PUBLIC SERVICES AND PROCUREMENT CANADA
ENVIRONMENTAL SERVICES – WESTERN REGION

Remediation Action Plan - Remediation Site Closure Report for the Resolute Bay Airport Landfill, Resolute Bay, Nunavut

PSPC Project R.095508.001

Final Report

March 30, 2020

DOJV Project No. P2017-06

Executive Summary

Dillon Consulting LTD./ Outcome Consultants Inc in joint venture (DOJV) was contracted by Public Services and Procurement Canada (PSPC) Environmental Services to revise the existing design remediation specifications for the Resolute Bay airport landfill in order to solicit and engage Remediation Contractor services to implement the remediation program and start field activities in 2018 and to oversee remedial work completion in 2019. Work by DOJV was completed at the Resolute Bay airport landfill as per the Terms of Reference (ToR) entitled "Specifications and Remedial Supervision – Resolute Bay Airport Landfill Remediation – Resolute Bay, Nunavut", dated December 2017. Work was completed under the Northern Contaminated Site Environmental Clean-up Work/Services Supply Arrangement #EW699-170520-003 and in accordance with the Nunavut Water Board (NWB) Water License 1BR-RBL1929.

The remediation contractor, Kudlik Construction Ltd. ("Kudlik" or "Contractor"), was awarded the work under the PSPC contract no. EW699-182827/A on June 1, 2018. Kudlik was the main contractor on site with supervision from DOJV personnel.

The main objectives of the remedial works were achieved at three areas of environmental concern (AEC). There were two historical landfills referenced as the solid waste landfill (AEC 1), historical landfill (AEC 2), and a vehicle storage area also referred to as a metal storage area (AEC 3). Surface waste removed from the vehicle storage area and the landfills were segregated into hazardous and non hazardous waste. Hazardous materials and excavated impacted soils were shipped off-site for disposal to a licensed waste facility. Non hazardous waste was consolidated into AEC 1 landfill and the two historic landfills were capped and covered. Capping and covering the two historic landfills, along with backfilling excavations, and constructing swales around the historic landfills to promote surface water drainage, used locally sourced borrow materials.

Kudlik's remedial program was completed over two consecutive summer seasons. Field activities began August 14, 2018 and ended September 17, 2018. Field activities in 2019 began on June 30, 2019 and ended on September 21, 2019.

Remedial work by the Contractor in 2018 included:

- Hazardous materials at or near the surface from landfills (AEC)-1, AEC-2, and vehicle storage AEC-3 were consolidated and packaged for shipping purposes,
- The hazardous material at the Site was packaged and a portion was shipped on the 2018 sea lift to an off-site licensed waste disposal facility. The remaining packaged hazardous waste was stored at the site for shipment on the 2019 sea lift
- All non-hazardous wastes from the surface of AEC-2 (excluding steel) and AEC-3 were consolidated into AEC-1,
- The AEC-1 landfill slope was graded to a 3:1 slope, and

- Borrow sources were prepared.

Remedial work by the Contractor in 2019 included:

- Steel from AEC-2 was consolidated and was placed at AEC-1,
- Developed borrow sites to meet Type 1 and Type 2 fill requirements for capping,
- Stabilized landfill slopes at AEC-1 and AEC-2,
- Constructed drainage swales at AEC-1 and AEC-2,
- Excavated, packaged, shipped off-site, and disposed of contaminated soil from AEC-3,
- Shipped the remaining hazardous material offsite on the 2019 sea lift to licensed waste facilities in the province of Quebec,
- Covered AEC-1 and AEC-2 landfills with a gravel cap,
- Installed wells for groundwater monitoring at AEC-1, AEC-2, and AEC-3, and
- Demobilized all Contractor equipment and materials from site on the 2019 sea lift.

DOJV personnel were on-site throughout the remedial works in 2018 and 2019 as the Departmental Representative. The Departmental Representatives main tasks included the following:

- Supervision of the Contractor's work to ensure adherence to meet the intent of the specifications,
- Supervision of the Contractor's work for adherence to Authorities Having Jurisdiction (e.g. Nunavut Water Board water licence, quarry permit, airport authorities),
- Construction Monitoring sampling of groundwater, surface water, sediment, and soil,
- Attended daily tailgate meetings conducted by Kudlik throughout the course of the work,
- Submitted Daily Reports to PSPC,
- Attended Weekly Construction Meetings and distributed minutes to Project Team,
- Collected confirmatory samples to determine extents of the impacted soils for excavations,
- Reviewed Kudlik's submittals including the Health and Safety Plan (HASP) and Spill Contingency Plan (SCP), and
- Installed monitoring wells for groundwater sampling and established sampling points for sediment and surface water which will be used in the next phase of the project, namely Long-Term Monitoring (LTM).

The Resolute Bay Landfill Remediation (RBLR) Project was a success. Kudlik's means and methods followed the specifications and adhered to the regulatory considerations of the project. DOJV personnel collected baseline samples of soil at quarry areas, Contractor laydown areas, and temporary hazardous

material processing areas (THMPA). DOJV compared analytical data to guidelines for residential/ parkland use as per the Water Licence stipulation. A summary of the analytical results of samples collected by DOJV is as follows:

- Baseline samples at quarry locations contained concentrations below applicable guidelines and thus each quarry location was approved for use for borrow material.
- Baseline results for groundwater, sediment, and surface water collected in 2018 were comparable to previous results collected historically.
- Construction monitoring data from groundwater, sediment, and surface water collected in 2018 and 2019 did not indicate a negative impact due to the construction itself. Historic data, along with the data collected in 2018 and 2019, will be used moving forward into the Long-Term Monitoring (LTM) phase of the site.
- Sample data from soil collected before and after at the THMPAs showed one elevated result. Laboratory analyses of soil reported elevated concentrations at THMPA-3 (located at AEC-3). However, THMPA-3 was located in an area previously identified as containing elevated concentrations of contaminants and thus, once the THMPA was decommissioned, the impacted soils were excavated and shipped south for disposal. Subsequent soil analytical results for Excavation-3 within AEC-3 confirmed the lateral and vertical extent of the historic impact had been removed.
- During the 2-year remedial program three unplanned spills were reported by Kudlik. Soil samples collected from the spill locations confirmed that Kudlik appropriately and adequately cleaned up each spill by placing impacted soils within Quatrex bags for shipment south for disposal. The sources of spills are outlined below:
    - Spill-1: 4 L of transmission oil near the screener adjacent to AEC-1
    - Spill-2: 20 L of oil at Contractor laydown area adjacent to AEC-1
    - Spill-3: 15 L of hydraulic oil near THMPA-2 (adjacent to old vehicles at AEC-2)
- DOJV collected 45 soil samples from the excavations at AEC-3 in order to confirm the vertical and horizontal extent of the impacts. In total, there were confirmatory soil samples which contained elevated concentrations of contaminants (PHCs, metals, or both). In all cases, the based on analytical data received, the excavations were extended and soil samples were collected from the new extent of the excavation. Once confirmatory sample results showed concentrations below applicable guidelines, the excavations were backfilled.

Remedial works at the Resolute Bay landfills are complete. Kudlik's equipment and materials demobilized from site in September 2019. The next phase of the project, long-term monitoring, is scheduled to begin in 2020, and not included as part of this report.

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1.0 Introduction

Dillon Consulting Ltd. and Outcome Consultants, a Joint Venture (Dillon-Outcome, or DOJV) was retained by Public Services and Procurement Canada (PSPC) on behalf of Transport Canada (TC) in December 2017 to develop a remediation tender specification and supervise the on-site construction activities associated with the Resolute Bay Landfill Remediation (RBLR). DOJV's services were completed under the Northern Contaminated Site Environmental Clean-up Work/Services Supply Arrangement #EW699-170520/003/NCS.

In the spring of 2018, PSPC on behalf of TC, tendered for remediation contractor services for the RBLR project which focussed on removal of surface wastes, containment of non-hazardous wastes in an existing landfill and shipping of hazardous materials and impacted soils off site. Kudlik Construction Limited (Kudlik) was retained by PSPC under contract EW699-182827/001/NCS on June 1, 2018 to carry out the remediation project.

The consultant services were conducted according to PSPC's Environmental Services Western region, Terms of Reference (ToR) "Specifications and Remedial Supervision – Resolute Bay Airport Landfill Remediation – Resolute Bay, Nunavut" dated December 2017 and Dillon-Outcome's proposal "Proposal for Specifications and Remedial Supervision – Resolute Bay Airport Landfill (RBL) Remediation, Resolute Bay, Nunavut" submitted December 20th, 2017.

1.1 Objective

The objective for the RBLR project was to reduce the environmental liability of the site, in accordance with the Nunavut Water Board (NWB) Water License 1BR-RBL1419 issued July 11, 2014 (expired July 10, 2019) and subsequently Water License 1BR-RBL1929 issued May 13, 2019 (expiring May 12, 2029), through the implementation of remedial means and methods to achieve the following project goals:

a) Demonstrating due diligence and decrease potential for adverse impacts to human health and the environment.
b) Reducing TC's contaminated sites liability at the site through remediation and or risk management strategies.

1.2 The Site

The Resolute Bay Airport is located five kilometres (5 km) northwest of the Inuit hamlet of Resolute, adjacent to the Resolute Bay on Cornwallis Island, Nunavut. Cornwallis Island is within the Qikiqtaaluk Region of Nunavut. Two landfills and a vehicle storage area were located on the site and were previously identified as "Areas of Environmental Concern" (AECs) based on activities, historical and present, associated with the airport and local community. Two inactive soil land treatment units (LTUs)

and a buried Asbestos waste pile were located adjacent to the site, however, these features were not included in the scope of work for Kudlik or DOJV. The site location is shown in Figure 1 (Appendix A).

1.3 Background

The Resolute Bay airport was originally constructed by the Royal Canadian Air Force (RCAF) and has been in operation since 1949 (PSPC, 2017). Transport Canada, on behalf of the Government of Canada, took ownership of the property in 1964 and continued operations until July 1st, 1995. From July 1st, 1995 to April 1st, 1999 the Government of Northwest Territories had ownership and operations continued operations under the Arctic Airport Division of the Department of Transportation. The Government of Nunavut has owned and operated the property since April 1st, 1999.

Previous environmental investigations (see Section 1.4) documented three AECs on site. Table 1-1 outlines pertinent information for the three AECs including the previously identified contaminants of concern (CoC) associated with each AEC.

Table 1-1. Area of Environmental Concern (AEC) Summary Table (PSPC, 2017)

AEC #	Description (Surface Area)	Contaminants of Concern (CoC)	Impacted Media	Age
1	Inactive Solid Waste Landfill (~30,000-m^2)	Metals, Petroleum Hydrocarbons (PHC), Polycyclic Aromatic Hydrocarbons (PAHs), benzene, toluene	Soil, Sediments, Surface Water	Developed between 1960s and 1970s. Operated until 1995
2	Historical Landfill (~61,500-m^2)	Metals, PHCs, PAHs, benzene, toluene	Soil, Groundwater, Surface Water	Operated from 1947 to 1996
3	Former Vehicle Storage Area (WMSA) (~2,000-m^2)	Metals, PHCs, PAHs	Soil, Metal Waste Material	Operation began between late 1970s/early 1980s. Evidence of illegal dumping as recent as 2009.

The AEC 1 landfill contained surface debris consisting of metal debris, abandoned drums, and demolition debris. The AEC 2 landfill contained minimal surface debris apart from abandoned antennas and metal debris at the north end. The Vehicle Storage Area (AEC 3) was also referred to as the Vehicle boneyard or metal storage area. AEC 3 contained abandoned vehicles, old military equipment, old fuel tanks, a snow melter, old and broken airport equipment such as antennas, drilling equipment, piles of metal debris, piles of fibreglass, sheet metal, cranes, and wooden debris. The abandoned vehicles included trucks, drill rigs, two garbage trucks, two crushers, loaders, and cars

Environmental audits and environmental site assessments (ESAs) have occurred at the Site since 1993. Investigations between 1993 and 2005 were undertaken by TC. TC engaged PSPC since 2009 to assist with delineation of contaminants of concern, and the development of remediation action plans for the site.

A Phase II/III ESA was completed by Franz Environmental in March of 2010 and provided a conceptual remedial option plan. An informal remediation action plan (RAP) was later produced by Franz during the 2011-2012 fiscal year. The accepted design included an aggregate capping solution that would act as a barrier to protect against risks to humans and the environment, by avoiding direct contact with the waste. The cap is also intended to promote permafrost aggradation, as depicted in the diagram below, which creates a permanent frozen soil layer within the aggregate cover. The presence of frozen soil throughout the year will limit water infiltration into the buried waste, thereby reducing the potential for leachate generation.

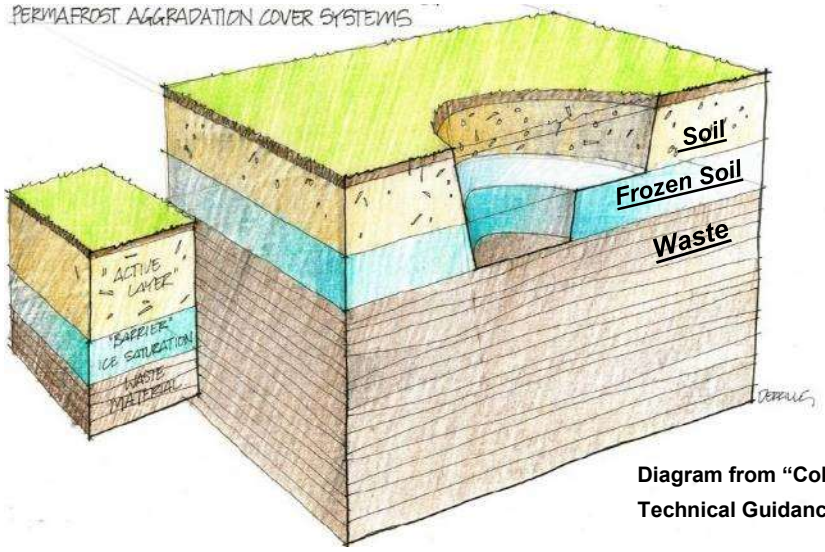


Diagram from "Cold Regions Cover System Design Technical Guidance Document", MEND Report 1.61.5c

A data gap assessment was completed on the AECs by Franz in 2013-2014. The data gap assessment identified an adjacent sewage lagoon which was a concern for overflowing effluent, a past contributor to leachate production at AEC-1. The sewage lagoon is owned and operated by the Government of Nunavut and is not included in the project scope.

In 2014-2015 government fiscal year PSPC purchased and mobilized 26 marine shipping containers, 10 Liquid hazardous waste containers and 5 solid hazardous waste containers to site in anticipation of remedial activities. Ownership of the containers were transferred to the awarded remediation contractor in 2018.

DOJV was retained by PSPC during the 2017-2018 government fiscal year to review and modify the existing remediation designs, in keeping with the NWB Water License 1BR-RBL1419, to provide an achievable scope of work that could be contracted and completed by the end of the FY 2019/20.

PSPC on behalf of TC, tendered for remediation contractor services in the spring of 2018 and awarded the contract in June 2018. Kudlik Construction Ltd. ("Kudlik" or "Contractor") was awarded the remediation work under Contract EW699-182827/A.

1.4 Previous Investigations

The following reports were reviewed as a part of the data review and planning phase. These reports identified the presence of contaminants of concern at the site, identified areas of potential and actual environmental contamination, and made assessments of risk to human health and ecological receptors.

- ARCADIS, 2015. Remediation Program for AECs at Resolute Bay Airport. Prepared for Public Works Government Services Canada Environmental Services – Western Region on behalf of Transport Canada. Dated December 3rd, 2015.
- Franz Environmental Inc., 2013. Data Gap and Geotechnical Assessment Resolute Bay Airport Landfill, Nunavut. Prepared for Public Works and Government Services Canada Environmental Services – Western Region on behalf of Transport Canada. Dated December 10th, 2013.
- Franz Environmental Inc., 2010. Phase II/III Environmental Site Assessment Final Report, Resolute Bay Airport Landfill Sites, Resolute Bay, Nunavut. Prepared for Public Works and Government Services Canada on behalf of Transport Canada. Dated March 2010.
- Franz Environmental Inc., 2010. Phase I and preliminary Phase II Environmental Site Assessment Upper Air Monitoring Station, Resolute Bay, Nunavut. Prepared for Public Works and Government Services Canada & Environment Canada on behalf of Transport Canada. Dated February 5th, 2010.

2.0 Remediation Activities

2.1 Timeline

2.1.1 2018

On-site remediation activities by Kudlik began August 14th, 2018 with the mobilization of personnel and supplies. Initial remediation efforts were carried out with local support (staff and equipment) until Kudlik was able to mobilize heavy equipment and supplies via the Sealift. Remedial works continued until September 17th, 2018, at which point equipment and supplies were winterized.

2.1.2 2019

Field activities in 2019 began on June 30, 2019 and ended on September 21, 2019, at which point equipment, supplies, and waste were transported onto the sealift to demobilize from the site.

2.2 Quality Assurance and Quality Control (QAQC)

The water licence (see Appendix E) recommended the use of the guidance document *Quality Assurance (QA) and Quality Control (QC) Guidelines For Use by Class "B" Licensees in Collecting Representative Water Samples in the Field and for Submission of a QAQC Plan* (INAC, 1996) for the development of the QA/QC plan for the remediation program. In recent years, however, the CCME has published updated guidance for conducting environmental site characterization projects, which is relevant to the current remediation program. As a result, DOJV has adopted this newer guidance (CCME, 2016) as the basis for this QA/QC plan.

2.2.1 Quality Assurance (QA) – Contractor Works

DOJV was retained to provide site supervisory services during the remediation project and to act as Canada's authorized departmental representative (DR) on-site. Part of this role was to provide Quality Assurance (QA) via inspections and documentation to ensure that Kudlik completed the works in accordance with the Contract. The following describes DOJV's efforts.

2.2.1.1 Issued for Construction Documents

After the contract was awarded to Kudlik and before the commencement of the on-site work DOJV finalized the Issued for Construction (IFC) Specification and Drawings. There were no questions during the solicitation period which impacted the Issued for Tender (IFT) specifications and therefore there were no modifications required for the preparation of the IFC Documents. IFC Documents were transmitted to Kudlik on June 22, 2018 via PSPCs ftp site.

2.2.1.2 Submittal Registry and Reviews

Required under the contract was for Kudlik to provide several work plans and a schedule prior to commencing the remediation work. The following is the list of submittals that were prepared by Kudlik and review by DOJV and PSPC prior to the summer 2018 work season:

- Project Schedule(s)
- Site Layout Plan
- Health and Safety Plan including Safety Data Sheets
- Environmental Protection Plan
- Mobilization and Demobilization Plan
- Grading and Cover Plan
- Qualifications and Training Certificates
- Hazardous Materials Plan including Transport Carriers, Disposal Facilities and Insurance
- Baseline Survey and Surveyor Qualifications
- Geotextile QAQC Information

Each of these documents were circulated for review and comments were provided to Kudlik for inclusion in their final documents. DOJV tracked the submission and review status of each document in a registry to ensure that the submissions met the contract requirements.

During the 2019 works, Kudlik provided additional submittal requirements. These submittals were tracked and verified using the same methods described above and included the following:

- Aggregate Bulk Samples
- Schedule Updates
- Survey Data
- Hazardous Materials Disposal Certificates

Electronic files including final and drafts is maintained by DOJV on a secure, backed-up server.

2.2.1.3 Documentation and Record Keeping

The field assessor recorded notes in a bound field book throughout the remediation program, including observations of the Contractors activities, equipment and personnel being utilized, previously unknown wastes and DOJV's sampling efforts.

Photographs were collected throughout the remediation project with the intent to document the remediation works carried out by Kudlik. Photographs before during and after each remedial activity were taken.

Electronic data is maintained on a secure, backed-up server. Field notes and forms were scanned and retained in electronic format as part of the project record. Daily Field reports were submitted to the PSPC project manager during the construction remediation activities.

2.2.2 Quality Control (QC) - Sampling

DOJV was retained to carry-out environmental sampling of soil, water and sediments prior to the commencement of Kudliks remediation efforts and at the end of the season. The following outlines DOJC's QC efforts for this remediation project

2.2.2.1 Certification and Training

Eurofins Environment Testing Canada ("Eurofins or "Lab") was the laboratory selected for remediation project. Eurofins is certified by the Canadian Association for Laboratory Accreditation Inc. (CALA), an accreditation program that includes an initial site assessment and regular evaluation of laboratory performance. The laboratory is certified for each of the analytes that were tested as part of this program.

ISO/IEC 17025:2017 is the international standard for testing and calibration laboratories. It "specifies the general requirements for the competence, impartiality and consistent operation of laboratories" and is applicable to all organizations performing laboratory activities. The lab selected for the remediation program was ISO/IEC 17025 certified.

Field personnel were trained to perform each sampling task in accordance with written standard operating procedures.

2.2.2.2 Sampling Methods

Sampling methods were performed using industry standard procedures for the media being sampled and for the contaminates of concern, in accordance with written standard operating procedures.

The field assessor used fresh disposable nitrile gloves for the collection of each sample. Any non-dedicated sampling equipment (e.g. Stainless-steel trowel) was decontaminated with Alconox sample detergent and rinsed with distilled water between uses.

2.2.2.3 Field Equipment

For each piece of field equipment, the field assessor noted the instrument type and model number in the field notes. Each piece of field equipment was identified with a unique name or number, so that any equipment errors not noted in the field can always be traced after the fact.

DOJV reviewed and maintained calibration records for all equipment requiring calibration. Instrument inspection and maintenance records (whether internal or provided by an equipment supplier) were retained and referenced where necessary.

2.2.2.4 Sample Handling, Custody and Analysis

Analytical protocols were selected by the lab for all analysis required for the remediation program. The field assessor confirmed that these analytical protocols were acceptable before the field program began.

Samples were collected in jars provided by the project laboratory. Preservation was provided by the project lab. DOJV reviewed the laboratory hold times for all analytes and made every effort to have samples to the lab before the hold time expired.

Samples were placed into coolers with ice for preservation during the field program and for shipment to the lab. Samples were shipped to the lab accompanied by chain of custody forms identifying samples, volumes, dates, and other pertinent information. Sample identification labels on jars were written clearly in ink and cross-checked before shipment with chain of custody forms.

Field quality control consisted of the following samples:

- Field duplicates were collected in the field from the same location by placing aliquots of approximately ten percent of the total sample volume in both primary and duplicate sample containers alternately. Field duplicates were "blind," i.e., not identifiable as duplicates by their ID, approximately one duplicate sample was collected for every ten primary samples.

Laboratory quality control consisted of the following methods:

- Laboratory duplicates were analyzed by the lab based on their quality control program.
- Laboratory blanks, i.e., generic samples of a matrix prepared with known zero concentrations of analytes of concern, were analyzed by the project lab based on its quality program.
- A Matrix spike is a sample of an analyte of concern with a known concentration in the matrix. Matrix spikes were also be included in the lab quality program.

Reportable detection limits for the program will be dependent on the capabilities of the project lab and are analyte specific.

2.2.2.5 Data Validation

All sample identifications were cross-checked with field records, chain of custody forms and sample labels before shipping. Laboratory certificates of analysis were cross-checked with field records to ensure that no errors were introduced by laboratory transcription.

Field and laboratory quality were compared to industry standards as shown in Table 2-1, below. Evaluation methods are derived from the Site Characterization Guidance Manual (CCME, 2016).

Table 2-1: Data Quality Targets

Quality Control Measure	Evaluation and Mitigation
Field duplicate	Relative percent difference between the primary and duplicate sample should be less than 40 percent for water and 60 percent for soil. Where samples exceed the acceptable value, each analyte-matrix combination should be assessed across the program.

Quality Control Measure	Evaluation and Mitigation
Laboratory duplicate	Per laboratory quality program, but generally less than 20 percent for water and 30 percent for soil. If laboratory duplicates exceed acceptable range, discuss reasons for the exceedance with the laboratory and assess each analyte across the program.
Laboratory blank	Per laboratory quality program. If laboratory blanks contain detectable concentrations, discuss reasons for the detection with the laboratory and assess each exceeding analyte across the program.
Matrix spike	Per laboratory quality program. If laboratory spikes are outside the acceptable range, discuss reasons for the issue with the laboratory and assess each analyte across the program.

2.2.2.6 Documentation and Record Keeping

The field assessor recorded notes in a bound field book throughout the remediation program, including observations of the Contractors activities, equipment being utilized, previously unknown wastes and DOJV's sampling efforts. These original field records were used to transfer information to digital formats.

Sample details were transmitted to the laboratory on chain of custody forms that accompany samples. The lab transmitted sample analysis data to DOJV in electronic formats, both static (PDF) and manipulatable (Excel). DOJV used the Laboratory electronic data to generate report tables.

Electronic data is maintained on a secure, backed-up server. Field notes and forms were scanned and retained in electronic format as part of the project record.

2.3 Remedial Activities

The remedial activities that took place during the 2018 summer season have been subdivided into the following work categories:

1. hazardous material consolidation and disposal off-site
2. borrow source development
3. non-hazardous waste transport to AEC-1
4. AEC-1 landfill slope reshaping, and
5. AEC-1 drainage swale construction.

The remedial activities that took place during the 2019 summer season have been subdivided into the following work categories:

6. Screen borrow material to meet requirements for capping and swale construction
7. Regrade landfill caps at AEC-1 and AEC-2
8. Stabilize landfill slopes at AEC-2
9. AEC-2 hazardous material consolidation and disposal off-site
10. Cover AEC-1 landfill top and slopes with a gravel cap
11. Cover AEC-2 landfill top and slopes with a gravel cap
12. Complete drainage swale construction at AEC-1
13. Complete drainage swale construction at AEC-2
14. Excavate and ship off-site for disposal, impacted soils from AEC-3
15. Ship all remaining hazardous material off-site for disposal

Refer to Figures within Appendix A for an overview of the specific work areas.

2.3.1 Hazardous Material Consolidation and Disposal Off-Site

Temporary Hazardous Material Storage Areas (THMSA) were constructed to consolidate, package and label the hazardous material on site in 2018 at AECs 1 & 3 as shown in Figures 2 and 4 respectively (Appendix A). An additional THMSA was constructed in 2019 to consolidate, package and label the hazardous material at AEC 2. Hazardous materials included:

- Asbestos-containing materials (ACM)
- Batteries
- Fire extinguishers
- Containerized Paint
- Transformers
- Metal with lead-amended paint
- Liquids from drums and vehicles

Asbestos was collected and double-bagged for off-site disposal. Wet and dry batteries were packaged separately for shipment. Transformers were drained of fluids and tested for PCBs prior to shipment. Drums or small above ground storage tanks (ASTs) containing liquids were consolidated into appropriate waste drums at the AEC-1 THMSA. Lead-painted equipment from AEC-3 was drained of fluids (fuel, coolant, oils, etc.) if required, stripped of batteries, and sheared at the AEC-3 THMSA. Once reduced to a size suitable for transport, Kudlik placed wastes in sea cans for off site disposal.

In 2015, PSPC on behalf of TC purchased 26 marine shipping containers, 10 Liquid hazardous waste containers and 5 solid hazardous waste containers to be utilized in the containerization of the hazardous wastes. Kudlik inspected all of the containers and found them to be in good repair and ownership of all the containers were transferred from PSPC to Kudlik.

In 2018, a total of six (6) sea cans of hazardous material were hauled to the bay and transported south via sea lift for disposal at a licensed disposal facility, waste receiver manifests are included in Appendix C-1. Prior to hazardous material storage, each sea can was inspected for deficiencies.

Photo 1 through Photo 20 below show the hazardous materials being consolidated, packaged, and readied for off-site transport. Disposal certificates of hazardous materials shipped in 2018 from Qikiqtaaluk are located within Appendix C-1. The activities at regarding hazardous materials at AEC 2 conducted in 2019 are detailed below in Section 2.3.9. A summary of the quantities of hazardous materials is presented in Section 3.0.

Photo 1: Establishing Temporary Hazardous Material Processing Area (THMPA-1) within AEC-1.

Photo 2: Temporary Hazardous Material Processing Area (THMPA-3) within AEC-3. Lead-painted item being crushed to reduce volume for off-site shipment.

Photo 3: Sea-cans were inspected prior to hazardous waste being consolidated within the sea-cans.

Photo 4: Sea-cans at AEC-3 prior to consolidating lead-painted items within sea-cans.

Photo 5: Sea-can inspection. Sea-can considered in 'good' condition with minor amount of moisture noted inside.

Photo 6: Sea-can inspection. Sea-can considered in 'excellent' condition.

Photo 7: Sea-cans utilized for off-site shipment to licensed disposal facility of items containing lead-amended paint.

Photo 8: Sea-cans utilized for off-site shipment to licensed disposal facility of items containing lead-amended paint.

Photo 9: Processing items with lead-amended paint within the lined temporary hazardous material storage area at AEC-3

Photo 10: Consolidating dry batteries within a sea-can in advance of off-site shipment to licensed disposal facility

Photo 11: Consolidated wet batteries prior to off-site shipment to licensed disposal facility.

Photo 12: Transformers, unearthed during swale excavations at AEC-1, prior to packaging for off-site shipment to a licensed disposal facility.

Photo 13: Drained, consolidated, and packaged transformers prior to off-site shipment to a licensed disposal facility.

Photo 14: Drums with liquid contents consolidated within THMPA-1.

Photo 15: Waste liquids were consolidated within drums for off-site transport and disposal.

Photo 16: Waste liquids within drums on a pallet ready for off-site shipment to a licensed disposal facility.

Photo 17: Consolidated and packaged asbestos-containing material (ACM) staged to be weighed prior to off-site shipment to a licensed disposal facility.

Photo 18: Box of paint cans being moved from AEC-3 into a sea-can for off-site transport to a licensed disposal facility.

Photo 19: Fire extinguishers from AEC-3 in the foreground prior to packaging for off-site transport. Propane tanks in background deemed non-hazardous due to all valves being removed.

Photo 20: Packaged hazardous materials near Resolute shore prior to being loaded onto barge for shipment to southern licensed waste disposal facility.

2.3.2 Borrow Source Development

Borrow sources were required to obtain sufficient material for the reshaping of the landfill slopes, capping of the landfills, and constructing drainage swales. Three borrow source areas (Northeast (NE), West and East) were identified by PSPC for use by the Contractor. The borrow sources were inspected by Kudlik, and the NE borrow source area was found to be an inadequate source. An additional borrow area (NE –A), 1-km distance east of the East borrow area, was identified by Kudlik to be suitable for the project requirements. Airport authority approval was obtained to quarry this area. The borrow source development started in 2018 with Kudlik pushing surface material into stockpiles with a Dozer. Due to the delay in the Sea Lift in 2018, the screening of borrow material commenced in 2019 (see Section 2.3.6). The locations of the borrow sources are shown on Figure 7 (Appendix A). The nomenclature for the borrow sources is described in Table 2-2.

Table 2-2: Borrow Area Nomenclature

Borrow Area	Nomenclature
Borrow Area East	BAE
Borrow Area Northeast	BANE
Borrow Area West	BAW

Photo 21: Preparing East borrow source

Photo 22: Preparing north end of west borrow source.

Photo 23: Northeast borrow source. Stockpile of unscreened material is seen.

Photo 24: Rock trucks staged at AEC-1.

2.3.3 Non-Hazardous Material Transport to AEC-1

Scattered debris from all three AECs was collected, consolidated, and crushed at the AEC-1 landfill.

Photo 25: View East toward AEC-1. Note the presence of scattered non-hazardous debris in foreground.

Photo 26: View East toward AEC-1 after the removal of the scattered debris. Note that the scattered non-hazardous debris removed from beyond the toe was placed on the AEC-1 slope.

Photo 27: Collecting non-hazardous debris from AEC-2 for transport to AEC-1.

Photo 28: Transporting non-hazardous debris from AEC-3 to AEC-1

Photo 29: Removing non-hazardous debris from the gully adjacent to AEC-3. Debris from the gully was transported to AEC-1.

Photo 30: Removing non-hazardous debris from the gully adjacent to AEC-3. Debris from the gully was transported to AEC-1.

Photo 31: Debris at AEC-3 sub-area.

Photo 32: Collecting non-hazardous debris from AEC-3 for transport to AEC-1.

Photo 33: Non-hazardous debris from AEC-3 transported to AEC-1.

Photo 34: Shearing non-hazardous debris at AEC-1.

Photo 35: Processed non-hazardous debris at AEC-1 top of slope.

2.3.4 AEC-1 Landfill Slope Reshaping

As per the specifications, the AEC-1 landfill slope was graded 3:1 (H:V) using a cut and fill approach. Crushed non-hazardous material was placed on the slope and mixed with aggregate for stabilization. Also, the ground beyond the landfill toe was levelled.

Photo 36: Excavator working at AEC-1 to establish 3:1 slope.

Photo 37: Southeastern section of AEC-1 slope prior to compacting and grading.

Photo 38: Cut/fill and regrading in progress at southeastern section of AEC-1 slope and swale.

Photo 39: Crushed waste on AEC-1 slope prior to aggregate stabilization.

Photo 40: Excavator starting on AEC-1 3:1 slope.

Photo 41: Mixing aggregates with waste to stabilize AEC-1 3:1 slope.

Photo 42: Stabilized section of AEC-1 3:1 slope.

2.3.5 AEC-1 Drainage Swale Construction

Swale construction commenced in 2018 along the north and south slope sides of the AEC-1 landfill. Following survey delineation, the swale path was excavated and stabilized up the slope. The eastern swale connecting the two slope side swales was excavated and constructed in 2019 (see Section 2.3.12), along with the placement of geotextile and aggregates.

Photo 43: View northwest along north end of AEC-1. Surveyor marked swale locations with paint prior to excavation.

Photo 44: View southwest along southern excavation for swale at AEC-1. Swale preparation shown is located west of the sewage outfall.

2.3.6 Use of Borrow Material

Kudlik screened borrow material in 2019 in order to produce quantities Type 1 and Type 2 fill materials as per the specifications. Borrow material was transported from the borrow areas (see Figure 7, Appendix A) with rock trucks to adjacent to the screener located at the north end of Borrow Area West (see Figure 7, Appendix A). Screened material was required at each of the AEC-1, AEC-2, and AEC-3 areas. The volumes required at each area are summarized in Table 2-3. The total volume of screened material is summarized in Table 2-4.

Table 2-3: Quantities of Fill Material by Location

Material Type	Use	Quantity (m^3)
	AEC-1	
Type 1	Swales	1,010
Type 1	Side Slope and Crest Cover	2,172
Type 2	Side Slope and Toe	5,483
Type 2	Top Cover	5,842
Pit Run	Side Slope	3,248
	AEC-2	
Type 1	Swales	1,484
Type 2	Side Slope and Top Cover	10,051
	AEC-3	
Type 2	Backfill excavations	143

Table 2-4: Total Quantities of Process Material Used

Material Type	Quantity (m^3)
Type 1	4,666
Type 2	21,519

Photo 45: Excavating material at Borrow Area East for transport to screener.

Photo 46: Screening borrow material to produce Type 1 and Type 2 materials.

Photo 47: Screening borrow material to produce Type 1 and Type 2 materials.

Photo 48: Screening borrow material to produce Type 1 and Type 2 materials.

2.3.7 Regrade landfill caps at AEC-1 and AEC-2

As per the specifications, the existing landfill caps at AEC-1 and AEC-2 were regraded to achieve a 2% slope using a cut and fill approach. Unearthed debris was collected and consolidated in order to determine if the debris was considered hazardous or non-hazardous. Hazardous debris was consolidated, packaged, and shipped off-site for disposal (see Section 2.3.15). Non-hazardous debris was incorporated into the AEC-1 slopes and mixed with aggregate for stabilization. The regraded 2% caps were overlain with Type 2 material (see Section 2.3.11). At AEC-1, the maximum cut was 0.6 m whereas at AEC-2, the maximum cut was 0.2 m. Minimizing the depth of the cuts were a consideration in order to minimize the potential exposure of buried wastes.

Photo 49: Cut and fill at AEC-1 to achieve 2% slope. Cut and fill done prior to placement of Type 2 cover material.

2.3.8 AEC-2 Landfill Slope Reshaping

As per the specifications, the AEC-2 landfill slope was graded 3:1 (H:V) using a cut and fill approach. Debris on the surface of AEC-2 and any unearthed debris from reshaping activities was collected and transported to AEC-1 for placement into the AEC-1 landfill slope with mixed aggregate for stabilization. All of the debris and waste material on the slopes and unearthed during shaping was assessed to determine hazardous or non-hazardous material. Hazardous material was shipped south for disposal (see Section 2.3.9). Non-hazardous material was consolidated in the AEC-1 slope as described in Section 2.3.4.

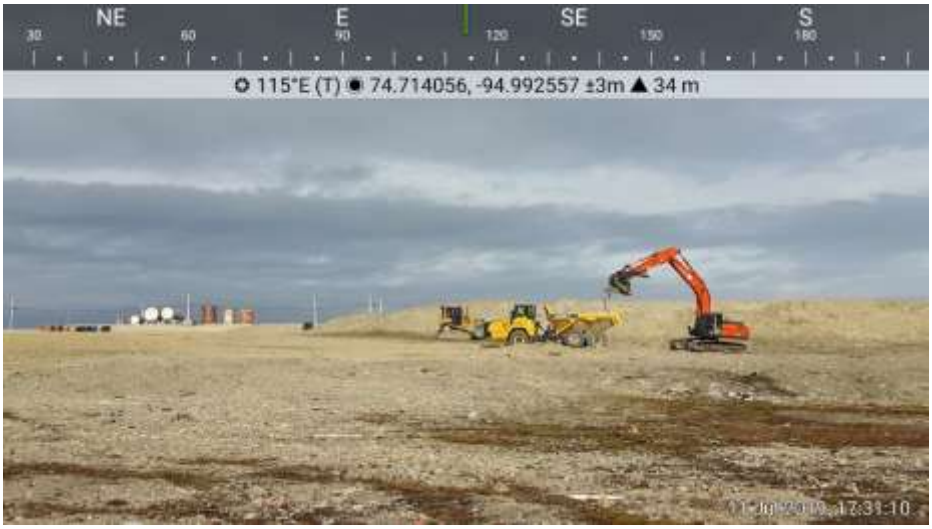


Photo 50: Non-hazardous debris on the slope and beyond the toe collected at AEC-2.

Photo 51: Compacting the reshaped 3:1 (H:V) slope at AEC-2.

Photo 52: View along crest of reshaped slope at AEC-2

Photo 53: Reshaped slope at AEC-2.

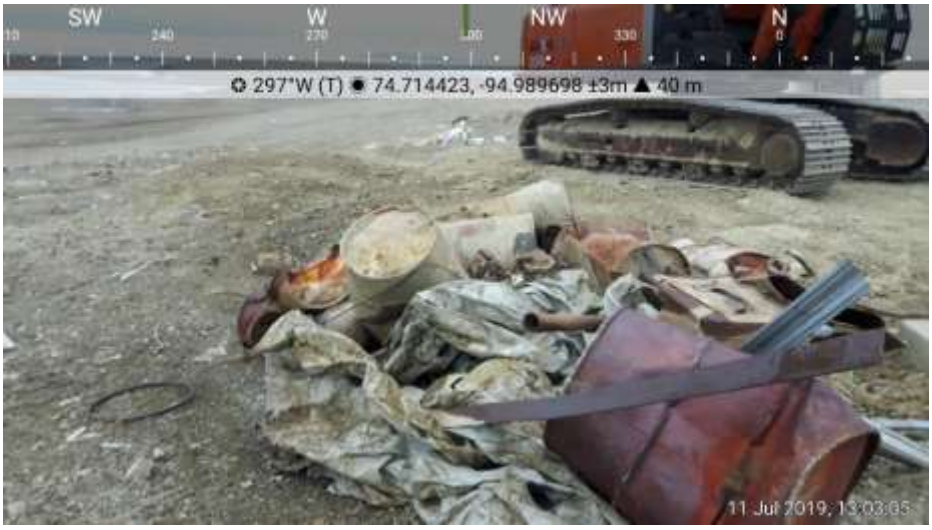


Photo 54: Unearthed material from AEC-2 slope. Material shown determined to be non-hazardous (note: drums shown were empty).

2.3.9 Hazardous materials consolidation at AEC-2 and transport off-site

At AEC-2, a THMSA was constructed to consolidate, package and label the hazardous material at AEC-2. Hazardous materials along the slopes of AEC-2 was limited to drums containing liquids. The liquids were consolidated for off-site transport. In addition to consolidating liquids from drums at AEC-2 during 2019, all of the remaining hazardous materials that were not shipped in 2018 (see Section 2.3.1) were shipped south on the sealift in September 2019. Section 3.1 summarizes the total volumes of hazardous waste material transported off-site for disposal.

Photo 55: Temporary Hazardous Material Processing Area at AEC-2. Drums shown contained liquids (note: drum in foreground is a spill kit).

Photo 56: Consolidated liquids containerized for off-site transport and disposal.

Photo 57: Sealift company (NEAS) transporting consolidated liquids from shore onto barge.

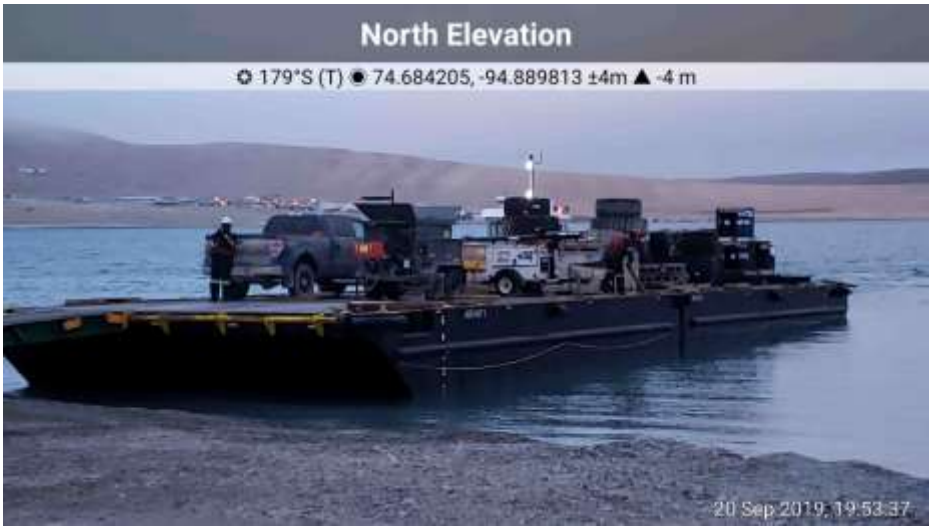


Photo 58: Consolidated liquids and remaining hazardous materials transported off-site for disposal. NEAS barge shown used to transport material from shore to sealift.

