-8	E655B	0.2	µg/L	1.6 µg/L	93.6	50.0	140	----
pyrene	129-00-0	E655B	0.2	µg/L	1.6 µg/L	102	50.0	140	----
<b>Phthalate Esters (QCLot: 476287)</b>									
bis(2-ethylhexyl) phthalate [DEHP]	117-81-7	E655B	1	µg/L	6.4 µg/L	110	50.0	140	----
<b>Semi-Volatile Organics (QCLot: 476287)</b>									
bis(2-chloroethyl) ether	111-44-4	E655B	0.4	µg/L	1.6 µg/L	93.4	50.0	140	----
chloroaniline, 4-	106-47-8	E655B	0.4	µg/L	1.6 µg/L	68.4	30.0	140	----
dichlorobenzene, 1,2-	95-50-1	E655B	0.4	µg/L	1.6 µg/L	71.2	40.0	130	----
dichlorobenzene, 1,3-	541-73-1	E655B	0.4	µg/L	1.6 µg/L	62.6	50.0	140	----
dichlorobenzene, 1,4-	106-46-7	E655B	0.4	µg/L	1.6 µg/L	65.0	40.0	130	----
dichlorobenzidine, 3,3'-	91-94-1	E655B	0.4	µg/L	1.6 µg/L	68.4	50.0	140	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Semi-Volatile Organics (QCLot: 476287) - continued</b>									
dinitrotoluene, 2,4-	121-14-2	E655B	0.4	µg/L	1.6 µg/L	118	50.0	140	----
dinitrotoluene, 2,6-	606-20-2	E655B	0.4	µg/L	1.6 µg/L	107	50.0	140	----
hexachlorobenzene	118-74-1	E655B	0.04	µg/L	1.6 µg/L	87.1	40.0	130	----
hexachlorobutadiene	87-68-3	E655B	0.2	µg/L	1.6 µg/L	48.6	40.0	130	----
hexachloroethane	67-72-1	E655B	0.4	µg/L	1.6 µg/L	55.3	40.0	130	----
trichlorobenzene, 1,2,4-	120-82-1	E655B	0.4	µg/L	1.6 µg/L	64.5	50.0	130	----
<b>Chlorinated Phenolics (QCLot: 476287)</b>									
chlorophenol, 2-	95-57-8	E655B	0.3	µg/L	4.8 µg/L	85.3	65.0	130	----
dichlorophenol, 2,4-	120-83-2	E655B	0.3	µg/L	4.8 µg/L	90.9	65.0	130	----
pentachlorophenol [PCP]	87-86-5	E655B	0.5	µg/L	4.8 µg/L	129	65.0	130	----
tetrachlorophenol, 2,3,4,5-	4901-51-3	E655B	0.5	µg/L	4.8 µg/L	100	50.0	130	----
tetrachlorophenol, 2,3,4,6-	58-90-2	E655B	0.5	µg/L	4.8 µg/L	109	65.0	130	----
trichlorophenol, 2,4,5-	95-95-4	E655B	0.5	µg/L	4.8 µg/L	104	65.0	130	----
trichlorophenol, 2,4,6-	88-06-2	E655B	0.5	µg/L	4.8 µg/L	102	65.0	130	----
<b>Chlorinated Phenolics (QCLot: 476289)</b>									
trichlorophenol, 2,3,6-	933-75-5	E651E	0.2	µg/L	0.4 µg/L	# 139	50.0	130	LCS-H
<b>Non-Chlorinated Phenolics (QCLot: 476287)</b>									
dimethylphenol, 2,4-	105-67-9	E655B	0.5	µg/L	4.8 µg/L	79.8	30.0	130	----
dinitrophenol, 2,4-	51-28-5	E655B	1	µg/L	4.8 µg/L	# 148	40.0	140	LCS-H

**Qualifiers**

Qualifier Description

LCS-H Lab Control Sample recovery was above ALS DQO. Non-detected sample results are considered reliable. Other results, if reported, have been qualified.



## Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level  $\geq 1x$  spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 476312)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	nitrate (as N)	14797-55-8	E235.NO3	2.50 mg/L	2.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 476313)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.512 mg/L	0.5 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 476314)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 476315)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	bromide	24959-67-9	E235.Br	ND mg/L	0.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 476316)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	fluoride	16984-48-8	E235.F	ND mg/L	1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 476317)</b>										
WT2203261-001	EQ Pond EQ Pond Discharge	chloride	16887-00-6	E235.Cl	102 mg/L	100 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 477592)</b>										
WT2203261-002	Pond A Pond A Discharge	nitrate (as N)	14797-55-8	E235.NO3	2.44 mg/L	2.5 mg/L	97.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 477593)</b>										
WT2203261-002	Pond A Pond A Discharge	chloride	16887-00-6	E235.Cl	99.5 mg/L	100 mg/L	99.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 477594)</b>										
WT2203261-002	Pond A Pond A Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 477595)</b>										
WT2203261-002	Pond A Pond A Discharge	fluoride	16984-48-8	E235.F	ND mg/L	1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 477596)</b>										
WT2203261-002	Pond A Pond A Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.500 mg/L	0.5 mg/L	100	75.0	125	----
<b>Anions and Nutrients (QCLot: 477597)</b>										
WT2203261-002	Pond A Pond A Discharge	bromide	24959-67-9	E235.Br	ND mg/L	0.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 478986)</b>										
WT2203261-003	Pond D Pond D Discharge	fluoride	16984-48-8	E235.F	ND mg/L	1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 478987)</b>										



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 478987) - continued</b>										
WT2203261-003	Pond D Pond D Discharge	bromide	24959-67-9	E235.Br	ND mg/L	0.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 478988)</b>										
WT2203261-003	Pond D Pond D Discharge	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 478989)</b>										
WT2203261-003	Pond D Pond D Discharge	chloride	16887-00-6	E235.Cl	99.6 mg/L	100 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 478990)</b>										
WT2203261-003	Pond D Pond D Discharge	nitrate (as N)	14797-55-8	E235.NO3	2.46 mg/L	2.5 mg/L	98.5	75.0	125	----
<b>Anions and Nutrients (QCLot: 478991)</b>										
WT2203261-003	Pond D Pond D Discharge	nitrite (as N)	14797-65-0	E235.NO2	0.504 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 479029)</b>										
WT2203193-003	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0874 mg/L	0.1 mg/L	87.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 479030)</b>										
WT2203193-005	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 479031)</b>										
WT2203193-002	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.37 mg/L	2.5 mg/L	94.9	70.0	130	----
<b>Cyanides (QCLot: 477421)</b>										
FC2200824-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.231 mg/L	0.25 mg/L	92.5	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 476256)</b>										
WT2203050-007	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 476011)</b>										
WT2203250-001	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0551 mg/L	0.05 mg/L	110	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0560 mg/L	0.05 mg/L	112	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.00499 mg/L	0.005 mg/L	99.8	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0507 mg/L	0.05 mg/L	101	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00543 mg/L	0.005 mg/L	109	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0128 mg/L	0.0125 mg/L	102	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	0.05 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0242 mg/L	0.025 mg/L	96.7	70.0	130	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Total Metals (QCLot: 476011) - continued</b>										
WT2203250-001	Anonymous	magnesium, total	7439-95-4	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0130 mg/L	0.0125 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0252 mg/L	0.025 mg/L	101	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0566 mg/L	0.05 mg/L	113	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	0.5 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00488 mg/L	0.005 mg/L	97.7	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2.5 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.0125 mg/L	ND	70.0	130	----
		thallium, total	7440-28-0	E420	0.0495 mg/L	0.05 mg/L	99.1	70.0	130	----
		tin, total	7440-31-5	E420	0.0256 mg/L	0.025 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0259 mg/L	0.025 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	ND mg/L	0.025 mg/L	ND	70.0	130	----
<b>Total Metals (QCLot: 476234)</b>										
WT2203249-001	Anonymous	mercury, total	7439-97-6	E508	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
<b>Speciated Metals (QCLot: 476554)</b>										
WT2203249-001	Anonymous	chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
<b>Aggregate Organics (QCLot: 478083)</b>										
WT2203252-001	Anonymous	chemical oxygen demand [COD]	----	E559-L	103 mg/L	100 mg/L	103	75.0	125	----
<b>Aggregate Organics (QCLot: 479032)</b>										
WT2203193-004	Anonymous	phenols, total (4AAP)	----	E562	0.0196 mg/L	0.02 mg/L	98.1	75.0	125	----
<b>Volatile Organic Compounds (QCLot: 478095)</b>										
WT2203274-001	Anonymous	acetone	67-64-1	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		benzene	71-43-2	E611D	109 µg/L	100 µg/L	109	60.0	140	----
		bromodichloromethane	75-27-4	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		bromoform	75-25-2	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		bromomethane	74-83-9	E611D	95.4 µg/L	100 µg/L	95.4	60.0	140	----
		carbon disulfide	75-15-0	E611D	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		carbon tetrachloride	56-23-5	E611D	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		chlorobenzene	108-90-7	E611D	96.3 µg/L	100 µg/L	96.3	60.0	140	----
		chloroethane	75-00-3	E611D	99.1 µg/L	100 µg/L	99.1	60.0	140	----
		chloroform	67-66-3	E611D	103 µg/L	100 µg/L	103	60.0	140	----
		chloromethane	74-87-3	E611D	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		dibromochloromethane	124-48-1	E611D	99.7 µg/L	100 µg/L	99.7	60.0	140	----



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 478095) - continued</b>										
WT2203274-001	Anonymous	dibromoethane, 1,2-	106-93-4	E611D	99.3 µg/L	100 µg/L	99.3	60.0	140	----
		dichlorobenzene, 1,2-	95-50-1	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		dichlorobenzene, 1,3-	541-73-1	E611D	98.8 µg/L	100 µg/L	98.8	60.0	140	----
		dichlorobenzene, 1,4-	106-46-7	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		dichlorodifluoromethane	75-71-8	E611D	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		dichloroethane, 1,1-	75-34-3	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		dichloroethane, 1,2-	107-06-2	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		dichloroethylene, 1,1-	75-35-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		dichloroethylene, cis-1,2-	156-59-2	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		dichloroethylene, trans-1,2-	156-60-5	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		dichloromethane	75-09-2	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		dichloropropane, 1,2-	78-87-5	E611D	105 µg/L	100 µg/L	105	60.0	140	----
		dichloropropylene, cis-1,3-	10061-01-5	E611D	95.8 µg/L	100 µg/L	95.8	60.0	140	----
		dichloropropylene, trans-1,3-	10061-02-6	E611D	91.8 µg/L	100 µg/L	91.8	60.0	140	----
		ethylbenzene	100-41-4	E611D	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		hexane, n-	110-54-3	E611D	107 µg/L	100 µg/L	107	60.0	140	----
		hexanone, 2-	591-78-6	E611D	93 µg/L	100 µg/L	93.0	60.0	140	----
		methyl ethyl ketone [MEK]	78-93-3	E611D	104 µg/L	100 µg/L	104	60.0	140	----
		methyl isobutyl ketone [MIBK]	108-10-1	E611D	98 µg/L	100 µg/L	98.0	60.0	140	----
		methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		styrene	100-42-5	E611D	95.1 µg/L	100 µg/L	95.1	60.0	140	----
		tetrachloroethane, 1,1,1,2-	630-20-6	E611D	95.9 µg/L	100 µg/L	95.9	60.0	140	----
		tetrachloroethane, 1,1,2,2-	79-34-5	E611D	108 µg/L	100 µg/L	108	60.0	140	----
		tetrachloroethylene	127-18-4	E611D	93.3 µg/L	100 µg/L	93.3	60.0	140	----
		toluene	108-88-3	E611D	101 µg/L	100 µg/L	101	60.0	140	----
		trichloroethane, 1,1,1-	71-55-6	E611D	97.2 µg/L	100 µg/L	97.2	60.0	140	----
		trichloroethane, 1,1,2-	79-00-5	E611D	102 µg/L	100 µg/L	102	60.0	140	----
		trichloroethylene	79-01-6	E611D	98.1 µg/L	100 µg/L	98.1	60.0	140	----
		trichlorofluoromethane	75-69-4	E611D	95.3 µg/L	100 µg/L	95.3	60.0	140	----
		vinyl chloride	75-01-4	E611D	96.2 µg/L	100 µg/L	96.2	60.0	140	----
		xylene, m+p-	179601-23-1	E611D	199 µg/L	200 µg/L	99.4	60.0	140	----
		xylene, o-	95-47-6	E611D	100 µg/L	100 µg/L	100	60.0	140	----