Photo 59: NEAS barge used to transport sea cans from shore to sealift.

Photo 60: NEAS sealift in Resolute Bay. Sealift transported consolidated hazardous materials to Valleyfield, QC for furtherance to waste disposal facilities.

2.3.10 Cover AEC-1 landfill with a gravel cap

As per the specifications, the AEC-1 landfill top and slope were capped with aggregate materials. Prior to the addition of aggregate materials, the AEC-1 landfill slopes were reshaped and stabilized (see Section 2.3.4); and, the landfill surface was regraded to promote positive drainage (see Section 2.3.7). The landfill cover consisted of Type 1 materials on the slope and crest, underlain by Type 2; and Type 2 materials on the surface.

Photo 61: AEC-1 slopes covered with aggregates

Photo 62: AEC-1 crest covered with Type 1 material

2.3.11 Cover AEC-2 landfill with a gravel cap

As per the specifications, the AEC-2 landfill was regraded to promote positive drainage. In order to achieve positive drainage over the entire landfill surface, the addition of Type 2 aggregate materials was required. Materials were transported to AEC-2 using rock trucks and spread in 0.15 m lifts. Subsequently, the materials were compacted using on-site equipment conducting a minimum of 6 passes per lift.

Photo 63: Type 2 material added to surface of AEC-2 landfill.

Photo 64: Spreading Type 2 across surface of AEC-2 landfill.

Photo 65: Track packing Type 2 lifts at AEC-2.

2.3.12 Complete drainage swale construction at AEC-1

Drainage swales were constructed at AEC-1 by excavating soils to the required depths, installing non-woven geotextile liner, and adding Type 1 material above the liner. The purpose of the swales was to direct surface water flow around the landfill.

Photo 66: Installing geotextile liner along centre line of swale at AEC-1

Photo 67: Construction swale at AEC-1. Rolls of geotextile liner seen on swale slopes.

Photo 68: View north along AEC-1 swale. Metal waste in background is within the adjacent municipal fenced waste area.

Photo 69: View southwest along centreline of AEC-1 swale.

2.3.13 Complete drainage swale construction at AEC-2

Drainage swales were constructed at AEC-2 using both geotextiles and constructing soil filters. The swales were excavated to the required depths and either a geotextile was installed (see Section 2.3.12) or a soil filter was constructed. The soil filter acts in the same function as the geotextile liner which was designed to keep the swale free of silt in order to allow for drainage around the landfills.

Photo 70: Excavating the centre line of AEC-2 swale.

Photo 71: Excavating and grading the slopes of the AEC-2 swale.

Photo 72: Swale constructed at AEC-2.

Photo 73: View north along centre line of swale from swale diffusion (end of the swale).

2.3.14 Excavate and ship off-site for disposal, impacted soils from AEC-3

Impacted soils at AEC-3 were excavated, packaged, and transported off-site for disposal. There were 6 excavation zones (see Figure 4, Appendix A) from which impacted soils were excavated and packaged in Quatrex bags for off-site disposal. The impacted soils at the Vehicle Storage Area and the respective contaminants of concern were defined in the Franz Environmental Inc 2013 Data Gap Report (Franz, 2013). Franz identified five areas of impacted soils based on soil analytical data. The sources of the impacts were identified to be from old vehicles, old fuel tanks, old equipment, and amended paint. At each excavation, in 2019, soil samples were collected to confirm the extents of the impacted soils. Note that a sixth area of impacted soils was identified during the 2019 field work. Table 2-5 below summarizes the contaminants of concern at each of the AEC 3 excavations.

Table 2-5: AEC 3 Excavations' Contaminants of Concern

Excavation[1]	Contaminants of Concern
Excavation 1	PHCs
Excavation 2	PHCs, metals
Excavation 3	PHCs
Excavation 3	PHCs, metals
Excavation 3	PHCs, metals
Excavation 3	PHCs, metals

1. See Figure 4 for excavation locations.

At each of the excavations, the results of confirmatory testing completed by DOJV, dictated the extents of the contaminated soil to be excavated. Furthermore, once laboratory analyses of confirmatory samples showed that no further excavation was required, the areas were backfilled using Type 2 material. In total, from AEC-3 there were 158 m^3 of impacted soils transported off-site for disposal. Disposal certificates are provided within Appendix C. Table 2-6 summarizes the confirmatory sampling at each excavation area.

Table 2-6: Confirmatory Sampling at AEC-3

Sample ID	Easting	Northing	Depth
	Excavation 1		
AEC3-1-1	440392.6	8296286.7	0.6 m
AEC3-1-2	440395.6	8296288.2	0.5 m
AEC3-1-3	440394.2	8296285.2	0.5 m
AEC3-1-4	440390.2	8296285.4	0.5 m
AEC3-1-5	440392.1	8296289.1	0.5 m
	Excavation 2		
AEC3-2-1	440417.3	8296294.6	0.6 m
AEC3-2-2	440415.4	8296297.5	0.5 m
AEC3-2-3	440421.5	8296295.2	0.5 m
AEC3-2-4	440419.1	8296291.0	0.5 m
AEC3-2-5	440412.9	8296291.4	0.5 m
AEC3-2-6	440415.4	8296297.5	0.6 m
AEC3-2-7	440416.6	8296288.3	0.4 m
AEC3-2-8	440421.7	8296290.6	0.4 m

	Excavation 3		
AEC3-3-1	440467.7	8296296.5	0.9 m
AEC3-3-2	440464.1	8296296.4	0.8 m
AEC3-3-3	440466.5	8296293.0	0.8 m
AEC3-3-4	440462.6	8296293.1	0.8 m
AEC3-3-5	440465.3	8296294.7	0.8 m
	Excavation 4		
AEC3-4-1	440481.6	8296323.6	0.2 m
AEC3-4-2	440481.6	8296323.6	0.2 m
AEC3-4-3	440480.0	8296322.5	0.2 m
AEC3-4-4	440482.2	8296323.4	0.2 m
	Excavation 5		
AEC3-5-1	440618.5	8296465.7	0.2 m
AEC3-5-2	440609.2	8296459.2	0.2 m
AEC3-5-3	440625.5	8296461.5	0.1 m
AEC3-5-4	440615.0	8296464.7	0.2 m
AEC3-5-5	440605.1	8296457.8	0.1 m
	Excavation 6		
AEC3-6-1	440452.2	8296287.9	0.5 m
AEC3-6-2	440455.1	8296286.6	0.5 m

AEC3-6-3	440449.8	8296287.9	0.5 m
AEC3-6-4	440457.1	8296287.3	0.5 m
AEC3-6-5	440458.8	8296286.7	0.5 m
AEC3-6-6	440455.2	8296288.0	0.5 m
AEC3-6-7	440456.3	8296285.5	0.5 m
AEC3-6-8	440456.4	8296288.8	0.7 m
AEC3-6-9	440453.5	8296290.0	0.6 m
AEC3-6-10	440453.7	8296287.6	0.6 m
AEC3-6-11	440452.2	8296285.4	0.6 m
AEC3-6-12	440450.4	8296285.5	0.6 m
AEC3-6-13	440448.7	8296285.8	0.6 m
AEC3-6-14	440450.7	8296289.9	0.6 m
AEC3-6-15	440448.4	8296288.2	0.7 m
AEC3-6-16	440446.7	8296286.7	0.6 m
AEC3-6-17	440447.8	8296289.7	0.6 m
AEC3-6-18	440446.1	8296288.5	0.6 m

Photo 74: Excavating impacted soils at AEC-3, Excavation #3.

Photo 75: AEC-3 excavated soils placed in Quatrex bags for off-site shipment and disposal.

Photo 76: Surveying extents of AEC-3 impacted-soils excavations.

Photo 77: Packaged impacted soils within Quatrex bags.

Table 2-7: AEC-3 Excavation Volumes

Excavation	Maximum Depth (m)	Length (m)	Width (m)	Excavated Volume (m3)	Depth of permafrost (m)	COCs
Excavation 1	0.6	6	4	14	0.6	PHCs
Excavation 2	0.6	9	7	38	0.6	PHCs, metals
Excavation 3	0.9	6	5	27	1.0	PHCs
Excavation 4	0.2	4	6	5	0.4	PHCs, metals
Excavation 5	0.2	20	6	24	0.4	PHCs, metals
Excavation 6	0.7	12	6	50	0.8	PHCs, metals

2.3.15 Ship all remaining hazardous material off-site for disposal

The activities regarding hazardous materials consolidation at AEC 1 conducted in 2018 are detailed above in Section 2.3.1. The activities conducted in 2019 with regard to hazardous material consolidation at AEC 2 are detailed above in Section 2.3.9. In 2019, all remaining hazardous materials for off-site disposal were shipped off-site. A summary of the quantities of hazardous materials is presented in Section 3.0.

3.0 Hazardous Material Waste Disposal

3.1 Off-site Disposal of Hazardous Materials

As part of the remedial activities of the Resolute Bay Landfill Remediation Project, several streams of hazardous material waste were sorted, segregated, stockpiled and packaged including:

- Metal debris with lead amended paint;
- Transformers;
- Batteries;
- Liquids from drums, tanks, and vehicles;
- Asbestos-Containing Materials (ACM);
- Containerized Paint (paint cans);
- Fridges; and,
- Fire extinguishers.

The majority of hazardous materials were previously identified and documented prior to remedial works in 2018. In 2018, the quantities of hazardous materials were measured in the field and agreed upon by the Kudlik site supervisor and the PSPC Authorized Departmental Representative. Table 3-1 outlines the hazardous waste quantities.

Table 3-1. Summary of Hazardous Materials

Hazardous Material	Quantity	Notes	Receiving Facility
Metal with lead amended paint	594 m^3 (pre-collapsed volume)	181 m^3 shipped off site in 2018 413 m^3 shipped off site in 2019	Sanexen – AIM
Transformers	37	All shipped off site in 2018	Qikiqtaaluk
Batteries	1290 kg (133 batteries)	All shipped off site in 2018	Qikiqtaaluk
Asbestos Containing Materials	1720 kg	All shipped off site in 2018	Qikiqtaaluk
Containerized Paint	40 kg	All shipped off site in 2018	Qikiqtaaluk
Liquids	4775 L (Total) 3175 L (oily water) 1400 L (waste oil) 200 L (epoxy resin)	2475 L shipped off site in 2018 2300 L shipped off site in 2019	Qikiqtaaluk
Fridges	4	All shipped off site in 2018	Qikiqtaaluk

Fire Extinguishers	8	All shipped off site in 2018	Qikiqtaaluk
PHC Contaminated Soil	41 m^3	All shipped off site in 2019	Qikiqtaaluk
Co-Mingled Metals and PHC Contaminated Soil	117 m^3	All shipped off site in 2019	Qikiqtaaluk

All hazardous materials outlined above were shipped south within sea cans and disposed of by Qikiqtaaluk Environmental, a licensed disposal facility. Disposal Certificates from Qikiqtaaluk Environmental were provided and are located within Appendix C. Appendix C-1 includes disposal certificates for items shipped south in 2018. Appendix C-2 includes disposal certificates for items shipped south in 2019. Note that Appendix C-2 also contains the disposal certificates of excavated soils from AEC-3.

4.0 Environmental Monitoring Methodology

Prior to, during, and after remediation activities carried out by Kudlik in 2018 and 2019, described in Section 2.0 above, DOJV carried out Environmental Monitoring of their works consisting of soil, sediment, surface water and groundwater samples. Sampling by DOJV was completed to evaluate the potential adverse impact of remediation activities on the environment at various locations.

In general, the samples collected throughout the project were collected in order to:

- Establish a preconstruction baseline
    - Groundwater, surface water, and sediment generally collected in pre-established locations such that they could be compared to past sample results.
    - Soil samples collected at locations prior to installing Hazardous Material Processing Areas (HMPA), under newly found wastes, or to prove the quality of borrow sources. These sample locations are specific to the activity from which they were sampled.
- Construction Monitoring
    - Groundwater, surface water, and sediment collected from preconstruction baseline locations such that they could be compared to baseline conditions
    - Soil samples collected at locations after Kudlik decommissioned the HMPAs, and after Kudlik removed equipment from laydown areas at AEC-1 in order to confirm that remediation activities in of themselves did not adversely affect the surrounding environment
- Spill Locations
    - Soil samples were collected at spill locations to confirm remedial efforts completed by Kudlik after the spills were sufficient to address the spill. (Note: in total there were three (3) spill locations, see Figure 8, Appendix A, and Section 5.3.4)
- Confirmatory sampling at AEC-3 excavations
    - Soil samples collected at six (6) excavations to confirm that the lateral and vertical extent of the impacts were removed

4.1 Health and Safety Program

4.1.1 Kudlik Health and Safety Plan

Kudlik had control of the work area and was assigned contractually by PSPC the responsibility for the health and safety of any person entering that work area. Within this context, prior to mobilization to the site and commencement of work, Kudlik was required to develop a written Health and Safety Plan (HASP). The Kudlik HASP was implemented, maintained, updated and enforced until final demobilization from site. The Kudlik HASP was prepared within the context of the project specifications and to ensure that the Health and Safety guidelines provided for safe and minimal risk working environment for site personnel. Additionally, the HASP objective was to minimize the impact of activities involving contact with hazardous materials or hazardous wastes on general public and surrounding environment.

The HASP included a plan that:

1. Identified site activities and potential hazards,
2. Described safe work practices and procedures,
3. Laid out required personal protective equipment (PPE)/safety levels,
4. Identified safety and first aid requirements, and
5. Identified emergency response procedures.

Upon review and approval of the HASP by project stakeholders, Kudlik was responsible for the safety of all persons and property entering the work site, and for protection of persons off site and environment to extent that they may be affected by conduct of Kudlik's Work. Kudlik was also required to control access to the site and provide Health and Safety orientations for all employees, sub-contractors, Departmental Representatives, and any other person, prior to accessing the site.

Kudlik was also required to comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

Throughout the course of the Summer 2018 and Summer 2019 work seasons, Kudlik recorded no incidents or accidents on-site.

4.1.2 DOJV - Site Specific Health and Safety Plan

DOJV prepared a Site-Specific Health and Safety Plan (SSHASP) which was specific to DOJV's site supervisory tasks on-site. This SSHASP applied to DOJV employees and directly retained subcontractors only and is subservient to the HASP prepared by Kudlik, since Kudlik had overall responsibility for health and safety at the site.

DOJVs SSHASP conformed to applicable codes and regulations for the work. The field team members were provided a copy of the SSHASP prior to the commencement of field work, and the HASP was reviewed with the team before the field programs began.

Dillon-Outcome provided the PSPC PM with a copy of the SSHASP prior to the initiation of field work. The SSHASP has been retained as part of the on-site project record by Dillon-Outcome.

4.2 Sampling

4.2.1 Surface Water Sampling

Surface water samples were collected from previously established stations at AEC-1 (AEC -1 SW1 to AEC-1 SW4), AEC-2 (AEC-2 SW1 to AEC-2 SW5), and AEC-3 (AEC-3 SW 1 and AEC-3 SW2). Surface water sample locations are shown on Figure 2, Figure 3, and Figure 6 for AEC-1, AEC-2, and AEC-3, respectively. A total of eleven (11) surface water samples, not including duplicates, were collected at each sampling event. Sample collection was carried out following industry best practices in sample collection and handling, and any deviation assessed by experienced personnel. Guidance on these protocols is found within the CCME Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment – Volumes 1, 2 and 3 (CCME, 2016) and from the Protocols Manual for Water Quality Sampling in Canada (CCME, 2011).

Surface sample locations were established based on locations previously established by Franz Environmental Inc as reported in the 2013 Data Gap Report (Franz, 2013). The established surface water sampling locations coincided with sediment sampling locations. Surface water sample locations were selected in order to ensure coverage at each of the AEC areas and to abide by the sampling requirements within the Water Licence. To the extent possible, historical sample locations for surface water were used for consistency purposes. Although the surface water in ponds surrounding AEC 1 and AEC 2 are ephemeral, sampling locations were selected in order for the opportunity for comparison of data over time to occur. Surface water sample locations were reviewed from the 2010 Phase II/III ESA (Franz, 2010) as well as the Franz 2013 Data Gap Report (Franz, 2013). Surface water sample locations in 2019 were the same as those locations sampled in 2018.

All surface water samples were collected from the surface profile of the water bodies (i.e., within top 0.4 m of the water column). Grab samples were collected directly into laboratory-supplied sample bottles. Where preservatives were already in sample bottles, a general chemistry bottle was repeatedly used to fill those first, then itself. As discussed in Section 4.3, standard practices in QA/QC were applied throughout the sampling process including duplicate submission at a rate of 10% and the use of trip blanks.

Sample bottles were provided by the contract laboratory (Eurofins). All bottles pre-charged with preservative (e.g. PHCs) were laboratory cleaned and were not rinsed. Uncharged bottles (e.g. general chemistry) were triple rinsed before the addition of any required laboratory preservatives.

To avoid potential water quality effects from sediment sampling, surface water sampling was always conducted prior to sediment sampling. Surface water samples were analyzed for Metals, Polyaromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs), including low-level Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX), PAHs, and shipped to the laboratory in sealed coolers with ice

packs and under a chain-of-custody (CoC). The CoCs are included within the laboratory certificates, shown within Appendix D.

4.2.2 Groundwater Sampling

A total of five (5) shallow groundwater samples were collected in 2018. A total of three (3) shallow groundwater samples were collected in 2019. Groundwater samples were collected from AEC-1 and AEC-2. Prior to groundwater sampling, the water elevations were recorded using a Heron Interface meter and the wells were purged of 3 well volumes. Note that no fuel or oil was detected within the groundwater wells during the sampling events of 2018 and 2019. Water elevations within pre-existing groundwater monitoring wells ranged from 0.30 m below ground to 0.05 m below ground. Sampling results are presented below in Section 5.3.

Groundwater samples were collected through dedicated silicon and LDPE tubing connected to a peristaltic pump and into laboratory supplied containers. Groundwater samples were analyzed for PHCs, BTEX, PAHs, metals and shipped to the laboratory in sealed coolers with ice packs and under a chain-of-custody. Laboratory certificates, which include the Chain of Custody, are included within Appendix D. The existing groundwater monitoring network at AEC 1 and AEC 2 established by previous site investigations and summarized within the Franz 2013 Data Gap Analysis consisted of a total of 12 groundwater monitoring wells (Franz, 2013). Table 4-1 below shows a list of previously installed groundwater monitoring wells that were located with respect to AEC 1 and 2, their condition, and their renamed sampling reference for monitoring purposes.

Table 4-1: Pre-Existing Groundwater Monitoring Network

Area of Concern	DOJV Sample Name	Monitoring Well	2018 Condition	Sampled 2018	Sampled 2019
AEC 1	AEC-1 GW-1	MW13-1 (Franz, 2013)	Good	Yes	Yes
AEC 1	AEC-1 GW-2	1-MW-13 (Franz, 2013)	Good	Yes	No, broken
AEC 1	AEC-1 GW-3	1-MW-14 (Franz, 2013)	Good	Yes	No, dry
AEC 1	na	MW13-2 (Franz, 2013)	Good	No, dry	No, removed
AEC 1	na	MW13-3	Good	No, dry	No, dry

Area of Concern	DOJV Sample Name	Monitoring Well	2018 Condition	Sampled 2018	Sampled 2019
		(Franz, 2013)			
AEC 2	AEC-2 GW-1	FL-MW-6 (Franz, 2013)	Good	Yes	Yes
AEC 2	AEC-2 GW-2	2-MW-8 (Franz, 2013)	Good	Yes	Yes
AEC 2	na	FL-MW-5	Broken	No	No
AEC 2	na	2-MW-2	Broken	No	No
AEC 2	na	FL-MW-3	Broken	No	No

Note: Additional wells detailed in the Franz 2013 Data Gap Analysis report could not be located and were presumed to be broken

Groundwater monitoring wells were installed in 2019 by DOJV. Sampling from the monitoring wells did not occur, however, Table 4-2 summarizes the locations of the wells which will be utilized for long term monitoring (see Section 8.0).

Table 4-2: Groundwater Monitoring Wells installed in 2019

Well ID	AEC	Northing	Easting	Depth of Well (m)
RBL-1	AEC-1	8295630	441147	0.99
RBL-2	AEC-1	8295552	440943	0.75
RBL-3	AEC-1	8295609	440901	0.76
RBL-5	AEC-2	8292509	441662	0.95
RBL-6	AEC-2	8292569	441413	0.94
RBL-7	AEC-2	8292634	441384	1.10

Well ID	AEC	Northing	Easting	Depth of Well (m)
RBL-10	AEC-3	8296242	440493	0.99
RBL-11	AEC-3	8296266	440383	0.97
RBL-12	AEC-3	8296335	440450	0.96
RBL-14	AEC-3	8296449	440682	0.98
RBL-15	AEC-3	8296469	440635	0.95

Note: All monitoring wells were 50 mm diameter PVC wells with a sleeve. All monitoring wells have a 750 mm screen length pre-packed with sand except RBL-2 and RBL-3 which have a 500 mm screen length. All monitoring wells installed with above ground steel casings for protection.

4.2.3 Soil and Sediment Sampling

Soil and sediment samples were collected manually using hand tools (shovel, trowel, bowl or by gloved hand) which were decontaminated between locations using an Alconox solution and distilled water. A total of ten (10) sediment samples and a total of thirteen (13) soil samples were collected in 2018. In 2019, a total of ten (10) sediment samples and a total of forty-five (45) soil samples were collected. Field personnel used a new pair of Nitrile gloves for each sample location. Each sample was placed into either laboratory supplied 250 mL clear glass jars or, 125 mL clear glass jars, which were each filled with soil as to meet the instructions provided by the project laboratory. Samples collected for analysis of volatiles (i.e., VOCs and/or BTEX) were collected using dedicated, single use, Terra Core tubular soil samplers and for preservation placed into 40 mL clear glass vials pre-charged with methanol and measured by Eurofins. Borrow source stock piles were sampled as a composite sample by collecting 7-10 grab samples, of equal size, from different locations and depths of the pile and mixing them together within a stainless-steel bowl. The homogenized samples were then sampled from the bowl as discussed above.

All locations were photographed during sampling and GPS locations recorded. Sediment sample locations were selected based on historical locations in an attempt to track changes over time. Sediment samples were always paired with surface water samples (see Section 4.2.1). The GPS co-ordinates of sediment (and paired surface water) samples are presented below in Table 4-3. Soil sample locations were based on site conditions at the time of remediation (under newly observed wastes, as a baseline prior to setting up a processing area, or as confirmatory samples at extents of excavations). Sample locations are shown on Figures within Appendix A.

Additionally, for each soil and sediment sample collected, a depth measurement, GPS coordinates, and description of the sample (including colour, odour, sheen, staining, and grain size), the presence of debris, and any unusual characteristics was recorded.

Soil and Sediment samples were analyzed for PHCs, BTEX, PAHs, metals and shipped to the laboratory in sealed coolers with ice packs and under a chain-of-custody, included in Appendix D.

Table 4-3: Paired Sediment and Surface Water Sample Locations

Surface Water Sample ID	Sediment Sample ID	AEC	Northing	Easting
AEC-1 SW-1	AEC-1 Sed-1	AEC-1	440896	8295614
AEC-1 SW-2	AEC-1 Sed -2	AEC-1	440868	8295684
AEC-1 SW-3	AEC-1 Sed -3	AEC-1	440835	8295601
AEC-1 SW-4	AEC-1 Sed -4	AEC-1	440905	8295447
AEC-2 SW-1	AEC-2 Sed -1	AEC-2	441674	8292276
AEC-2 SW-2	AEC-2 Sed -2	AEC-2	441487	8292323
AEC-2 SW-3	AEC-2 Sed-3	AEC-2	441333	8292604
AEC-2 SW-4	AEC-2 Sed -4	AEC-2	441229	8292611
AEC-2 SW-5	AEC-2 Sed -5	AEC-2	441221	8292698
AEC-3 SW-1	AEC-3 Sed-1	AEC-3	440848	8295616
AEC-3 SW-2	AEC-3 Sed-2	AEC-3	440798	8295692

A total of thirteen (13) baseline surface water samples were collected in 2018 (11 samples plus 2 duplicates).

4.3 Quality Assurance and Quality Control

Quality assurance/quality control (QA/QC) procedures were consistent with industry standards and guidelines. At least 10% of samples were taken and analyzed in duplicate and appropriate QA/QC data

was generated. All samples were given sequential alphanumerical coding before submission to the analytical laboratories; this coding method was intended to mask any information concerning site location, sample type or possible concentrations in the samples.

Sampling procedures and laboratory analytical precision were evaluated by calculating the relative percent difference (RPD) for a sample and duplicate pair according the following equation:

$RPD = | X_1 - X_2 | / X_{avg} \times 100$

where: X_1 and X_2 are the duplicate concentrations and X_{avg} is the mean of these two values.

The duplicate results were evaluated using criteria developed by Zeiner (1994), which draws from several data validation guidelines developed by the United States Environmental Protection Agency (USEPA) (Zeiner, 1994).

Dillon-Outcome defines the acceptable range for RPD in samples as below 40% for water, and below 60% for soil and sediment.

Sample duplicate RPD results are summarized in Section 5.4

4.3.1 Groundwater

In 2018, Dillon-Outcome attempted to collect a duplicate for the AEC-1-GW-1 sample, but was unsuccessful due to poor recharge and insufficient volume of water in the monitoring well. Similarly, in 2019, the poor recharge of the monitoring wells did not allow for a duplicate groundwater sample to be collected.

4.3.2 Surface Water

Dillon-Outcome collected two (2) field duplicates throughout the 2018 surface water sampling program:

- DUP-SW-1 was collected as a duplicate of AEC-1 SW-2 and analyzed for PAHs, PHCs, metals and BTEX.
- DUP-SW-2 was collected as a duplicate of AEC-3 SW-1 and analyzed for PAHs, PHCs, metals and BTEX.

Dillon-Outcome collected two (2) field duplicates throughout the 2019 surface water sampling program:

- AEC-1-SW DUP-1 was collected as a duplicate of AEC-1 SW-3 and analyzed for PAHs, PHCs, metals and BTEX.
- AEC-3 DUP-2 was collected as a duplicate of AEC-3 SW-1 and analyzed for PAHs, PHCs, metals and BTEX.

4.3.3 Sediment

Dillon-Outcome collected two (2) field duplicate of sediment throughout the sediment sampling program:

- In 2018, DUP-Sed-1 was collected as a duplicate of AEC-1-Sed-2 and analyzed for metals, PCBs, PHCs and VOCs.
- In 2019, AEC-1-SED-DUP-1 was collected as a duplicate of AEC-1-SEC-3 and analyzed for metals, PCBs, PHCs and VOCs.

4.3.4 Soil

No field duplicates were collected for soil samples during the 2018 sampling program. During the 2019 field program, soil sample duplicates were as follows

- Soil sample AEC3-4-2 was a duplicate of AEC3-4-1
- Soil sample AEC3-2-6 was a duplicate of AEC3-2-1
- Soil sample RBL-Dup was a duplicate of RBL-3-SGS

4.3.5 Grain Size Analyses

All borrow areas required preparatory work by Kudlik in order for the borrow material to meet the desired specifications. There were requirements to select, blend, and/or screen granular materials to satisfy gradation specifications. Kudlik screened aggregate materials in 2019 in order to meet the specifications. The produced aggregate was subject to continual sampling by DOJV throughout the 2019 work period. The on-site DOJV personnel sampled from the screened stockpiles of material in order to confirm material acceptability. The aggregate is to meet the required specifications regardless of the place of sampling.

Throughout the project, seventeen (17) samples were collected for sieve analysis. All of the samples conformed to the gradation specifications apart from one sample collected at the beginning of the screening process which contained an elevated % of fines. Kudlik subsequently blended materials from within the various borrow areas. Throughout the remaining summer screening period, sieve analysis confirmed that the aggregate materials conformed to the specifications. Averages of all the sieve analyses for Type 1 and Type 2 materials is shown in Appendix F. Overall, all of the materials utilized for the remedial works was acceptable and conformed to requirements specified. Additionally, the field performance of the borrow material was found to be satisfactory.

4.4 Laboratory

The Dillon-Outcome project laboratory was Eurofins in Ottawa, Ontario. Analysis of samples was performed in Eurofins's Ottawa and Mississauga locations. Eurofins is certified by the Canadian

Association for Laboratory Accreditation Inc. (CALA) and has an internal set of QA/QC protocols, including replicate analysis, blank spikes, matrix spikes, instrumentation calibration, internal standards, method blanks, and internal QC checks. All laboratory quality information was reviewed as part of the data review.

Chain of Custody forms and Laboratory Certificates of Analyses are provided in Appendix D.

5.0 Sampling Program and Results

5.1 Sampling Program Overview

As part of the activities for the Resolute Bay Landfill Remediation project, sampling by the Authorized Departmental Representative was required as per the following table.

Table 5-1. Departmental Representative Sampling Summary

Media	Reason	Location	Analyses
Soil	Baseline	Temporary Hazardous Material Processing Areas (THMPAs)	PHCs, BTEX
Soil	Baseline	Aggregate borrow sources	PHCs, BTEX, PAHs, metals
Surface Water	Performance Monitoring as per Nunavut Water Board Water License	AEC-1, AEC-2, AEC-3	PHCs, BTEX, PAHs, metals
Sediment	Performance Monitoring as per Nunavut Water Board Water License	AEC-1, AEC-2, AEC-3	PHCs, BTEX, PAHs, metals
Groundwater	Performance Monitoring as per Nunavut Water Board Water License	AEC-1, AEC-2, AEC-3	PHCs, BTEX, PAHs, metals
Soil	Confirmatory	AEC-1, northern swale, at unearthed transformer location	PCBs
Soil	Confirmatory	AEC-3 impacted-soil excavations	PHCs, metals
Soil	Quality Assurance	Type 1 and Type 2 materials	Grain Size Analysis
Soil	Confirmatory (collected after clean-up by Kudlik)	Spill locations	PHCs, BTEX, PAHs
Soil	Construction Monitoring	THMPAs and areas of use by Contractor for comparison to baseline	PHCs, BTEX, PAHs, metals

5.2 Environmental Quality Guideline Selection

There are two separate land uses for the RBLR Project. AEC 1 and AEC 2 will remain as landfills; therefore, the commercial land use would apply. All debris and impacted soils were removed from AEC 3; therefore, the residential/parkland land use applies. AEC 1 is approximately 40 metres from ephemeral surface water bodies and 1 km from the ocean. AEC 2 is approximately 50 metres from ephemeral surface water bodies and approximately 2 km from the ocean. AEC 3 is approximately 100 m from the gully and approximately 0.6 km from the ocean.

The following Environmental Quality Guidelines (EQGs) were established during previous investigations by others and were selected for use on site during the NWB license review process.

The Interim Sediment Quality Guideline (ISQG) for freshwater and marine aquatic life was used to evaluate contaminant concentrations in Sediment samples (CCME, 1999).

The Canadian Soil Quality Guidelines (CSQG) for soil was used to evaluate analytical results for soil samples (CCME, 1999). Both parkland and commercial use CSQGs are considered for the land based on proximity to the airport. The Canada-Wide Standards (CWS) for Petroleum Hydrocarbons is used to evaluate PHC contamination (CCME, 2008).

For both surface water and groundwater samples the Canadian Water Quality Guidelines for the Protection of Aquatic Life are applied (CCME, 2003). The inland water samples are classified as freshwater, but the marine guidelines are also included for reference. Water samples with considerable amounts of PHCs are compared to the Alberta Tier 1 Groundwater Remediation Guidelines (Alberta Government, 2019)

5.3 Sample Results

5.3.1 Groundwater

A total of five (5) shallow groundwater samples were collected in 2018.

Baseline groundwater samples were collected from AEC-1 and AEC-2. The following exceedances were reported from the 2018 samples:

- AEC-1-GW-1 exceeded guidelines for Arsenic, Cadmium, Iron and Zinc.
- AEC-2-GW-1 exceeded the guideline for Zinc.
- AEC-2-GW-2 exceeded guidelines for Arsenic, Cadmium, Iron, Mercury and Zinc.

A total of three (3) shallow groundwater samples were collected in 2019. Groundwater samples were collected from AEC-1 and AEC-2. The following exceedances are presented below:

- AEC-1-GW-1 exceeded guidelines for Arsenic, Cadmium, Chromium VI, Iron, Mercury, and Zinc.
- AEC-2-GW-1 exceeded guidelines for Cadmium, Chromium VI, and Mercury.
- AEC-2-GW-2 exceeded guidelines for Cadmium.

Analytical data is summarized in Tables within Appendix B. The elevated results reported in 2018 and 2019 are similar to those reported in the 2009 Phase II/III ESA (Franz, 2010). Each of the exceedances above criteria reported in 2018 and 2019 were also reported as exceedances in the Phase II/III apart from Arsenic. Arsenic concentrations reported in the Phase II/III ranged from <1 ug/L to 2 ug/L. Arsenic concentrations in 2018 and 2019 ranged from <1 ug/L to 7 ug/L. The CCME water quality guideline for arsenic concentrations in freshwater is 5 ug/L.

A total of eleven (11) groundwater monitoring wells were installed in late August 2019. The new wells followed the nomenclature described in the Water Licence. The associated area of each monitoring well is presented in Table 5-2 below. The locations of the monitoring wells are shown on Figures 9, 10, and 11 for AEC-1, AEC-2, and AEC-2, respectively. The groundwater monitoring wells were installed in order to comply with Part K of the Water Licence which stipulates the requirement to maintain monitoring stations for sampling throughout the long-term monitoring of the site. The Water Licence is attached as Appendix E. Groundwater samples were not collected from the newly installed wells in 2019.

Table 5-2. Locations of Installed Groundwater Monitoring Wells in 2019

Area of Concern	Monitoring Well Location
AEC 1	RBL-1, RB-2, RBL-3
AEC 2	RBL-5, RBL-6, RBL-7
AEC 3	RBL-10, RBL-11, RBL12, RBL-14 RBL 15

5.3.2 Surface Water

A total of thirteen (13) baseline surface water samples were collected in 2018 (11 samples plus 2 duplicates). Surface water was collected from AEC-1, AEC-2, and AEC-3. Surface water sample locations are shown within the Figures 2, 3, and 6 for AEC 1, AEC 2, and AEC 3, respectively. The following exceedances are presented below:

- AEC-1-SW-1 & AEC-1-SW-2 exceeded guidelines for Antimony and Hexavalent Chromium.
- AEC-1-SW-3 exceeded guidelines for Cadmium.
- AEC-2-SW-1 & AEC-2-SW-3 exceeded guidelines for Antimony.
- AEC-2-SW-2 exceeded guidelines for Hexavalent Chromium.

Analytical data is summarized in Tables within Appendix B.

A total of thirteen (13) surface water samples were collected in 2019 (11 samples plus 2 duplicates). Surface water was collected from AEC-1, AEC-2, and AEC-3. The following exceedances are presented below:

- AEC-1 SW-1 exceeded guidelines for Antimony, Zinc
- AEC-2 SW-3 exceeded guidelines for Antimony

Analytical data is summarized in Tables within Appendix B. The elevated results reported in 2018 and 2019 are similar to those reported in the 2009 Phase II/III ESA (Franz, 2010). Each of the exceedances above criteria reported in 2018 and 2019 were also reported as elevated in the Phase II/III ESA (Franz, 2010).

5.3.3 Sediment

A total of ten (10) baseline sediment samples were collected in 2018. The following exceedances are presented below:

- Sediment sample AEC-2-Sed-1 exceeded criteria for Cadmium, Copper, Lead and Zinc.

Similarly, in 2019 a total of ten (10) sediment samples were collected with sediment collected from the AEC-2 Sed-1 location containing concentrations above criteria for Cadmium, Copper, Lead and Zinc. This elevated result is similar to the elevated results reported in the 2009 Phase II/III ESA (Franz, 2010). Each of the exceedances above criteria reported in 2018 and 2019 for sediment were also reported as exceedances in the Phase II/III ESA.

Analytical data is summarized in Tables within Appendix B.

5.3.4 Soil

A total of thirteen (13) soil samples were collected during 2018. The following exceedances are presented below:

- Soil samples AEC-3-HMPA-2 & AEC-3-HMPA-3 exceeded guidelines for Hexavalent Chromium.

Note that these samples, containing elevated concentrations, were collected from before and after the use of a HMPA and were located in an area of previously known contamination that was subsequently excavated in 2019. Additionally, the 2009 Phase II/III ESA reported a similarly elevated concentration of Hexavalent Chromium at AEC-3 in an area that was subsequently excavated in 2019.

A total of 45 soil samples were collected at AEC-3 during 2019. The following exceedances are presented below:

- Soil sample AEC-3-2-4 (at Excavation #2) exceeded guidelines for PHC F3
- Soil sample AEC-3-4-2 (at Excavation #4) exceeded guidelines for PHC F3
- Soil sample AEC-3-5-1 (at Excavation #5) exceeded guidelines for PHC F3 and Hexavalent Chromium
- Soil sample AEC-3-5-2 (at Excavation #5) exceeded guidelines for Hexavalent Chromium
- Soil samples AEC-3-6-1 and AEC-3-6-2 (at Excavation #6) exceeded guidelines for BTEX, PHC F1, PHC F2, PHC F3, and Hexavalent Chromium

- Soil samples AEC-3-6-3, AEC-3-6-4, AEC-3-6-6, and AEC-3-6-10 (Excavation #6) exceeded guidelines for Hexavalent Chromium

The analytical results for AEC-3 confirmatory samples directed the excavations to extend either laterally, vertically or both. In all cases, at each of the six (6) excavations, subsequent analytical results indicated that impacted soils had been removed. As is shown on Figure 4, Appendix A, the excavation limits were extended beyond sample locations with elevated concentrations.

In addition to the confirmatory samples collected at AEC-3 during 2019, DOJV collected eleven (11) soil samples at installed monitoring well locations and seven (7) samples at areas of use by the Contractor. A summary of these soil samples is presented below:

- The soil samples collected at each of the spill locations (see Figure 8, Appendix A) indicated no remaining adverse effects. Analytical results confirmed that Kudlik had dealt with impacted soils appropriately by excavating the impacted soils for off-site disposal. Details of the three spills are as follows and summarized in Table 5-3.
    - Spill-1: 4 L of transmission oil near the screener adjacent to AEC-1
    - Spill-2: 20 L of oil at Contractor laydown area adjacent to AEC-1
    - Spill-3: 15 L of hydraulic oil near THMPA-2 (adjacent to old vehicles at AEC-2)

Table 5-3. Summary of Sampling at Spill Locations

Soil Sample ID	GPS Coordinates	Depth (m)	Area (m2)	Excavated soil volume (m3)	Volume of spill	COC	Depth to permafrost (m)
Spill-1	441220, 8295535	0.25	2	0.5 m^3	4 litres	PHCs (hydraulic oil)	0.6
Spill-2	441152, 8295671	0.15	6	1 m^3	20 litres	PHCs	0.6
Spill-3	441467, 8292731	0.10	5	0.5 m^3	15 litres	PHCs (hydraulic oil)	0.7

- The soil samples collected at THMPAs at AEC 1, AEC 2, and AEC 3; screener area at the borrow area West (BAW), and Contractor AEC 1 laydown area after Kudlik had decommissioned or removed equipment indicated that no adverse effects from the remediation activities themselves had occurred.
- During the installation of each of the new monitoring wells in 2019, soil samples were collected. There were no elevated concentrations within soils at any of the new monitoring well locations.

The locations of the monitoring wells installed in 2019, and the respective soil sample collected are shown in Figure 9, 10, and 11 for AEC-1, AEC-2, and AEC-3, respectively.

Analytical data for soil is summarized in Tables B-1, B-2 and B-13 for PHCs, PAHs, and AEC-3 samples respectively. Laboratory certificates are presented in Appendix D.

5.4 QA/QC Results

As noted in Section 4.3, Dillon-Outcome defines the acceptable range for RPD in samples as below 40% for water, and below 60% for soil and sediment. These values are based on those suggested in the CCME characterization guidance (CCME, 2016) and general industry practice.

5.4.1 Surface Water

RPD values for surface water sample duplicates are included within Tables (see Appendix B). Duplicate RPDs in surface water ranged from 0% to 25%, within the acceptable range.

5.4.2 Sediment

RPD values for the sediment sample duplicate are included within Tables (see Appendix B). Duplicate RPDs for the sediment sample ranged from 0% to 38%, within the acceptable range.

5.4.3 Soil

RPD values for the soil sample duplicate are included within Tables (see Appendix B). Duplicate RPDs for the soil sample ranged from 0% to 20%, within the acceptable range, apart from one result. The AEC-3-4-1 and respective duplicate 3-4-2, collected from Excavation #4 within AEC-3 (see Figure 4, Appendix A) had an RPD value of 168% for PHC F3. The one elevated RPD result for soil was assumed to be caused by the heterogenous nature of the AEC-3 soils as well as the elevated concentrations within the soils of PHC F3. This soil was subsequently excavated and transported off-site for disposal with additional confirmatory samples collected as described in Section 5.3.4.

6.0 Regulatory Considerations

The Nunavut Water Board (NWB) issued Water License (WL) 1BR-RBL1929 on May 13, 2019. WL 1BR-RBL1929 expires on May 12, 2029. The preceding Water Licence, 1BR-RBL1419, was issued July 11, 2014 and expired July 10, 2019. The regulatory requirements set in the Water Licence were adhered to by Kudlik throughout the course of the remedial works. Additionally, the reporting requirements dictated in the Water Licence were followed and are summarized in separate reports written by DOJV, namely:

- WL 1BR-RBL1929 Annual Report
- WL 1BR-RBL1929 Operations and Maintenance Manual
- WL 1BR-RBL1929 Post Closure Monitoring Plan, to describe future monitoring at the site (note: report also referred to as Long-Term Monitoring Plan)
- WL 1BR-RBL1929 Remedial Action Plan, to describe the remedial activities that occurred (note: report also referred to as Site Closure Report)

WL 1BR-RBL1929 is attached as Appendix E. Note that during the remedial works, Kudlik posted the WL in the Contractor's site office adjacent to AEC-1. Additionally, DOJV personnel kept a copy of the WL in the site binder for reference throughout the remedial works.

Airport authorities were consulted during the applications process and were updated throughout the remedial works.

There were no known inspections of the site by Land-Use Inspectors (LUI) during 2018. In 2019, Mona Manik with the Government of Nunavut attended a site visit in August. Note that DOJV on-site Departmental Representatives did conduct ongoing inspections and were thoroughly familiar with the regulatory requirements stipulated. Stipulations were discussed on-site as required between the Departmental Representative and Kudlik's site supervisor. Regulatory considerations were documented in the DOJV daily reports and discussed amongst the project team in weekly construction meetings. The DOJV daily reports are attached as Appendix G. The weekly construction meeting minutes are attached as Appendix H.

7.0 Discussion

The remedial activities that were completed 2018-2019 were supervised by DOJV and included the following work categories:

1. hazardous material consolidation
2. borrow source development
3. non-hazardous waste transport to AEC-1
4. AEC-1 landfill slope reshaping
5. AEC-1 Drainage swale excavations
6. Use of borrow material
7. Regrading landfill caps at AEC-1 and AEC-2
8. AEC-2 landfill slope reshaping
9. Hazardous material consolidation at AEC-2 in preparation for off-site disposal
10. AEC-1 landfill cover
11. AEC-2 landfill cover
12. Drainage swale construction at AEC-1
13. Drainage swale construction at AEC-2
14. Excavation and off-site disposal of impacted soils from AEC-3
15. Shipping all remaining hazardous materials off-site for disposal

7.1 Construction Monitoring

Construction Monitoring (also referred to as Performance Monitoring) was conducted by DOJV as per sampling requirements described in the Nunavut Water Board Water License. Construction Monitoring in 2018 and 2019 included surface water, sediment, and groundwater sampling.

Results from the surface water, sediment, and groundwater construction monitoring sampling in 2018 and 2019 were comparable to previous data collected for the Phase II/II ESA (Franz, 2010) and Data Gap Analysis (Franz, 2013). Looking forward, the construction monitoring data as well as the historic data will be incorporated into the long-term monitoring data set for the site (see Section 8)

Results from the soil sampling associated with construction monitoring confirmed that the Contractor's activities did not adversely affect the underlying soils at laydown areas, temporary hazardous material processing areas (THMPA), or the screener location.

7.2 Confirmatory Sampling

Confirmatory sampling was conducted by DOJV at AEC-3 soil excavations. Laboratory analytical results of samples collected determined the extents of the excavations. Analytical data was compared to residential/parkland criteria. In instances where soil samples had concentrations above criteria, the excavations were increased and subsequent samples were collected for laboratory analyses. DOJV's role

was to confirm the extents of the impacted soils. Figure 4, Appendix A, shows the final excavation limits of the AEC-3 impacted soils along with samples locations collected for confirmatory purposes.

All of the impacted soils were excavated, packaged, and transported off-site for disposal in 2019. Appendix C includes the disposal certificates.

7.3 Supervision of Contractor's Work

Kudlik completed the remediation works in keeping with the Contract documents. Prior to remedial works, DOJV reviewed Kudlik's submittals including the HASP and SCP. During remedial works DOJV referenced the Kudlik submittals along with the specifications in order to ensure that Kudlik was adhering to the Contract documents and to the AHJs. No issues were observed or noted by DOJV.

Throughout the field work, DOJV maintained an on-site Departmental Representative. The Departmental Representative attended daily tailgate meetings conducted by Kudlik, attended weekly construction meetings, and submitted Daily Reports to PSPC.

Daily reports from 2018 and 2019 are attached as Appendix G-1 and Appendix G-2, respectively. Weekly construction meeting minutes are attached as Appendix H.

In summary, the remediation of the Resolute Bay Airport Landfills is complete. The next step for the site is long-term monitoring (see Section 8).

8.0 The Next Steps – Long Term Monitoring

As part of the NWB Amended Renewal Water License 1BR-RBL-1929, issued in 2019, a Monitoring Program is required. The schedule, data collection, and reporting for Operations & Maintenance and Long-Term Monitoring will work in conjunction under the Monitoring Program. The Operations and Maintenance activities will serve to observe and analyze physical parameters, whereas, the Long-Term Monitoring Plan will serve to analyze Water Quality (chemical) parameters over time. The proposed Monitoring Program schedule is that monitoring be conducted after remediation is complete in years 1, 3, 5, 7, 10, 15, 20 and 25. Although, the exact years of the monitoring events may be adjusted, it is planned that long-term monitoring begin in 2020.

The main purpose of the proposed program is to ensure no contamination pathways are observed following the implemented designs. Additionally, it must be confirmed that adequate permafrost aggregation in the AEC 1 landfill is present, and that the function of the two landfills meet design intents in terms of stability.

As such, the Monitoring Plan focuses on 2 main parameters:

1. Water Quality – Reported as part of the Long-Term Monitoring Plan
2. Site Stability – Reported as part of the Operations and Maintenance Report

For water quality parameters, after the third round of monitoring (in 2025), there will be sufficient data collected to analyze contaminant concentration trends based on statistical test. Beyond data collection of years 1 and 3, it is recommended that after each subsequent monitoring round that the consultant make recommendations based on the statistical results, and if any changes to the scope and schedule are required. These recommendations will be included as part of the Long-Term Monitoring Plan Reporting.

For site stability, observational parameters are to be analyzed immediately for variances from as-built drawings and compared accordingly. Recommendations will be summarized in the Operations and Maintenance Report, and categorized by specific AEC, as outlined in the Operations and Maintenance Manual.

The above schedule is based on the assumption that during the first three to five rounds of monitoring, trends on the contaminant concentration can be established. Once contaminant concentration trends are determined, and show an indication that no increase in concentration is occurring, the time between monitoring rounds can be extended. If contaminant trends cannot be established, annual monitoring is recommended.

Due to the remote nature of the site, method and frequency should work in conjunction with the Long-Term Monitoring Plan and any Remedial Plans that have been developed.

In the next two years, there is only monitoring planned for the year 2020. This visit will prioritize data collection for baseline conditions following remedial works, as well as the observation of differential landfill cap settlement.

For further details on the upcoming Monitoring Program, the following documents can be referenced:

- WL 1BR-RBL1929 Operations and Maintenance Manual Resolute Bay Landfill Remediation Project, dated March 2020.

- WL 1BR-RBL1929 Post Closure Monitoring Plan for the Resolute Bay Airport Landfill, dated March 2020, which describes future monitoring at the site (note: report also referred to as Long-Term Monitoring Plan)

9.0 Closure

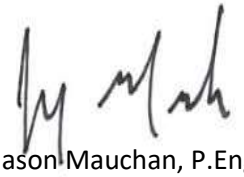
This report was prepared exclusively for the purposes, project, and site location outlined in the report. The report is based on information provided to, or obtained by, Dillon-Outcome as indicated in the report, and applies solely to site conditions and the regulatory and planning frameworks existing at the time of the site supervision. Dillon-Outcome's report represents a reasonable review of available information and environmental monitoring efforts within an established work scope and schedule.

This report was prepared by Dillon-Outcome for the sole benefit of our client. The material in it reflects Dillon-Outcome's best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon-Outcome accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that this information is satisfactory for your requirements.

Sincerely,

DILLON-OUTCOME JOINT VENTURE



Jason Mauchan, P.Eng.
Senior Project Engineer

Michael Billowits, MSc.(Eng), P.Eng.
Engineer of Record
President, Outcome Consultants Inc.

10.0 References

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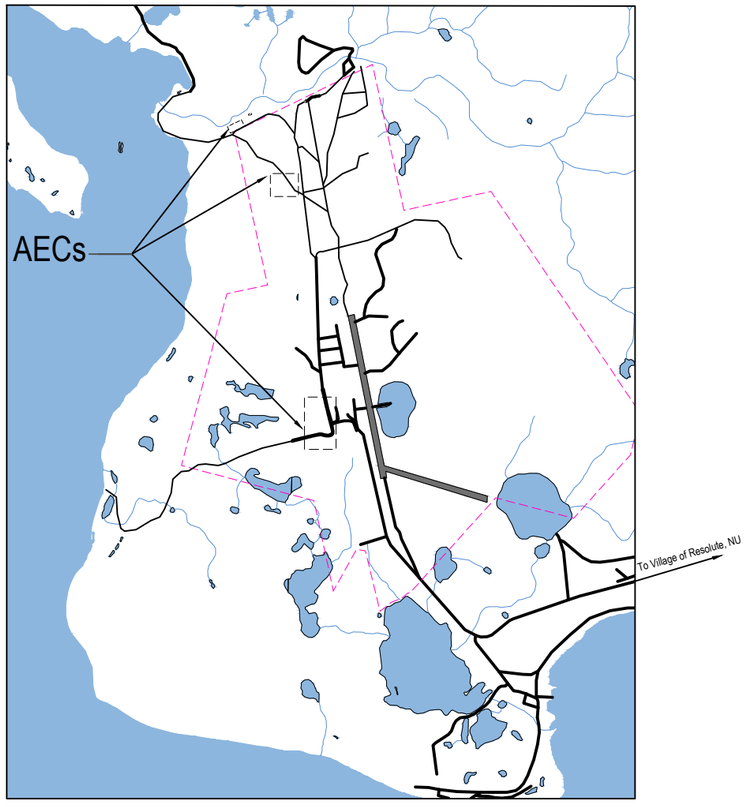
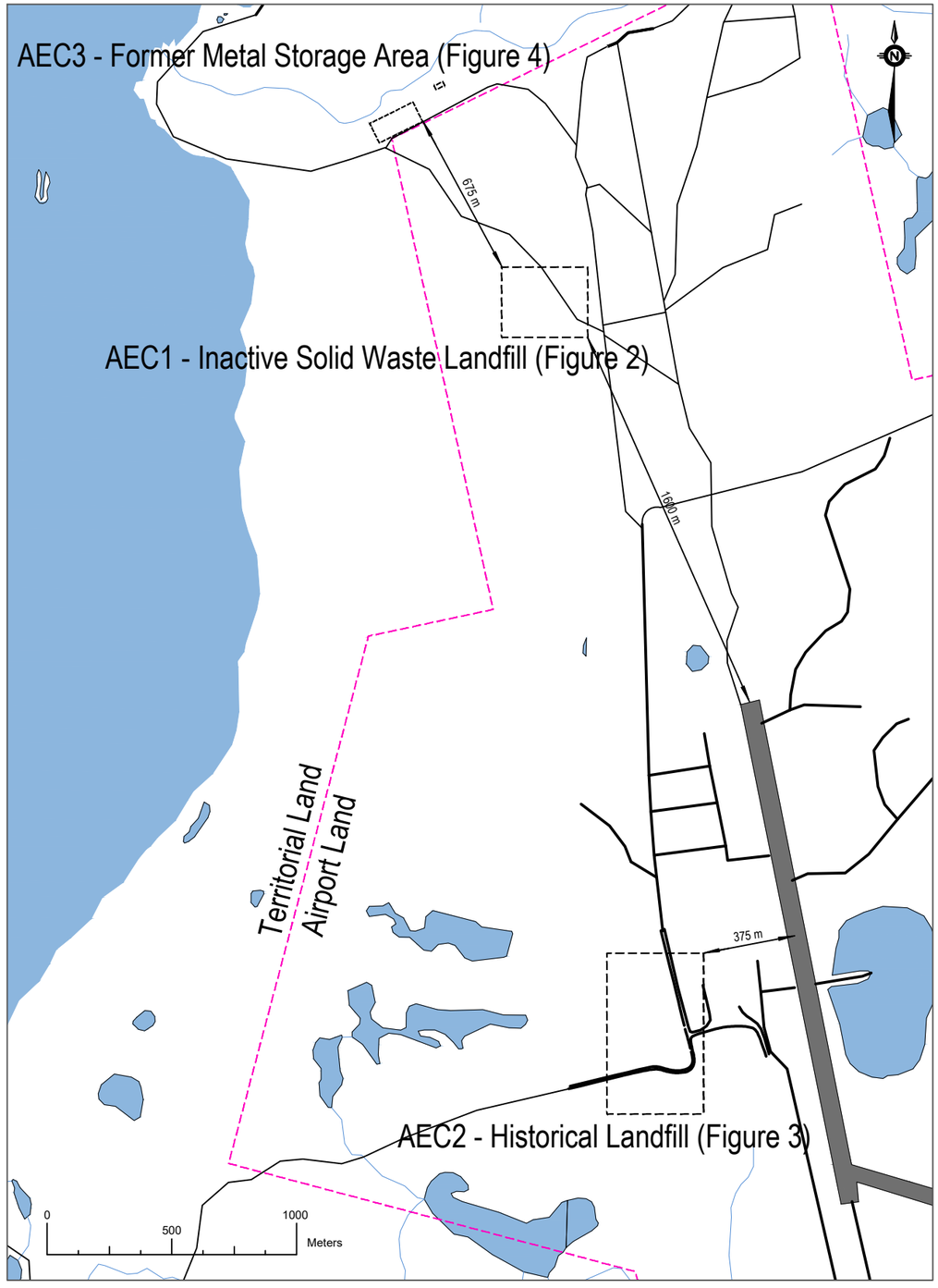
Appendix A

Figures





Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

NOTES:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2018)

LEGEND:

Airport Property Line

Area of Environmental Concern (AEC)

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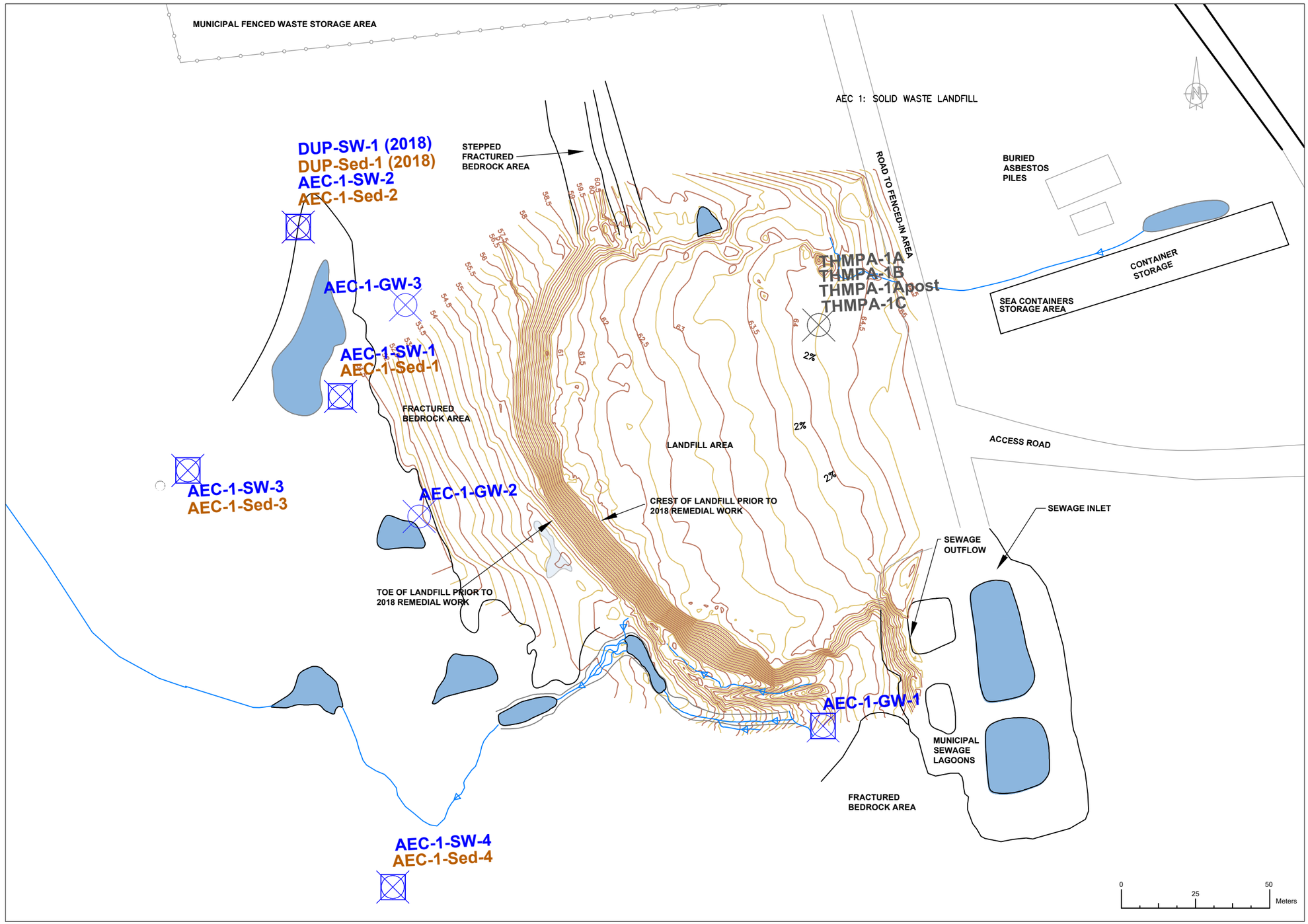
project title / titre du projet

RESOLUTE BAY NUNAVUT
PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin

SITE LOCATION

drawn by / dessine par	C. SADLER	
designed by / conc par	J. MAUCHAN	
approved by / approuve par	M. BILLOWITS	
bid / offre	N. ROBINSON	project manager / administrateur de projets
project date / date du projet	MARCH 2020	
project no. / no. du projet	R.095508.001	
drawing no. / dessine no.	Figure 1	



Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

NOTES:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

2 – Protected and maintained municipal fenced waste storage area. Kudlik Construction provided public access throughout work.

3 – Protected, maintained and left buried Asbestos piles As-Is

4 – Protected and maintained sewage lagoons. Kudlik Construction provided public access throughout work

5 – Buried Asbestos Piles were not disturbed during work

6 – (2018) and (2019) indicate year that sample was collected.

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- Topographic Elevation (approx. metres above sea level)
- Surface Water Drainage Pathway
- Surface Flow Direction
- Water
- Road
- Photo Number and Loction
- Buried Asbestos Piles
- Sample collected in 2018

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

- Sample collected in 2018 and 2019
- Sample collected in 2019

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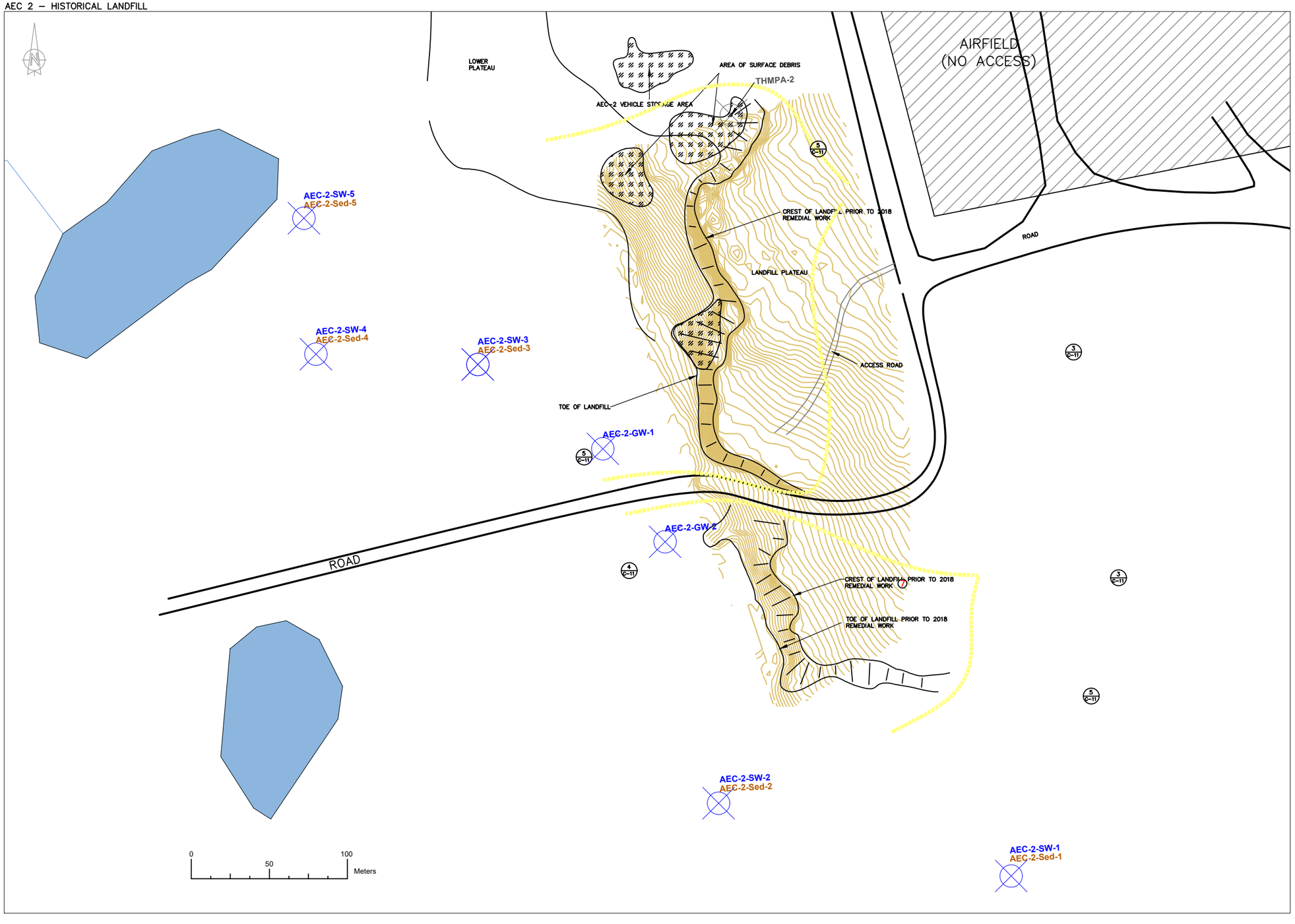
RESOLUTE BAY NUNAVUT
PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
AEC1 Construction Monitoring Sample Locations

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
project date / date du projet	MARCH 2020
project no. / no. du projet	R.095508.001
drawing no. / dessine no.	Figure 2

AEC 2 – HISTORICAL LANDFILL



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1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- 666 Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste
- Road
- Embankment
- Sample collected by DOJV in 2018 and 2019

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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PWGSC for TRANSPORT CANADA

REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
AEC2 Construction Monitoring Sampling Locations

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
project date / date du projet	MARCH 2020
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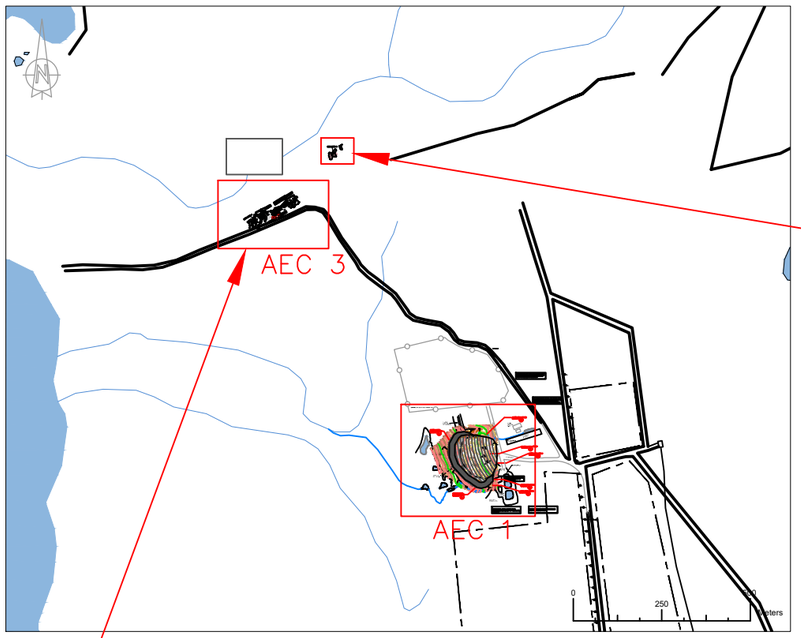

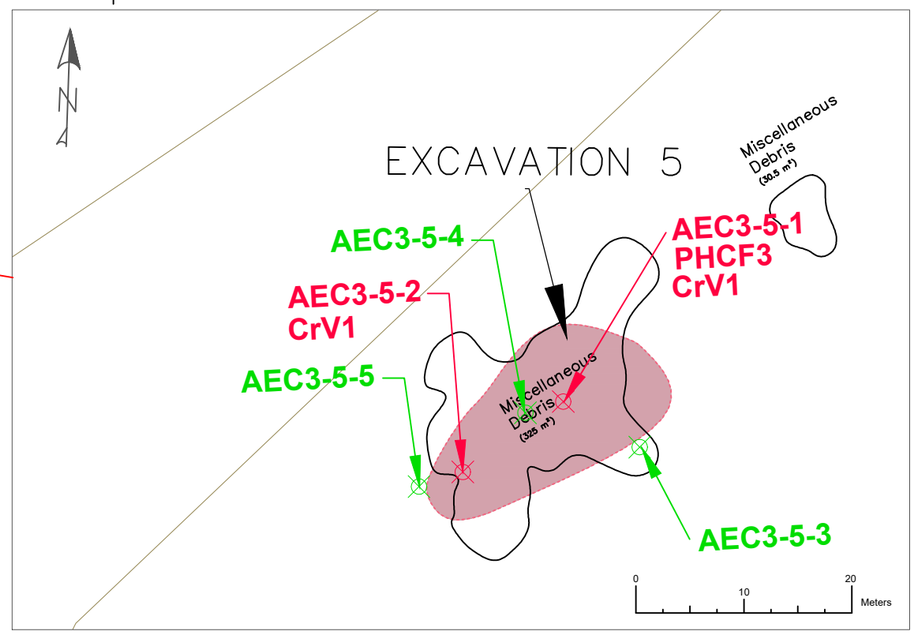

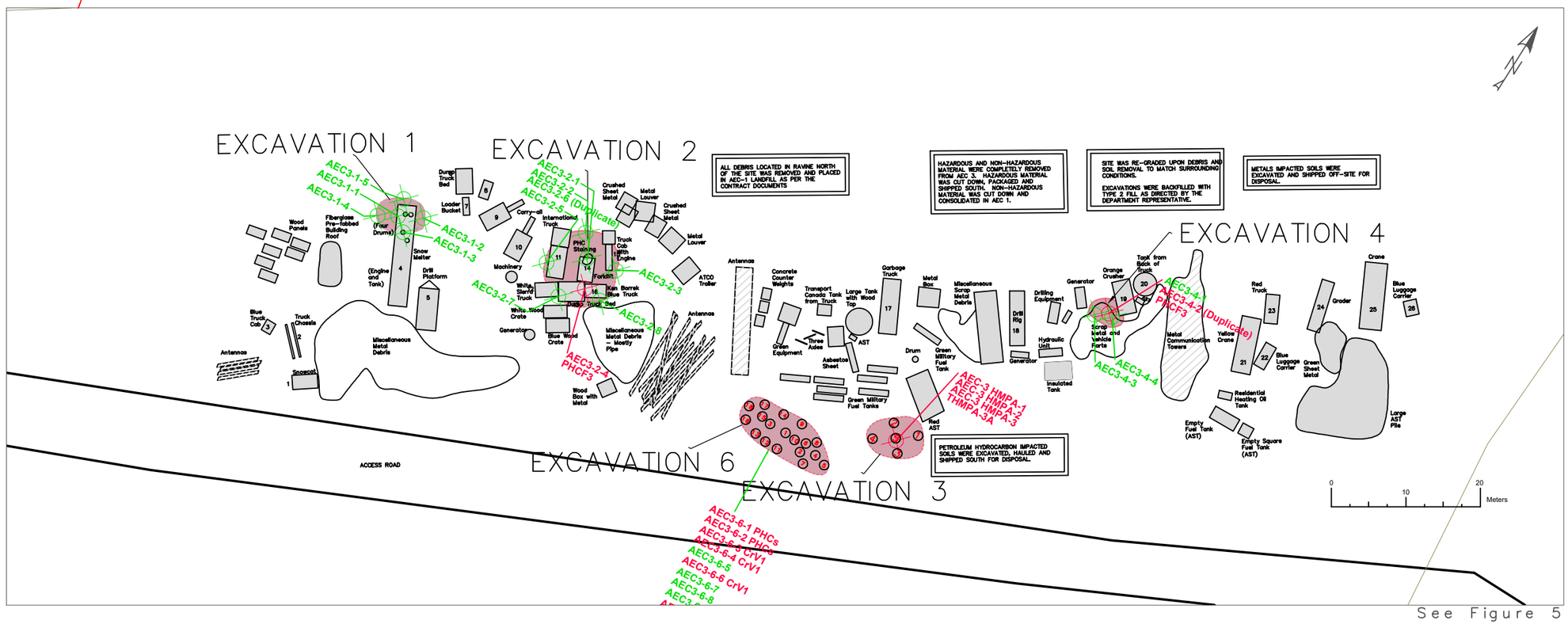

See Figure 5

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Notes:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:
- Major Topographic Contour
- Minor Topographic Contour
- Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste
- Road
- Embankment
- 2019 Soil Sample Below Criteria
- 2019 Soil Sample Above Criteria

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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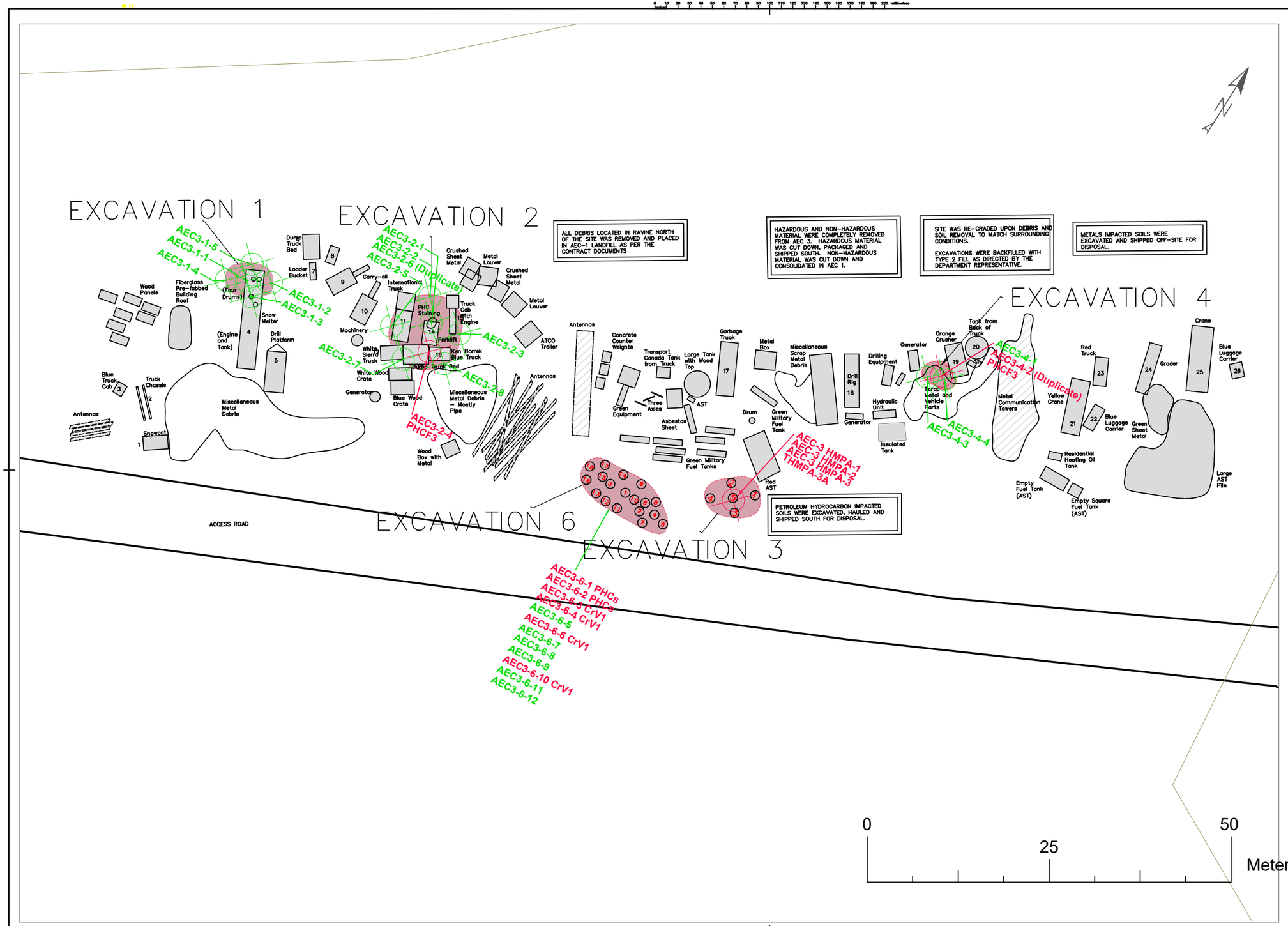
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin: AEC3 SOIL EXCAVATION LOCATIONS

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
project date / date du projet	MARCH 2020
project no. / no. du projet	R.095508.001
drawing no. / dessine no.	Figure 4



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Notes:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

2 – All Non-hazardous debris moved to AEC1 landfill.

3 – All Hazardous Materials Transported off-site for disposal.

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- 845 Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste (removed)
- Road
- Embankment
- 2019 Soil Sample Below Criteria
- 2019 Excavation Area

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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project title / titre du projet: RESOLUTE BAY NUNAVUT — PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin: AEC3 EXCAVATIONS

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON — project manager / administrateur de projets
project date / date du projet	MARCH 2020
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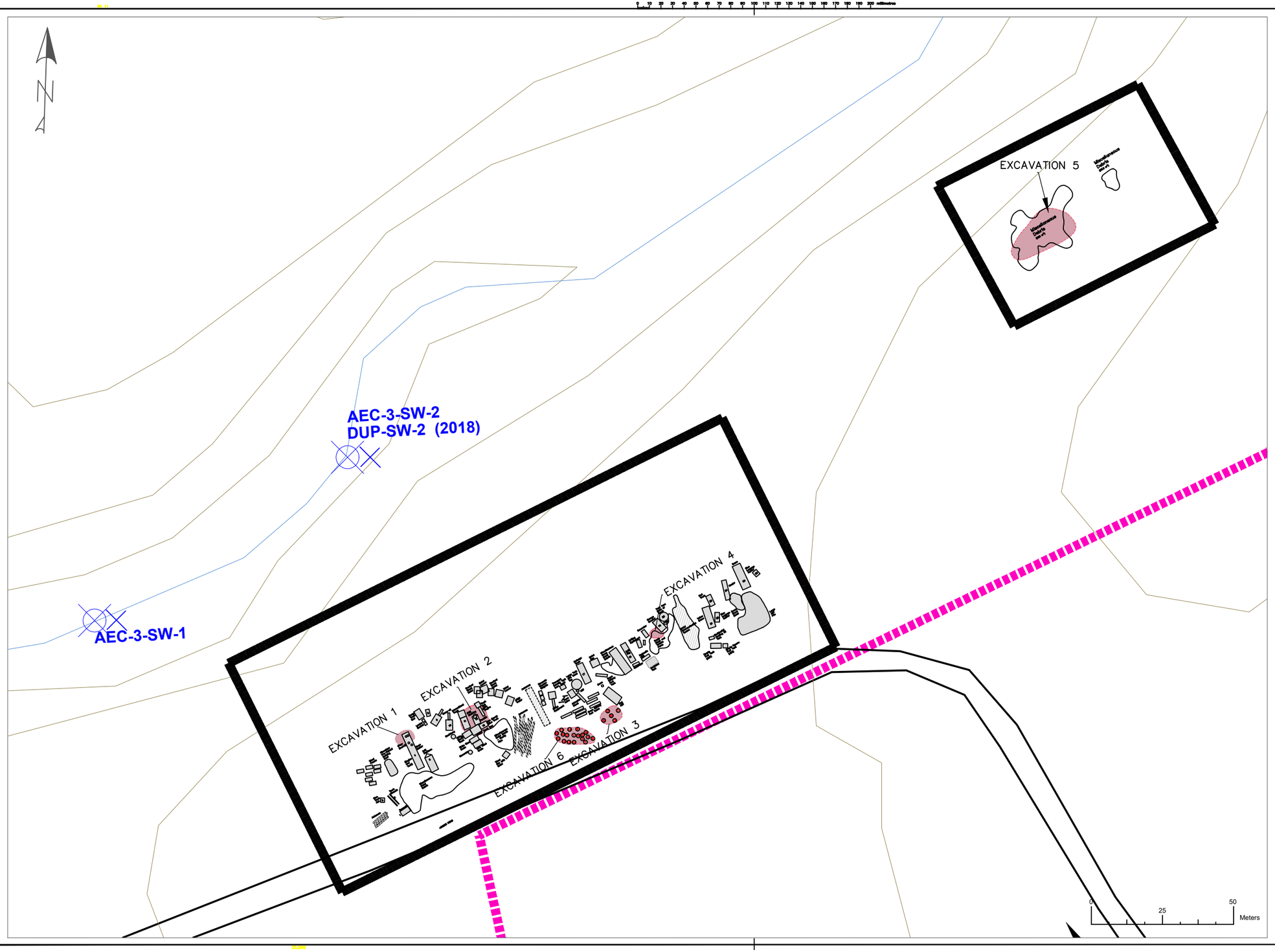

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LEGEND:

- Road
- Gravel Road
- Embankment
- Fenced Area
- Water
- Airstrip
- Surface Waste
- Area Identification
- Topographic Elevation (approx. metres above sea level)
- Surface Water Drainage Pathway
- Surface Flow Direction
- Vehicle/Debris/Structure
- Property Boundary
- Sample collected in 2018
- Sample collected in 2019
- Major Topographic Contour
- Minor Topographic Contour

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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drawing title / titre du dessin
AEC-3 CONSTRUCTION MONITORING SAMPLING LOCATIONS

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
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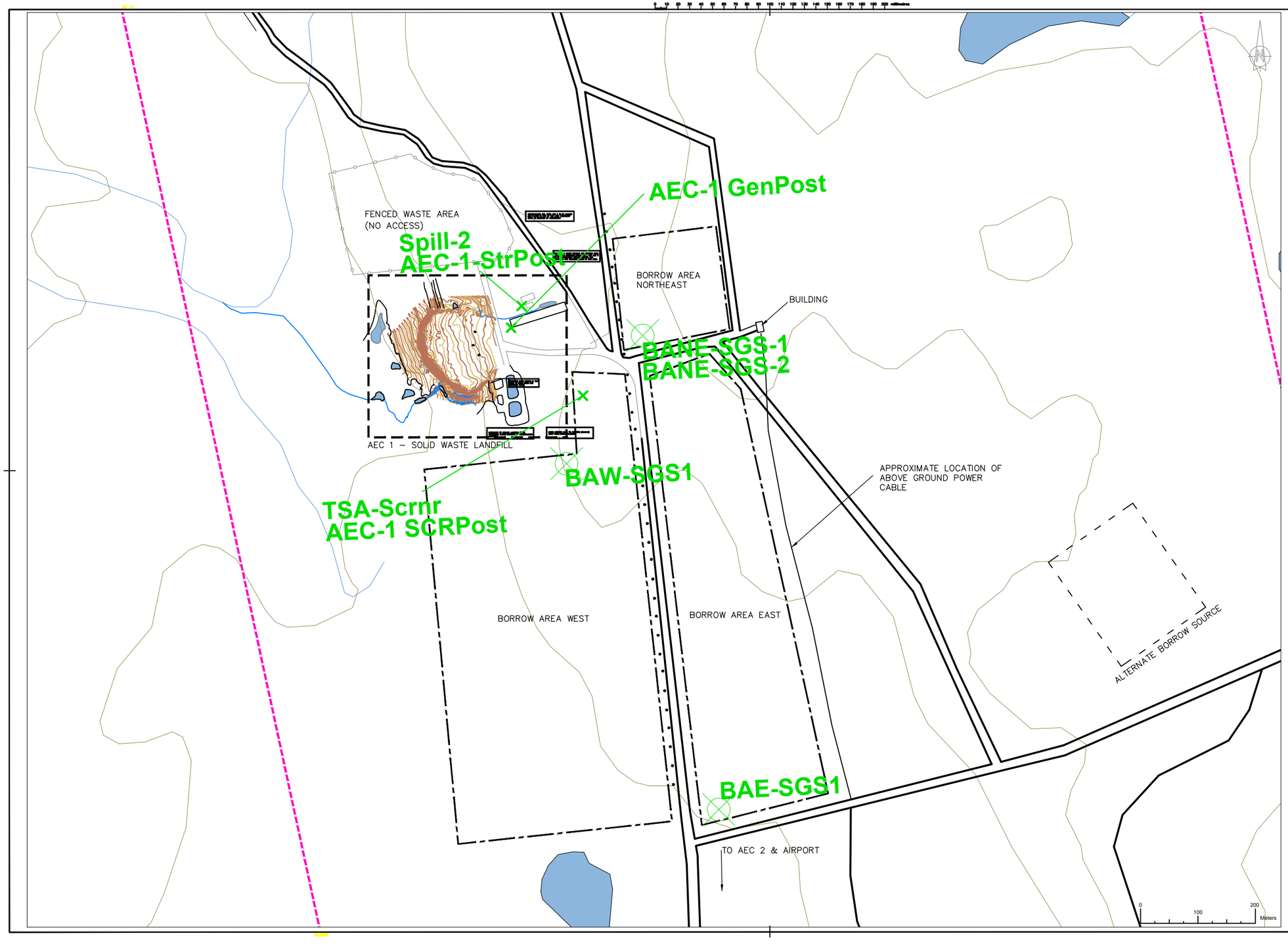