Page : 24 of 24  
Work Order : WT2203261 Amendment 1  
Client : Clean Harbors Environmental Services, Inc.  
Project : 12572192-20.22

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www.alsglobal.com

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20

Page

Environmental Division  
Waterloo  
Work Order Reference  
WT2203261

Report To: Contact and company name below will appear on the final report

Company: GHD Ltd. (Acct 13791)

Contact: Stephanie Berton

Phone: 519-884-0510

Company address below will appear on the final report

Street: 455 Phillip St

City/Province: Waterloo, ON

Postal Code: N2L 3X2

Invoice To: Same as Report To  YES  NO

Company: GHD Ltd. (Acct 13791)

Contact: Project Information

ALS Account # / Quote #: 44985-20-21

Job #: 44985-20-21

PO / AFE: LSD:

ALS Lab Work Order # (lab use only): **WT2203261**

Sample Identification and/or Coordinates (This description will appear on the report)

EQ Pond Discharge

POND D East Pond

PONDA West Pond

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Are samples taken from a Regulated DW System?  YES  NO

Are samples for human consumption/user?  YES  NO

Released by: **[Signature]** Date: **May 2/2022** Time: **1500**

Initial Shipment Reception (lab use only)

Received by: **[Signature]** Date: **May 2/2022** Time: **1500**

Final Shipment Reception (lab use only)

Received by: **[Signature]** Date: **May 2/2022** Time: **1500**

White - Laboratory Copy

Yellow - Client Copy

Refer to back page for ALS locations and sampling information

If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

### Reports / Recipients

Select Report Format:  PDF  EXCEL  EDD (DIGITAL)

Merge QC/QCI Reports with COA  YES  NO  N/A

Compare Results to Criteria on Report - provide details below if box checked

Select Distribution:  EMAIL  MAIL  FAX

Email 1 or Fax: stephanie.berton@ghd.com

Email 2: See SSO/WPO

Email 3:

### Invoice Recipients

Select Invoice Distribution:  EMAIL  MAIL  FAX

Email 1 or Fax: Invoicing-Canada@ghd.com

Email 2:

Oil and Gas Required Fields (client use)

A/E/Cost Center:

Major/Minor Code:

Requisitioner:

Location:

ALS Contact: Rick H

Sampler:

Date (dd-mm-yy)

Time (hh:mm)

Sample Type

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

Water

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Water

Water

Water

Water

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Water

Water

Water

Water

Water

### NUMBER OF CONTAINERS

SVOCs (SVOC-44985-P-WT)

VOCs(VOC-ROU-HS-WT.)

ALK, Conductivity, pH, TDS, TSS

Anions6 (Br,N2N3, CL, F, BR, SO4)

Phenols-4AAP, COD, TKN, TTP

DOC

NH3-Unionized Ammonia

Total Metals, Hardness-Calc-T-WT

Mercury Total

Total Cyanide, Total Cr6

REP: WT-44985-VOC

REP: WT-44985-Metals

Field Temp

Field Ph

SAMPLES ON HOLD

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see notes)

### Turnaround Time (TAT) Requested

Routine [R] if received by 3pm M-F - no surcharges apply

4 day [F4] if received by 3pm M-F - 20% rush surcharge min/m

3 day [F3] if received by 3pm M-F - 25% rush surcharge min/m

2 day [F2] if received by 3pm M-F - 50% rush surcharge min/m

1 day [E] if received by 3pm M-F - 100% rush surcharge min/m

Same day [E2] if received by 10am M-F - 200% rush surcharge

Fees may apply to rush results on weekends, statutory holidays; routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the TAT requested, you will be contacted.

### Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below



Telephone : + 1 519 886 6910

### SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method:  NONE  ICE  ICE PACKS  FROZEN  COOLING INITIATED

Submission Comments Identified on Sample Receipt Notification:  YES  NO

Cooler Custody Seals Intact:  YES  N/A  NO

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C

INITIAL COOLER TEMPERATURES °C



## CERTIFICATE OF ANALYSIS

Work Order	: <b>WP2200475</b>	Page	: 1 of 2
Client	: <b>Clean Harbors Environmental Services, Inc.</b>	Laboratory	: Winnipeg - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 RR1 Corunna ON Canada N0N 1G0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg MB Canada R2J 3T4
Telephone	: 519 864 3815	Telephone	: +1 204 255 9720
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 08:50
PO	: 735-002833	Date Analysis	: 04-May-2022
		Commenced	
C-O-C number	: ----	Issue Date	: 04-May-2022 15:13
Sampler	: ----		
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Jeremy Byrnes	Senior Analyst	Limnology, Winnipeg, Manitoba



## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
°C	degrees Celsius
pH units	pH units

>: greater than.