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NOTES:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:

- Major Topographic Contour (Background – from NTS)
- Major Topographic Contour
- Minor Topographic Contour
- Topographic Elevation (approx. metres above sea level)
- Surface Water Drainage Pathway
- Water
- Borrow Source Area
- Property Boundary
- Area Identification
- Road
- Fenced Area
- Hydro Pole
- Sample collected in 2018
- Sample collected in 2019

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin: BORROW AREAS

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
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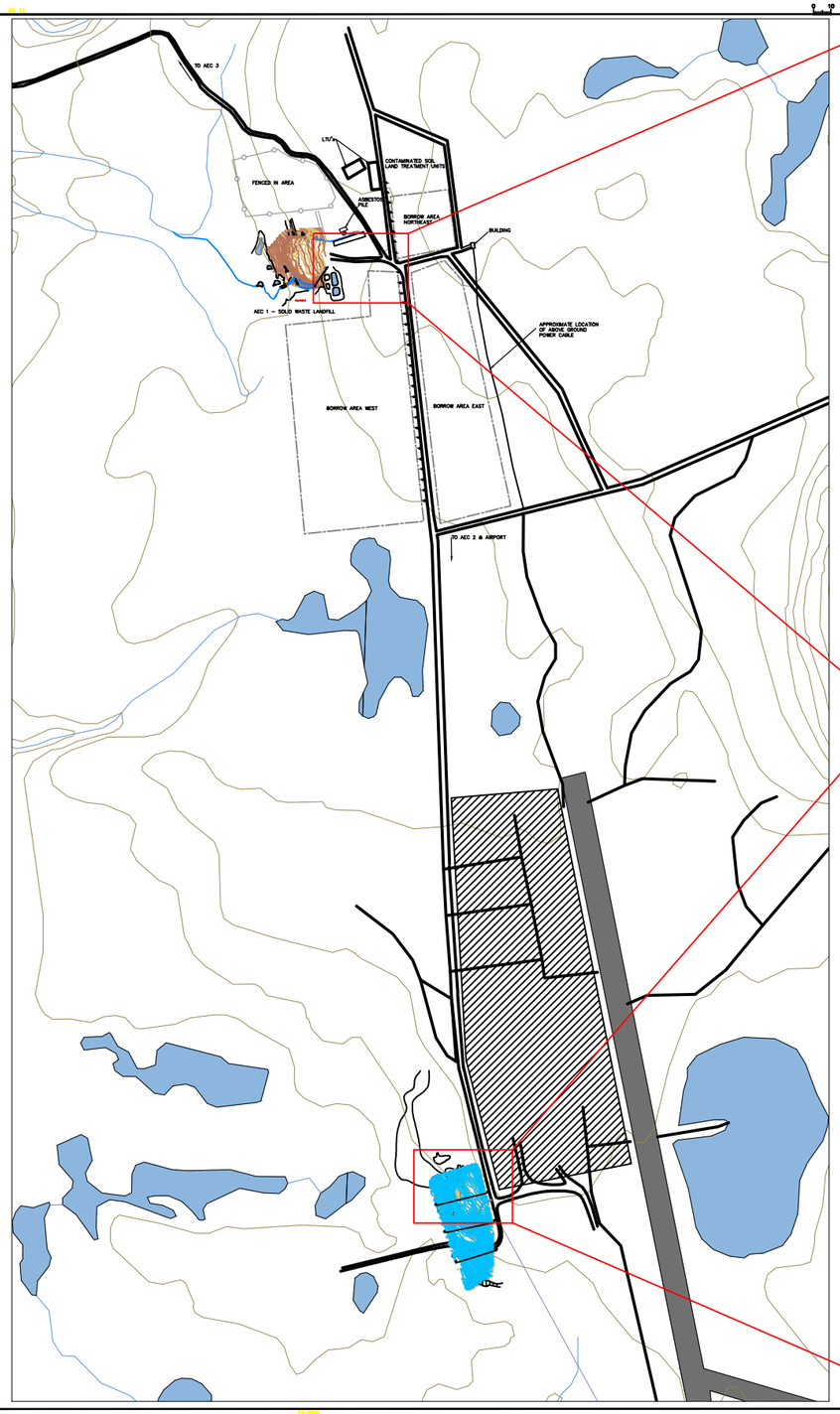
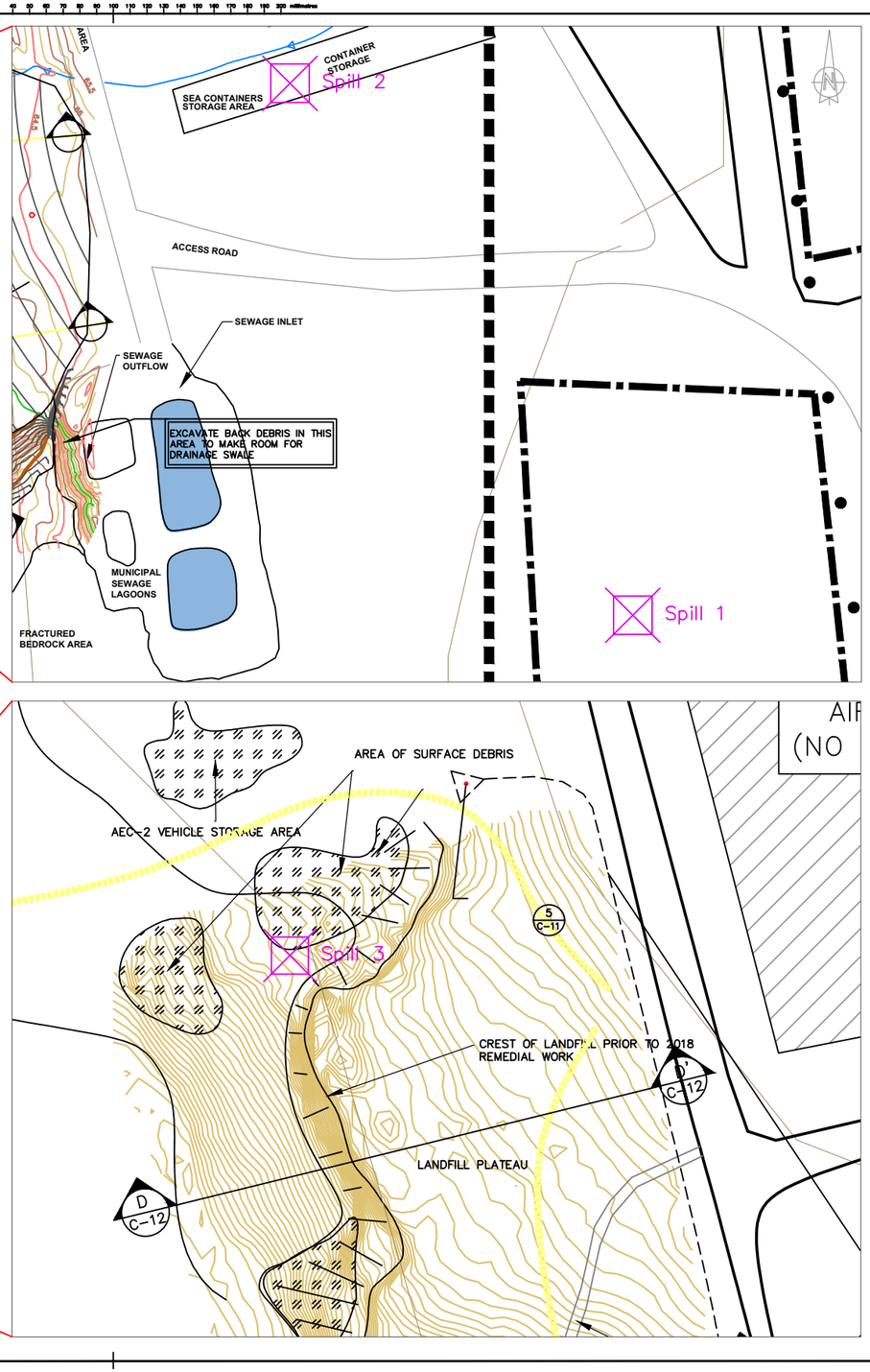
project no. / no. du projet	R.095508.001
drawing no. / dessine no.	Figure 7





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NOTES:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

2 – Spills were cleaned up by Kudlik as per their Spill Contingency Plan.

3 – Spill locations were sampled by DOJV

LEGEND:

- Water
- Road
- Fenced Area
- Hydro Pole
- Major Topographic Contour (Background – from NTS)
- Major Topographic Contour
- Minor Topographic Contour
- Topographic Elevation (approx. metres above sea level)
- Surface Water Drainage Pathway
- Borrow Source Area
- Property Boundary
- Area Identification
- Spill Location and sample location
- Sample collected in 2018
- Sample collected in 2019

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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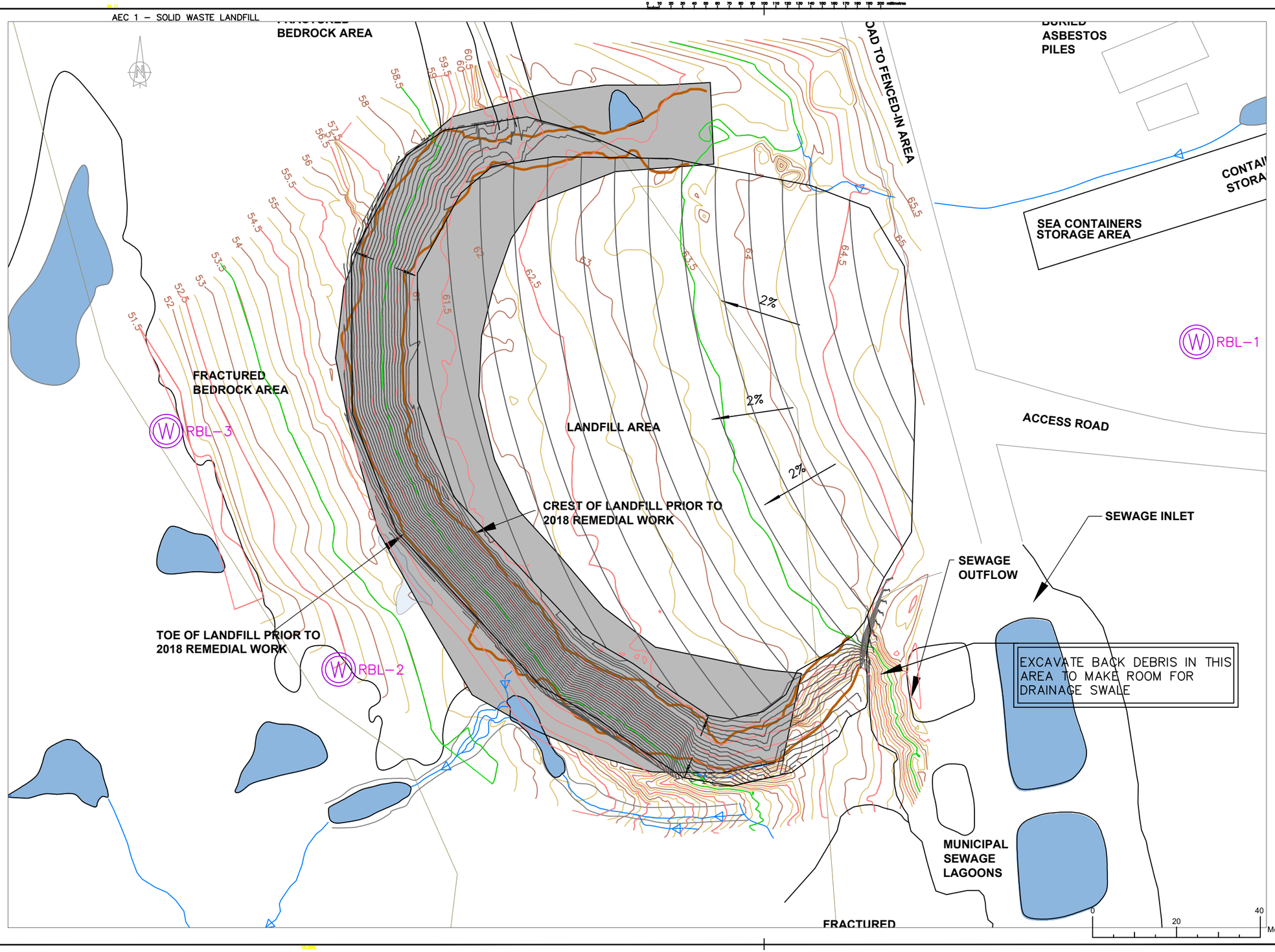
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
SPILL LOCATIONS

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
project date / date du projet	MARCH 2020
project no. / no. du projet	R.095508.001
drawing no. / dessine no.	Figure 8

AEC 1 – SOLID WASTE LANDFILL



Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

Notes:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste
- Road
- Embankment
- Sample collected in 2018
- Sample collected in 2019
- Monitoring Well installed in 2019

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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PROFESSIONAL SEALS

DO NOT SCALE DRAWINGS

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02		
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revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

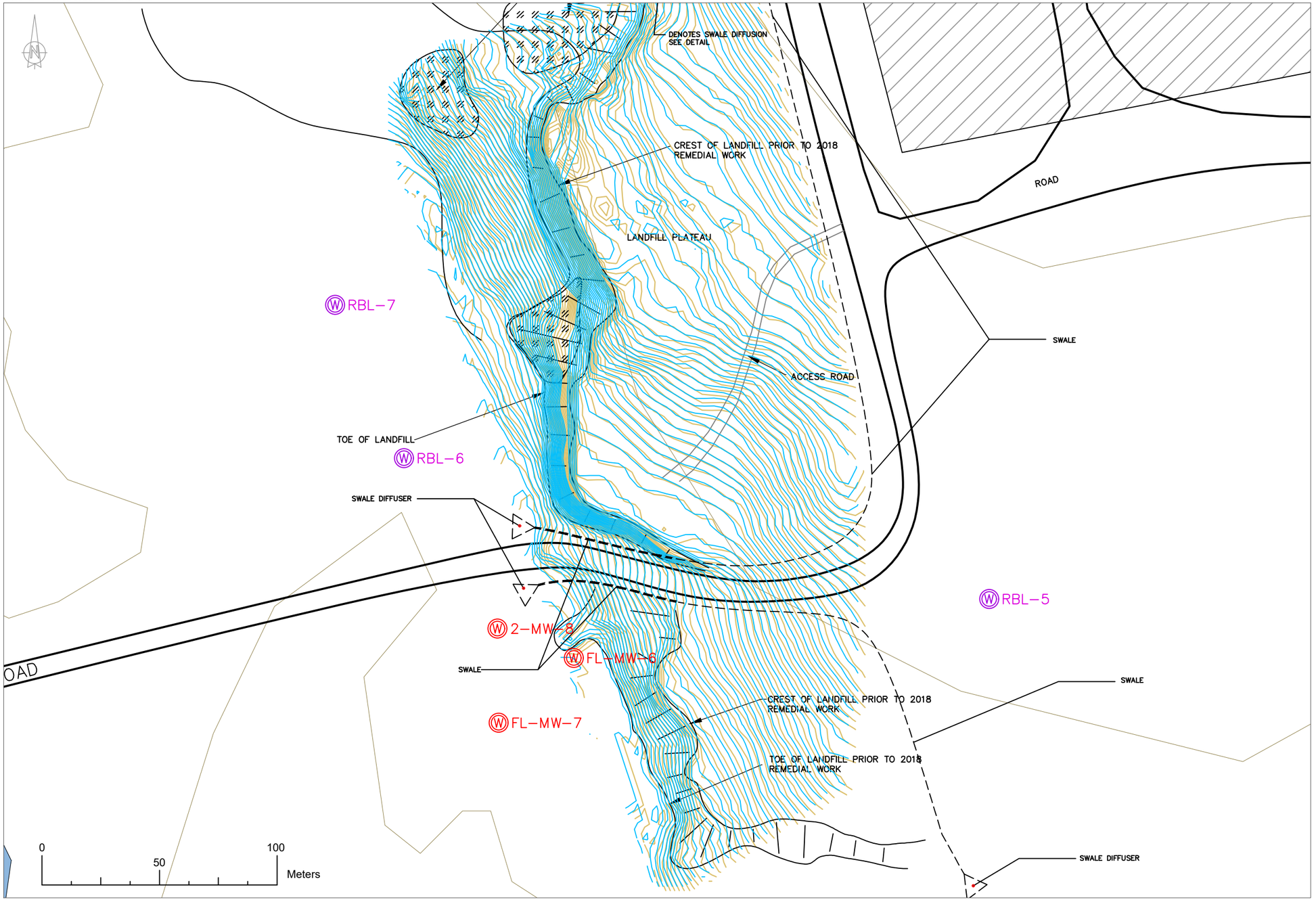
A Detail No. / No. du detail
B drawing no. – where detail required / dessin no. – ou detail exige
C drawing no. – where detailed / dessin no. – ou detaille

project title / titre du projet
RESOLUTE BAY NUNAVUT
PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
AEC1 MONITORING WELLS INSTALLED IN 2019

drawn by / dessine par	C. SADLER
designed by / conc par	J. MAUCHAN
approved by / approuve par	M. BILLOWITS
bid / offre	N. ROBINSON (project manager / administrateur de projets)
project date / date du projet	MARCH 2020
project no. / no. du projet	R.095508.001
drawing no. / dessine no.	Figure 9

AEC 2 – HISTORICAL LANDFILL



Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

Notes:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- 845 Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste
- Road
- Embankment
- Sample collected in 2018
- Sample collected in 2019
- Monitoring Well installed in 2019
- Existing Monitoring Well

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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PROFESSIONAL SEALS

DO NOT SCALE DRAWINGS

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02		
01		
revision		date

Do not scale drawings.
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A Detail No. / No. du detail
B drawing no. – where detail required / dessin no. – ou detail exige
C drawing no. – where detailed / dessin no. – ou detaille

project title / titre du projet
RESOLUTE BAY NUNAVUT
PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
AEC2 MONITORING WELLS INSTALLED IN 2019

drawn by / dessine par	C. SADLER	
designed by / conc par	J. MAUCHAN	
approved by / approuve par	M. BILLOWITS	
bid / offre	N. ROBINSON	project manager / administrateur de projets
project date / date du projet	MARCH 2020	
project no. / no. du projet	R.095508.001	
drawing no. / dessine no.	Figure 10	

AEC 3 – VEHICLE STORAGE AREA

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

Notes:

1 – Adapted from Preliminary Design prepared by Arcadis Canada Inc. on behalf of Public Works & Government Services Canada (March 2016)

LEGEND:

- Major Topographic Contour
- Minor Topographic Contour
- 863 Topographic Elevation (approx. metres above sea level)
- Airfield
- Surface Waste
- Road
- Embankment
- Sample collected in 2018
- Sample collected in 2019
- Monitoring Well installed in 2019

THMPA – Temporary Hazardous Materials Processing Area (soil Sample)
SW – Surface Water Sample
SED – Sediment Sample
GW – Groundwater Sample
DUP – Duplicate Sample

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PROFESSIONAL SEALS

DO NOT SCALE DRAWINGS

04		
03		
02		
01		
revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A Detail No. / No. du detail
B drawing no. – where detail required / dessin no. – ou detail exige
C drawing no. – where detailed / dessin no. – ou detaille

project title / titre du projet
RESOLUTE BAY NUNAVUT
PWGSC for TRANSPORT CANADA
REMEDIATION OF RESOLUTE BAY AIRPORT LANDFILLS

drawing title / titre du dessin
AEC3 MONITORING WELLS INSTALLED IN 2019

drawn by / dessine par	C. SADLER	
designed by / conc par	J. MAUCHAN	
approved by / approuve par	M. BILLOWITS	
bid / offre	N. ROBINSON	project manager / administrateur de projets
project date / date du projet	MARCH 2020	
project no. / no. du projet	R.095508.001	
drawing no. / dessine no.	Figure 11	

Appendix B

Data Tables (Analytical Results)

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Table B-1. Soil Sample Lab Results (Metals and PHCs)

Laboratory ID AEC-# Purpose Source Sampling Date Depth (m)	Units	CCME Soil PL [1]	CCME Soil CL [2]	CCME Soil PL [3]	CCME Soil CL [4]	BAW-SGS1 West Borrow Baseline OCI 2/Sep/18 0 – 0.2	BANE-SGS1 Northeast Borrow Baseline OCI 2/Sep/18 0 – 0.2	BANE-SGS2 Northeast Borrow Baseline OCI 2/Sep/18 0 – 0.2	BAE-SGS1 East Borrow Baseline OCI 2/Sep/18 0 – 0.2	THMPA-1A AEC-1 Pre-Const OCI 17/Aug/18 0 – 0.10	THMPA-1B AEC-1 Pre-Const OCI 17/Aug/18 0 – 0.10	THMPA-1Apost AEC-1 Post-Const OCI 30/Aug/18 0 – 0.10	THMPA-2-0719 AEC-2 Pre-Const OCI 14/Jul/19
PHCs													
F1 (C6-C10)	ug/g			210	320	<10	<10	<10	<10	<10	<10	<10	<10
F1-BTEX (C6-C10)	ug/g			-	-	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	ug/g			150	260	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	ug/g			300	1700	<20	<20	<20	<20	<20	<20	<20	60
F4 (C34-C50)	ug/g			2800	3300	<20	<20	<20	<20	<20	<20	<20	<20
F4 (C34-C50) gravimetric													
Metals													
Aluminium (Al)	ug/g	-	-			1380	1210	1110	3280				4880
Antiomony (Sb)	ug/g	20	40			<1	<1	<1	<1				<1
Arsenic (As)	ug/g	12	12			1	1	1	2				2
Barium (Ba)	ug/g	500	2000			10	7	7	26				66
Beryllium (Be)	ug/g	4	8			<1	<1	<1	<1				<1
Boron (B)	ug/g	-	-			<5	6.00	5.00	8.00				10.00
Cadmium (Cd)	ug/g	10	22			<0.4	<0.4	<0.4	<0.4				<0.4
Chromium (Cr)	ug/g	64	87			10	8	6	12				16
Cr(VI)	ug/g	0.4	1.4			<0.2	<0.2	<0.2	<0.2				<0.2
Cr(III)	ug/g	-	-			10	8	6	12				16
Cobalt (Co)	ug/g	50	300			<1	1	1	2				3
Copper (Cu)	ug/g	63	91			2	1	1	4				6
Iron (Fe)	ug/g	-	-			2540	2760	2730	5900				8730
Lead (Pb)	ug/g	140	260			4	4	4	6				12
Mercury (Hg)	ug/g	6.6	24			<0.1	<0.1	<0.1	<0.1				<0.1
Molybdenum (Mo)	ug/g	10	40			<1	1	1	<1				<1
Nickel (Ni)	ug/g	45	89			5	5	4	8				11
Selenium (Se)	ug/g	1	2.9			<1	<1	<1	<1				<1
Silver (Ag)	ug/g	20	40			0.3	<0.2	<0.2	<0.2				<0.2
Thallium (Tl)	ug/g	1	1			<1	<1	<1	<1				<1
Tin (Sn)	ug/g	50	300			<5	<5	<5	<5				<5
Uranium (U)	ug/g	23	33			<0.5	<0.5	<0.5	<0.5				0.5
Vanadium (V)	ug/g	130	130			5	4	4	10				10
Zinc (Zn)	ug/g	250	410			12	23	23	19				34

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Commercial Land-use, coarse-grained soil

3 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

4 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Commercial Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-1. Soil Sample Lab Results (Metals and PHCs)

Laboratory ID	Units	THMPA-3A	AEC 3 HMPA 1	AEC 3 HMPA 2	AEC 3 HMPA 3	RBL-1-SGS	RBL-2-SGS	RBL-3-SGS	RBL-DUP (RBL-3-SGS)	RPD	RBL-5-SGS	RBL-7-SGS
AEC-#		AEC-3	AEC-3	AEC-3	AEC-3	AEC-1	AEC-1	AEC-1	AEC-1	%	AEC-2	AEC-2
Purpose		Pre-Const	Construction	Construction	Construction	LTM Baseline	LTM Baseline	LTM Baseline	LTM Baseline		LTM Baseline	LTM Baseline
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI		OCI	OCI
Sampling Date		26/Aug/18	8/Sep/18	16/Sep/18	16/Sep/18	30/Aug/19	31/Aug/19	31/Aug/19	30/Aug/19		30/Aug/19	30/Aug/19
Depth (m)		0 – 0.10	0 – 0.10	0 – 0.10	0 – 0.10							
PHCs												
F1 (C6-C10)	ug/g		<10	<10	<10	<10	<10	<10	<10	nc	<10	<10
F1-BTEX (C6-C10)	ug/g		<10	<10	<10	<10	<10	<10	<10	nc	<10	<10
F2 (C10-C16)	ug/g		<10	90	<10	<10	20	<10	<10	nc	<10	<10
F3 (C16-C34)	ug/g		<20	**690**	<20	<20	20	30	<20	nc	<20	<20
F4 (C34-C50)	ug/g		<20	<20	<20	<20	20	20	<20	nc	<20	<20
F4 (C34-C50) gravimetric												
Metals												
Aluminium (Al)	ug/g	2230	1940	1930	1670	1930	1690	744	1190	46	2070	749
Antiomony (Sb)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	nc	<1	<1
Arsenic (As)	ug/g	2	1	2	1	<1	1	<1	<1	nc	2	<1
Barium (Ba)	ug/g	14	18	147	35	11	10	10	6	50	46	8
Beryllium (Be)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	nc	<1	<1
Boron (B)	ug/g	9.00	6.00	11.00	6.00	<5	<5	<5	<5	nc	7	<5
Cadmium (Cd)	ug/g	<0.4	<0.4	1	<0.4	<0.4	<0.4	<0.4	<0.4	nc	<0.4	<0.4
Chromium (Cr)	ug/g	13	7	22	15	12	7	2	6	100	13	8
Cr(VI)	ug/g	<0.20	<0.20	**3.690**	**4.200**	<0.2	0.21	<0.2	<0.2	nc	<0.2	<0.2
Cr(III)	ug/g	13	7	18	11	12	7	2	6	100	13	8
Cobalt (Co)	ug/g	2	1	2	1	1	1	<1	<1	nc	1	<1
Copper (Cu)	ug/g	3	3	5	4	3	3	1	2	67	4	<1
Iron (Fe)	ug/g	3800	3340	4760	4200	2200	2600	1460	1480	1	3520	1210
Lead (Pb)	ug/g	23	19	78	59	3	4	3	3	0	3	9
Mercury (Hg)	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Molybdenum (Mo)	ug/g	<1	<1	1	<1	<1	<1	<1	<1	nc	<1	<1
Nickel (Ni)	ug/g	7	5	5	6	6	5	2	3	40	8	4
Selenium (Se)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	nc	<1	<1
Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	nc	<0.2	<0.2
Thallium (Tl)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	nc	<1	<1
Tin (Sn)	ug/g	<5	<5	<5	<5	<5	<5	<5	<5	nc	<5	<5
Uranium (U)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nc	<0.5	<0.5
Vanadium (V)	ug/g	6	6	6	6	7	5	3	6	67	9	3
Zinc (Zn)	ug/g	22	16	23	22	14	20	12	13	8	14	13

Notes:

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(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

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Table B-1. Soil Sample Lab Results (Metals and PHCs)

Laboratory ID		RBL-10-SGS	RBL-11-SGS	RBL-12-SGS	RBL-14-SGS	RBL-15-SGS	AEC-1-SCR-POST	AEC-1-GEN-POST	AEC-1-STR-POST	TSA-SCRNR	AEC-2 spill-1	AEC-2 spill-2	AEC-2 spill-3
AEC-#	Units	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-1	AEC-1	AEC-1	West Borrow	AEC-2	AEC-2	AEC-2
Purpose		LTM Baseline	LTM Baseline	LTM Baseline	LTM Baseline	LTM Baseline	Post-Cons	Post-Cons	Post-Cons	Pre-Cons	Spill	Spill	Spill
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		30/Aug/19	30/Aug/19	30/Aug/19	30/Aug/19	30/Aug/19	20/Sep/19	20/Sep/19	20/Sep/19	14/Jul/19	20/Aug/18	21/Jul/19	14/Jul/19
Depth (m)													
PHCs													
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1-BTEX (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	ug/g	<10	<10	<10	<10	<10	<10	60	<10	30	<10	<10	20
F3 (C16-C34)	ug/g	<20	<20	<20	<20	<20	50	**340**	<20	<20	<20	60	180
F4 (C34-C50)	ug/g	<20	<20	<20	<20	<20	<20	280	<20	<20	<20	<20	90
F4 (C34-C50) gravimetric								400					400
Metals													
Aluminium (Al)	ug/g	2700	2480	2530	1640	2600				1550			
Antiomony (Sb)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Arsenic (As)	ug/g	2	2	2	1	2	2	1	2	1			
Barium (Ba)	ug/g	14	12	14	13	25	34	67	23	11			
Beryllium (Be)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Boron (B)	ug/g	6	7	7	5	8	7	5	7	6.00			
Cadmium (Cd)	ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4			
Chromium (Cr)	ug/g	27	16	20	6	10	9	11	16	10			
Cr(VI)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			
Cr(III)	ug/g	27	16	20	6	10				10			
Cobalt (Co)	ug/g	2	2	2	2	2	2	2	3	1			
Copper (Cu)	ug/g	3	3	3	2	4	3	12	5	2			
Iron (Fe)	ug/g	5040	4560	4760	3070	4320				2910			
Lead (Pb)	ug/g	7	6	7	7	4	6	10	7	3			
Mercury (Hg)	ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			
Molybdenum (Mo)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Nickel (Ni)	ug/g	14	9	11	5	6	7	7	10	6			
Selenium (Se)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Silver (Ag)	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2			
Thallium (Tl)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Tin (Sn)	ug/g	<5	<5	<5	<5	<5				<5			
Uranium (U)	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
Vanadium (V)	ug/g	8	7	7	6	10	8	7	7	6			
Zinc (Zn)	ug/g	15	13	16	23	13	24	33	16	10			

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(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-2. Soil Sample Lab Results (PAHs, BTEX and General Chemistry)

Laboratory ID		BAW-SGS1	BANE-SGS1	BANE-SGS2	BAE-SGS1	THMPA-1A	THMPA-1B	THMPA-1Apost	THMPA-2-0719	THMPA-3A	AEC 3 HMPA 1	AEC 3 HMPA 2	AEC 3 HMPA 3	RBL-1-SGS	RBL-2-SGS	RBL-3-SGS	RBL-DUP (RBL-3-SGS)	RPD	RBL-5-SGS	RBL-7-SGS	RBL-10-SGS	RBL-11-SGS
AEC-#		West Borrow	Northeast Borrow	Northeast Borrow	East Borrow	AEC-1	AEC-1	AEC-1	AEC-2	AEC-3	AEC-3	AEC-3	AEC-3	AEC-1	AEC-1	AEC-1	AEC-1		AEC-2	AEC-2	AEC-3	AEC-3
Purpose		Baseline	Baseline	Baseline	Baseline	Pre-Cons	Pre-Const	Post-Const	Pre-Const	Pre-Const	Construction	Construction	Construction	LTM Baseline	LTM Baseline	LTM Baseline	LTM Baseline		LTM Baseline	LTM Baseline	LTM Baseline	LTM Baseline
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI		OCI	OCI	OCI	OCI
Sampling Date		2/Sep/18	2/Sep/18	2/Sep/18	2/Sep/18	17/Aug/18	17/Aug/18	30/Aug/18	14/Jul/19	26/Aug/18	8/Sep/18	16/Sep/18	16/Sep/18	30/Aug/19	31/Aug/19	31/Aug/19	30/Aug/19		30/Aug/19	30/Aug/19	30/Aug/19	30/Aug/19
Depth	Units	0 – 0.2	0 – 0.2	0 – 0.2	0 – 0.2	0 – 0.10	0 – 0.10	0 – 0.10		0 – 0.10	0 – 0.10	0 – 0.10	0 – 0.10									
PAHs																						
Acenaphthene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.120	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene equivalency	ug/g																					
Acenaphthylene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.070	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Acridine	ug/g																					
Anthracene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.080	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(a)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Benzo(c)phenanthrene	ug/g																					
Benzo[e]pyrene	ug/g	<0.05	<0.05	<0.05	<0.05																	
Chrysene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Fluorene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.050	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
1+2-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05					<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
1-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	12.400	2.230	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
2-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	21.900	3.570	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.820	0.130	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	0.090	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Perylene	ug/g																					
Pyrene	ug/g	<0.05	<0.05	<0.05	<0.05				<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Quinoline	ug/g																					
BTEX																						
Acetone	ug/g																		<0.50			
Benzene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.0068		<0.02	<0.02	<0.02	<0.0068	<0.0068	<0.0068	<0.068	nc	<0.0068	<0.0068	<0.068	<0.068
Bromodichloromethane	ug/g																		<0.05			
Bromoform	ug/g																		<0.05			
Bromomethane	ug/g																		<0.05			
Carbon tetrachloride	ug/g																		<0.05			
Chlorobenzene	ug/g																		<0.05			
Chloroform	ug/g																		<0.05			
Dibromochloromethane	ug/g																		<0.05			
Dichlorobenzene, 1,2-	ug/g																		<0.05			
Dichlorobenzene, 1,3-	ug/g																		<0.05			
Dichlorobenzene, 1,4-	ug/g																		<0.05			
Dichlorodifluoromethane	ug/g																		<0.05			
Dichloroethane, 1,1-	ug/g																		<0.05			
Dichloroethane, 1,2-	ug/g																		<0.05			
Dichloroethylene, 1,1-	ug/g																		<0.05			
Dichloroethylene, 1,2-cis-	ug/g																		<0.05			
Dichloroethylene, 1,2-trans-	ug/g																		<0.05			
Dichloropropane, 1,2-	ug/g																		<0.05			
Dichloropropene, 1,3-	ug/g																		<0.05			
Dichloropropene, 1-3-cis-	ug/g																		<0.05			
Dichloropropene, 1-3-trans-	ug/g																		<0.05			
Ethylbenzene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.018		<0.05	0.09	<0.05	<0.018	<0.018	<0.018	<0.018	nc	<0.018	<0.018	<0.018	<0.018
Ethylene dibromide	ug/g																		<0.05			
Hexane (n)	ug/g																		<0.05			
Methyl ethyl ketone	ug/g																		<0.50			
Methyl isobutyl ketone	ug/g																		<0.50			
Methyl tert-butyl ether (MTBE)	ug/g																		<0.05			
Methylene chloride	ug/g																		<0.05			
Styrene	ug/g																		<0.05			
Tetrachloroethane, 1,1,1,2-	ug/g																		<0.05			
Tetrachloroethane, 1,1,2,2-	ug/g																		<0.05			
Tetrachloroethylene	ug/g																		<0.05			
Toluene	ug/g	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20	<0.20	<0.080		<0.20	<0.20	<0.20	<0.08	<0.08	<0.08	<0.08	nc	<0.08	<0.08	<0.08	<0.08
Trichloroethane, 1,1,1-	ug/g																		<0.08			
Trichloroethane, 1,1,2-	ug/g																		<0.05			
Trichloroethylene	ug/g																		<0.05			
Trichlorofluoromethane	ug/g																		<0.05			
Vinyl chloride	ug/g																		<0.02			
1,2-dichloroethane-d4	%																		93			
4-bromofluorobenzene	%																		114			
Toluene-d8	%	98	105	101	104			95	109		101	97	100	91	90	94	92	2	93	92	91	90
m/p-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.030		<0.05	0.080	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
o-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.020		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
Xylene; total	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050		<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05
General																						
Alpha-androstrane	%	105	103	98	93	98	93	14	79		72	67	82	92	90	83	100	19	93	85	86	94
Cyanide (CN-)	ug/g																					
Electrical Conductivity	mS/cm																					
Moisture-Humidite	%	6	7	12	15	7	8	115	7.2		9	8	8	11.4	15.6	17.1	11.4	40	9.6	8	13.3	6.7
pH																						
Sodium Adsorption Ratio																						

Notes:

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene

Table B-2. Soil Sample Lab Results (PAHs, BTEX and General Chemistry)

Laboratory ID	Units	RBL-12-SGS	RBL-14-SGS	RBL-15-SGS	AEC-1-SCR-POST	AEC-1-GEN-POST	AEC-1-STR-POST	TSA-SCRNR	AEC-2 spill-1	AEC-2 spill-2	AEC-2 spill-3
AEC-#		AEC-3	AEC-3	AEC-3	AEC-1	AEC-1	AEC-1	West Borrow	AEC-2	AEC-2	AEC-2
Purpose		LTM Baseline	LTM Baseline	LTM Baseline	Post-Cons	Post-Cons	Post-Cons	Pre-Cons	Spill	Spill	Spill
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		30/Aug/19	30/Aug/19	30/Aug/19	20/Sep/19	20/Sep/19	20/Sep/19	14/Jul/19	20/Aug/18	21/Jul/19	14/Jul/19
Depth											
PAHs											
Acenaphthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo[a]pyrene equivalency	ug/g										
Acenaphthylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Acridine	ug/g										
Anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(a)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(a)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(b)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(g,h,i)perylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(k)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(c)phenanthrene	ug/g										
Benzo[e]pyrene	ug/g										
Chrysene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Dibenzo(a,h)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Fluorene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
1+2-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
1-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
2-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Naphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Phenanthrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Perylene	ug/g										
Pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Quinoline	ug/g										
BTEX											
Acetone	ug/g										
Benzene	ug/g	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.0068	<0.02	<0.02	<0.0068
Bromodichloromethane	ug/g										
Bromoform	ug/g										
Bromomethane	ug/g										
Carbon tetrachloride	ug/g										
Chlorobenzene	ug/g										
Chloroform	ug/g										
Dibromochloromethane	ug/g										
Dichlorobenzene, 1,2-	ug/g										
Dichlorobenzene, 1,3-	ug/g										
Dichlorobenzene, 1,4-	ug/g										
Dichlorodifluoromethane	ug/g										
Dichloroethane, 1,1-	ug/g										
Dichloroethane, 1,2-	ug/g										
Dichloroethylene, 1,1-	ug/g										
Dichloroethylene, 1,2-cis-	ug/g										
Dichloroethylene, 1,2-trans-	ug/g										
Dichloropropane, 1,2-	ug/g										
Dichloropropene, 1,3-	ug/g										
Dichloropropene, 1-3-cis-	ug/g										
Dichloropropene, 1-3-trans-	ug/g										
Ethylbenzene	ug/g	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.05	<0.05	<0.018
Ethylene dibromide	ug/g										
Hexane (n)	ug/g										
Methyl ethyl ketone	ug/g										
Methyl isobutyl ketone	ug/g										
Methyl tert-butyl ether (MTBE)	ug/g										
Methylene chloride	ug/g										
Styrene	ug/g										
Tetrachloroethane, 1,1,1,2-	ug/g										
Tetrachloroethane, 1,1,2,2-	ug/g										
Tetrachloroethylene	ug/g										
Toluene	ug/g	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.080	<0.20	<0.20	<0.080
Trichloroethane, 1,1,1-	ug/g										
Trichloroethane, 1,1,2-	ug/g										
Trichloroethylene	ug/g										
Trichlorofluoromethane	ug/g										
Vinyl chloride	ug/g										
1,2-dichloroethane-d4	%										
4-bromofluorobenzene	%										
Toluene-d8	%	93	91	92	99	101	96	107		96	104
m/p-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.030	<0.05	<0.05	<0.030
o-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.020	<0.05	<0.05	<0.020
Xylene; total	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050
General											
Alpha-androstrane	%	83	92	104	95	99	99	69		137	80
Cyanide (CN-)	ug/g				<0.02	<0.02	<0.02				
Electrical Conductivity	mS/cm				0.19	0.17	0.15				
Moisture-Humidite	%	3.7	11.3	9.3	1.7	5.7	4.3	10.1		6.3	6.2
pH					8.21	7.89	7.96				
Sodium Adsorption Ratio					0.63	0.42	0.34				

Notes:

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene

Table B-3. Groundwater Sample Lab Results (Metals)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	AEC1-GW-1 AEC-1 Construction Monitoring OCI 28/Aug/18	AEC1-GW2 AEC-1 Construction Monitoring OCI 4/Sep/18	AEC1-GW3 AEC-1 Construction Monitoring OCI 4/Sep/18	AEC-1-GW-1 AEC-1 Construction Monitoring OCI 7/13/2019	AEC-2-GW-1 AEC-2 Construction Monitoring OCI 29/Aug/18	AEC-2-GW-2 AEC-2 Construction Monitoring OCI 29/Aug/18	AEC-2-GW1 AEC-2 Construction Monitoring OCI 7/13/2019	AEC-2-GW2 AEC-2 Construction Monitoring OCI 7/13/2019
Metals											
Aluminium (Al)	ug/L			<10			20	50	920	<10	<10
Antiomony (Sb)	ug/L			<0.5			<0.5	0.8	1.0	0.7	1.2
Arsenic (As)	ug/L	5	12.5	**5**			**6**	<1	**7**	<1	<1
Barium (Ba)	ug/L			10			<10	30	100	30	40
Beryllium (Be)	ug/L			<0.5			<0.5	<0.5	<0.5	<0.5	<0.5
Boron (B)	ug/L	1500		300			340	20	40	20	40
Bromine (Br)	ug/L				<250	<250	<250			<250	<250
Cadmium (Cd)	ug/L	0.09	0.12	**0.20**			**0.20**	**<0.1**	**0.20**	**<0.1**	**<0.1**
Calcium (Ca)	ug/L			64000			42000	38000	148000	38000	55000
Chlorine (Cl)	ug/L				15000	4000	55000			6000	4000
Chromium (Cr)	ug/L			<1			<1	<1	2	<1	<1
Cobalt (Co)	ug/L			4.5			7.9	<0.2	3.0	<0.2	<0.2
Copper (Cu)	ug/L	Equation		8			8	<1	4	<1	<1
Cr(III)	ug/L	8.9	56	<1			<1	<1	2	<1	
Cr(VI)	ug/L	1	1.5	<1			**<10**	<1	<1	**<10**	
Fluorine (F)	ug/L				<100	100	<100			<100	<100
Iron (Fe)	ug/L	300	No data	**1710**			**2420**	120	**8760**	<30	<30
Lead (Pb)	ug/L	Equation		3			2	<1	6	<1	<1
Lithium (Li)	ug/L										
Magnesium (Mg)	ug/L			12000			9000	5000	17000	5000	7000
Mercury (Hg)	ug/L	0.026	0.016	<0.01			**<0.1**	<0.01	**0.02**	**<0.1**	
Manganese (Mn)	ug/L										
Molybdenum (Mo)	ug/L	73		<5			<5	<5	<5	<5	<5
Nickel (Ni)	ug/L	Equation		10			13	<5	6.000	<5	<5
Phosphorus (P)	ug/L										
Potassium (K)	ug/L			16000			16000	1000	3000	<1000	<1000
Selenium (Se)	ug/L	1		<1			<1	<1	<1	<1	<1
Silicon (Si)	ug/L										
Silver (Ag)	ug/L	0.25		<0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Sodium (Na)	ug/L			38000			41000	7000	14000	5000	3000
Strontium (Sr)	ug/L										
Sulphur (S)	ug/L										
Thallium (Tl)	ug/L	0.8		<0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Tin (Sn)	ug/L			<10			<10	<10	<10	<10	<10
Titanium (Ti)	ug/L										
Uranium (U)	ug/L	15		<1			<1	<1	<1	<1	<1
Vanadium (V)	ug/L			2			2	<1	4	<1	<1
Zinc (Zn)	ug/L	7		**10**			**20**	**10**	**10**	10	<10
Zirconium (Zr)	ug/L										

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-4. Groundwater Sample Lab Results (PHCs and PAHs)

Laboratory ID	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	Alberta Tier 1 Commercial (Table 2)	AEC1-GW-1	AEC1-GW2	AEC1-GW3	AEC1-GW-1	AEC-2-GW-1	AEC-2-GW-2	AEC-2-GW1	AEC-2-GW-2
AEC-#					AEC-1	AEC-1	AEC-1	AEC-1	AEC-2	AEC-2	AEC-1	AEC-1
Purpose					Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring
Source					OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date					28/Aug/18	4/Sep/18	4/Sep/18	13-Jul-19	29/Aug/18	29/Aug/18	13-Jul-19	13-Jul-19
PHCs												
F1 (C6-C10)	ug/L			2200	<20	<20		<20	<20	<20	<20	<20
F1-BTEX (C6-C10)	ug/L				<20			<20	<20	<20	<20	<20
F2 (C10-C16)	ug/L			1100	<20	<20	<20	<20	<20	<20	<20	<20
F3 (C16-C34)	ug/L				<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	ug/L				<50	<50	<50	<50	<50	<50	<50	<50
PAHs												
Benzo[a]pyrene equivalency	ug/L											
Acenaphthene	ug/L	5.8			<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Acenaphthylene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Acridine	ug/L	4.4										
Anthracene	ug/L	0.012			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**		**<0.1**	**<0.1**
Benzo(a)anthracene	ug/L	0.018			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**		**<0.1**	**<0.1**
Benzo(a)pyrene	ug/L	0.015			<0.01	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
Benzo(b)fluoranthene	ug/L				<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(b&j)fluoranthene	ug/L											
Benzo(g,h,i)perylene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Benzo(k)fluoranthene	ug/L				<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Benzo(c)phenanthrene	ug/L											
Benzo[e]pyrene	ug/L											
Chrysene	ug/L				<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05
Dibenzo(a,h)anthracene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Fluoranthene	ug/L	0.04			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**		**<0.1**	**<0.1**
Fluorene	ug/L	3			<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
1+2-methylnaphthalene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
1-methylnaphthalene	ug/L				<0.1	<0.1	<0.1	0.3	<0.1		<0.1	<0.1
2-methylnaphthalene	ug/L				<0.1	<0.1	<0.1	0.4	<0.1		<0.1	<0.1
Naphthalene	ug/L	1.1	1.4		<0.1	<0.1	<0.1	0.3	<0.1		<0.1	<0.1
Phenanthrene	ug/L	0.4			<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Perylene	ug/L	0.025										
Pyrene	ug/L				<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Quinoline	ug/L	3.4										
BTEX	ug/L											
Benzene	ug/L	370						<0.5			<0.5	<0.5
Ethylbenzene	ug/L	90						<0.5			<0.5	<0.5
m/p-xylene	ug/L							0.6			<0.4	<0.4
o-xylene	ug/L							<0.4			<0.4	<0.4
Toluene	ug/L	2						1.0			<0.5	<0.5
Xylene; total	ug/L							0.6			<0.5	<0.5
General												
Alkalinity as Calcium Carbonate (CaCO3)	ug/L							317000			127000	190000
Alpha-androstrane	%							95			102	99
Bromine (Br)	ug/L							<250			<250	<250
Chlorine (Cl)	ug/L	120000						55000			6000	4000
Conductivity	uS/cm							735			233	320
Fluorine (F)	ug/L	120						<100			<100	<100
Hardness as Calcium Carbonate (CaCO3)	ug/L							142000			115000	166000
Nitrate Nitrogen (N-NO3)	ug/L	13000						<100			<100	<100
pH		6.5-9.0						8.12			8.58	8.50
Sulphate (SO4)	ug/L							16000			6000	4000
Toluene-d8	%							92			94	92
Total Suspended Solids	ug/L							20000			<2000	9000
Trinitramide (N-NO2)	ug/L	60						**<100**			**<100**	**<100**

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

3 = Alberta Government, Alberta Tier 1 Soil and Groundwater Guidelines. Table 2. Updated 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- RPD for sodium = 13% (estimated)

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-5. Groundwater Sample Lab Results (BTEX and General Chemistry)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	AEC1-GW-1 AEC-1 Construction Monitoring OCI 28/Aug/18	AEC1-GW2 AEC-1 Construction Monitoring OCI 4/Sep/18	AEC1-GW3 AEC-1 Construction Monitoring OCI 4/Sep/18	AEC-1-GW-1 AEC-1 Construction Monitoring OCI 13-Jul-19	AEC-2-GW-1 AEC-2 Construction Monitoring OCI 29/Aug/18	AEC-2-GW-2 AEC-2 Construction Monitoring OCI 29/Aug/18	AEC-2-GW1 AEC-2 Construction Monitoring OCI 13-Jul-19	AEC-2-GW2 AEC-2 Construction Monitoring OCI 13-Jul-19
BTEX											
Benzene	ug/L	370	110	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	90	25	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ug/L	2	215	<0.5			1.0	<0.5	<0.5	<0.5	<0.5
Toluene-d8	ug/L			123				127	106		
m/p-xylene	ug/L			<0.4			0.6	<0.4	<0.4	<0.4	<0.4
o-xylene	ug/L			<0.4			<0.4	<0.4	<0.4	<0.4	<0.4
Xylene; total	ug/L	nd	nd	<0.5			0.6	<0.5	<0.5	<0.5	<0.5
General											
Alpha-androstrane	%			115	111	105		111	105		
Moisture-Humidite	%										
Alkalinity as CaCO3	mg/L			289			317	106	437	127	190
Cl	mg/L						55			6	4
Conductivity	uS/cm			748			735	246	814	233	320
F	ug/L						<100			<100	<100
Hardness (as CaC03)	mg/L			209			142	113	440	115	166
N-NH3	mg/L			4				0	0		
N-NO2	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
N-NO3	mg/L			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
P	mg/L			3.72							
pH				7.90	8.01	7.99	8.12	7.90	7.96	8.58	8.50
Phenols	ug/L			7		78		<1	25	<1	<1
S04	mg/L				51	9	16			6	4
Total Suspended Solids (TSS)	mg/L			7				<2	33		

Notes:

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2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

3 = Alberta Government, Alberta Tier 1 Soil and Groundwater Guidelines. Table 2. Updated 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-6. Surface Water Sample Lab Results (Metals)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	AEC-1 SW-1 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-2 AEC-1 Construction Monitoring OCI 27/Aug/18	DUP-SW-1 (AEC-1 SW-2) AEC-1 Construction Monitoring OCI 27/Aug/18	RPD %	AEC-1 SW-3 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-4 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1-SW-1 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW-2 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW3 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW-DUP1 (AEC-1 SW-3) AEC-1 Construction Monitoring OCI 8-Jul-19	RPD %	AEC-1-SW4 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-2 SW-1 AEC-2 Construction Monitoring OCI 30/Aug/18
Total Metals																
Aluminium (Al)	ug/L			<10	<10	<10	nc	<10	<10	10	<10	<10	<10	nc	<10	<10
Antiomony (Sb)	ug/L	0.5		**0.6**	<0.5	<0.5	nc	**0.8**	<0.5	**1.0**	<0.5	<0.5	<0.5	nc	<0.5	**0.7**
Arsenic (As)	ug/L	5	12.5	<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	nc	<1	<1
Barium (Ba)	ug/L			90	30	30	0	100	20	120	70	90	60	40	30	50
Beryllium (Be)	ug/L	0.5		<0.5	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nc	<0.5	<0.5
Boron (B)	ug/L	1500		30	10	10	0	30	20	110	90	90	40	77	10	20
Calcium (Ca)	ug/L															
Cadmium (Cd)	ug/L	0.09	0.12	<0.1	<0.1	<0.1	nc	<0.1	**0.1**	**0.2**	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Chromium (Cr)	ug/L			2	<1	<1	nc	2	<1	2	1	1	<1	nc	<1	<1
Cr(III)	ug/L	8.9	56	1	<1	<1	nc	<1	<1	2	1	1			<1	<1
Cr(VI)	ug/L	1	1.5	**1**	<1	<1	nc	**2**	<1	<10	<10	<10	<10	nc	<10	<1
Cobalt (Co)	ug/L			<0.2	<0.2	<0.2	nc	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	nc	0.6	<0.2
Copper (Cu)	ug/L	Equation		2	<1	<1	nc	2	<1	4	<1	1	<1	nc	<1	1
Iron (Fe)	ug/L	300		<30	<30	<30	nc	<30	<30	70	<30	<30	<30	nc	<30	<30
Lead (Pb)	ug/L	Equation		1	<1	1	nc	<1	<1	2	<1	<1	<1	nc	<1	<1
Lithium (Li)	ug/L															
Magnesium (Mg)	ug/L															
Manganese (Mn)	ug/L															
Mercury (Hg)	ug/L	0.026	0.016							<0.1	<0.1	<0.1			<0.1	
Molybdenum (Mo)	ug/L	73		<5	<5	<5	nc	<5	<5	<5	<5	<5	<5	nc	<5	<5
Nickel (Ni)	ug/L	Equation		<5	<5	<5	nc	<5	<5	<5	<5	<5	<5	nc	<5	<5
Phosphorus (P)	ug/L															
Potassium (K)	ug/L															
Selenium (Se)	ug/L	1		<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	nc	<1	<1
Silicon (Si)	ug/L															
Silver (Ag)	ug/L	0.25		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Sodium (Na)	ug/L			5000	9000	7000	0	6000	9000	42000	40000	39000	34000	14	21000	7000
Strontium (Sr)	ug/L															
Sulphur (S)	ug/L															
Thallium (Tl)	ug/L	0.8		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Tin (Sn)	ug/L			<10	<10	<10	nc	<10	<10	<10	<10	<10	<10	nc	<10	<10
Titanium (Ti)	ug/L															
Uranium (U)	ug/L	15		<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	nc	<1	<1
Vanadium (V)	ug/L			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	nc	<1	<1
Zinc (Zn)	ug/L	7		<10	<10	<10	nc	<10	<10	**60**	<10	<10	<10	nc	<10	<10
Zirconium (Zr)	ug/L															

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2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-6. Surface Water Sample Lab Results (Metals)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	AEC-2 SW-2 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-3 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-4 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-5 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2-SW-1 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW-2 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW-3 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW-4 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW-5 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-3-SW-1 AEC-3 Construction Monitoring OCI 28/Aug/18	Dup-SW-2 (AEC-3 SW-1) AEC-3 Construction Monitoring OCI 28/Aug/18	RPD % nc	AEC-3-SW-2 AEC-3 Construction Monitoring OCI 28/Aug/18	AEC-3-SW-1 AEC-3 Construction Monitoring OCI 8-Jul-19
Total Metals															
Aluminium (Al)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	10
Antiomony (Sb)	ug/L	<0.5	**0.8**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
Arsenic (As)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Barium (Ba)	ug/L	50	90	80	50	20	40	100	70	60	<10	<10		<10	<10
Beryllium (Be)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5
Boron (B)	ug/L	10	30	30	20	60	30	60	40	50	<10	<10		<10	20
Calcium (Ca)	ug/L														
Cadmium (Cd)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Chromium (Cr)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Cr(III)	ug/L	<1	<1	<1	<1	<10	<10	<10	<10	<10	<1	<1		<1	<1
Cr(VI)	ug/L	**1**	<1	<1	<1	<10	<10	<10	<10	<10	<1	<1		<1	<10
Cobalt (Co)	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	<0.2
Copper (Cu)	ug/L	<1	<1	<1	<1	5	<1	<1	<1	<1	<1	<1		<1	<1
Iron (Fe)	ug/L	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30	<30		<30	<30
Lead (Pb)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Lithium (Li)	ug/L														
Magnesium (Mg)	ug/L														
Manganese (Mn)	ug/L														
Mercury (Hg)	ug/L					<0.1	<0.1	<0.1	<0.1	<0.1					<0.1
Molybdenum (Mo)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	<5
Nickel (Ni)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5		<5	<5
Phosphorus (P)	ug/L														
Potassium (K)	ug/L														
Selenium (Se)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Silicon (Si)	ug/L														
Silver (Ag)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Sodium (Na)	ug/L	10000	9000	13000	9000	27000	21000	35000	25000	23000	4000	4000	0	3000	14000
Strontium (Sr)	ug/L														
Sulphur (S)	ug/L														
Thallium (Tl)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Tin (Sn)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	<10
Titanium (Ti)	ug/L														
Uranium (U)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Vanadium (V)	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1	<1
Zinc (Zn)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		<10	<10
Zirconium (Zr)	ug/L														

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2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic A

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-6. Surface Water Sample Lab Results (Metals)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	AEC-3-SW-DUP2 (AEC-3 SW-1) AEC-3 Construction Monitoring OCI 8-Jul-19	RPD %	AEC-3-SW-2 AEC-3 Construction Monitoring OCI 8-Jul-19
Total Metals				
Aluminium (Al)	ug/L	20	67	30
Antiomony (Sb)	ug/L	<0.5	nc	<0.5
Arsenic (As)	ug/L	<1	nc	<1
Barium (Ba)	ug/L	<10	nc	<10
Beryllium (Be)	ug/L	<0.5	nc	<0.5
Boron (B)	ug/L	<10	nc	<10
Calcium (Ca)	ug/L			
Cadmium (Cd)	ug/L	<0.1	nc	<0.1
Chromium (Cr)	ug/L	<1	nc	<1
Cr(III)	ug/L	<1	nc	<1
Cr(VI)	ug/L	<10	nc	<10
Cobalt (Co)	ug/L	<0.2	nc	<0.2
Copper (Cu)	ug/L	<1	nc	<1
Iron (Fe)	ug/L	<30	nc	<30
Lead (Pb)	ug/L	<1	nc	<1
Lithium (Li)	ug/L			
Magnesium (Mg)	ug/L			
Manganese (Mn)	ug/L			
Mercury (Hg)	ug/L	<0.1	nc	<0.1
Molybdenum (Mo)	ug/L	<5	nc	<5
Nickel (Ni)	ug/L	<5	nc	<5
Phosphorus (P)	ug/L			
Potassium (K)	ug/L			
Selenium (Se)	ug/L	<1	nc	<1
Silicon (Si)	ug/L			
Silver (Ag)	ug/L	<0.1	nc	<0.1
Sodium (Na)	ug/L	<2000	nc	<2000
Strontium (Sr)	ug/L			
Sulphur (S)	ug/L			
Thallium (Tl)	ug/L	<0.1	nc	<0.1
Tin (Sn)	ug/L	<10	nc	<10
Titanium (Ti)	ug/L		nc	
Uranium (U)	ug/L	<1	nc	<1
Vanadium (V)	ug/L	<1	nc	<1
Zinc (Zn)	ug/L	<10	nc	<10
Zirconium (Zr)	ug/L			

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-7. Surface Water Sample Lab Results (PHCs and PAHs)

Laboratory ID AEC-# Station ID Source Sampling Date	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	AEC-1 SW-1 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-2 AEC-1 Construction Monitoring OCI 27/Aug/18	DUP-SW-1 (AEC-1 SW-2) AEC-1 Construction Monitoring OCI 27/Aug/18	RPD %	AEC-1 SW-3 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-4 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1-SW1 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW2 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW3 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SWDUP1 (AEC-1 SW-3) AEC-1 Construction Monitoring OCI 8-Jul-19	RPD %	AEC-1-SW4 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-2 SW-1 AEC-2 Construction Monitoring OCI 30/Aug/18
PHCs																
F1 (C6-C10)	ug/L			<20	<20	<20	nc	<20	<20	<20	<20	<20	<20	nc	<20	<20
F1-BTEX (C6-C10)	ug/L			<20	<20	<20	nc	<20	<20	<20	<20	<20	<20	nc	<20	<20
F2 (C10-C16)	ug/L			<20	<20	<20	nc	<20	<20	<20	<20	<20	<20	nc	<20	<20
F3 (C16-C34)	ug/L			<50	<50	<50	nc	<50	<50	<50	<50	<50	<50	nc	<50	<50
F4 (C34-C50)	ug/L			<50	<50	<50	nc	<50	<50	<50	<50	<50	<50	nc	<50	<50
PAHs																
Benzo[a]pyrene equivalency	ug/L															
Acenaphthene	ug/L	5.8		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Acenaphthylene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Acridine	ug/L	4.4														
Anthracene	ug/L	0.012		<0.1	<0.1	<0.1	nc	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	nc		<0.1
Benzo(a)anthracene	ug/L	0.018		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Benzo(a)pyrene	ug/L	0.015		<0.01	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nc		<0.01
Benzo(b)fluoranthene	ug/L			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc		<0.05
Benzo(b&j)fluoranthene	ug/L															
Benzo(g,h,i)perylene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Benzo(k)fluoranthene	ug/L			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc		<0.05
Benzo(c)phenanthrene	ug/L															
Benzo[e]pyrene	ug/L															
Chrysene	ug/L			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc		<0.05
Dibenzo(a,h)anthracene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Fluoranthene	ug/L	0.04		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Fluorene	ug/L	3		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Indeno(1,2,3-c,d)pyrene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
1+2-methylnaphthalene	ug/L									<0.1	<0.1	<0.1	<1	nc	<0.1	
1-methylnaphthalene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
2-methylnaphthalene	ug/L			<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Naphthalene	ug/L	1.1	1.4	<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Phenanthrene	ug/L	0.4		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Perylene	ug/L															
Pyrene	ug/L	0.025		<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc		<0.1
Quinoline	ug/L	3.4														

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-7. Surface Water Sample Lab Results (PHCs and PAHs)

Laboratory ID AEC-# Station ID Source Sampling Date	Units	AEC-2 SW-2 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-3 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-4 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-5 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2-SW1 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW2 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW3 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW4 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW5 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-3-SW-1 AEC-3 Construction Monitoring OCI 28/Aug/18	Dup-SW-2 (AEC-3 SW-1) AEC-3 Construction Monitoring OCI 28/Aug/18	RPD %	AEC-3-SW-2 AEC-3 Construction Monitoring OCI 28/Aug/18	AEC-3-SW-1 AEC-3 Construction Monitoring OCI 8-Jul-19
PHCs															
F1 (C6-C10)	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	nc	<20	<20
F1-BTEX (C6-C10)	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	nc	<20	<20
F2 (C10-C16)	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	nc	<20	<20
F3 (C16-C34)	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	nc	<50	<50
F4 (C34-C50)	ug/L	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	nc	<50	50
PAHs															
Benzo[a]pyrene equivalency	ug/L														
Acenaphthene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Acenaphthylene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Acridine	ug/L														
Anthracene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Benzo(a)anthracene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Benzo(a)pyrene	ug/L	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	nc	<0.01	<0.01
Benzo(b)fluoranthene	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05
Benzo(b&j)fluoranthene	ug/L														
Benzo(g,h,i)perylene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Benzo(k)fluoranthene	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05
Benzo(c)phenanthrene	ug/L														
Benzo[e]pyrene	ug/L														
Chrysene	ug/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05
Dibenzo(a,h)anthracene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Fluoranthene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Fluorene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
1+2-methylnaphthalene	ug/L					<0.1	<0.1	<0.1	<0.1	<1					<0.1
1-methylnaphthalene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
2-methylnaphthalene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Naphthalene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Phenanthrene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Perylene	ug/L														
Pyrene	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1	<0.1
Quinoline	ug/L														

Notes:

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20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-7. Surface Water Sample Lab Results (PHCs and PAHs)

Laboratory ID AEC-# Station ID Source Sampling Date	Units	AEC-3-SWDUP2 (AEC-3 SW-1) AEC-3 Construction Monitoring OCI 8-Jul-19	RPD %	AEC-3-SW2 AEC-3 Construction Monitoring OCI 8-Jul-19
PHCs				
F1 (C6-C10)	ug/L	<20	nc	<20
F1-BTEX (C6-C10)	ug/L	<20	nc	<20
F2 (C10-C16)	ug/L	<20	nc	<20
F3 (C16-C34)	ug/L	<50	nc	<50
F4 (C34-C50)	ug/L	<50	nc	<50
PAHs				
Benzo[a]pyrene equivalency	ug/L			
Acenaphthene	ug/L	<0.1	nc	<0.1
Acenaphthylene	ug/L	<0.1	nc	<0.1
Acridine	ug/L			
Anthracene	ug/L	<0.1	nc	<0.1
Benzo(a)anthracene	ug/L	<0.I	nc	<0.1
Benzo(a)pyrene	ug/L	<0.01	nc	<0.01
Benzo(b)fluoranthene	ug/L	<0.05	nc	<0.05
Benzo(b&j)fluoranthene	ug/L			
Benzo(g,h,i)perylene	ug/L	<0.1	nc	<0.1
Benzo(k)fluoranthene	ug/L	<0.05	nc	<0.05
Benzo(c)phenanthrene	ug/L			
Benzo[e]pyrene	ug/L			
Chrysene	ug/L	<0.05	nc	<0.05
Dibenzo(a,h)anthracene	ug/L	<0.1	nc	<0.1
Fluoranthene	ug/L	<0.1	nc	<0.1
Fluorene	ug/L	<0.1	nc	<0.1
Indeno(1,2,3-c,d)pyrene	ug/L	<0.1	nc	<0.1
1+2-methylnaphthalene	ug/L	<0.1	nc	<0.1
1-methylnaphthalene	ug/L	<0.1	nc	<0.1
2-methylnaphthalene	ug/L	<0.1	nc	<0.1
Naphthalene	ug/L	<0.1	nc	<0.1
Phenanthrene	ug/L	<0.1	nc	<0.1
Perylene	ug/L			
Pyrene	ug/L	<0.1	nc	<0.1
Quinoline	ug/L			

Notes:

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20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-8. Surface Water Sample Lab Results (BTEX and General Chemistry)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	CCME AW (Freshwater)[1]	CCME AW (Marine)[2]	AEC-1 SW-1 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-2 AEC-1 Construction Monitoring OCI 27/Aug/18	DUP-SW-1 AEC-1 Construction Monitoring OCI 27/Aug/18	RPD %	AEC-1 SW-3 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1 SW-4 AEC-1 Construction Monitoring OCI 27/Aug/18	AEC-1-SW1 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW2 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SW3 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-1-SWDUP1 AEC-1 Construction Monitoring OCI 8-Jul-19
BTEX													
Benzene	ug/L	370	110	<0.5	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	90	25	<0.5	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ug/L	2	215	<0.5	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	ug/L			<0.4	<0.4	<0.4	nc	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
o-xylene	ug/L			<0.4	<0.4	<0.4	nc	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Xylene; total	ug/L	nd	nd	<0.5	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene-d8	%			100	95	96	0.01	113	119	90	92	91	89
General													
Alpha-androstrane	%			98	107	111	0.04	100	115	105	108	95	105
Moisture-Humidite	%												
Hardness	mg/L												

Notes:

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2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

d = Average calculated hardness

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-8. Surface Water Sample Lab Results (BTEX and General Chemistry)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	RPD %	AEC-1-SW4 AEC-1 Construction Monitoring OCI 8-Jul-19	AEC-2 SW-1 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-2 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-3 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-4 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2 SW-5 AEC-2 Construction Monitoring OCI 30/Aug/18	AEC-2-SW1 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW2 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW3 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW4 AEC-2 Construction Monitoring OCI 8-Jul-19	AEC-2-SW5 AEC-2 Construction Monitoring OCI 8-Jul-19
BTEX													
Benzene	ug/L	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ug/L	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ug/L	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	ug/L	nc	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
o-xylene	ug/L	nc	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Xylene; total	ug/L	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene-d8	%	2	92	116	123	109	115	100	90	90	89	92	90
General													
Alpha-androstrane	%	10	106	111	105	103	98	93	106	91	97	106	89
Moisture-Humidite	%												
Hardness	mg/L												

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

d = Average calculated hardness

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-8. Surface Water Sample Lab Results (BTEX and General Chemistry)

Laboratory ID AEC-# Purpose Source Sampling Date	Units	AEC-3-SW-1 AEC-3 Construction Monitoring OCI 28/Aug/18	Dup-SW-2 AEC-3 Construction Monitoring OCI 28/Aug/18	RPD %	AEC-3-SW-2 AEC-3 Construction Monitoring OCI 28/Aug/18	AEC-3-SW1 AEC-3 Construction Monitoring OCI 8-Jul-19	AEC-3-SWDUP2 AEC-3 Construction Monitoring OCI 8-Jul-19	RPD %	AEC-3-SW2 AEC-3 Construction Monitoring OCI 8-Jul-19
BTEX									
Benzene	ug/L	<0.5	<0.5	nc	<0.5	<0.5	<0.5	nc	<0.5
Ethylbenzene	ug/L	<0.5	<0.5	nc	<0.5	<0.5	<0.5	nc	<0.5
Toluene	ug/L	<0.5	<0.5	nc	<0.5	<0.5	<0.5	nc	<0.5
m/p-xylene	ug/L	<0.4	<0.4	nc	<0.4	<0.4	<0.4	nc	<0.4
o-xylene	ug/L	<0.4	<0.4	nc	<0.4	<0.4	<0.4	nc	<0.4
Xylene; total	ug/L	<0.5	<0.5	nc	<0.5	<0.5	<0.5	nc	<0.5
Toluene-d8	%	95	101	0.06	94	91	101	10	105
General									
Alpha-androstrane	%	105	98	0.07	103	103	116	12	115
Moisture-Humidite	%								
Hardness	mg/L								

Notes:

1 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

2 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Marine. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

d = Average calculated hardness

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-9. Sediment Sample Lab Results (PHCs and Metals)

Laboratory ID	Units	CCME ISQG (Freshwater)	CCME ISQG (Marine)	AEC1-Sed 1	AEC1-Sed 2	DUP-Sed-1	RPD	AEC1-Sed 3	AEC1-Sed 4	AEC-1-SED-1	AEC-1-SED-2	AEC-1-SED-3	AEC-1-SED-4	AEC-1-SED-
AEC-#				AEC-1	AEC-1	AEC-1	%	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1
Station ID				Construction Monitoring	Construction Monitoring	Construction Monitoring		Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring
Source				OCI	OCI	OCI		OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date				23/Aug/18	23/Aug/18	23/Aug/18		23/Aug/18	23/Aug/18	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19
Depth (m)				0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10
PHCs														
F1 (C6-C10)	ug/g			<10	<10	<10	nc	<10	<10	<10	<10	<10	<10	<10
F1-BTEX (C6-C10)	ug/g			<10	<10	<10	nc	<10	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	ug/g			<10	<10	<10	nc	<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	ug/g			<20	<20	<20	nc	<20	<20	<20	<20	130	<20	<20
F4 (C34-C50)	ug/g			<20	<20	<20	nc	<20	<20	<20	<20	90	<20	<20
F4g	ug/g											<100		
Metals														
Aluminium (Al)										4450	4040	852	1340	4050
Antiomony (Sb)	ug/g			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	<1
Arsenic (As)	ug/g	5.9	7.24	<1	1.0	1.0	0.00	<1	1.0	2	2	<1	<1	2
Barium (Ba)	ug/g			7.0	53.0	36.0	0.38	10.0	14.0	67	49	35	15	50
Beryllium (Be)	ug/g			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	<1
Boron (B)	ug/g			<5	9.000	<5	nc	<5	<5	7	6	<5	<5	6
Cadmium (Cd)	ug/g	0.6	0.7	<0.4	<0.4	<0.4	nc	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (Cr)	ug/g	37.3	52.3	3.0	20.0	14.0	0.35	11.0	6.0	12	12	17	7	11
Cr(III)	ug/g			3.0	20.0	14.0	0.35	11.0	6.0	12	12	15.7	7	11
Cr(VI)	ug/g			<0.20	<0.20	<0.20	nc	<0.20	<0.20	<0.2	<0.2	1.31	<0.2	<0.2
Cobalt (Co)	ug/g			<1	2.0	2.0	0.00	<1	1.0	3	3	<1	1	3
Copper (Cu)	ug/g	35.7	18.7	<1	4	4	0.00	1	3	7	5	3	3	5
Lead (Pb)	ug/g	35	30	2	6	5	0.18	5	3	6	5	11	4	5
Mercury (Hg)	ug/g	0.17	0.13	<0.1	<0.1	<0.1	nc	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	ug/g			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	<1
Nickel (Ni)	ug/g			2.0	10.0	8.0	0.22	4.0	4.0	8	8	3	5	8
Selenium (Se)	ug/g			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	<1
Silver (Ag)	ug/g			<0.2	<0.2	<0.2	nc	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium (Tl)	ug/g			<1	<1	<1	nc	<1	<1	<1	<1	<1	<1	<1
Tin (Sn)	ug/g									<5	<5	<5	<5	<5
Uranium (U)	ug/g			<0.5	<0.5	<0.5	nc	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5
Vanadium (V)	ug/g			3	10	10	0.00	3	7	15	14	4	5	14
Zinc (Zn)	ug/g	123	124	11	18	16	0.12	15	14	26	17	39	16	18
Iron (Fe)	ug/g			1510	4670	4340	0.07	1170	2760	6770	6160	1500	2400	6410

Notes:

1 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Freshwater. ISQG.

2 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Marine. ISQG.

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-9. Sediment Sample Lab Results (PHCs and Metals)

Laboratory ID		AEC-2-Sed-1	AEC-2-Sed-2	AEC-2-Sed-3	AEC-2-Sed-4	AEC-2-Sed-5	AEC-2-SED-1	AEC-2-SED-2	AEC-2-SED-3	AEC-2-SED-4	AEC-2-SED-5
AEC-#		AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2
Station ID	Units	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		26/Aug/18	26/Aug/18	26/Aug/18	26/Aug/18	26/Aug/18	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19
Depth (m)		0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10	0.0 - 0.10
PHCs											
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	15	<10	<10	<10	<10
F1-BTEX (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	<10	<10	<10	<10
F2 (C10-C16)	ug/g	<10	<10	<10	<10	<10	1460	<10	<10	20	<10
F3 (C16-C34)	ug/g	<20	<20	<20	<20	<20	7490	<20	20	<20	<20
F4 (C34-C50)	ug/g	<20	<20	<20	<20	<20	3120	<20	<20	40	<20
F4g	ug/g						47900				
Metals											
Aluminium (Al)							3350	1380	3530	671	2100
Antiomony (Sb)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic (As)	ug/g	2.0	<1	<1	<1	<1	2	<1	2	<1	1
Barium (Ba)	ug/g	42.0	8.0	16.0	4.0	14.0	107	14	31	8	17
Beryllium (Be)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)	ug/g	6	<5	5	<5	<5	6	<5	6	<5	6
Cadmium (Cd)	ug/g	**1.5**	<0.4	<0.4	<0.4	<0.4	2.6	<0.4	<0.4	<0.4	<0.4
Chromium (Cr)	ug/g	9	3	5	3	3	16	4	9	4	5
Cr(III)	ug/g	9	3	5	3	3	14.8	4	9	4	5
Cr(VI)	ug/g	0.5	<0.20	<0.20	<0.20	<0.20	1.22	<0.20	<0.2	<0.2	<0.2
Cobalt (Co)	ug/g	2.0	<1	1.0	<1	<1	3	<1	2	<1	1
Copper (Cu)	ug/g	**703**	1	2	<1	1	**1510**	4	4	2	4
Lead (Pb)	ug/g	**36**	6	7	3	5	**67**	8	6	6	13
Mercury (Hg)	ug/g	0.1	<0.1	<0.1	<0.1	<0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	ug/g	2.0	<1	<1	<1	<1	3	<1	<1	<1	<1
Nickel (Ni)	ug/g	5.0	2.0	3.0	2.0	2.0	8	2	6	2	4
Selenium (Se)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver (Ag)	ug/g	0.8	<0.2	<0.2	<0.2	<0.2	1.4	<0.2	<0.2	<0.2	<0.2
Thallium (Tl)	ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tin (Sn)	ug/g						39	<5	<5	<5	<5
Uranium (U)	ug/g	0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Vanadium (V)	ug/g	7	4	7	3	4	7	5	12	4	7
Zinc (Zn)	ug/g	**230**	11	16	9	10	390	**11**	19	12	19
Iron (Fe)	ug/g	4980	1500	2820	1290	1880	6770	6160	1500	2400	6410

Notes:

1 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Freshwater. ISQG.

2 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Marine. ISQG.

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Samples AEC-1-SW-2 (2018), AEC-3-SW-1 (2018), AEC-1-SW-3 (2019) and AEC-3-SW-1 (2019) are presented adjacent to their respective duplicate samples

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-10. Sediment Sample Lab Results (PAHs , BTEX and General Chemistry)

Laboratory ID	Units	CCME ISQG (Freshwater)	CCME ISQG (Marine)	AEC1-Sed 1	AEC1-Sed 2	DUP-Sed-1	RPD	AEC1-Sed 3	AEC1-Sed 4	AEC-1-SED-1	AEC-1-SED-2	AEC-1-SED-3	AEC-1-SED-4	AEC-1-SED-	AEC-2-Sed-1	AEC-2-Sed-2
AEC-#				AEC-1	AEC-1	AEC-1	%	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1	AEC-1	AEC-2	AEC-2
Purpose				Construction Monitoring	Construction Monitoring	Construction Monitoring		Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring
Source				OCI	OCI	OCI		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date				23/Aug/18	23/Aug/18	23/Aug/18		23/Aug/18	23/Aug/18	7-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19	26/Aug/18	26/Aug/18
Depth																
PAHs																
Acenaphthene	ug/g	0.007	0.007	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo[a]pyrene equivalency																
Acenaphthylene	ug/g	0.006	0.006	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Acridine																
Anthracene	ug/g	0.047	0.047	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(a)anthracene	ug/g	0.032	0.075	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(a)pyrene	ug/g	0.032	0.089	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(b)fluoranthene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(g,h,i)perylene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(k)fluoranthene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Benzo(c)phenanthrene																
Benzo[e]pyrene																
Chrysene	ug/g	0.057	0.108	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Dibenzo(a,h)anthracene	ug/g	0.006	0.006	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Fluoranthene	ug/g	0.111	0.113	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Fluorene	ug/g	0.021	0.021	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Indeno(1,2,3-c,d)pyrene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
1+2-methylnaphthalene	ug/g									<0.05	<0.05	<0.05	<0.05	<0.05		
1-methylnaphthalene	ug/g			0.050	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
2-methylnaphthalene	ug/g	0.020	0.020	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Naphthalene	ug/g	0.035	0.035	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Phenanthrene	ug/g	0.042	0.087	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Perylene																
Pyrene	ug/g	0.053	0.153	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2	<0.05
Quinoline																
BTEX																
Benzene	ug/g	nd	nd	<0.02	<0.02	<0.02	nc	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	ug/g	nd	nd	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	ug/g	nd	nd	<0.20	<0.20	<0.20	nc	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m/p-xylene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-xylene	ug/g			<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene; total	ug/g	nd	nd	<0.05	<0.05	<0.05	nc	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene-d8	%			103	98	103	5	103	105	98	99	98	98	101	102	100
General																
Alpha-androstrane	%			98	107	111	4	100	115	60	63	62	63	64	93	98
Moisture-Humidite	%			19	13	15	9	24	13	12.5	12.7	24.3	7.3	14.6	55	20

Notes:

1 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Freshwater. ISQG.

2 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Marine. ISQG.