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Analytical Results

WP2200475-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EQ Pond Discharge Microtox - EQ Pond Microtox

Client sampling date / time: 03-May-2022 00:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Microtox</b>								
Mtx colour	----	None	-	-	E863	-	04-May-2022	-
Mtx colour correction required	----	No	-	-	E863	-	04-May-2022	-
odour	----	Mild	-	-	E863	-	04-May-2022	-
Mtx turbidity	----	Low	-	-	E863	-	04-May-2022	-
solids, total [TS]	----	Low	-	-	E863	-	04-May-2022	-
temperature	----	19.8	0.010	°C	E863	-	04-May-2022	-
oxygen, dissolved	7782-44-7	115	0.10	%	E863	-	04-May-2022	-
Mtx pH, initial	----	7.81	0.010	pH units	E863	-	04-May-2022	-
Mtx Microtox other	----	See Attached	-	-	E863	-	04-May-2022	-
Mtx IC50 (5 min)	----	>90	-	%	E863	-	04-May-2022	-
Mtx IC50 (15 min)	----	>90	-	%	E863	-	04-May-2022	-
Mtx IC50 (30 min)	----	>90	-	%	E863	-	04-May-2022	-
Mtx IC20 (5 min)	n/a	>90	-	%	E863	-	04-May-2022	-
Mtx IC20 (15 min)	n/a	>90	-	%	E863	-	04-May-2022	-
Mtx IC20 (30 min)	n/a	>90	-	%	E863	-	04-May-2022	-

Please refer to the General Comments section for an explanation of any qualifiers detected.

## QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: <b>WP2200475</b>	Page	: 1 of 5
Client	: <b>Clean Harbors Environmental Services, Inc.</b>	Laboratory	: Winnipeg - Environmental
Contact	: Rob Girard	Account Manager	: Rick Hawthorne
Address	: 4090 TELFER ROAD RR1 Corunna ON Canada N0N 1G0	Address	: 1329 Niakwa Road East, Unit 12 Winnipeg, Manitoba Canada R2J 3T4
Telephone	: 519 864 3815	Telephone	: +1 204 255 9720
Project	: 12572192-20.22	Date Samples Received	: 03-May-2022 08:50
PO	: 735-002833	Issue Date	: 04-May-2022 15:13
C-O-C number	: ----		
Sampler	: ----		
Site	: 4090 Telfer Road, RR#1, Corunna		
Quote number	: 12572192-20.22-SSOW-735-002833		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

### Key

**Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.  
**CAS Number:** Chemical Abstracts Services number is a unique identifier assigned to discrete substances.  
**DQO:** Data Quality Objective.  
**LOR:** Limit of Reporting (detection limit).  
**RPD:** Relative Percent Difference.

### **Workorder Comments**

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

### **Summary of Outliers**

#### **Outliers : Quality Control Samples**

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

#### **Outliers: Reference Material (RM) Samples**

- No Reference Material (RM) Sample outliers occur.

#### **Outliers : Analysis Holding Time Compliance (Breaches)**

- No Analysis Holding Time Outliers exist.

## ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microtox : Microtox Toxicity Test</b>										
<b>Amber glass</b> EQ Pond Discharge Microtox - EQ Pond Microtox	E863	03-May-2022	----	----	----		04-May-2022	3 days	2 days	✓

### Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



---

## *Quality Control Parameter Frequency Compliance*

- No Quality Control data available for this section.



## Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Microtox Toxicity Test	E863  Winnipeg - Environmental	Water	Env. Canada EPS 1/RM/24	The Microtox test organism is a marine luminescent bacteria ( <i>Vibrio fischeri</i> ). This method measures the light output before and after the bacteria are exposed to a dilution series of concentrations of a sample. The degree of light loss (an indication of metabolic inhibition) indicates the degree of toxicity of the sample.





## QUALITY CONTROL REPORT

Work Order : **WP2200475**

Page : 1 of 2

Client : Clean Harbors Environmental Services, Inc.  
Contact : Rob Girard  
Address : 455 Phillip Street  
Waterloo ON Canada N2L 3X2  
Telephone : 519 864 3815  
Project : 12572192-20.22  
PO : 735-002833  
C-O-C number : ----  
Sampler : ----  
Site : 4090 Telfer Road, RR#1, Corunna  
Quote number : 12572192-20.22-SSOW-735-002833  
No. of samples received : 1  
No. of samples analysed : 1

Laboratory : Winnipeg - Environmental  
Account Manager : Rick Hawthorne  
Address : 1329 Niakwa Road East, Unit 12  
Winnipeg, Manitoba Canada R2J 3T4  
Telephone : +1 204 255 9720  
Date Samples Received : 03-May-2022 08:50  
Date Analysis Commenced : 04-May-2022  
Issue Date : 04-May-2022 15:13

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

### Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Jeremy Byrnes	Senior Analyst	Limnology, Winnipeg, Manitoba

Page : 2 of 2  
Work Order : WP2200475  
Client : Clean Harbors Environmental Services, Inc.  
Project : 12572192-20.22

---



## **General Comments**

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include 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 predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

# = Indicates a QC result that did not meet the ALS DQO.

## **Workorder Comments**

---

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

---



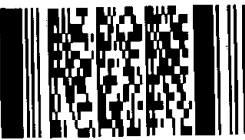
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Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Canada Toll Free: 1 800 668 9878

Page of

<b>Report To</b> Contact and company name below will appear on the final report		<b>Reports / Recipients</b>			<b>Turnaround Time (TAT) Requested</b>			<b>AFFIX ALS BARCODE LABEL HERE (ALS use only)</b>																																														
Company:	GHD Ltd. (GHDL100)	Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)			<input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush resubmits on weekends, statutory holidays and non-routine tests																																																	
Contact:	Kory Ozgun	Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A																																																				
Phone:	519-884-0510	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked																																																				
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			Date and Time Required for all EAP TATs:																																																	
Street:	455 Phillip St.	Email 1 or Fax kory.ozgun@ghd.com																																																				
City/Province:	Waterloo, ON	Email 2 See SSOW/PO																																																				
Postal Code:	N2L 3X2	Email 3																																																				
<b>Invoice To</b>		<b>Invoice Recipients</b>			For tests that can not be performed according to the TAT requested, you will be contacted.																																																	
Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			<b>Analysis Request</b>																																																	
Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Email 1 or Fax Invoicing-Canada@ghd.com																																																				
Company: GHD Ltd. (GHDL100)		Email 2			<table border="1"> <thead> <tr> <th rowspan="2">NUMBER OF CONTAINERS</th> <th colspan="10">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</th> <th rowspan="2">Field Temp</th> <th rowspan="2">Field Ph</th> <th rowspan="2">SAMPLES ON HOLD</th> <th rowspan="2">EXTENDED STORAGE REQUIRED</th> <th rowspan="2">SUSPECTED HAZARD (see notes)</th> </tr> <tr> <th>Microtox (Winnipeg)</th> <th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th> </tr> </thead> <tbody> <tr> <td></td> <td>R</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below										Field Temp	Field Ph	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)	Microtox (Winnipeg)												R															
NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											Field Temp	Field Ph	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																						
	Microtox (Winnipeg)																																																					
	R																																																					
Project Information		Oil and Gas Required Fields (client use)																																																				
ALS Account # / Quote #: WT2022GHDL1000060 (Planned Event)		AFE/Cost Center:		PO#																																																		
Job #: 12572192-20.22		Major/Minor Code:		Routing Code:																																																		
PO / AFE: 735-002833		Requisitioner:																																																				
LSD:		Location:																																																				
ALS Lab Work Order # (lab use only):		ALS Contact: Rick H		Sampler:																																																		
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																																																		
	EQ Pond Discharge			Water																																																		
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Environmental Division Winnipeg Work Order Reference <b>WP2200475</b></p>  <p>Telephone: +1 204 255 9720</p> </div>																																																						
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			<b>SAMPLE RECEIPT DETAILS (lab use only)</b>																																																	
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Please send to ALS Winnipeg ASAP for analysis (Short Hold Time) Address: 1329 Niakwa Road East, Unit 12 Winnipeg MB, Canada R2L 3T4			Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED																																																	
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO																																																	
					Cooler Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A																																																	
					INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C																																														
					8.8																																																	
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>																																																	
Released by:	Date:	Time:	Received by: O.A.	Date: MAY 03 2022	Time: 8:50 AM	Received by:	Date:	Time:																																														

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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.