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

\- Sample AEC-1-Sed-2 (2018) presented adjacent to the respective duplicate sample

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-10. Sediment Sample Lab Results (PAHs , BTEX and General Chemistry)

Laboratory ID	Units	AEC-2-Sed-3	AEC-2-Sed-4	AEC-2-Sed-5	AEC-2-SED-1	AEC-2-SED-2	AEC-2-SED-3	AEC-2-SED-4	AEC-2-SED-5
AEC-#		AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2	AEC-2
Purpose		Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring	Construction Monitoring
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		26/Aug/18	26/Aug/18	26/Aug/18	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19	8-Jul-19
Depth									
PAHs									
Acenaphthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene equivalency									
Acenaphthylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acridine									
Anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(c)phenanthrene									
Benzo[e]pyrene									
Chrysene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenzo(a,h)anthracene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1+2-methylnaphthalene	ug/g				<0.05	<0.05	<0.05	<0.05	<0.05
1-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-methylnaphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perylene									
Pyrene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Quinoline									
BTEX									
Benzene	ug/g	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	ug/g	<0.20	<0.20	<0.20	1.33	<0.20	<0.20	<0.20	<0.20
m/p-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-xylene	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene; total	ug/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene-d8	%	101	100	104	98	98	97	101	99
General									
Alpha-androstrane	%	107	100	115	0	66	63	63	75
Moisture-Humidite	%	18	16	43	52.7	17.9	10.6	24.3	12.3

Notes:

1 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Freshwater. ISQG.
2 = CCME, Canadian Sediment Quality Guidelines for the Protection of Aquatic Life. Updated 2019. Marine. ISQG.
20 = Denotes exceedance of CCME for the respective EQG for an OCI sample
nc = not calculable
(1) = Detection limits raised due to matrix interference
\- Sample AEC-1-Sed-2 (2018) presented adjacent to the respective duplicate sample
Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-11. AEC3 Waste and AEC2 Lead-Based Paint Lab Results

Laboratory ID	Units	AEC-2 Paint	AEC3 Waste
Purpose		Paint	Construction Monitoring
Source		OCI	OCI
Sampling Date		3/Sep/19	27/Aug/18
1-methylnaphthalene	ug/g		<3110
2-methylnaphthalene	ug/g		6320
Acenaphthene	ug/g		<0.05
Acenaphthylene	ug/g		10.4
Alpha-androstrane	%		111
Anthracene	ug/g		5.7
Aroclor 1242	ug/g		<2
Aroclor 1248	ug/g		<2
Aroclor 1254	ug/g		10
Aroclor 1260	ug/g		<2
Benzene	ug/g		1.8
Benzo(a)anthracene	ug/g		4.3
Benzo(a)pyrene	ug/g		1.1
Benzo(b)fluoranthene	ug/g		2.1
Benzo(g,h,i)perylene	ug/g		<0.05
Benzo(k)fluoranthene	ug/g		0.97
Chrysene	ug/g		6.5
Decachlorobiphenol	%		N/A
Dibenzo(a,h)anthracene	ug/g		<0.05
Ethylbenzene	ug/g		4.7
F1 (C6-C10)	ug/g		320
F1-BTEX (C6-C10)	ug/g		270
F2 (C10-C16)	ug/g		2220
F3 (C16-C34)	ug/g		1070
F4 (C34-C50)	ug/g		31700
Fluoranthene	ug/g		5.9
Fluorene	ug/g		13.6
Indeno(1,2,3-c,d)pyrene	ug/g		<0.05
m/p-xylene	ug/g		19
Moisture-Humidite	%		26
Naphthalene	ug/g		490
o-xylene	ug/g		8
Phenanthrene	ug/g		30
Polychlorinated Biphenyls (PCBs)	ug/g		<2
Pyrene	ug/g		8.3
Toluene	ug/g		12.9
Toluene-d8	%		103
Xylene; total	ug/g		26.3
Lead(Pb)	ug/g	23100	

Notes:

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-12. PCB Test Samples

Laboratory ID	Units	CCME Soil PL [1]	CCME Soil CL [2]	CCME AW (Freshwater) CL [3]	THMPA-1C	AEC1-SW1
Media					Soil	Surface Water
Purpose					Confirmatory	Construction Monitoring
Source					AEC-1	AEC-0
Sampling Date					15/Aug/18	16/Aug/18
Depth					0.0-0.3	
PCBs						
Aroclor 1242	ug/g				<0.02	<0.02
Aroclor 1248	ug/g				<0.02	<0.02
Aroclor 1254	ug/g	No data	No data	No data	<0.02	<0.02
Aroclor 1260	ug/g				<0.02	<0.02
Polychlorinated Biphenyls	ug/g	1.3	33	No data	<0.02	<0.02
Decachlorobiphenol	%				74	118

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, course-grained sc

2 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Commercial Land-use, course-grained soil

3 = Canadian Council of Ministers of the Environment (CCME), Water Quality Guidelines for the Protection of Aquatic Life. Freshwater. Updated January 2019

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

onyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-13. AEC3 Excavation Soil Sample Lab Results (Metals and PHCs)

Laboratory ID AEC-# Station ID Source Sampling Date	Units	CCME Soil PL [1]	CCME Soil PL [2]	AEC-3-1-1 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-1-2 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-1-3 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-1-4 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-1-5 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-2-1 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-2-2 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-2-3 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-2-4 AEC-3 Confirmatory OCI 25-Jul-19	AEC-3-2-5 AEC-3 Confirmatory OCI 25-Jul-19
PHCs													
F1 (C6-C10)	ug/g		210										
F1 BTEX (C6-C10)	ug/g		-										
F2 (C-10-C16)	ug/g		150	<10	<10	<10	<10	<10	<10	<10	<10	40	<10
F3 (C-16-C34)	ug/g		300	260	<20	<20	<20	20	60	140	<20	**4200**	<20
F4 (C34-C50)	ug/g		2800	30	<20	<20	<20	<20	<20	40	<20	760	<20
F4 (C34-C50) gravimetric	ug/g											1400	
General													
Moisture-Humidite	%			9.1	8.1	5.2	3.2	7.5	17.9	4.9	6.5	4.1	8.8
Alpha-androstrane	%			72	82	83	88	73	74	77	85	81	73
Metals													
Aluminum (Al)	ug/g	-							2870	2420	2900	2600	2600
Antimony (Sb)	ug/g	20							<1	<1	<1	<1	<1
Arsenic (As)	ug/g	12							2	2	2	2	2
Barium (Ba)	ug/g	500							28	29	30	28	26
Beryllium (Be)	ug/g	4							<1	<1	<1	<1	<1
Boron (B)	ug/g	-							<5	<5	<5	<5	<5
Cadmium (Cd)	ug/g	10							<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (Cr)	ug/g	64							18	10	10	11	11
Cr(III)	ug/g	-							18	10	10	11	11
Cr(VI)	ug/g	0.4							<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt (Co)	ug/g	50							2	2	2	2	2
Copper (Cu)	ug/g	63							3	8	5	5	3
Iron (Fe)	ug/g	-							5370	4820	5380	5240	5110
Lead (Pb)	ug/g	140							7	17	17	11	19
Mercury (Hg)	ug/g	6.6							<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	ug/g	10							<1	<1	<1	<1	<1
Nickel (Ni)	ug/g	45							7	6	5	7	6
Selenium (Se)	ug/g	1							<1	<1	<1	<1	<1
Silver (Ag)	ug/g	20							<0.2	<0.2	<0.2	<0.2	<0.2
Thallium (Tl)	ug/g	1							<1	<1	<1	<1	<1
Tin (Sn)	ug/g	50							<5	<5	<5	<5	<5
Uranium (U)	ug/g	23							<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium (V)	ug/g	130							8	21	17	7	7
Zinc (Zn)	ug/g	250							14	4.9	6.5	19	15

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-13. AEC3 Excavation Soil Sample Lab Results (Metals and PHCs)

Laboratory ID	Units	AEC-3-2-6	AEC-3-EX2-7	AEC-3-EX2-8	AEC-3-3-1	AEC-3-3-2	AEC3-3-3	AEC-3-3-4	AEC-3-3-5	AEC-3-4-1	AEC-3-4-2	AEC-3-EX4-3
AEC-#		AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3
Station ID		Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		25-Jul-19	19-Aug-19	19-Aug-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	26-Jul-19	25-Jul-19	25-Jul-19	19-Aug-19
PHCs												
F1 (C6-C10)	ug/g									<10	<10	
F1 BTEX (C6-C10)	ug/g									<10	<10	
F2 (C-10-C16)	ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10
F3 (C-16-C34)	ug/g	20	<20	20	<20	<20	<20	<20	<20	80	950	70
F4 (C34-C50)	ug/g	<20	<20	50	<20	<20	<20	<20	<20	<20	60	90
F4 (C34-C50) gravimetric	ug/g										600	
General												
Moisture-Humidite	%	17.2	10.5	2.7	7.4	12.9	9.5	17.8	8	8.2	7.2	10.6
Alpha-androstrane	%	71	104	97	73	80	68	70	71	77	95	88
Metals												
Aluminum (Al)	ug/g	3390								4210	3780	
Antimony (Sb)	ug/g	<1								<1	<1	
Arsenic (As)	ug/g	2								2	2	
Barium (Ba)	ug/g	36								27	22	
Beryllium (Be)	ug/g	<1								<1	<1	
Boron (B)	ug/g	<5								<5	<5	
Cadmium (Cd)	ug/g	<0.4								<0.4	<0.4	
Chromium (Cr)	ug/g	8								11	12	
Cr(III)	ug/g	8								11	12	
Cr(VI)	ug/g	<0.2								<0.2	0.24	
Cobalt (Co)	ug/g	3								3	3	
Copper (Cu)	ug/g	4								5	4	
Iron (Fe)	ug/g	6410								7430	6620	
Lead (Pb)	ug/g	9								16	14	
Mercury (Hg)	ug/g	<0.1								<0.1	<0.1	
Molybdenum (Mo)	ug/g	<1								<1	<1	
Nickel (Ni)	ug/g	6								8	8	
Selenium (Se)	ug/g	<1								<1	<1	
Silver (Ag)	ug/g	<0.2								<0.2	<0.2	
Thallium (Tl)	ug/g	<1								<1	<1	
Tin (Sn)	ug/g	<5								49	<5	
Uranium (U)	ug/g	<0.5								<0.5	<0.5	
Vanadium (V)	ug/g	9								11	10	
Zinc (Zn)	ug/g	18								19	19	

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

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Table B-13. AEC3 Excavation Soil Sample Lab Results (Metals and PHCs)

Laboratory ID	Units	AEC-3-EX4-4	AEC-3-5-1	AEC-3-5-2	AEC-3-5-3	AEC-3-EX5-4	AEC-3-EX5-5	AEC-3-6-1	AEC-3-6-2	AEC-3-6-3	AEC-3-6-4	AEC-3-6-5
AEC-#		AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3
Station ID		Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory
Source		OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date		19-Aug-19	8-Jul-19	8-Jul-19	8-Jul-19	20-Aug-19	20-Aug-19	26-Jul-19	26-Jul-19	2-Aug-19	2-Aug-19	2-Aug-19
PHCs												
F1 (C6-C10)	ug/g		<10	<10	<10			**1100**	**500**	<10	<10	<10
F1 BTEX (C6-C10)	ug/g		<10	<10	<10			1100	500	<10	<10	<10
F2 (C-10-C16)	ug/g	<10	<10	<10	<10	<10	<10	**570**	80	<10	<10	<10
F3 (C-16-C34)	ug/g	40	840	<20	40	20	20	**880**	**4700**	<20	<20	<20
F4 (C34-C50)	ug/g	130	640	30	60	30	20	1250	1150	<20	<20	<20
F4 (C34-C50) gravimetric	ug/g	100	1200					1900	1900			
General												
Moisture-Humidite	%	4	9.7	7.7	8.8	11.7	10.8	7.2	10.7	6.3	6.4	7
Alpha-androstrane	%	102	0	90	93	94	106			101	91	103
Metals												
Aluminum (Al)	ug/g		1370	1560	1610			3180	3330	4160	3190	1970
Antimony (Sb)	ug/g		<1	<1	<1			<1	<1	<1	<1	<1
Arsenic (As)	ug/g		1	1	1			2	3	2	2	2
Barium (Ba)	ug/g		11	9	12			82	213	60	37	16
Beryllium (Be)	ug/g		<1	<1	<1			<1	<1	<1	<1	<1
Boron (B)	ug/g		<5	<5	<5			<5	6	6	10	<5
Cadmium (Cd)	ug/g		<0.4	<0.4	<0.4			<0.4	0.7	<0.4	<0.4	<0.4
Chromium (Cr)	ug/g		6	6	5			12	17	12	14	8
Cr(III)	ug/g		5	6	5			5	N/A	12	14	8
Cr(VI)	ug/g		**0.54**	**0.43**	<0.2	<0.2	<0.2	**7.44**	**19.5**	**0.49**	**0.51**	0.29
Cobalt (Co)	ug/g		1	1	1			2	3	3	2	2
Copper (Cu)	ug/g		4	3	2			11	38	7	4	3
Iron (Fe)	ug/g		2290	2490	2530			5620	8020	5510	4100	3230
Lead (Pb)	ug/g		16	5	7			36	82	10	15	15
Mercury (Hg)	ug/g		<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)	ug/g		<1	<1	<1			<1	1	<1	<1	<1
Nickel (Ni)	ug/g		4	4	4			6	7	9	9	6
Selenium (Se)	ug/g		<1	<1	<1			<1	<1	<1	<1	<1
Silver (Ag)	ug/g		<0.2	<0.2	<0.2			<0.2	<0.2	<0.2	<0.2	<0.2
Thallium (Tl)	ug/g		<1	<1	<1			<1	<1	<1	<1	<1
Tin (Sn)	ug/g		<5	<5	<5			<5	<5	<5	<5	<5
Uranium (U)	ug/g		<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium (V)	ug/g		6	6	6			9	10	12	10	6
Zinc (Zn)	ug/g		14	11	12			23	38	21	22	14

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

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Table B-13. AEC3 Excavation Soil Sample Lab Results (Metals and PHCs)

Laboratory ID		Units	AEC-3-6-6	AEC-3-6-7	AEC-3-6-8	AEC-3-6-9	AEC-3-6-10	AEC-3-6-11	AEC-3-6-12	AEC-3-6-13	AEC-3-6-14	AEC-3-6-15	AEC-3-6-16
AEC-#			AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3
Station ID			Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory
Source			OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date			2-Aug-19	2-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19	28-Aug-19
PHCs													
F1 (C6-C10)		ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 BTEX (C6-C10)		ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C-10-C16)		ug/g	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C-16-C34)		ug/g	<20	<20	<20	<20	30	40	<20	<20	<20	<20	<20
F4 (C34-C50)		ug/g	<20	<20	<20	<20	20	30	<20	<20	<20	<20	<20
F4 (C34-C50) gravimetric		ug/g											
General													
Moisture-Humidite		%	7.1	5.5	7.4	7.8	13.2	8.3	7.2	6.7	11.1	6.5	7.9
Alpha-androstrane		%	98	81	79	84	64	81	79	75	78	78	78
Metals													
Aluminum (Al)		ug/g	2440	2850	3180	3600	1690	2820	3570	2610	1470	3050	3990
Antimony (Sb)		ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic (As)		ug/g	1	2	2	2	<1	1	2	2	<1	2	2
Barium (Ba)		ug/g	36	40	56	75	28	41	56	24	14	38	48
Beryllium (Be)		ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (B)		ug/g	<5	5	7	7	7	7	8	7	7	7	9
Cadmium (Cd)		ug/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (Cr)		ug/g	9	7	11	9	5	7	10	7	5	8	8
Cr(III)		ug/g	8	7	11	9	5	7	10	7	5	8	8
Cr(VI)		ug/g	**0.61**	0.22	<0.2	<0.2	**1.42**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt (Co)		ug/g	2	2	2	2	1	2	2	2	1	2	3
Copper (Cu)		ug/g	3	10	5	5	3	4	5	3	2	4	5
Iron (Fe)		ug/g	3390	3850	5150	5590	2750	4350	5390	4460	2340	4500	5900
Lead (Pb)		ug/g	14	15	11	10	27	20	6	17	36	17	14
Mercury (Hg)		ug/g	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum (Mo)		ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel (Ni)		ug/g	6	6	9	8	5	6	7	6	4	6	7
Selenium (Se)		ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Silver (Ag)		ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium (Tl)		ug/g	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tin (Sn)		ug/g	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Uranium (U)		ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium (V)		ug/g	7	8	9	11	7	9	11	8	5	7	11
Zinc (Zn)		ug/g	18	22	23	21	15	19	17	19	18	20	21

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

DILLON CONSULTING

outcome CONSULTANTS

Table B-13. AEC3 Excavation Soil Sample Lab Results (Metals and PHCs)

Laboratory ID	Units	AEC-3-6-17	AEC-3-6-18
AEC-#		AEC-3	AEC-3
Station ID		Confirmatory	Confirmatory
Source		OCI	OCI
Sampling Date		28-Aug-19	28-Aug-19
PHCs			
F1 (C6-C10)	ug/g	<10	<10
F1 BTEX (C6-C10)	ug/g	<10	<10
F2 (C-10-C16)	ug/g	<10	<10
F3 (C-16-C34)	ug/g	20	<20
F4 (C34-C50)	ug/g	<20	<20
F4 (C34-C50) gravimetric	ug/g		
General			
Moisture-Humidite	%	7.1	11.5
Alpha-androstrane	%	78	78
Metals			
Aluminum (Al)	ug/g	2660	1700
Antimony (Sb)	ug/g	<1	<1
Arsenic (As)	ug/g	2	<1
Barium (Ba)	ug/g	38	20
Beryllium (Be)	ug/g	<1	<1
Boron (B)	ug/g	7	8
Cadmium (Cd)	ug/g	<0.4	<0.4
Chromium (Cr)	ug/g	7	8
Cr(III)	ug/g	7	8
Cr(VI)	ug/g	<0.2	<0.2
Cobalt (Co)	ug/g	2	1
Copper (Cu)	ug/g	3	2
Iron (Fe)	ug/g	4460	2630
Lead (Pb)	ug/g	18	46
Mercury (Hg)	ug/g	<0.1	<0.1
Molybdenum (Mo)	ug/g	<1	<1
Nickel (Ni)	ug/g	5	5
Selenium (Se)	ug/g	<1	<1
Silver (Ag)	ug/g	<0.2	<0.2
Thallium (Tl)	ug/g	<1	<1
Tin (Sn)	ug/g	<5	<5
Uranium (U)	ug/g	<0.5	<0.5
Vanadium (V)	ug/g	9	6
Zinc (Zn)	ug/g	21	21

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use, coarse-grained soil

2 = CCME (2008) Canadian-Wide Standards for Petroleum Hydrocarbons in Soil - table 1, Tier 1 levels for PHCs, Residential/Parkland Use in coarse-grained surface soils

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

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(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-14. AEC3 Excavation Soil Lab Samples (PAHs)

Laboratory ID			AEC-3-4-1	AEC-3-5-1	AEC-3-5-2	AEC-3-5-3	AEC-3-6-1	AEC-3-6-2	AEC-3-6-3	AEC-3-6-4	AEC-3-6-5	AEC-3-6-6	AEC-3-6-7	AEC-3-6-8	AEC-3-6-9
AEC-#			AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3
Purpose			Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory
Source			OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date	Units	CCME PL[1]	25-Jul-19	2-Aug-19	2-Aug-19	2-Aug-19	26-Jul-19	26-Jul-19	2-Aug-19	2-Aug-19	2-Aug-19	2-Aug-19	2-Aug-19	28-Aug-19	28-Aug-19
PAHs															
Benzene	ug/g	0.0068	<0.0068	<0.0068	<0.068	<0.068	**0.033**	**0.0171**	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068
Ethylbenzene	ug/g	0.018	<0.018	<0.018	<0.018	<0.018	**1.47**	**0.115**	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
m/p-xylene	ug/g		<0.030	<0.030	<0.030	<0.030	6.82	0.686	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.050
o-xylene	ug/g		<0.020	<0.020	<0.020	<0.020	4.54	0.450	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050
Toluene	ug/g	0.08	<0.080	<0.080	<0.080	<0.080	**0.54**	**0.111**	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Xylene total	ug/g	2.4	<0.050	<0.050	<0.050	<0.050	**11.4**	1.14	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene-d8	%		92				115	106						96	92
Decachlorobiphenyl	%						82	67	85	94	78	80	64		
1+2-methylnaphthalene	ug/g	-												<0.05	<0.05
1-methylnaphthalene	ug/g	-												<0.05	<0.05
2-methylnaphthalene	ug/g	-												<0.05	<0.05
Acenaphthene	ug/g	0.28												<0.05	<0.05
Acenaphthylene	ug/g	320												<0.05	<0.05
Anthracene	ug/g	2.5												<0.05	<0.05
Benz(a)anthracene	ug/g	1												<0.05	<0.05
Benzo(a)pyrene	ug/g	20												<0.05	<0.05
Benzo(b)fluoranthene	ug/g	1												<0.05	<0.05
Benzo(ghi)perylene	ug/g	1												<0.05	<0.05
Benzo(k)fluoranthene	ug/g	1												<0.05	<0.05
Chrysene	ug/g	6.2												<0.05	<0.05
Dibenz(ah)anthracene	ug/g	1												<0.05	<0.05
Fluoranthene	ug/g	50												<0.05	<0.05
Fluorene	ug/g	0.25												<0.05	<0.05
Indeno(123-cd)pyrene	ug/g	1												<0.05	<0.05
Naphthalene	ug/g	0.013												<0.05	<0.05
Phenanthrene	ug/g	0.046												<0.05	<0.05
Pyrene	ug/g	10												<0.05	<0.05
PCBs															
Aroclor 1242	ug/g	-					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Aroclor 1248	ug/g	-					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Aroclor 1254	ug/g	-					0.25	1.13	<0.02	<0.02	<0.02	<0.02	<0.02		
Aroclor 1260	ug/g	-					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Polychlorinated biphenyls (PCBs)	ug/g	1.3					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use

20 = Denotes exceedance of CCME for the respective EQG for an OCI sample

nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Table B-14. AEC3 Excavation Soil Lab Samples (PAHs)

Laboratory ID	AEC-3-6-10	AEC-3-6-11	AEC-3-6-12	AEC-3-6-13	AEC-3-6-14	AEC-3-6-15	AEC-3-6-16	AEC-3-6-17	AEC-3-6-18
AEC-#	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3	AEC-3
Purpose	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory	Confirmatory
Source	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI	OCI
Sampling Date	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19	29-Aug-19
PAHs									
Benzene	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068
Ethylbenzene	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
m/p-xylene	<0.050	<0.050	0.09	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
o-xylene	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
Xylene total	<0.050	<0.050	0.09	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene-d8	92	94	100	94	94	94	96	94	100
Decachlorobiphenyl									
1+2-methylnaphthalene	<0.05	<0.05	0.26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1-methylnaphthalene	<0.05	<0.05	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	<0.05	<0.05	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benz(a)anthracene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(ghi)perylene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(ah)anthracene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(123-cd)pyrene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	<0.05	<0.05	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	<0.05	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCBs									
Aroclor 1242									
Aroclor 1248									
Aroclor 1254									
Aroclor 1260									
Polychlorinated biphenyls (PCBs)									

Notes:

1 = CCME, Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. Updated 2019. Residential/Parkland Land-use

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nc = not calculable

(1) = Detection limits raised due to matrix interference

Acronyms = PAH: Polycyclic Aromatic Hydrocarbon; PHC: Petroleum Hydrocarbon; PCB: Polychlorinated biphenyl; BTEX: Benzene, Toluene, Ethylbenzene, Xylenes

Appendix C

Qikiqtaaluk Environmental Disposal Certificates

Appendix C-1: Disposal Certificates 2018

Appendix C-2: Disposal Certificates 2019

Qikiqtaaluk environmental
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Date
2018-10-15
Certificate number
18-012

Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Client Information

Company name:	Kudlik Construction Ltd.
Generator no.:	
Mailing address:	1519 Federal Road
	Iqaluit, Nunavut X0A 0H0
Contact name:	François Bourassa
Telephone no.:	867-979-1166
Project no.:	QE18-105

Shipping Site Information

Site address:	Resolute Bay Landfill Remediation
	Resolute, Nunavut X0A 0V0
Contact name:	F. Bourassa
Telephone no.:	418-871-3455

Description of wastes	Quantity	Type of package	Weight (Kg)	Final Disposal Facility	Disposal Facility bill #	Notes
Lead-acid batteries	1	Quatrex bag	651.5	Covanta Environmental Solutions, Chambly, QC	48 151	
Dry batteries	1	Quatrex bag	535	Covanta Environmental Solutions, Chambly, QC	48 114	
Oily solid waste	2	Drum	154	Covanta Environmental Solutions, Chambly, QC	48 151	
Oily Water (mixed waste)	4	Drum	750	Covanta Environmental Solutions, Chambly, QC	48 151	
Oily Water (mixed waste)	3	Drum	426	Covanta Environmental Solutions, Chambly, QC	48 114	

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

Qikiqtaaluk environmental
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Date
2018-10-15
Certificate number
18-012

Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Description of wastes	Quantity	Type of package	Weight (Kg)	Final Disposal Facility	Disposal Facility bill #	Notes
Waste oil	5	Drum	1,003.5	Covanta Environmental Solutions, Chambly, QC	48 114	
Paint	1	Crate	192	Covanta Environmental Solutions, Chambly, QC	48 151	5 fire extinguishers included in crate
Polymerized sludge	1	Drum	230	Covanta Environmental Solutions, Chambly, QC	48 114	
Transformers, empty, no PCB	1	Box	712	Covanta Environmental Solutions, Chambly, QC	48 114	1 box containing 30 units
Transformers, empty cylinders	3	Units	35	Covanta Environmental Solutions, Chambly, QC	48 114	
Metal containing lead-based paint	1	20' marine container	6,800	AIM Recycling, Laval, QC	7169958(P)	Container TCQU0000223
Metal containing lead-based paint	1	20' marine container	25,960	AIM Recycling, Laval, QC	7169976(P)	Container TCQU0000033
Metal containing lead-based paint	1	20' marine container	7,220	AIM Recycling, Laval, QC	7170402(P)	Container TCQU0000100
Metal containing lead-based paint	1	20' marine container	13,920	AIM Recycling, Laval, QC	7170431(P)	Container TCQU0000012
Metal containing lead-based paint	1	20' marine container	21,440	AIM Recycling, Laval, QC	7170783(P)	Container TCQU0000011

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

Qikiqtaaluk environmental
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Date
2018-10-15
Certificate number
18-012

Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Description of wastes	Quantity	Type of package	Weight (Kg)	Final Disposal Facility	Disposal Facility bill #	Notes
Refrigerator (domestic)	2	Units	223	Covanta Environmental Solutions, Chambly, QC	48 114	
Fire Extinguishers	5	Units	56.5	Covanta Environmental Solutions, Chambly, QC	48 151	5 units included in crate with paint
Fire Extinguishers	3	Units	32	Covanta Environmental Solutions, Chambly, QC	48 114	
Asbestos-containing materials	5	Pallets/Quatrex	1 959.5	Covanta Environmental Solutions, Chambly, QC	48 114	

This document certifies that the products listed above were received and disposed of by Qikiqtaaluk Environmental in accordance with laws in effect for the disposal and recycling of dangerous goods.

Jennifer Godin, Director

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

BON DE RÉCEPTION / RECEPTION BILL

No du bon de réception
Reception bill No **48 114**

CLIENT : 1 496 QIKIQTAALUK ENVIRONNEMENTAL INC.

Date de livraison :
Delivery date : 2018/10/24

No du connaissement :
Bill of lading : 33528

No Pesée / Weighing #	KG	Qté / Qty	Format	Type de produits / Type of product		MDDELCC	MOE	# fournisseur / Vendor #	Réf. client / Client ref.
764 149	519,50	1	quadrex	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l				
764 150	712,00	1	unité	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l	boite à transfo contena			
764 153	230,00	1	baril	SPE2	Spécial RTMD et/ou SIMDUT	polymerized sludge	B11-0.0-P		
764 155	249,00	1	palette	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l				
764 157	265,50	1	palette	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l				
764 158	223,00	2	unité	SPE2	NUNAVUT QE18-105 / Frigo		L01-0.0-S		
764 161	305,50	1	palette	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l				
764 163	819,50	4	baril	HUG1	NUNAVUT-QE18-105 / Huile usée		A01-0.0-L		
764 166	535,00	1	quadrex	BAT1	Batterie avec plomb RTMD		E15-8.0-S		
764 168	620,00	1	quadrex	SPE2	NUNAVUT QE18-105 / Débris de démolition contenant de l				
764 188	184,00	1	baril	HUG1	NUNAVUT-QE18-105 / Huile usée		A01-0.0-L		
764 189	426,00	3	baril	EAU1	NUNAVUT QE18-105 / Eau huileuse (mix waste)		A03-0.0-L		
765 495	35,00	3	Bonbonne	MET1	NUNAVUT QE18-105 / Métal à recycler (transfo vide sans				
765 497	32,00	3	Bonbonne	SPE2	NUNAVUT QE18-105 / Extincteur		M07-2.2-G		

Total :	5 156,00	24,00

Nombre de pesée :
Number of weighing : 14

BON DE RÉCEPTION / RECEPTION BILL

No du bon de réception
Reception bill No **48 151**

CLIENT : 1 496 QIKIQTAALUK ENVIRONNEMENTAL INC.

Date de livraison :
Delivery date : 2018/10/26

No du connaissement :
Bill of lading : 33567

No Pesée Weighing #	KG	Qté Qty	Format	Type de produits Type of product		MDDELCC	MOE	# fournisseur Vendor #	Réf. client Client ref.
764 817	651,50	1	quadrex	**BAT1**	Batterie avec plomb RTMD	E15-8.0-S			
764 818	597,50	3	baril	**EAU1**	NUNAVUT QE18-105 / Eau huileuse (mix waste)	A03-0.0-L			
764 844	248,50	1	quadrex	**PEI2**	NUNAVUT QE18-105 / Labpack peinture inflammable	B11-3.0-P			
764 845	152,50	1	baril	**EAU1**	NUNAVUT QE18-105 / Eau huileuse (mix waste)	A03-0.0-L			
764 847	154,00	2	baril	**EQU2**	NUNAVUT QE18-105 / Solide et guenille contaminés à l'hu	L03-0.0-S			

Total :	1 804,00	8,00

Nombre de pesée :
Number of weighing : 5

AIM Recyclage Laval
Division de la Compagnie Américaine de Fer & Métaux inc.
2185 Montee Masson
Laval H7E 4P2
Tel: 450-661-8017
Fax: 450-661-2494

+7169958

BILLET DE PESÉE / SCALE TICKET

Réception / Receiving

No de Billet / Ticket No.	**7169958(P)**
#Camion, Chauffeur / Truck#, Driver	CAMION STEPAHNE
#Conteneur / Container#	
#Réf.	TCQU 0000223
#Sceau / Seal#	
Route / Run	
Net	644

Fournisseur / Supplier: 66704

SANEXEN SERVICES
ENVIRONNEMENTAUX INC.
9935 AVENUE DE CATANIA
BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4
TPS / GST: 134976687 TVQ / PST: 1015427058
Nom de l'acheteur / Trader name: Pascal Boilard

Date	Poids / Weights (lb)	
10/23/2018 10:11:33	Brut / Gross	50,300
10/23/2018 10:26:31	Tare	40,900
	Net	**9,400**

Produits et ajustements / Accepted Commodities and Adjustments

Produits / Commodities	Brut / Gross	Tare	Net avant / before	Ajustements / Adjustments	Déduction / Deduct.	Net	Contrat / Contract
NO. 1 H.M.S. O/S - (SURDIMENSIONNÉ)	7,050	0	7,050	Pneus / Tires	1,600	5,450	
TOLE	2,350	0	2,350	Terre, saleté / Dirt	1,000	1,350	
Grand total	9,400	0	9,400		2,600	**6,800**	

Billet complété à: 11/06/2018 11:22:31

AIM Recyclage Laval
Division de la Compagnie Américaine de Fer & Métaux inc.
2185 Montee Masson
Laval H7E 4P2
Tel: 450-661-8017
Fax: 450-661-2494

+7169976

BILLET DE PESÉE / SCALE TICKET

Réception / Receiving

No de Billet / Ticket No.	**7169976(P)**
#Camion, Chauffeur / Truck#, Driver	CAMION STEPHANE
#Conteneur / Container#	
#Réf.	tcqu 0000033
#Sceau / Seal#	
Route / Run	
Net	644

Fournisseur / Supplier: 66704

SANEXEN SERVICES
ENVIRONNEMENTAUX INC.
9935 AVENUE DE CATANIA
BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4
TPS / GST: 134976687 TVQ / PST: 1015427058
Nom de l'acheteur / Trader name: Pascal Boilard

Date	Poids / Weights (lb)	
10/23/2018 10:32:34	Brut / Gross	67,420
10/23/2018 10:56:30	Tare	40,460
	Net	**26,960**

Produits et ajustements / Accepted Commodities and Adjustments

Produits / Commodities	Brut / Gross	Tare	Net avant / before	Ajustements / Adjustments	Déduction / Deduct.	Net	Contrat / Contract
NO. 1 H.M.S. O/S - (SURDIMENSIONNÉ)	67,420	40,460	26,960	Terre, saleté / Dirt	1,000	25,960	
Grand total	67,420	40,460	26,960		1,000	**25,960**	

Billet complété à: 11/06/2018 11:22:45

AIM Recyclage Laval
Division de la Compagnie Américaine de Fer & Métaux inc.
2185 Montee Masson
Laval H7E 4P2
Tel: 450-661-8017
Fax: 450-661-2494

+7170402

BILLET DE PESÉE / SCALE TICKET

Réception / Receiving

No de Billet / Ticket No.	**7170402(P)**
#Camion, Chauffeur / Truck#, Driver	TCQU 00000100
#Conteneur / Container#	
#Réf.	
#Sceau / Seal#	
Route / Run	
Net	644

Fournisseur / Supplier: 66704

SANEXEN SERVICES
ENVIRONNEMENTAUX INC.
9935 AVENUE DE CATANIA
BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4
TPS / GST: 134976687 TVQ / PST: 1015427058
Nom de l'acheteur / Trader name: Pascal Boilard

Date		Poids / Weights (lb)	
10/24/2018	10:36:45	Brut / Gross	48,640
10/24/2018	11:05:40	Tare	40,420
		Net	**8,220**

Produits et ajustements / Accepted Commodities and Adjustments

Produits / Commodities	Brut / Gross	Tare	Net avant / before	Ajustements / Adjustments	Déduction / Deduct.	Net	Contrat / Contract
TOLE	48,640	40,420	8,220	Terre, saleté / Dirt	1,000	7,220	
Grand total	48,640	40,420	8,220		1,000	**7,220**	

Billet complété à: 11/06/2018 11:23:02

AIM Recyclage Laval
Division de la Compagnie Américaine de Fer & Métaux inc.
2185 Montee Masson
Laval H7E 4P2
Tel: 450-661-8017
Fax: 450-661-2494

+7170431

BILLET DE PESÉE / SCALE TICKET

Réception / Receiving

No de Billet / Ticket No.	**7170431(P)**
#Camion, Chauffeur / Truck#, Driver	TCQU0000012
#Conteneur / Container#	
#Réf.	
#Sceau / Seal#	
Route / Run	
Net	644

Fournisseur / Supplier: 66704

SANEXEN SERVICES
ENVIRONNEMENTAUX INC.
9935 AVENUE DE CATANIA
BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4
TPS / GST: 134976687 TVQ / PST: 1015427058
Nom de l'acheteur / Trader name: Pascal Boilard

Date	Poids / Weights (lb)	
10/24/2018 11:10:43	Brut / Gross	54,740
10/24/2018 11:45:00	Tare	40,820
	Net	**13,920**

Produits et ajustements / Accepted Commodities and Adjustments

Produits / Commodities	Brut / Gross	Tare	Net avant / before	Ajustements / Adjustments	Déduction / Deduct.	Net	Contrat / Contract
TOLE	54,740	40,820	13,920			13,920	
Grand total	54,740	40,820	13,920			**13,920**	

Billet complété à: 11/06/2018 11:23:16

AIM Recyclage Laval
Division de la Compagnie Américaine de Fer & Métaux inc.
2185 Montee Masson
Laval H7E 4P2
Tel: 450-661-8017
Fax: 450-661-2494

+7170783

BILLET DE PESÉE / SCALE TICKET

Réception / Receiving

No de Billet / Ticket No.	**7170783(P)**
#Camion, Chauffeur / Truck#, Driver	TCQU 000011
#Conteneur / Container#	
#Réf.	
#Sceau / Seal#	
Route / Run	
Net	644

Fournisseur / Supplier: 66704

SANEXEN SERVICES
ENVIRONNEMENTAUX INC.
9935 AVENUE DE CATANIA
BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4
TPS / GST: 134976687 TVQ / PST: 1015427058
Nom de l'acheteur / Trader name: Pascal Boilard

Date	Poids / Weights (lb)	
10/25/2018 10:07:58	Brut / Gross	62,780
10/25/2018 10:36:49	Tare	41,340
	Net	**21,440**

Produits et ajustements / Accepted Commodities and Adjustments

Produits / Commodities	Brut / Gross	Tare	Net avant / before	Ajustements / Adjustments	Déduction / Deduct.	Net	Contrat / Contract
NO. 1 H.M.S. O/S - (SURDIMENSIONNÉ)	62,780	41,340	21,440			21,440	
Grand total	62,780	41,340	21,440			**21,440**	

Billet complété à: 11/06/2018 11:23:29

Qikiqtaaluk environmental
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Date
2020-01-16
Certificate number
19-047

Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Client Information

Company name:	Kudlik Construction Ltd.
Generator no.:	
Mailing address:	1519 Federal Road
	Iqaluit, Nunavut X0A 0H0
Contact name:	François Bourassa
Telephone no.:	867-979-1166
Project no.:	QE18-105

Shipping Site Information

Site address:	Resolute Bay Landfill Remediation
	Resolute, Nunavut X0A 0V0
Contact name:	F. Bourassa
Telephone no.:	418-930-0850

Description of wastes	Quantity	Type of package	Weight (Kg)	Final Disposal Facility	Notes
Contaminated Soil	183	Quatrex	261,710	Horizon Environnement, Grandes-Piles, QC	
Contaminated Soil	24	Quatrex	38,280	Horizon Environnement, Grandes-Piles, QC	
Contaminated Soil	25	Quatrex	39,190	Horizon Environnement, Grandes-Piles, QC	
Transformers, empty, not containing PCBs	4	Units		Arcelor Mittal, Contrecoeur, QC	

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

Qikiqtaaluk environmental
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Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Date
2020-01-16
Certificate number
19-047

Description of wastes	Quantity	Type of package	Volume / Weight	Final Disposal Facility	Notes
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000007-5
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000009-6
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000005-4
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000012-0
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000025-0
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000020-2
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000021-8
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000025-0
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000016-2

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

Qikiqtaaluk environmental
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Date
2020-01-16
Certificate number
19-047

Certificate of Transfer & Disposal

HAZARDOUS WASTE RECEIVER (NUR# 300001)

Description of wastes	Quantity	Type of package	Volume (L)	Final Disposal Facility	Notes
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000008-0
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000004-9
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000006-0
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000014-1
Metal containing lead-based paint	1	20' marine container		Arcelor Mittal, Contrecoeur, QC	Container TCQU000015-7
Oily Water	1	Tote Tank	900	Covanta Solutions	
Mixed liquid waste	1	Tote Tank	400	Covanta Solutions	
Oil / fuel mix	1	Tote Tank	1,000	Covanta Solutions	

This document certifies that the products listed above were received and disposed of by Qikiqtaaluk Environmental in accordance with laws in effect for the disposal and recycling of dangerous goods.

Jennifer Godin, Director

Iqaluit Head Office: 2027 Iqaluit Lane, Iqaluit, Nunavut X0A 0H0
Montreal Office: 9935 de Châteauneuf, Entrance 1, Suite 200 Brossard, Québec J4Z 3V4
1-866-634-6367 www.qenv.ca

HORIZON ENVIRONNEMENT INC.
120, Route 155
Grandes-Piles (Québec) G0X 1H0
Tél. : 1-800-545-7657 • (819) 538-3921
Fax : (819) 538-0889

BILLET

Nº T.P.S. : 140578741 RT

Nº T.V.Q. : 1017578304

Nº DU BILLET :	114143
Nº DU CONTRAT :	CHE-3351
BON DE COMMANDE :	402063229
DATE :	2019-11-27
HEURE ENTRÉE :	16:39
HEURE SORTIE :	16:39

CLIENT
SANEXEN SERVICES ENVIRONNEMENTAUX INC.
9935, RUE CHÂTEAUNEUF, ENTRÉE 1, BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4

TÉL.

GÉNÉRATEUR
KUDLIR CONSTRUCTION LTD
RESOLUTE BAY LANDFILL,
RESOLUTE BAY, NUNAVUT
X0A 0V0

TÉL.

Produit (001-C) SOLS CONTAMINES CELLULE

No Client SANEXEN-01

(C-3C) CELLULE 3C

ZONE DE DÉCHARGEMENT :

TRANSPORTEUR
TRANSPORTEUR INDÉPENDANT
,
,

TÉL.

DÉTAIL DES PRIX

POIDS BRUT :	262710 Kg
TARE :	1000 Kg
POIDS NET :	261710 Kg

NO PRÉAVIS
BON DE TRAVAIL
COURTIER
Nº D'IMMATRICULATION : (L733562) TRANSPORT NALACO 1980
MANIFEST (Can) CORR CHE-3350
MANIFEST (US)
Nº DE CONNAISSEMENT :

AUTRES SERVICES

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom _____
(CARACTÈRE D'IMPRIMERIE)

Signature _____

119000

COPIE DU BUREAU

HORIZON ENVIRONNEMENT INC.
120, Route 155
Grandes-Piles (Québec) G0X 1H0
Tél. : 1-800-545-7657 • (819) 538-3921
Fax : (819) 538-0889 ( ) -

BILLET

N° T.P.S. : 140578741 RT

N° T.V.Q. : 1017578304

N° DU BILLET : 114514

N° DU CONTRAT : CHE-3351

BON DE COMMANDE : 402063229

DATE : 2019-12-12

HEURE ENTRÉE : 08:13

HEURE SORTIE : 08:52

CLIENT

SANEXEN SERVICES ENVIRONNEMENTAUX INC.
9935, RUE CHÂTEAUNEUF, ENTRÉE 1, BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4

TÉL.

GÉNÉRATEUR

KUDLIR CONSTRUCTION LTD
RESOLUTE BAY LANDFILL,
RESOLUTE BAY, NUNAVUT
X0A 0V0

TÉL.

Produit (001-C) SOLS CONTAMINES CELLULE

No Client SANEXEN-01

ZONE DE DÉCHARGEMENT : (C-3C) CELLULE 3C

TRANSPORTEUR

TRANSPORTEUR INDÉPENDANT
,
,

TÉL.

DÉTAIL DES PRIX

POIDS BRUT : 57510 Kg

TARE : 19230 Kg

POIDS NET : 38280 Kg

NO PRÉAVIS

BON DE TRAVAIL

COURTIER

N° D'IMMATRICULATION : (PR41926) CONTRANS

MANIFEST (Can)

MANIFEST (US)

N° DE CONNAISSEMENT

AUTRES SERVICES

119371

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom ED DIOTTE
(CARACTÈRE D'IMPRIMERIE)

Signature

COPIE DU BUREAU

HORIZON ENVIRONNEMENT INC
120, Route 155
Grandes-Piles (Québec) G0X 1H0
Tél. : 1-800-545-7657 • (819) 538-3921
Fax : (819) 538-0889 ( ) -

BILLET

N° T.P.S. : 140578741 RT

N° T.V.Q. : 1017578304

N° DU BILLET : 114519

N° DU CONTRAT : CHE-3351

BON DE COMMANDE : 402063229

DATE : 2019-12-12

HEURE ENTRÉE : 08:15

HEURE SORTIE : 09:12

CLIENT
SANEXEN SERVICES ENVIRONNEMENTAUX INC.
9935, RUE CHÂTEAUNEUF, ENTRÉE 1, BUREAU 200
BROSSARD, QUEBEC
J4Z 3V4

TÉL.

GÉNÉRATEUR
KUDLIR CONSTRUCTION LTD
RESOLUTE BAY LANDFILL,
RESOLUTE BAY, NUNAVUT
X0A 0V0

TÉL.

TRANSPORTEUR
TRANSPORTEUR INDÉPENDANT
,
,

TEL

Produit (001-C) SOLS CONTAMINES CELLULE

No Client SANEXEN-01

ZONE DE DÉCHARGEMENT : (C-3C) CELLULE 3C

DÉTAIL DES PRIX

POIDS BRUT : 58070 Kg

TARE : 18880 Kg

POIDS NET : 39190 Kg

NO PRÉAVIS

BON DE TRAVAIL

$ COURTIER

N° D'IMMATRICULATION : (L802697) CONTRANS

MANIFEST (Can)

MANIFEST (US)

N° DE CONNAISSEMENT :

AUTRES SERVICES

DÉCLARATION DU TRANSPORTEUR :

Je déclare que tous les renseignements ci-dessus sont véridiques et que le contenu de ma cargaison ne contient aucune matière dangereuse tel que défini par le Règlement sur les matières dangereuses du Québec.