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Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Canada Toll Free: 1 800 668 9878

Page of

<b>Report To</b> Contact and company name below will appear on the final report Company: GHD Ltd. (GHDL100) Contact: Kory Ozgun Phone: 519-884-0510 Company address below will appear on the final report Street: 455 Phillip St. City/Province: Waterloo, ON Postal Code: N2L 3X2		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: kory.ozgun@ghd.com Email 2: See SSOW/PO Email 3:		<b>Turnaround Time (TAT) Requested</b> <input checked="" type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests Date and Time Required for all EAP TATs:		<b>AFFIX ALS BARCODE LABEL HERE</b> (ALS use only)				
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Invoice Recipients</b> Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Invoicing-Canada@ghd.com Email 2:		For tests that can not be performed according to the TAT requested, you will be contacted.						
<b>Project Information</b> ALS Account # / Quote #: WT2022GHDL1000060 (Planned Event) Job #: 12572192-20.22 PO / AFE: 735-002833 LSD:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below						
<b>ALS Lab Work Order # (lab use only):</b>		<b>ALS Contact:</b> Rick H		<b>Sampler:</b>		<b>NUMBER OF CONTAINERS</b> Microtox (Winnipeg)				
<b>ALS Sample # (lab use only)</b>		<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)		<b>Date</b> (dd-mmm-yy)	<b>Time</b> (hh:mm)	<b>Sample Type</b>	<b>SAMPLES ON HOLD</b> <b>EXTENDED STORAGE REQUIRED</b> <b>SUSPECTED HAZARD (see notes)</b>			
EQ Pond Discharge		Environmental Division Winnipeg Work Order Reference <b>WP2200475</b>  Telephone: +1 204 255 9720				Water	R			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b> Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Notes / Specify Limits for result evaluation by selecting from drop-down below</b> (Excel COC only) Please send to ALS Winnipeg ASAP for analysis (Short Hold Time) Address: 1329 Niakwa Road East, Unit 12 Winnipeg MB, Canada R2L 1T4		<b>SAMPLE RECEIPT DETAILS (lab use only)</b> Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input checked="" type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: 8.8 FINAL COOLER TEMPERATURES °C:						
<b>SHIPMENT RELEASE (client use)</b> Released by: Date: Time:		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b> Received by: Date: MAY 03 2022 Time:		<b>FINAL SHIPMENT RECEPTION (lab use only)</b> Received by: Date: Time:						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 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.

# **Appendix D**

## **Analytical Data Verification Memo**

# Technical Memorandum

February 02, 2023

<b>To</b>	Meghan O'Brien	<b>Tel</b>	+1 519 884 0510
<b>Copy to</b>		<b>Email</b>	Stephanie.berton@ghd.com
<b>From</b>	Stephanie Berton/an/3	<b>Ref. No.</b>	12572192
<b>Subject</b>	Analytical Data Verification Surface Water Sampling Events Clean Harbors Canada Inc. Sarnia, Ontario March and May 2022		

## 1. Introduction

The following document details an analytical data verification of results for surface water samples collected at the Clean Harbors Canada Inc. site in Sarnia, Ontario in March and May 2022. Samples were submitted to ALS Canada Ltd. (ALS) located in Waterloo, Ontario. A sample collection and analysis summary is presented in Table 1. A summary of the analytical methodology is presented in Table 2.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, duplicate data, recovery data from laboratory control samples (LCS), surrogate spikes and matrix spikes (MS).

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 2 and applicable guidance from the documents entitled:

1. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", United States Environmental Protection Agency (USEPA) 540/R-99-008, September 2016.
2. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", USEPA 540/R-94-013, September 2016.

Items 1 and 2 will subsequently be referred to as the "Guidelines" in this Memorandum.

## 2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 2. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

Most samples were properly preserved and delivered on ice and received by the laboratory at the required temperature (<10°C). Samples collected on May 3, 2022 arrived at the laboratory on the day of sampling and did not have time to achieve a temperature of <10°C. This is acceptable since the cooling process had been initiated.

### **3. Laboratory Method Blank Analyses**

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

Most method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation. Alkalinity and conductivity were detected in some of the method blanks. Associated sample concentrations were greater than ten times the blank values and were not qualified.

### **4. Surrogate Spike Recoveries**

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample extraction and/or analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC), and semi-volatile organic compound (SVOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory (method) control limits. Most surrogate recoveries were within the laboratory control limits. Each individual surrogate compound is expected to meet the laboratory control limits with the exception of SVOC analyses. According to the "Guidelines" for SVOC analyses, up to one outlying surrogate in the acid extractable fraction is acceptable as long as the recovery is at least 10 percent. No qualifications required on this basis.

### **5. Laboratory Control Sample Analyses**

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

#### **Organic Analyses**

The LCS contained all compounds of interest. Most LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy. Non detect results associated with high LCS recoveries were not qualified. The indicated high bias would not impact the data.

#### **Inorganic Analyses**

The LCS contained all analytes of interest. LCS recoveries were assessed per the "Guidelines". All LCS recoveries were within the control limits, demonstrating acceptable analytical accuracy.

### **6. Matrix Spike Analyses**

To evaluate the effects of sample matrices on the extraction or digestion process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern

and analyzed as MS samples. If the original sample concentration is significantly greater than the spike concentration, the recovery is not assessed.

The MS samples were spiked with the analytes of interest, and the results were evaluated using the "Guidelines". All percent recoveries were within the control limits, demonstrating acceptable analytical accuracy.

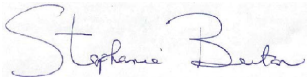
## 7. Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory. The laboratory performed additional site-specific duplicate analyses internally. The relative percent differences (RPDs) associated with these duplicate samples must be less than 20 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is a difference of one times the RL value for water samples. All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

## 8. Conclusion

Based on the assessment detailed in the foregoing, the data are acceptable without qualification.

Regards



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**Analytical Method and Holding Time Criteria  
Surface Water Sampling Events  
Clean Harbors Canada Inc.  
Sarnia, Ontario  
March and May 2022**

Parameters	Methodology <sup>(1)</sup>	Holding Time Criteria
		Water
Volatile Organic Compounds	SW846 8260	14 days
Semi-volatile Organic Compounds	SW846 8270	14 days
Metals	SW846 6020/EPA 200.8	60 days
Mercury	EPA 1631	28 days
Hexavalent Chromium	SW846 7199	28 days
Hardness	SM 2340B	60 days
pH	SM 4500H	28 days
Ammonia-N	EPA 350.1	28 days
Un-ionized ammonia-N	Calculation	NA
Anions (Nitrite-N, Nitrate-N)	EPA 300.1	3 days
Anions (Chloride, Bromide, Fluoride, Sulphate)	EPA 300.1	28 days
Alkalinity	EPA 310.1	14 days
Conductivity	SM 2510	28 days
Total Dissolved Solids	SM 2540C	7 days
Total Suspended Solids	SM 2540D	7 days
Cyanide, total	SM 4500 CN-E	14 days
Total Phosphorus	SM4500P-F	28 days
Total Kjeldahl Nitrogen	SM 4500 NORGA	28 days
Chemical Oxygen Demand	SM 5220D	28 days
Dissolved Organic Carbon (lab filtered)	SM 5310B	3 days
Phenols	SW846 79066	28 days
Microtox	Env. Canada EPS 1/RM//24 (Nov 1992)	3 days

## Notes:

<sup>(1)</sup> Methods referenced from the following:

SW846 - "Test Method for Evaluating Solid Waste Physical/Chemical Methods", EPA, November 1986  
with promulgated updates

SM - Standard Methods for the Examination of Water and Wastewater", 21st Ed., APHA, September 2005

EPA - "Methods for Chemical Analysis of Water and Wastes", EPA 600/4 79 020, Revised

N - Nitrogen

NA - Not applicable

EPS - Environmental Protection Series