Nom Phil Menard
(CARACTÈRE D'IMPRIMERIE)

Signature

119376

COPIE DU BUREAU

Appendix D

Laboratory Certificates of Analysis and Chain of Custody Forms

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Sarah Horner, Inorganics Technician

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

				Lab I.D.	1384717	1384718	1384719	1384720
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Type				
				Sampling Date	2018-08-17	2018-08-17	2018-08-23	2018-08-23
				Sample I.D.	THMPA-1A	THMPA-1B	AEC1-Sed 1	AEC1-Sed 2
Group	**Analyte**	**MRL**	**Units**	**Guideline**				
Hydrocarbons	F1 (C6-C10)	10	ug/g		<10	<10	<10	<10
	F1-BTEX (C6-C10)	10	ug/g		<10	<10	<10	<10
	F2 (C10-C16)	10	ug/g		<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g		<20	<20	<20	<20
	F4 (C34-C50)	20	ug/g		<20	<20	<20	<20
Mercury	Hg	0.1	ug/g				<0.1	<0.1
Metals	Ag	0.2	ug/g				<0.2	<0.2
	Al	5	ug/g				824	3100
	As	1	ug/g				<1	1
	B	5	ug/g				<5	9
	Ba	1	ug/g				7	53
	Be	1	ug/g				<1	<1
	Cd	0.4	ug/g				<0.4	<0.4
	Co	1	ug/g				<1	2
	Cr	1	ug/g				3	20
	Cr(III)	1	ug/g				3	20
	Cr(VI)	0.20	ug/g				<0.20	<0.20
	Cu	1	ug/g				<1	4
	Fe	5	ug/g				1510	4670
	Mo	1	ug/g				<1	<1
	Ni	1	ug/g				2	10
	Pb	1	ug/g				2	6
	Sb	1	ug/g				<1	<1
	Se	1	ug/g				<1	<1
	Sn	5	ug/g				<5	<5

Guideline = *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

Group	Analyte	MRL	Units	Guideline	1384717 Soil 2018-08-17 THMPA-1A	1384718 Soil 2018-08-17 THMPA-1B	1384719 Soil 2018-08-23 AEC1-Sed 1	1384720 Soil 2018-08-23 AEC1-Sed 2
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.							
Metals	Tl	1	ug/g				<1	<1
	U	0.5	ug/g				<0.5	<0.5
	V	2	ug/g				3	10
	Zn	2	ug/g				11	18
Moisture	Moisture-Humidite	0.1	%		7.2	7.5	18.8	13.3
PAH	1+2-methylnaphthalene	0.05	ug/g				<0.05	<0.05
	1-methylnaphthalene	0.05	ug/g				0.05	<0.05
	2-methylnaphthalene	0.05	ug/g				<0.05	<0.05
	Acenaphthene	0.05	ug/g				<0.05	<0.05
	Acenaphthylene	0.05	ug/g				<0.05	<0.05
	Anthracene	0.05	ug/g				<0.05	<0.05
	Benzo(a)anthracene	0.05	ug/g				<0.05	<0.05
	Benzo(a)pyrene	0.05	ug/g				<0.05	<0.05
	Benzo(b)fluoranthene	0.05	ug/g				<0.05	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g				<0.05	<0.05
	Benzo(k)fluoranthene	0.05	ug/g				<0.05	<0.05
	Chrysene	0.05	ug/g				<0.05	<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g				<0.05	<0.05
	Fluoranthene	0.05	ug/g				<0.05	<0.05
	Fluorene	0.05	ug/g				<0.05	<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g				<0.05	<0.05
	Naphthalene	0.05	ug/g				<0.05	<0.05
	Phenanthrene	0.05	ug/g				<0.05	<0.05
	Pyrene	0.05	ug/g				<0.05	<0.05
PHC Surrogate	Alpha-androstrane	0	%		98	93	98	107

Guideline = *** = Guideline Exceedence**

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1384717 Soil 2018-08-17 THMPA-1A	1384718 Soil 2018-08-17 THMPA-1B	1384719 Soil 2018-08-23 AEC1-Sed 1	1384720 Soil 2018-08-23 AEC1-Sed 2
VOCs Surrogates	Toluene-d8	0	%		101	105	103	98
Volatiles	Benzene	0.02	ug/g		<0.02	<0.02	<0.02	<0.02
	Ethylbenzene	0.05	ug/g		<0.05	<0.05	<0.05	<0.05
	m/p-xylene	0.05	ug/g		<0.05	<0.05	<0.05	<0.05
	o-xylene	0.05	ug/g		<0.05	<0.05	<0.05	<0.05
	Toluene	0.20	ug/g		<0.20	<0.20	<0.20	<0.20
	Xylene; total	0.05	ug/g		<0.05	<0.05	<0.05	<0.05

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1384721 Soil 2018-08-23 AEC1-Sed 3	1384722 Soil 2018-08-23 AEC1-Sed 4	1384723 Soil 2018-08-23 DUP-1
Hydrocarbons	F1 (C6-C10)	10	ug/g		<10	<10	<10
	F1-BTEX (C6-C10)	10	ug/g		<10	<10	<10
	F2 (C10-C16)	10	ug/g		<10	<10	<10
	F3 (C16-C34)	20	ug/g		<20	<20	<20
	F4 (C34-C50)	20	ug/g		<20	<20	<20
Mercury	Hg	0.1	ug/g		<0.1	<0.1	<0.1
Metals	Ag	0.2	ug/g		<0.2	<0.2	<0.2
	Al	5	ug/g		579	1950	2730
	As	1	ug/g		<1	1	1
	B	5	ug/g		<5	<5	<5
	Ba	1	ug/g		10	14	36
	Be	1	ug/g		<1	<1	<1

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Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

Group	Analyte	MRL	Units	Guideline	1384721 Soil 2018-08-23 AEC1-Sed 3	1384722 Soil 2018-08-23 AEC1-Sed 4	1384723 Soil 2018-08-23 DUP-1
	Lab I.D.				1384721	1384722	1384723
	Sample Matrix				Soil	Soil	Soil
	Sample Type						
	Sampling Date				2018-08-23	2018-08-23	2018-08-23
	Sample I.D.				AEC1-Sed 3	AEC1-Sed 4	DUP-1
Metals	Cd	0.4	ug/g		<0.4	<0.4	<0.4
	Co	1	ug/g		<1	1	2
	Cr	1	ug/g		11	6	14
	Cr(III)	1	ug/g		11	6	14
	Cr(VI)	0.20	ug/g		<0.20	<0.20	<0.20
	Cu	1	ug/g		1	3	4
	Fe	5	ug/g		1170	2760	4340
	Mo	1	ug/g		<1	<1	<1
	Ni	1	ug/g		4	4	8
	Pb	1	ug/g		5	3	5
	Sb	1	ug/g		<1	<1	<1
	Se	1	ug/g		<1	<1	<1
	Sn	5	ug/g		<5	<5	<5
	Tl	1	ug/g		<1	<1	<1
	U	0.5	ug/g		<0.5	<0.5	<0.5
	V	2	ug/g		3	7	10
	Zn	2	ug/g		15	14	16
Moisture	Moisture-Humidite	0.1	%		23.6	13.0	14.6
PAH	1+2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	1-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthylene	0.05	ug/g		<0.05	<0.05	<0.05
	Anthracene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(a)anthracene	0.05	ug/g		<0.05	<0.05	<0.05

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K1Y 0Y2
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Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

Group	Analyte	MRL	Units	Guideline	1384721 Soil 2018-08-23 AEC1-Sed 3	1384722 Soil 2018-08-23 AEC1-Sed 4	1384723 Soil 2018-08-23 DUP-1
	Lab I.D.				1384721	1384722	1384723
	Sample Matrix				Soil	Soil	Soil
	Sample Type						
	Sampling Date				2018-08-23	2018-08-23	2018-08-23
	Sample I.D.				AEC1-Sed 3	AEC1-Sed 4	DUP-1
PAH	Benzo(a)pyrene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(b)fluoranthene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(k)fluoranthene	0.05	ug/g		<0.05	<0.05	<0.05
	Chrysene	0.05	ug/g		<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g		<0.05	<0.05	<0.05
	Fluoranthene	0.05	ug/g		<0.05	<0.05	<0.05
	Fluorene	0.05	ug/g		<0.05	<0.05	<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g		<0.05	<0.05	<0.05
	Naphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	Phenanthrene	0.05	ug/g		<0.05	<0.05	<0.05
	Pyrene	0.05	ug/g		<0.05	<0.05	<0.05
PHC Surrogate	Alpha-androstrane	0	%		100	115	111
VOCs Surrogates	Toluene-d8	0	%		103	105	103
Volatiles	Benzene	0.02	ug/g		<0.02	<0.02	<0.02
	Ethylbenzene	0.05	ug/g		<0.05	<0.05	<0.05
	m/p-xylene	0.05	ug/g		<0.05	<0.05	<0.05
	o-xylene	0.05	ug/g		<0.05	<0.05	<0.05
	Toluene	0.20	ug/g		<0.20	<0.20	<0.20
	Xylene; total	0.05	ug/g			<0.05	<0.05
		0.5	ug/g		<0.5		

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Client: Outcome Consultants Inc
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K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815794
Date Submitted: 2018-08-31
Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2018-09-10 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 343956 **Analysis/Extraction Date** 2018-09-06 **Analyst** RRK **Method** C SM2540B			
Moisture-Humidite			80-120
Run No 352067 **Analysis/Extraction Date** 2018-09-05 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.2 ug/g	105	70-130
Arsenic	<1 ug/g	101	70-130
Boron (total)	<5 ug/g	101	70-130
Barium	<1 ug/g	103	70-130
Beryllium	<1 ug/g	106	70-130
Cadmium	<0.4 ug/g	103	70-130
Cobalt	<1 ug/g	99	70-130
Chromium Total	<1 ug/g	102	70-130
Copper	<1 ug/g	106	70-130
Iron	<5 ug/g	105	70-130

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Report Number: 1815794
Date Submitted: 2018-08-31
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Molybdenum	<1 ug/g	98	70-130
Nickel	<1 ug/g	103	70-130
Lead	<1 ug/g	103	70-130
Antimony	<1 ug/g	89	70-130
Selenium	<1 ug/g	104	70-130
Sn	<5 ug/g	121	70-130
Thallium	<1 ug/g	103	70-130
Uranium	<0.5 ug/g	101	70-130
Vanadium	<2 ug/g	103	70-130
Zinc	<2 ug/g	109	70-130
Run No 352245 **Analysis/Extraction Date** 2018-09-07 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1-BTEX			
Run No 352246 **Analysis/Extraction Date** 2018-09-06 **Analyst** TJB **Method** V 8260B			
Benzene	<0.02 ug/g	90	60-130
Ethylbenzene	<0.05 ug/g	85	60-130
Petroleum Hydrocarbons F1	<10 ug/g	94	80-120

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
m/p-xylene	<0.05 ug/g	86	60-130
o-xylene	<0.05 ug/g	87	60-130
Toluene	<0.20 ug/g	88	60-130
Run No 352247 **Analysis/Extraction Date** 2018-09-07 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352266 **Analysis/Extraction Date** 2018-09-07 **Analyst** AET **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	100	80-120
Run No 352284 **Analysis/Extraction Date** 2018-09-07 **Analyst** SKH **Method** EPA 200.8			
Aluminum	<5 ug/g	119	70-130
Boron (total)	<5 ug/g	107	70-130
Sn	<5 ug/g	110	70-130
Run No 352287 **Analysis/Extraction Date** 2018-09-07 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	102	80-120
Run No 352317 **Analysis/Extraction Date** 2018-09-06 **Analyst** HK **Method** P 8270			

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Date Submitted: 2018-08-31
Date Reported: 2018-09-10
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COC #: 197839

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Methlynaphthalene, 1-	<0.05 ug/g	66	50-140
Methlynaphthalene, 2-	<0.05 ug/g	54	50-140
Acenaphthene	<0.05 ug/g	61	50-140
Acenaphthylene	<0.05 ug/g	63	50-140
Anthracene	<0.05 ug/g	69	50-140
Benz[a]anthracene	<0.05 ug/g	61	50-140
Benzo[a]pyrene	<0.05 ug/g	64	50-140
Benzo[b]fluoranthene	<0.05 ug/g	258	50-140
Benzo[ghi]perylene	<0.05 ug/g	62	50-140
Benzo[k]fluoranthene	<0.05 ug/g	99	50-140
Chrysene	<0.05 ug/g	71	50-140
Dibenz[a h]anthracene	<0.05 ug/g	64	50-140
Fluoranthene	<0.05 ug/g	64	50-140
Fluorene	<0.05 ug/g	61	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	63	50-140
Naphthalene	<0.05 ug/g	58	50-140
Phenanthrene	<0.05 ug/g	54	50-140
Pyrene	<0.05 ug/g	63	50-140

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Date Reported: 2018-09-10
Project: RBLR
COC #: 197839

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352381 **Analysis/Extraction Date** 2018-09-10 **Analyst** RRK **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	80	80-120
Petroleum Hydrocarbons F3	<20 ug/g	80	80-120
Petroleum Hydrocarbons F4	<20 ug/g	80	80-120
Run No 352389 **Analysis/Extraction Date** 2018-09-10 **Analyst** SKH **Method** M US EPA 3060A			
Cr(III)			
Run No 352393 **Analysis/Extraction Date** 2018-09-10 **Analyst** SKH **Method** EPA 200.8			
Lead	<1 ug/g	104	70-130

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Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH" or Eurofins Mississauga Method 11-09-SP-2322, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene	Yes	
BTEX was subtracted from F1 fraction	Yes	
If YES, was F1-BTEX (C6-C10) reported	Yes	
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		Naphthalene (PAH) not requested/analysed
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		PAH not requested/analysed
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	Yes	

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if NO was F4 (C34-C50) gravimetric reported		

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Attention: Jonathan Markiewicz
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Report Number: 1816144
Date Submitted: 2018-09-05
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816144
Date Submitted: 2018-09-05
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

				Lab I.D.	1385834
				Sample Matrix	Paint
				Sample Type	
				Sampling Date	2018-09-03
				Sample I.D.	AEC-2 Paint
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Metals	Pb	10	ug/g		23100

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Report Number: 1816144
Date Submitted: 2018-09-05
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352467 **Analysis/Extraction Date** 2018-09-11 **Analyst** SKH **Method** EPA 6020			
Lead	<10 ug/g	79	57-143

Guideline = *** = Guideline Exceedence**

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Report Number: 1816144
Date Submitted: 2018-09-05
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

Sample Comment Summary

Sample ID: 1385834 AEC-2 Paint Lead analysed and reported on a dry sample basis. Sample is not homogeneous - results may be difficult to duplicate.

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Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815911
Date Submitted: 2018-09-04
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815911
Date Submitted: 2018-09-04
Date Reported: 2018-09-11
Project: RBLR P2017-06
COC #: 197849

				Lab I.D.	1385180
				Sample Matrix	GW
				Sample Type	
				Sampling Date	2018-09-03
				Sample I.D.	AEC1-GW2
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20

Guideline = *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352404 **Analysis/Extraction Date** 2018-09-11 **Analyst** TJB **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L	98	60-140

Guideline = *** = Guideline Exceedence**

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PO#: P2017-06

Report Number: 1815910
Date Submitted: 2018-09-04
Date Reported: 2018-09-12
Project: RBLR P2017-06
COC #: 197489
Temperature (C):
Custody Seal:

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

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Date Submitted: 2018-09-04
Date Reported: 2018-09-12
Project: RBLR P2017-06
COC #: 197489

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 Soil 2018-09-02 11:20 BAW-SGS 1	1385177 Soil 2018-09-02 11:48 BANE-SG S1	1385178 Soil 2018-09-02 11:58 BANE-SG S2
PHC's F1	352339	10	ug/g		<10	<10	<10
PHC's F1-BTEX	352339	10	ug/g		<10	<10	<10
PHC's F2	352468	10	ug/g		<10	<10	<10
PHC's F3	352468	20	ug/g		<20	<20	<20
PHC's F4	352468	20	ug/g		<20	<20	<20

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 Soil 2018-09-02 12:13 BAE-SGS1
PHC's F1	352339	10	ug/g		<10
PHC's F1-BTEX	352339	10	ug/g		<10
PHC's F2	352468	10	ug/g		<10
PHC's F3	352468	20	ug/g		<20
PHC's F4	352468	20	ug/g		<20

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Report Number: 1815910
Date Submitted: 2018-09-04
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Project: RBLR P2017-06
COC #: 197489

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D. 1385176 Soil 2018-09-02 11:20 BAW-SGS 1	1385177 Soil 2018-09-02 11:48 BANE-SG S1	1385178 Soil 2018-09-02 11:58 BANE-SG S2
Aluminum	352284	5	ug/g		1380	1210	1110
Antimony	352197	1	ug/g		<1	<1	<1
Arsenic	352197	1	ug/g		1	1	1
Barium	352197	1	ug/g		10	7	7
Beryllium	352197	1	ug/g		<1	<1	<1
Boron (total)	352284	5	ug/g		<5	6	5
Cadmium	352197	0.4	ug/g		<0.4	<0.4	<0.4
Chromium III	352476		ug/g		10.0	8.00	6.00
Chromium Total	352197	1	ug/g		10	8	6
Chromium VI	352476	0.20	ug/g		<0.20	<0.20	<0.20
Cobalt	352197	1	ug/g		<1	1	1
Copper	352197	1	ug/g		2	1	1
Iron	352197	5	ug/g		2540	2760	2730
Lead	352197	1	ug/g		4	4	4
Mercury	352287	0.1	ug/g		<0.1	<0.1	<0.1
Molybdenum	352197	1	ug/g		<1	1	1
Nickel	352197	1	ug/g		5	5	4
Selenium	352197	1	ug/g		<1	<1	<1
Silver	352197	0.2	ug/g		0.3	<0.2	<0.2
Thallium	352197	1	ug/g		<1	<1	<1
Tin	352197	5	ug/g			<5	<5
	352284	5	ug/g		<5		
Uranium	352197	0.5	ug/g		<0.5	<0.5	<0.5

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 Soil 2018-09-02 11:20 BAW-SGS 1	1385177 Soil 2018-09-02 11:48 BANE-SG S1	1385178 Soil 2018-09-02 11:58 BANE-SG S2
Vanadium	352197	2	ug/g		5	4	4
Zinc	352197	2	ug/g		12	23	23

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 Soil 2018-09-02 12:13 BAE-SGS1
Aluminum	352284	5	ug/g		3280
Antimony	352197	1	ug/g		<1
Arsenic	352197	1	ug/g		2
Barium	352197	1	ug/g		26
Beryllium	352197	1	ug/g		<1
Boron (total)	352284	5	ug/g		8
Cadmium	352197	0.4	ug/g		<0.4
Chromium III	352476		ug/g		12.0
Chromium Total	352197	1	ug/g		12
Chromium VI	352476	0.20	ug/g		<0.20
Cobalt	352197	1	ug/g		2
Copper	352197	1	ug/g		4
Iron	352197	5	ug/g		5900
Lead	352197	1	ug/g		6
Mercury	352287	0.1	ug/g		<0.1
Molybdenum	352197	1	ug/g		<1
Nickel	352197	1	ug/g		8

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 / Soil / / 2018-09-02 12:13 / BAE-SGS1
Selenium	352197	1	ug/g		<1
Silver	352197	0.2	ug/g		<0.2
Thallium	352197	1	ug/g		<1
Tin	352197	5	ug/g		<5
Uranium	352197	0.5	ug/g		<0.5
Vanadium	352197	2	ug/g		10
Zinc	352197	2	ug/g		19

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 / Soil / / 2018-09-02 11:20 / BAW-SGS1	1385177 / Soil / / 2018-09-02 11:48 / BANE-SGS1	1385178 / Soil / / 2018-09-02 11:58 / BANE-SGS2
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05
Acenaphthene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Acenaphthylene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Anthracene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Benz[a]anthracene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Benzo[a]pyrene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Benzo[b]fluoranthene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Benzo[ghi]perylene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Benzo[k]fluoranthene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Chrysene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Dibenz[a h]anthracene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Fluoranthene	352317	0.05	ug/g		<0.05	<0.05	<0.05

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PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 Soil 2018-09-02 11:20 BAW-SGS 1	1385177 Soil 2018-09-02 11:48 BANE-SG S1	1385178 Soil 2018-09-02 11:58 BANE-SG S2
Fluorene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Methlynaphthalene, 1-	352317	0.05	ug/g		<0.05	<0.05	<0.05
Methlynaphthalene, 2-	352317	0.05	ug/g		<0.05	<0.05	<0.05
Naphthalene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Phenanthrene	352317	0.05	ug/g		<0.05	<0.05	<0.05
Pyrene	352317	0.05	ug/g		<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 Soil 2018-09-02 12:13 BAE-SGS1
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05
Acenaphthene	352317	0.05	ug/g		<0.05
Acenaphthylene	352317	0.05	ug/g		<0.05
Anthracene	352317	0.05	ug/g		<0.05
Benz[a]anthracene	352317	0.05	ug/g		<0.05
Benzo[a]pyrene	352317	0.05	ug/g		<0.05
Benzo[b]fluoranthene	352317	0.05	ug/g		<0.05
Benzo[ghi]perylene	352317	0.05	ug/g		<0.05
Benzo[k]fluoranthene	352317	0.05	ug/g		<0.05
Chrysene	352317	0.05	ug/g		<0.05
Dibenz[a h]anthracene	352317	0.05	ug/g		<0.05
Fluoranthene	352317	0.05	ug/g		<0.05

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COC #: 197489

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1385179 Sample Matrix Soil Sample Type Sample Date 2018-09-02 12:13 Sampling Time Sample I.D. BAE-SGS1
Fluorene	352317	0.05	ug/g		<0.05
Indeno[1 2 3-cd]pyrene	352317	0.05	ug/g		<0.05
Methlynaphthalene, 1-	352317	0.05	ug/g		<0.05
Methlynaphthalene, 2-	352317	0.05	ug/g		<0.05
Naphthalene	352317	0.05	ug/g		<0.05
Phenanthrene	352317	0.05	ug/g		<0.05
Pyrene	352317	0.05	ug/g		<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1385176 Sample Matrix Soil Sample Type Sample Date 2018-09-02 11:20 Sampling Time Sample I.D. BAW-SGS1	1385177 Soil 2018-09-02 11:48 BANE-SGS1	1385178 Soil 2018-09-02 11:58 BANE-SGS2
Benzene	352339	0.02	ug/g		<0.02	<0.02	<0.02
Ethylbenzene	352339	0.05	ug/g		<0.05	<0.05	<0.05
Toluene	352339	0.20	ug/g		<0.20	<0.20	<0.20
Xylene Mixture	352340	0.05	ug/g		<0.05	<0.05	<0.05
Xylene, m/p-	352339	0.05	ug/g		<0.05	<0.05	<0.05
Xylene, o-	352339	0.05	ug/g		<0.05	<0.05	<0.05

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 / Soil / / 2018-09-02 / 12:13 / BAE-SGS1
Benzene	352339	0.02	ug/g		<0.02
Ethylbenzene	352339	0.05	ug/g		<0.05
Toluene	352339	0.20	ug/g		<0.20
Xylene Mixture	352340	0.05	ug/g		<0.05
Xylene, m/p-	352339	0.05	ug/g		<0.05
Xylene, o-	352339	0.05	ug/g		<0.05

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 / Soil / / 2018-09-02 / 11:20 / BAW-SGS1	1385177 / Soil / / 2018-09-02 / 11:48 / BANE-SGS1	1385178 / Soil / / 2018-09-02 / 11:58 / BANE-SGS2
Moisture-Humidite	343956	0.1	%		5.7	7.4	12.0

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.
					1385179 Soil 2018-09-02 12:13 BAE-SGS1
Moisture-Humidite	343956	0.1	%		15.1

PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	
					1385174 Soil 2018-09-02 11:00 THMPA-1C	1385175 Soil 2018-09-02 11:10 AEC1-SW1
Aroclor 1242	352372	0.02	ug/g		<0.02	<0.02
Aroclor 1248	352372	0.02	ug/g		<0.02	<0.02
Aroclor 1254	352372	0.02	ug/g		<0.02	<0.02
Aroclor 1260	352372	0.02	ug/g		<0.02	<0.02
Polychlorinated Biphenyls	352372	0.02	ug/g		<0.02	<0.02

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PCB Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385174 Soil 2018-09-02 11:00 THMPA-1C	1385175 Soil 2018-09-02 11:10 AEC1-SW1	
Decachlorobiphenol	352373		%		74.0	118	

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 Soil 2018-09-02 11:20 BAW-SGS1	1385177 Soil 2018-09-02 11:48 BANE-SGS1	1385178 Soil 2018-09-02 11:58 BANE-SGS2
Alpha-androstrane	352468	0	%		105	103	98

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 / Soil / / 2018-09-02 / 12:13 / BAE-SGS1
Alpha-androstrane	352468	0	%		93

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1385176 / Soil / / 2018-09-02 / 11:20 / BAW-SGS1	1385177 / Soil / / 2018-09-02 / 11:48 / BANE-SGS1	1385178 / Soil / / 2018-09-02 / 11:58 / BANE-SGS2
Toluene-d8	352339	0	%		98	105	101

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1815910
Date Submitted: 2018-09-04
Date Reported: 2018-09-12
Project: RBLR P2017-06
COC #: 197489

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1385179 / Soil / / 2018-09-02 / 12:13 / BAE-SGS1
Toluene-d8	352339	0	%		104

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Date Submitted: 2018-09-04
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Project: RBLR P2017-06
COC #: 197489

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
343956	Moisture-Humidite			80-120				
352197	Silver	<0.2 ug/g	108	70-130	62	70-130	0	0-20
352197	Arsenic	<1 ug/g	105	70-130	95	70-130	0	0-20
352197	Barium	<1 ug/g	103	70-130	108	70-130	1	0-20
352197	Beryllium	<1 ug/g	110	70-130	106	70-130	0	0-20
352197	Cadmium	<0.4 ug/g	106	70-130	96	70-130	0	0-20
352197	Cobalt	<1 ug/g	103	70-130	97	70-130	0	0-20
352197	Chromium Total	<1 ug/g	107	70-130	98	70-130	21	0-20
352197	Copper	<1 ug/g	109	70-130	93	70-130	0	0-20
352197	Iron	<5 ug/g	96	70-130	240	70-130	1	0-20
352197	Molybdenum	<1 ug/g	101	70-130	101	70-130	0	0-20
352197	Nickel	<1 ug/g	110	70-130	92	70-130	0	0-20
352197	Lead	<1 ug/g	105	70-130	91	70-130	0	0-20
352197	Antimony	<1 ug/g	89	70-130	98	70-130	0	0-20
352197	Selenium	<1 ug/g	107	70-130	92	70-130	0	0-20
352197	Tin	<5 ug/g	85	70-130		70-130	0	0-20
352197	Thallium	<1 ug/g	106	70-130	93	70-130	0	0-20
352197	Uranium	<0.5 ug/g	98	70-130	97	70-130	0	0-20
352197	Vanadium	<2 ug/g	105	70-130	114	70-130	0	0-20
352197	Zinc	<2 ug/g	113	70-130	93	70-130	1	0-20
352284	Aluminum	<5 ug/g	119	70-130	435	70-130	8	0-20
352284	Boron (total)	<5 ug/g	107	70-130	105	70-130	0	0-20
352284	Tin	<5 ug/g	110	70-130	91	70-130	0	0-20
352287	Mercury	<0.1 ug/g	105	80-120	112	70-130	0	0-30
352317	Methlynaphthalene, 1-	<0.05 ug/g	66	50-140		50-140		0-40
352317	Methlynaphthalene, 2-	<0.05 ug/g	54	50-140		50-140		0-40
352317	Acenaphthene	<0.05 ug/g	61	50-140		50-140		0-40
352317	Acenaphthylene	<0.05 ug/g	63	50-140		50-140		0-40
352317	Anthracene	<0.05 ug/g	69	50-140		50-140		0-40
352317	Benz[a]anthracene	<0.05 ug/g	61	50-140		50-140		0-40
352317	Benzo[a]pyrene	<0.05 ug/g	64	50-140		50-140		0-40
352317	Benzo[b]fluoranthene	<0.05 ug/g	258	50-140		50-140		0-40

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Date Submitted: 2018-09-04
Date Reported: 2018-09-12
Project: RBLR P2017-06
COC #: 197489

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
352317	Benzo[ghi]perylene	<0.05 ug/g	62	50-140		50-140		0-40
352317	Benzo[k]fluoranthene	<0.05 ug/g	99	50-140				0-40
352317	Chrysene	<0.05 ug/g	71	50-140		50-140		0-40
352317	Dibenz[a h]anthracene	<0.05 ug/g	64	50-140		50-140		0-40
352317	Fluoranthene	<0.05 ug/g	64	50-140		50-140		0-40
352317	Fluorene	<0.05 ug/g	61	50-140		50-140		0-40
352317	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	63	50-140		50-140		0-40
352317	Naphthalene	<0.05 ug/g	58	50-140		50-140		0-40
352317	Phenanthrene	<0.05 ug/g	54	50-140		50-140		0-40
352317	Pyrene	<0.05 ug/g	63	50-140		50-140		0-40
352339	Benzene	<0.02 ug/g	90	60-130	90	50-140	0	0-50
352339	Ethylbenzene	<0.05 ug/g	85	60-130	92	50-140	0	0-50
352339	PHC's F1	<10 ug/g	94	80-120	100	60-140	0	0-30
352339	PHC's F1-BTEX							
352339	Xylene, m/p-	<0.05 ug/g	86	60-130	91	50-140	0	0-50
352339	Xylene, o-	<0.05 ug/g	87	60-130	93	50-140	0	0-50
352339	Toluene	<0.20 ug/g	88	60-130	90	50-140	0	0-50
352340	Xylene Mixture							
352372	Aroclor 1242	<0.02 ug/g	82	60-140	88	60-140	0	0-40
352372	Aroclor 1248	<0.02 ug/g	82	60-140	88	60-140	0	0-40
352372	Aroclor 1254	<0.02 ug/g	82	60-140	88	60-140	0	0-40
352372	Aroclor 1260	<0.02 ug/g	82	60-140	88	60-140	0	0-40
352372	Polychlorinated Biphenyls	<0.02 ug/g	82	60-140	88	60-140	0	0-40
352468	PHC's F2	<10 ug/g	98	80-120	107	60-140	0	0-30
352468	PHC's F3	<20 ug/g	98	80-120	107	60-140	0	0-30
352468	PHC's F4	<20 ug/g	98	80-120	107	60-140	0	0-30
352476	Chromium III							
352476	Chromium VI	<0.20 ug/g	101	80-120	76	70-130	0	0-35

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Project: RBLR P2017-06
COC #: 197489

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene		2018-09-10	2018-09-10	C_M	P 8270
343956	Moisture-Humidite	Manual	2018-09-07	2018-09-07	RRK	C SM2540B
352197	Silver		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Arsenic		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Barium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Beryllium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Cadmium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Cobalt		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Chromium Total		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Copper		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Iron		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Molybdenum		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Nickel		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Lead		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Antimony		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Selenium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Tin		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Thallium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Uranium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Vanadium		2018-09-06	2018-09-06	SKH	EPA 200.8
352197	Zinc		2018-09-06	2018-09-06	SKH	EPA 200.8
352284	Aluminum		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Boron (total)		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Tin		2018-09-07	2018-09-07	SKH	EPA 200.8
352287	Mercury	Cetac Hg Analyzer	2018-09-07	2018-09-07	SKH	M SM3112B-3500B
352317	Methlynaphthalene, 1-		2018-09-06	2018-09-07	HK	P 8270
352317	Methlynaphthalene, 2-		2018-09-06	2018-09-07	HK	P 8270
352317	Acenaphthene		2018-09-06	2018-09-07	HK	P 8270
352317	Acenaphthylene		2018-09-06	2018-09-07	HK	P 8270
352317	Anthracene		2018-09-06	2018-09-07	HK	P 8270
352317	Benz[a]anthracene		2018-09-06	2018-09-07	HK	P 8270
352317	Benzo[a]pyrene		2018-09-06	2018-09-07	HK	P 8270
352317	Benzo[b]fluoranthene		2018-09-06	2018-09-07	HK	P 8270

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
352317	Benzo[ghi]perylene		2018-09-06	2018-09-07	HK	P 8270
352317	Benzo[k]fluoranthene		2018-09-06	2018-09-07	HK	P 8270
352317	Chrysene		2018-09-06	2018-09-07	HK	P 8270
352317	Dibenz[a h]anthracene		2018-09-06	2018-09-07	HK	P 8270
352317	Fluoranthene		2018-09-06	2018-09-07	HK	P 8270
352317	Fluorene		2018-09-06	2018-09-07	HK	P 8270
352317	Indeno[1 2 3-cd]pyrene		2018-09-06	2018-09-07	HK	P 8270
352317	Naphthalene		2018-09-06	2018-09-07	HK	P 8270
352317	Phenanthrene		2018-09-06	2018-09-07	HK	P 8270
352317	Pyrene		2018-09-06	2018-09-07	HK	P 8270
352339	Benzene	GC/MS	2018-09-06	2018-09-06	TJB	V 8260B
352339	Ethylbenzene	GC/MS	2018-09-06	2018-09-06	TJB	V 8260B
352339	PHC's F1	GC/FID	2018-09-10	2018-09-10	TJB	CCME
352339	PHC's F1-BTEX	GC/FID	2018-09-10	2018-09-10	TJB	CCME
352339	Xylene, m/p-	GC/MS	2018-09-06	2018-09-06	TJB	V 8260B
352339	Xylene, o-	GC/MS	2018-09-06	2018-09-06	TJB	V 8260B
352339	Toluene	GC/MS	2018-09-06	2018-09-06	TJB	V 8260B
352340	Xylene Mixture	GC/MS	2018-09-10	2018-09-10	TJB	V 8260B
352372	Aroclor 1242	GC/ECD	2018-09-09	2018-09-09	R_E	EPA 8081B/8082A
352372	Aroclor 1248	GC/ECD	2018-09-09	2018-09-09	R_E	EPA 8081B/8082A
352372	Aroclor 1254	GC/ECD	2018-09-09	2018-09-09	R_E	EPA 8081B/8082A
352372	Aroclor 1260	GC/ECD	2018-09-09	2018-09-09	R_E	EPA 8081B/8082A
352372	Polychlorinated Biphenyls	GC/ECD	2018-09-09	2018-09-09	R_E	EPA 8081B/8082A
352468	PHC's F2	GC/FID	2018-09-11	2018-09-11	RRK	CCME
352468	PHC's F3	GC/FID	2018-09-11	2018-09-11	RRK	CCME
352468	PHC's F4	GC/FID	2018-09-11	2018-09-11	RRK	CCME
352476	Chromium III	Flame AA	2018-09-12	2018-09-12	H_D	M US EPA 3060A
352476	Chromium VI	Flame AA	2018-09-11	2018-09-11	H_D	M US EPA 3060A

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Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number: 1816118
Date Submitted: 2018-09-05
Date Reported: 2018-09-12
Project: RBLR
COC #: 197843
Temperature (C): 11
Custody Seal:

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1385790 AEC-2-Sed-1	PAH MRLs were elevated due to matrix interference (dilution was done).

Report Comments:

Long Qu, Organics Supervisor

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.
Eurofins (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils).
Licensed by Ontario MOE for specific tests in drinking water.
Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

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Project: RBLR
COC #: 197843

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
PHC's F1	352418	10	ug/g		<10	<10	<10	<10	<10
PHC's F1-BTEX	352418	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	352544	10	ug/g		<10	<10	<10	<10	<10
PHC's F3	352544	20	ug/g		<20	<20	<20	<20	<20
PHC's F4	352544	20	ug/g		<20	<20	<20	<20	<20

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Aluminum	352284	5	ug/g			1010	2180	426	979
	352393	5	ug/g		2180				
Antimony	352284	1	ug/g			<1	<1	<1	<1
	352393	1	ug/g		<1				
Arsenic	352284	1	ug/g			<1	<1	<1	<1
	352393	1	ug/g		2				
Barium	352284	1	ug/g			8	16	4	14
	352393	1	ug/g		42				
Beryllium	352284	1	ug/g			<1	<1	<1	<1
	352393	1	ug/g		<1				
Boron (total)	352284	5	ug/g			<5	5	<5	<5
	352393	5	ug/g		6				
Cadmium	352284	0.4	ug/g			<0.4	<0.4	<0.4	<0.4

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Project: RBLR
COC #: 197843

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Cadmium	352393	0.4	ug/g		1.5				
Chromium III	352539		ug/g		8.54	3.00	5.00	3.00	3.00
Chromium Total	352284	1	ug/g			3	5	3	3
	352393	1	ug/g		9				
Chromium VI	352539	0.20	ug/g		0.46	<0.20	<0.20	<0.20	<0.20
Cobalt	352284	1	ug/g			<1	1	<1	<1
	352393	1	ug/g		2				
Copper	352284	1	ug/g			1	2	<1	1
	352393	1	ug/g		703				
Iron	352284	5	ug/g			1500	2820	1290	1880
	352393	5	ug/g		4980				
Lead	352284	1	ug/g			6	7	3	5
	352393	1	ug/g		36				
Mercury	352382	0.1	ug/g			<0.1	<0.1	<0.1	<0.1
	352541	0.1	ug/g		0.1				
Molybdenum	352284	1	ug/g			<1	<1	<1	<1
	352393	1	ug/g		2				
Nickel	352284	1	ug/g			2	3	2	2
	352393	1	ug/g		5				
Selenium	352284	1	ug/g			<1	<1	<1	<1
	352393	1	ug/g		<1				
Silver	352284	0.2	ug/g			<0.2	<0.2	<0.2	<0.2
	352393	0.2	ug/g		0.8				
Thallium	352284	1	ug/g			<1	<1	<1	<1

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COC #: 197843

Metals

Analyte	Batch No	MRL	Units	Guideline	1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
				Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
Thallium	352393	1	ug/g		<1				
Tin	352284	5	ug/g			<5	<5	<5	<5
	352467	5	ug/g		24				
Uranium	352284	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	352393	0.5	ug/g		0.5				
Vanadium	352284	2	ug/g			4	7	3	4
	352393	2	ug/g		7				
Zinc	352284	2	ug/g			11	16	9	10
	352393	2	ug/g		230				

PAH

Analyte	Batch No	MRL	Units	Guideline	1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
				Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
1+2-methylnaphthalene	208523	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Acenaphthene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Acenaphthylene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Anthracene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Benz[a]anthracene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816118
Date Submitted: 2018-09-05
Date Reported: 2018-09-12
Project: RBLR
COC #: 197843

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Benzo[a]pyrene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Benzo[b]fluoranthene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Benzo[ghi]perylene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Benzo[k]fluoranthene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Chrysene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Dibenz[a h]anthracene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Fluoranthene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Fluorene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Indeno[1 2 3-cd]pyrene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Methlynaphthalene, 1-	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Methlynaphthalene, 2-	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Naphthalene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				

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PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Phenanthrene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				
Pyrene	352057	0.05	ug/g			<0.05	<0.05	<0.05	<0.05
		2	ug/g		<2				

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Benzene	352418	0.02	ug/g		<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	352418	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	352418	0.20	ug/g		<0.20	<0.20	<0.20	<0.20	<0.20
Xylene Mixture	352419	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	352418	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	352418	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Moisture-Humidite	343956	0.1	%		55.2	19.8	18.2	15.9	42.7

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Alpha-androstrane	352544	0	%		93	98	107	100	115

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1385790 Soil 2018-08-26 AEC-2-Sed-1	1385791 Soil 2018-08-26 AEC-2-Sed-2	1385792 Soil 2018-08-26 AEC-2-Sed-3	1385793 Soil 2018-08-26 AEC-2-Sed-4	1385794 Soil 2018-08-26 AEC-2-Sed-5
Toluene-d8	352418	0	%		102	100	101	100	104

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
343956	Moisture-Humidite			80-120				
352057	Methlynaphthalene, 1-	<2 ug/g	80	50-140		50-140		0-40
352057	Methlynaphthalene, 2-	<2 ug/g	80	50-140		50-140		0-40
352057	Acenaphthene	<2 ug/g	80	50-140		50-140		0-40
352057	Acenaphthylene	<2 ug/g	80	50-140		50-140		0-40
352057	Anthracene	<2 ug/g	80	50-140		50-140		0-40
352057	Benz[a]anthracene	<2 ug/g	100	50-140		50-140		0-40
352057	Benzo[a]pyrene	<2 ug/g	80	50-140		50-140		0-40
352057	Benzo[b]fluoranthene	<2 ug/g	120	50-140		50-140		0-40
352057	Benzo[ghi]perylene	<2 ug/g	80	50-140		50-140		0-40
352057	Benzo[k]fluoranthene	<2 ug/g	80	50-140				0-40
352057	Chrysene	<2 ug/g	100	50-140		50-140		0-40
352057	Dibenz[a h]anthracene	<2 ug/g	80	50-140		50-140		0-40
352057	Fluoranthene	<2 ug/g	100	50-140		50-140		0-40
352057	Fluorene	<2 ug/g	80	50-140		50-140		0-40
352057	Indeno[1 2 3-cd]pyrene	<2 ug/g	80	50-140		50-140		0-40
352057	Naphthalene	<2 ug/g	80	50-140		50-140		0-40
352057	Phenanthrene	<2 ug/g	100	50-140		50-140		0-40
352057	Pyrene	<2 ug/g	100	50-140		50-140		0-40
352284	Silver	<0.2 ug/g	108	70-130	86	70-130	0	0-20
352284	Aluminum	<5 ug/g	119	70-130	435	70-130	8	0-20
352284	Arsenic	<1 ug/g	104	70-130	89	70-130	0	0-20
352284	Boron (total)	<5 ug/g	107	70-130	105	70-130	0	0-20
352284	Barium	<1 ug/g	105	70-130	100	70-130	9	0-20
352284	Beryllium	<1 ug/g	108	70-130	88	70-130	0	0-20
352284	Cadmium	<0.4 ug/g	105	70-130	86	70-130	0	0-20
352284	Cobalt	<1 ug/g	103	70-130	88	70-130	0	0-20
352284	Chromium Total	<1 ug/g	105	70-130	102	70-130	3	0-20
352284	Copper	<1 ug/g	108	70-130	84	70-130	0	0-20
352284	Iron	<5 ug/g	107	70-130	233	70-130	7	0-20
352284	Molybdenum	<1 ug/g	101	70-130	91	70-130	0	0-20
352284	Nickel	<1 ug/g	108	70-130	90	70-130	0	0-20

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Report Number: 1816118
Date Submitted: 2018-09-05
Date Reported: 2018-09-12
Project: RBLR
COC #: 197843

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
352284	Lead	<1 ug/g	105	70-130	83	70-130	0	0-20
352284	Antimony	<1 ug/g	91	70-130	88	70-130	0	0-20
352284	Selenium	<1 ug/g	108	70-130	87	70-130	0	0-20
352284	Tin	<5 ug/g	110	70-130	91	70-130	0	0-20
352284	Thallium	<1 ug/g	106	70-130	84	70-130	0	0-20
352284	Uranium	<0.5 ug/g	104	70-130	86	70-130	0	0-20
352284	Vanadium	<2 ug/g	102	70-130	102	70-130	0	0-20
352284	Zinc	<2 ug/g	113	70-130	77	70-130	3	0-20
352382	Mercury	<0.1 ug/g	95	80-120	103	70-130	0	0-30
352393	Silver	<0.2 ug/g	107	70-130	94	70-130	0	0-20
352393	Aluminum	<5 ug/g	112	70-130	851	70-130	3	0-20
352393	Arsenic	<1 ug/g	104	70-130	90	70-130	0	0-20
352393	Boron (total)	<5 ug/g	105	70-130	101	70-130	0	0-20
352393	Barium	<1 ug/g	104	70-130	94	70-130	4	0-20
352393	Beryllium	<1 ug/g	107	70-130	91	70-130	0	0-20
352393	Cadmium	<0.4 ug/g	105	70-130	89	70-130	0	0-20
352393	Cobalt	<1 ug/g	101	70-130	93	70-130	0	0-20
352393	Chromium Total	<1 ug/g	104	70-130	111	70-130	15	0-20
352393	Copper	<1 ug/g	107	70-130	92	70-130	2	0-20
352393	Iron	<5 ug/g	102	70-130	265	70-130	2	0-20
352393	Molybdenum	<1 ug/g	99	70-130	88	70-130	0	0-20
352393	Nickel	<1 ug/g	107	70-130	94	70-130	4	0-20
352393	Lead	<1 ug/g	104	70-130	78	70-130	3	0-20
352393	Antimony	<1 ug/g	93	70-130	87	70-130	0	0-20
352393	Selenium	<1 ug/g	109	70-130	86	70-130	0	0-20
352393	Thallium	<1 ug/g	105	70-130	86	70-130	0	0-20
352393	Uranium	<0.5 ug/g	97	70-130	86	70-130	0	0-20
352393	Vanadium	<2 ug/g	102	70-130	128	70-130	4	0-20
352393	Zinc	<2 ug/g	112	70-130	115	70-130	4	0-20
352418	Benzene	<0.02 ug/g	90	60-130	90	50-140	0	0-50
352418	Ethylbenzene	<0.05 ug/g	85	60-130	92	50-140	0	0-50
352418	PHC's F1	<10 ug/g	94	80-120	100	60-140	0	0-30
352418	PHC's F1-BTEX							

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COC #: 197843

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
352418	Xylene, m/p-	<0.05 ug/g	86	60-130	91	50-140	0	0-50
352418	Xylene, o-	<0.05 ug/g	87	60-130	93	50-140	0	0-50
352418	Toluene	<0.20 ug/g	88	60-130	90	50-140	0	0-50
352419	Xylene Mixture							
352467	Tin	<5 ug/g	114	70-130	1	70-130	0	0-20
352539	Chromium III							
352539	Chromium VI	<0.20 ug/g	101	80-120	83	70-130	0	0-35
352541	Mercury	<0.1 ug/g	94	80-120	112	70-130	0	0-30
352544	PHC's F2	<10 ug/g	98	80-120	107	60-140	0	0-30
352544	PHC's F3	<20 ug/g	98	80-120	107	60-140	0	0-30
352544	PHC's F4	<20 ug/g	98	80-120	107	60-140	0	0-30

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene		2018-09-12	2018-09-12	C_M	P 8270
343956	Moisture-Humidite	Manual	2018-09-10	2018-09-10	RRK	C SM2540B
352057	Methlynaphthalene, 1-		2018-09-07	2018-09-10	C_M	P 8270
352057	Methlynaphthalene, 2-		2018-09-07	2018-09-10	C_M	P 8270
352057	Acenaphthene		2018-09-07	2018-09-10	C_M	P 8270
352057	Acenaphthylene		2018-09-07	2018-09-10	C_M	P 8270
352057	Anthracene		2018-09-07	2018-09-10	C_M	P 8270
352057	Benz[a]anthracene		2018-09-07	2018-09-10	C_M	P 8270
352057	Benzo[a]pyrene		2018-09-07	2018-09-10	C_M	P 8270
352057	Benzo[b]fluoranthene		2018-09-07	2018-09-10	C_M	P 8270
352057	Benzo[ghi]perylene		2018-09-07	2018-09-10	C_M	P 8270
352057	Benzo[k]fluoranthene		2018-09-07	2018-09-10	C_M	P 8270
352057	Chrysene		2018-09-07	2018-09-10	C_M	P 8270
352057	Dibenz[a h]anthracene		2018-09-07	2018-09-10	C_M	P 8270
352057	Fluoranthene		2018-09-07	2018-09-10	C_M	P 8270
352057	Fluorene		2018-09-07	2018-09-10	C_M	P 8270
352057	Indeno[1 2 3-cd]pyrene		2018-09-07	2018-09-10	C_M	P 8270
352057	Naphthalene		2018-09-07	2018-09-10	C_M	P 8270
352057	Phenanthrene		2018-09-07	2018-09-10	C_M	P 8270
352057	Pyrene		2018-09-07	2018-09-10	C_M	P 8270
352284	Silver		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Aluminum		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Arsenic		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Boron (total)		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Barium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Beryllium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Cadmium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Cobalt		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Chromium Total		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Copper		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Iron		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Molybdenum		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Nickel		2018-09-07	2018-09-07	SKH	EPA 200.8

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816118
Date Submitted: 2018-09-05
Date Reported: 2018-09-12
Project: RBLR
COC #: 197843

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
352284	Lead		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Antimony		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Selenium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Tin		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Thallium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Uranium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Vanadium		2018-09-07	2018-09-07	SKH	EPA 200.8
352284	Zinc		2018-09-07	2018-09-07	SKH	EPA 200.8
352382	Mercury	Cetac Hg Analyzer	2018-09-10	2018-09-10	SKH	M SM3112B-3500B
352393	Silver		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Aluminum		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Arsenic		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Boron (total)		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Barium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Beryllium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Cadmium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Cobalt		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Chromium Total		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Copper		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Iron		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Molybdenum		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Nickel		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Lead		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Antimony		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Selenium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Thallium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Uranium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Vanadium		2018-09-10	2018-09-10	SKH	EPA 200.8
352393	Zinc		2018-09-10	2018-09-10	SKH	EPA 200.8
352418	Benzene	GC/MS	2018-09-07	2018-09-10	TJB	V 8260B
352418	Ethylbenzene	GC/MS	2018-09-07	2018-09-10	TJB	V 8260B
352418	PHC's F1	GC/FID	2018-09-11	2018-09-11	TJB	CCME
352418	PHC's F1-BTEX	GC/FID	2018-09-11	2018-09-11	TJB	CCME

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PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816118
Date Submitted: 2018-09-05
Date Reported: 2018-09-12
Project: RBLR
COC #: 197843

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
352418	Xylene, m/p-	GC/MS	2018-09-07	2018-09-10	TJB	V 8260B
352418	Xylene, o-	GC/MS	2018-09-07	2018-09-10	TJB	V 8260B
352418	Toluene	GC/MS	2018-09-07	2018-09-10	TJB	V 8260B
352419	Xylene Mixture	GC/MS	2018-09-11	2018-09-11	TJB	V 8260B
352467	Tin		2018-09-11	2018-09-11	SKH	EPA 200.8
352539	Chromium III	Flame AA	2018-09-12	2018-09-12	H_D	M US EPA 3060A
352539	Chromium VI	Flame AA	2018-09-12	2018-09-12	H_D	M US EPA 3060A
352541	Mercury	Cetac Hg Analyzer	2018-09-12	2018-09-12	SKH	M SM3112B-3500B
352544	PHC's F2	GC/FID	2018-09-12	2018-09-12	RRK	CCME
352544	PHC's F3	GC/FID	2018-09-12	2018-09-12	RRK	CCME
352544	PHC's F4	GC/FID	2018-09-12	2018-09-12	RRK	CCME

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Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH", "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene	Yes	
BTEX was subtracted from F1 fraction	Yes	
If YES, was F1-BTEX (C6-C10) reported	Yes	
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	Yes	
if NO was F4 (C34-C50) gravimetric reported		

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816359
Date Submitted: 2018-09-10
Date Reported: 2018-09-17
Project: RBLR
COC #: 197844

Dear Jason Mauchan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Sarah Horner, Inorganics Technician

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

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Certificate of Analysis

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Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
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Invoice to: Outcome Consultants Inc

Report Number: 1816359
Date Submitted: 2018-09-10
Date Reported: 2018-09-17
Project: RBLR
COC #: 197844

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386467 Soil 2018-08-30 THMPA-1A Post	1386468 Soil 2018-08-26 THMPA-3A
Hydrocarbons	F1 (C6-C10)	10	ug/g			<10	
	F1-BTEX (C6-C10)	10	ug/g			<10	
	F2 (C10-C16)	10	ug/g			<10	
	F3 (C16-C34)	20	ug/g			<20	
	F4 (C34-C50)	20	ug/g			<20	
Mercury	Hg	0.1	ug/g				<0.1
Metals	Ag	0.2	ug/g				<0.2
	Al	5	ug/g				2230
	As	1	ug/g				2
	B	5	ug/g				9
	Ba	1	ug/g				14
	Be	1	ug/g				<1
	Cd	0.4	ug/g				<0.4
	Co	1	ug/g				2
	Cr	1	ug/g				13
	Cr(III)	1	ug/g				13
	Cr(VI)	0.20	ug/g				<0.20
	Cu	1	ug/g				3
	Fe	5	ug/g				3800
	Mo	1	ug/g				<1
	Ni	1	ug/g				7
	Pb	1	ug/g				23
	Sb	1	ug/g				<1
	Se	1	ug/g				<1
	Sn	5	ug/g				<5

Guideline = *** = Guideline Exceedence**

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Date Submitted: 2018-09-10
Date Reported: 2018-09-17
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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386467 Soil 2018-08-30 THMPA-1A Post	1386468 Soil 2018-08-26 THMPA-3A
Metals	Tl	1	ug/g				<1
	U	0.5	ug/g				<0.5
	V	2	ug/g				6
	Zn	2	ug/g				22
Moisture	Moisture-Humidite	0.1	%			14.1	
PHC Surrogate	Alpha-androstrane	0	%			115	
VOCs Surrogates	Toluene-d8	0	%			95	
Volatiles	Benzene	0.02	ug/g			<0.02	
	Ethylbenzene	0.05	ug/g			<0.05	
	m/p-xylene	0.05	ug/g			<0.05	
	o-xylene	0.05	ug/g			<0.05	
	Toluene	0.20	ug/g			<0.20	
	Xylene; total	0.05	ug/g			<0.05	

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Report Number: 1816359
Date Submitted: 2018-09-10
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 343956 **Analysis/Extraction Date** 2018-09-07 **Analyst** RRK **Method** C SM2540B			
Moisture-Humidite			80-120
Run No 352627 **Analysis/Extraction Date** 2018-09-14 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	92	80-120
Run No 352641 **Analysis/Extraction Date** 2018-09-13 **Analyst** AET **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	87	80-120
Run No 352650 **Analysis/Extraction Date** 2018-09-13 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	100	80-120
Run No 352655 **Analysis/Extraction Date** 2018-09-13 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.2 ug/g	105	70-130
Aluminum	<5 ug/g	112	70-130
Arsenic	<1 ug/g	100	70-130
Boron (total)	<5 ug/g	98	70-130
Barium	<1 ug/g	101	70-130

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Date Submitted: 2018-09-10
Date Reported: 2018-09-17
Project: RBLR
COC #: 197844

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Beryllium	<1 ug/g	101	70-130
Cadmium	<0.4 ug/g	103	70-130
Cobalt	<1 ug/g	98	70-130
Chromium Total	<1 ug/g	99	70-130
Copper	<1 ug/g	104	70-130
Iron	<5 ug/g	110	70-130
Molybdenum	<1 ug/g	96	70-130
Nickel	<1 ug/g	102	70-130
Lead	<1 ug/g	102	70-130
Antimony	<1 ug/g	92	70-130
Selenium	<1 ug/g	104	70-130
Sn	<5 ug/g	74	70-130
Thallium	<1 ug/g	104	70-130
Uranium	<0.5 ug/g	99	70-130
Vanadium	<2 ug/g	98	70-130
Zinc	<2 ug/g	108	70-130

Run No 352656 **Analysis/Extraction Date** 2018-09-13 **Analyst** SKH
Method M US EPA 3060A

Guideline = *** = Guideline Exceedence**

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Date Submitted: 2018-09-10
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Project: RBLR
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Cr(III)			
Run No 352676 **Analysis/Extraction Date** 2018-09-12 **Analyst** TJB **Method** V 8260B			
Benzene	<0.02 ug/g	101	60-130
Ethylbenzene	<0.05 ug/g	104	60-130
m/p-xylene	<0.05 ug/g	105	60-130
o-xylene	<0.05 ug/g	102	60-130
Toluene	<0.20 ug/g	105	60-130
Run No 352681 **Analysis/Extraction Date** 2018-09-14 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352683 **Analysis/Extraction Date** 2018-09-14 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1-BTEX			
Run No 352806 **Analysis/Extraction Date** 2018-09-17 **Analyst** RRK **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	110	80-120
Petroleum Hydrocarbons F3	<20 ug/g	110	80-120
Petroleum Hydrocarbons F4	<20 ug/g	110	80-120

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816171
Date Submitted: 2018-09-06
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Revision 1: This is an amendment and supersedes all other copies of this report. MRLs for Hg, Cr(VI), and Cr(III) have been lowered.

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

APPROVAL: _____
Long Qu, Organics Supervisor

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151 Holland Ave.
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Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816171
Date Submitted: 2018-09-06
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1385880 SURF W 2018-08-28 AEC-3-SW-1	1385881 SURF W 2018-08-28 AEC-3-SW-2	1385882 SURF W 2018-08-28 Dup-SW-2
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20	<20	<20
	F1-BTEX (C6-C10)	20	ug/L		<20	<20	<20
	F2 (C10-C16)	20	ug/L		<20	<20	<20
	F3 (C16-C34)	50	ug/L		<50	<50	<50
	F4 (C34-C50)	50	ug/L		<50	<50	<50
Metals	Ag	0.0001	mg/L		<0.0001	<0.0001	<0.0001
	Al	0.01	mg/L		<0.01	<0.01	<0.01
	As	0.001	mg/L		<0.001	<0.001	<0.001
	B	0.01	mg/L		<0.01	<0.01	<0.01
	Ba	0.01	mg/L		<0.01	<0.01	<0.01
	Be	0.0005	mg/L		<0.0005	<0.0005	<0.0005
	Cd	0.0001	mg/L		<0.0001	<0.0001	<0.0001
	Co	0.0002	mg/L		<0.0002	<0.0002	<0.0002
	Cr	0.001	mg/L		<0.001	<0.001	<0.001
	Cu	0.001	mg/L		<0.001	<0.001	<0.001
	Fe	0.03	mg/L		<0.03	<0.03	<0.03
	Mo	0.005	mg/L		<0.005	<0.005	<0.005
	Na	2	mg/L		4	3	4
	Ni	0.005	mg/L		<0.005	<0.005	<0.005
	Pb	0.001	mg/L		<0.001	<0.001	<0.001
	Sb	0.0005	mg/L		<0.0005	<0.0005	<0.0005
	Se	0.001	mg/L		<0.001	<0.001	<0.001
	Sn	0.01	mg/L		<0.01	<0.01	<0.01
	Tl	0.0001	mg/L		<0.0001	<0.0001	<0.0001
	U	0.001	mg/L		<0.001	<0.001	<0.001

Guideline = *** = Guideline Exceedence**

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K1Y 0Y2
Attention: Jonathan Markiewicz
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Invoice to: Outcome Consultants Inc

Report Number: 1816171
Date Submitted: 2018-09-06
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1385880 SURF W 2018-08-28 AEC-3-SW-1	1385881 SURF W 2018-08-28 AEC-3-SW-2	1385882 SURF W 2018-08-28 Dup-SW-2
Metals	V	0.001	mg/L			<0.001	<0.001	<0.001
	Zn	0.01	mg/L			<0.01	<0.01	<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1
	1-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1
	Acenaphthene	0.1	ug/L			<0.1	<0.1	<0.1
	Acenaphthylene	0.1	ug/L			<0.1	<0.1	<0.1
	Anthracene	0.1	ug/L			<0.1	<0.1	<0.1
	Benzo(a)anthracene	0.1	ug/L			<0.1	<0.1	<0.1
	Benzo(a)pyrene	0.01	ug/L			<0.01	<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L			<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05
	Chrysene	0.05	ug/L			<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L			<0.1	<0.1	<0.1
	Fluoranthene	0.1	ug/L			<0.1	<0.1	<0.1
	Fluorene	0.1	ug/L			<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	<0.1	<0.1
	Naphthalene	0.1	ug/L			<0.1	<0.1	<0.1
	Phenanthrene	0.1	ug/L			<0.1	<0.1	<0.1
	Pyrene	0.1	ug/L			<0.1	<0.1	<0.1
PHC Surrogate	Alpha-androstrane	0	%			105	103	98
Subcontract	Cr(III)	0.001	mg/L			<0.001	<0.001	<0.001
	Cr(VI)	0.001	mg/L			<0.001	<0.001	<0.001
	Hg	0.00001	mg/L			<0.00001	<0.00001	<0.00001

Guideline = *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816171
Date Submitted: 2018-09-06
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1385880 SURF W 2018-08-28 AEC-3-SW-1	1385881 SURF W 2018-08-28 AEC-3-SW-2	1385882 SURF W 2018-08-28 Dup-SW-2
VOCs Surrogates	Toluene-d8	0	%			95	94	101
Volatiles	Benzene	0.5	ug/L			<0.5	<0.5	<0.5
	Ethylbenzene	0.5	ug/L			<0.5	<0.5	<0.5
	m/p-xylene	0.4	ug/L			<0.4	<0.4	<0.4
	o-xylene	0.4	ug/L			<0.4	<0.4	<0.4
	Toluene	0.5	ug/L			<0.5	<0.5	<0.5
	Xylene; total	0.5	ug/L			<0.5	<0.5	<0.5

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2018-09-13 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 352321 **Analysis/Extraction Date** 2018-09-11 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140

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Project: RBLR
COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352406 **Analysis/Extraction Date** 2018-09-10 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.0001 mg/L	103	89-111
Aluminum	<0.01 mg/L	93	91.5-108.4
Arsenic	<0.001 mg/L	97	91.7-108.2
Boron (total)	<0.01 mg/L	98	84.9-115
Barium	<0.01 mg/L	99	93.4-106.5
Beryllium	<0.0005 mg/L	107	89.5-110.4
Cadmium	<0.0001 mg/L	104	93.5-106.4
Cobalt	<0.0002 mg/L	102	92.7-107.2
Chromium Total	<0.001 mg/L	103	94-106
Copper	<0.001 mg/L	104	92.4-107.6
Iron	<0.03 mg/L	92	91-109

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Molybdenum	<0.005 mg/L	92	92.8-107.2
Nickel	<0.005 mg/L	105	93-106.9
Lead	<0.001 mg/L	109	90-110
Antimony	<0.0005 mg/L	90	89.6-110.3
Selenium	<0.001 mg/L	96	87.4-112.6
Sn	<0.01 mg/L	85	80-120
Thallium	<0.0001 mg/L	108	90.4-109.5
Uranium	<0.001 mg/L	97	92.7-107.2
Vanadium	<0.001 mg/L	98	93-106.9
Zinc	<0.01 mg/L	108	91.5-108.4
Run No 352420 **Analysis/Extraction Date** 2018-09-10 **Analyst** TJB **Method** V 8260B			
Benzene	<0.5 ug/L	91	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Petroleum Hydrocarbons F1	<20 ug/L	93	60-140
Petroleum Hydrocarbons F1-BTEX			
m/p-xylene	<0.4 ug/L	89	60-130
o-xylene	<0.4 ug/L	88	60-130

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COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Toluene	<0.5 ug/L	92	60-130
Run No 352421 **Analysis/Extraction Date** 2018-09-11 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352521 **Analysis/Extraction Date** 2018-09-12 **Analyst** H F **Method** M SM3120B-3500C			
Sodium	<2 mg/L	87	82-118
Run No 352648 **Analysis/Extraction Date** 2018-09-13 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	70	60-140
Petroleum Hydrocarbons F3	<50 ug/L	70	60-140
Petroleum Hydrocarbons F4	<50 ug/L	70	60-140
Run No 352965 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Mercury	<0.00001 mg/L	100	
Run No 352966 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Chromium VI	<0.001 mg/L	101	

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352967 **Analysis/Extraction Date** 2018-09-19 **Analyst** AET **Method** SUBCONTRACT-A			
Cr(III)			

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Sample Comment Summary

Sample ID:	1385880	AEC-3-SW-1	Metals bottle used for Na analysis.
Sample ID:	1385881	AEC-3-SW-2	Metals bottle used for Na analysis.
Sample ID:	1385882	Dup-SW-2	Metals bottle used for Na analysis.

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Client: Outcome Consultants Inc
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Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816358
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197844

Dear Jason Mauchan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
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Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816358
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197844

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386462 SURF W 2018-08-30 AEC-2 SW-1	1386463 SURF W 2018-08-30 AEC-2 SW-2	1386464 SURF W 2018-08-30 AEC-2 SW-3	1386465 SURF W 2018-08-30 AEC-2 SW-4
Hydrocarbons	F1 (C6-C10)	20	ug/L			<20	<20	<20	<20
	F1-BTEX (C6-C10)	20	ug/L			<20	<20	<20	<20
	F2 (C10-C16)	20	ug/L			<20	<20	<20	<20
	F3 (C16-C34)	50	ug/L			<50	<50	<50	<50
	F4 (C34-C50)	50	ug/L			<50	<50	<50	<50
Metals	Ag	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001
	Al	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
	As	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	B	0.01	mg/L			0.02	0.01	0.03	0.03
	Ba	0.01	mg/L			0.05	0.05	0.09	0.08
	Be	0.0005	mg/L			<0.0005	<0.0005	<0.0005	<0.0005
	Cd	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001
	Co	0.0002	mg/L			<0.0002	<0.0002	<0.0002	<0.0002
	Cr	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Cu	0.001	mg/L			0.001	<0.001	<0.001	<0.001
	Fe	0.03	mg/L			<0.03	<0.03	<0.03	<0.03
	Mo	0.005	mg/L			<0.005	<0.005	<0.005	<0.005
	Na	2	mg/L			7	10	9	13
	Ni	0.005	mg/L			<0.005	<0.005	<0.005	<0.005
	Pb	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Sb	0.0005	mg/L			0.0007	<0.0005	0.0008	<0.0005
	Se	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Sn	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
	Tl	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001
	U	0.001	mg/L			<0.001	<0.001	<0.001	<0.001

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386462 SURF W 2018-08-30 AEC-2 SW-1	1386463 SURF W 2018-08-30 AEC-2 SW-2	1386464 SURF W 2018-08-30 AEC-2 SW-3	1386465 SURF W 2018-08-30 AEC-2 SW-4
Metals	V	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Zn	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	1-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Acenaphthene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(a)anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene	0.01	ug/L			<0.01	0.01	<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Chrysene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Fluoranthene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Fluorene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Naphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Phenanthrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Pyrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
PHC Surrogate	Alpha-androstrane	0	%			111	105	103	98
Subcontract	Cr(III)	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Cr(VI)	0.001	mg/L			<0.001	0.001	<0.001	<0.001
	Hg	0.00001	mg/L			<0.00001	<0.00001	<0.00001	<0.00001

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Date Reported: 2018-09-19
Project: RBLR
COC #: 197844

				Lab I.D.	1386462	1386463	1386464	1386465
				Sample Matrix	SURF W	SURF W	SURF W	SURF W
				Sample Type				
				Sampling Date	2018-08-30	2018-08-30	2018-08-30	2018-08-30
				Sample I.D.	AEC-2 SW-1	AEC-2 SW-2	AEC-2 SW-3	AEC-2 SW-4
Group	**Analyte**	**MRL**	**Units**	**Guideline**				
VOCs Surrogates	Toluene-d8	0	%		116	123	109	115
Volatiles	Benzene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	Ethylbenzene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	m/p-xylene	0.4	ug/L		<0.4	<0.4	<0.4	<0.4
	o-xylene	0.4	ug/L		<0.4	<0.4	<0.4	<0.4
	Toluene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	Xylene; total	0.5	ug/L		<0.5	<0.5	<0.5	<0.5

				Lab I.D.	1386466
				Sample Matrix	SURF W
				Sample Type	
				Sampling Date	2018-08-30
				Sample I.D.	AEC-2 SW-5
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20
	F1-BTEX (C6-C10)	20	ug/L		<20
	F2 (C10-C16)	20	ug/L		<20
	F3 (C16-C34)	50	ug/L		<50
	F4 (C34-C50)	50	ug/L		<50
Metals	Ag	0.0001	mg/L		<0.0001
	Al	0.01	mg/L		<0.01
	As	0.001	mg/L		<0.001
	B	0.01	mg/L		0.02
	Ba	0.01	mg/L		0.05
	Be	0.0005	mg/L		<0.0005
	Cd	0.0001	mg/L		<0.0001

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Group	Analyte	MRL	Units	Guideline	1386466
				Lab I.D.	1386466
				Sample Matrix	SURF W
				Sample Type	
				Sampling Date	2018-08-30
				Sample I.D.	AEC-2 SW-5
Metals	Co	0.0002	mg/L		<0.0002
	Cr	0.001	mg/L		<0.001
	Cu	0.001	mg/L		<0.001
	Fe	0.03	mg/L		<0.03
	Mo	0.005	mg/L		<0.005
	Na	2	mg/L		9
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		<0.001
	Sb	0.0005	mg/L		<0.0005
	Se	0.001	mg/L		<0.001
	Sn	0.01	mg/L		<0.01
	Tl	0.0001	mg/L		<0.0001
	U	0.001	mg/L		<0.001
	V	0.001	mg/L		<0.001
	Zn	0.01	mg/L		<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1
	1-methylnaphthalene	0.1	ug/L		<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1
	Acenaphthene	0.1	ug/L		<0.1
	Acenaphthylene	0.1	ug/L		<0.1
	Anthracene	0.1	ug/L		<0.1
	Benzo(a)anthracene	0.1	ug/L		<0.1
	Benzo(a)pyrene	0.01	ug/L		<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1

Guideline = *** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816358
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197844

Group	Analyte	MRL	Units	Guideline	1386466
				Lab I.D.	1386466
				Sample Matrix	SURF W
				Sample Type	
				Sampling Date	2018-08-30
				Sample I.D.	AEC-2 SW-5
PAH	Benzo(k)fluoranthene	0.05	ug/L		<0.05
	Chrysene	0.05	ug/L		<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1
	Fluoranthene	0.1	ug/L		<0.1
	Fluorene	0.1	ug/L		<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1
	Naphthalene	0.1	ug/L		<0.1
	Phenanthrene	0.1	ug/L		<0.1
	Pyrene	0.1	ug/L		<0.1
PHC Surrogate	Alpha-androstrane	0	%		93
Subcontract	Cr(III)	0.001	mg/L		<0.001
	Cr(VI)	0.001	mg/L		<0.001
	Hg	0.00001	mg/L		<0.00001
VOCs Surrogates	Toluene-d8	0	%		100
Volatiles	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5
	m/p-xylene	0.4	ug/L		<0.4
	o-xylene	0.4	ug/L		<0.4
	Toluene	0.5	ug/L		<0.5
	Xylene; total	0.5	ug/L		<0.5

Guideline = *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2018-09-14 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 352321 **Analysis/Extraction Date** 2018-09-13 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352542 **Analysis/Extraction Date** 2018-09-12 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.0001 mg/L	108	89-111
Aluminum	<0.01 mg/L	106	91.5-108.4
Arsenic	<0.001 mg/L	103	91.7-108.2
Boron (total)	<0.01 mg/L	92	84.9-115
Barium	<0.01 mg/L	103	93.4-106.5
Beryllium	<0.0005 mg/L	106	89.5-110.4
Cadmium	<0.0001 mg/L	103	93.5-106.4
Cobalt	<0.0002 mg/L	102	92.7-107.2
Chromium Total	<0.001 mg/L	100	94-106
Copper	<0.001 mg/L	100	92.4-107.6
Iron	<0.03 mg/L	92	91-109

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Molybdenum	<0.005 mg/L	95	92.8-107.2
Nickel	<0.005 mg/L	103	93-106.9
Lead	<0.001 mg/L	101	90-110
Antimony	<0.0005 mg/L	110	89.6-110.3
Selenium	<0.001 mg/L	96	87.4-112.6
Sn	<0.01 mg/L	82	80-120
Thallium	<0.0001 mg/L	101	90.4-109.5
Uranium	<0.001 mg/L	94	92.7-107.2
Vanadium	<0.001 mg/L	101	93-106.9
Zinc	<0.01 mg/L	100	91.5-108.4
Run No 352627 **Analysis/Extraction Date** 2018-09-12 **Analyst** TJB **Method** V 8260B			
Benzene	<0.5 ug/L	91	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Petroleum Hydrocarbons F1	<20 ug/L	86	60-140
m/p-xylene	<0.4 ug/L	89	60-130
o-xylene	<0.4 ug/L	88	60-130
Toluene	<0.5 ug/L	92	60-130

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Date Reported: 2018-09-19
Project: RBLR
COC #: 197844

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352628 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352629 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F1-BTEX			
Run No 352751 **Analysis/Extraction Date** 2018-09-16 **Analyst** H F **Method** M SM3120B-3500C			
Sodium	<2 mg/L	107	82-118
Run No 352809 **Analysis/Extraction Date** 2018-09-17 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	70	60-140
Petroleum Hydrocarbons F3	<50 ug/L	70	60-140
Petroleum Hydrocarbons F4	<50 ug/L	70	60-140
Run No 352965 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Mercury	<0.00001 mg/L	100	
Run No 352966 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chromium VI	<0.001 mg/L	101	
Run No 352967 **Analysis/Extraction Date** 2018-09-19 **Analyst** AET **Method** SUBCONTRACT-A			
Cr(III)			

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Sample Comment Summary

Sample ID: 1386462 AEC-2 SW-1 Metals bottle was used for Na analysis on this report.

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Client: Outcome Consultants Inc
151 Holland Ave.
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Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816360
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197840

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
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Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816360
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197840

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386469 SURF W 2018-08-27 AEC-1 SW-1	1386470 SURF W 2018-08-27 AEC-1 SW-2	1386471 SURF W 2018-08-27 AEC-1 SW-3	1386472 SURF W 2018-08-27 AEC-1 SW-4
Hydrocarbons	F1 (C6-C10)	20	ug/L			<20	<20	<20	<20
	F1-BTEX (C6-C10)	20	ug/L			<20	<20	<20	<20
	F2 (C10-C16)	20	ug/L			<20	<20	<20	<20
	F3 (C16-C34)	50	ug/L			<50	<50	<50	<50
	F4 (C34-C50)	50	ug/L			<50	<50	<50	<50
Mercury	Hg	0.0001	mg/L						<0.0001
Metals	Ag	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001
	Al	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
	As	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	B	0.01	mg/L			0.03	0.01	0.03	0.02
	Ba	0.01	mg/L			0.09	0.03	0.10	0.02
	Be	0.0005	mg/L			<0.0005	<0.0005	<0.0005	<0.0005
	Cd	0.0001	mg/L			<0.0001	<0.0001	<0.0001	0.0001
	Co	0.0002	mg/L			<0.0002	<0.0002	<0.0002	0.0005
	Cr	0.001	mg/L			0.002	<0.001	0.002	<0.001
	Cu	0.001	mg/L			0.002	<0.001	0.002	<0.001
	Fe	0.03	mg/L			<0.03	<0.03	<0.03	<0.03
	Mo	0.005	mg/L			<0.005	<0.005	<0.005	<0.005
	Na	2	mg/L			5	9	6	9
	Ni	0.005	mg/L			<0.005	<0.005	<0.005	<0.005
	Pb	0.001	mg/L			0.001	<0.001	<0.001	<0.001
	Sb	0.0005	mg/L			0.0006	<0.0005	0.0008	<0.0005
	Se	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Sn	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
	Tl	0.0001	mg/L			<0.0001	<0.0001	<0.0001	<0.0001

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386469 SURF W 2018-08-27 AEC-1 SW-1	1386470 SURF W 2018-08-27 AEC-1 SW-2	1386471 SURF W 2018-08-27 AEC-1 SW-3	1386472 SURF W 2018-08-27 AEC-1 SW-4
Metals	U	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	V	0.001	mg/L			<0.001	<0.001	<0.001	<0.001
	Zn	0.01	mg/L			<0.01	<0.01	<0.01	<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	1-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Acenaphthene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(a)anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene	0.01	ug/L			<0.01	<0.01	<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Chrysene	0.05	ug/L			<0.05	<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Fluoranthene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Fluorene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Naphthalene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Phenanthrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
	Pyrene	0.1	ug/L			<0.1	<0.1	<0.1	<0.1
PHC Surrogate	Alpha-androstrane	0	%			98	107	100	115
Subcontract	Cr(III)	0.001	mg/L			0.001	<0.001	<0.001	<0.001
	Cr(VI)	0.001	mg/L			0.001	<0.001	0.002	<0.001

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Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1386469 SURF W 2018-08-27 AEC-1 SW-1	1386470 SURF W 2018-08-27 AEC-1 SW-2	1386471 SURF W 2018-08-27 AEC-1 SW-3	1386472 SURF W 2018-08-27 AEC-1 SW-4
Subcontract	Hg	0.00001	mg/L		<0.00001	<0.00001	<0.00001	
VOCs Surrogates	Toluene-d8	0	%		100	95	113	119
Volatiles	Benzene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	Ethylbenzene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	m/p-xylene	0.4	ug/L		<0.4	<0.4	<0.4	<0.4
	o-xylene	0.4	ug/L		<0.4	<0.4	<0.4	<0.4
	Toluene	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
	Xylene; total	0.5	ug/L		<0.5	<0.5	<0.5	<0.5

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.
					1386473 SURF W 2018-08-27 DUP-SW-1
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20
	F1-BTEX (C6-C10)	20	ug/L		<20
	F2 (C10-C16)	20	ug/L		<20
	F3 (C16-C34)	50	ug/L		<50
	F4 (C34-C50)	50	ug/L		<50
Metals	Ag	0.0001	mg/L		<0.0001
	Al	0.01	mg/L		<0.01
	As	0.001	mg/L		<0.001
	B	0.01	mg/L		0.01
	Ba	0.01	mg/L		0.03
	Be	0.0005	mg/L		<0.0005

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Project: RBLR
COC #: 197840

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. 1386473 SURF W 2018-08-27 DUP-SW-1
Metals	Cd	0.0001	mg/L		<0.0001
	Co	0.0002	mg/L		<0.0002
	Cr	0.001	mg/L		<0.001
	Cu	0.001	mg/L		<0.001
	Fe	0.03	mg/L		<0.03
	Mo	0.005	mg/L		<0.005
	Na	2	mg/L		7
	Ni	0.005	mg/L		<0.005
	Pb	0.001	mg/L		0.001
	Sb	0.0005	mg/L		<0.0005
	Se	0.001	mg/L		<0.001
	Sn	0.01	mg/L		<0.01
	Tl	0.0001	mg/L		<0.0001
	U	0.001	mg/L		<0.001
	V	0.001	mg/L		<0.001
	Zn	0.01	mg/L		<0.01
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1
	1-methylnaphthalene	0.1	ug/L		<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1
	Acenaphthene	0.1	ug/L		<0.1
	Acenaphthylene	0.1	ug/L		<0.1
	Anthracene	0.1	ug/L		<0.1
	Benzo(a)anthracene	0.1	ug/L		<0.1
	Benzo(a)pyrene	0.01	ug/L		<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05

Guideline = *** = Guideline Exceedence**

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1816360
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197840

Group	Analyte	MRL	Units	Guideline	Lab I.D. 1386473 Sample Matrix SURF W Sample Type Sampling Date 2018-08-27 Sample I.D. DUP-SW-1
PAH	Benzo(g,h,i)perylene	0.1	ug/L		<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05
	Chrysene	0.05	ug/L		<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1
	Fluoranthene	0.1	ug/L		<0.1
	Fluorene	0.1	ug/L		<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1
	Naphthalene	0.1	ug/L		<0.1
	Phenanthrene	0.1	ug/L		<0.1
	Pyrene	0.1	ug/L		<0.1
PHC Surrogate	Alpha-androstrane	0	%		111
Subcontract	Cr(III)	0.001	mg/L		<0.001
	Cr(VI)	0.001	mg/L		<0.001
	Hg	0.00001	mg/L		<0.00001
VOCs Surrogates	Toluene-d8	0	%		96
Volatiles	Benzene	0.5	ug/L		<0.5
	Ethylbenzene	0.5	ug/L		<0.5
	m/p-xylene	0.4	ug/L		<0.4
	o-xylene	0.4	ug/L		<0.4
	Toluene	0.5	ug/L		<0.5
	Xylene; total	0.5	ug/L		<0.5

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2018-09-14 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 352321 **Analysis/Extraction Date** 2018-09-13 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352542 **Analysis/Extraction Date** 2018-09-12 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.0001 mg/L	108	89-111
Aluminum	<0.01 mg/L	106	91.5-108.4
Arsenic	<0.001 mg/L	103	91.7-108.2
Boron (total)	<0.01 mg/L	92	84.9-115
Barium	<0.01 mg/L	103	93.4-106.5
Beryllium	<0.0005 mg/L	106	89.5-110.4
Cadmium	<0.0001 mg/L	103	93.5-106.4
Cobalt	<0.0002 mg/L	102	92.7-107.2
Chromium Total	<0.001 mg/L	100	94-106
Copper	<0.001 mg/L	100	92.4-107.6
Iron	<0.03 mg/L	92	91-109

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Molybdenum	<0.005 mg/L	95	92.8-107.2
Nickel	<0.005 mg/L	103	93-106.9
Lead	<0.001 mg/L	101	90-110
Antimony	<0.0005 mg/L	110	89.6-110.3
Selenium	<0.001 mg/L	96	87.4-112.6
Sn	<0.01 mg/L	82	80-120
Thallium	<0.0001 mg/L	101	90.4-109.5
Uranium	<0.001 mg/L	94	92.7-107.2
Vanadium	<0.001 mg/L	101	93-106.9
Zinc	<0.01 mg/L	100	91.5-108.4
Run No 352555 **Analysis/Extraction Date** 2018-09-12 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.0001 mg/L	94	76-123
Run No 352627 **Analysis/Extraction Date** 2018-09-12 **Analyst** TJB **Method** V 8260B			
Benzene	<0.5 ug/L	91	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Petroleum Hydrocarbons F1	<20 ug/L	86	60-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
m/p-xylene	<0.4 ug/L	89	60-130
o-xylene	<0.4 ug/L	88	60-130
Toluene	<0.5 ug/L	92	60-130
Run No 352628 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352629 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F1-BTEX			
Run No 352751 **Analysis/Extraction Date** 2018-09-16 **Analyst** H F **Method** M SM3120B-3500C			
Sodium	<2 mg/L	107	82-118
Run No 352809 **Analysis/Extraction Date** 2018-09-17 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	70	60-140
Petroleum Hydrocarbons F3	<50 ug/L	70	60-140
Petroleum Hydrocarbons F4	<50 ug/L	70	60-140
Run No 352965 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			

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Report Number: 1816360
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197840

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Mercury	<0.00001 mg/L	100	
Run No 352966 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Chromium VI	<0.001 mg/L	101	
Run No 352967 **Analysis/Extraction Date** 2018-09-19 **Analyst** AET **Method** SUBCONTRACT-A			
Cr(III)			

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Report Number: 1816360
Date Submitted: 2018-09-10
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Project: RBLR
COC #: 197840

Sample Comment Summary

Sample ID: 1386469 AEC-1 SW-1 Metals bottle was used for Na analysis on this report.

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Report Number: 1816506
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

eurofins | Environment Testing

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Attention: Jonathan Markiewicz
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Report Number: 1816506
Date Submitted: 2018-09-10
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Project: RBLR
COC #: 197842

					Lab I.D.	1386901	1386902
					Sample Matrix	GW	GW
					Sample Type		
					Sampling Date	2018-08-28	2018-08-28
					Sample I.D.	AEC-GW-1	Trip Blank 1
Group	**Analyte**	**MRL**	**Units**	**Guideline**			
Anions	N-NO2	0.10	mg/L			<0.10	
	N-NO3	0.10	mg/L			<0.10	
General Chemistry	Alkalinity as CaCO3	5	mg/L			289	
	Conductivity	5	uS/cm			748	
	pH	1.00				7.90	
	Total Suspended Solids	2	mg/L			7	
Hardness	Hardness as CaCO3	1	mg/L			209	
Hydrocarbons	F1 (C6-C10)	20	ug/L			<20	<20
	F1-BTEX (C6-C10)	20	ug/L			<20	
	F2 (C10-C16)	20	ug/L			<20	
	F3 (C16-C34)	50	ug/L			<50	
	F4 (C34-C50)	50	ug/L			<50	
Metals	Ag	0.0001	mg/L			<0.0001	
	Al	0.01	mg/L			<0.01	
	As	0.001	mg/L			0.005	
	B	0.01	mg/L			0.30	
	Ba	0.01	mg/L			0.01	
	Be	0.0005	mg/L			<0.0005	
	Ca	1	mg/L			64	
	Cd	0.0001	mg/L			0.0002	
	Co	0.0002	mg/L			0.0045	
	Cr	0.001	mg/L			<0.001	
	Cu	0.001	mg/L			0.008	
	Fe	0.03	mg/L			1.71	
	K	1	mg/L			16	

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Group	Analyte	MRL	Units	Guideline	1386901 GW 2018-08-28 AEC-GW-1	1386902 GW 2018-08-28 Trip Blank 1
	Lab I.D.				1386901	1386902
	Sample Matrix				GW	GW
	Sample Type					
	Sampling Date				2018-08-28	2018-08-28
	Sample I.D.				AEC-GW-1	Trip Blank 1
Metals	Mg	1	mg/L		12	
	Mo	0.005	mg/L		<0.005	
	Na	2	mg/L		38	
	Ni	0.005	mg/L		0.010	
	P	0.01	mg/L		3.72	
	Pb	0.001	mg/L		0.003	
	Sb	0.0005	mg/L		<0.0005	
	Se	0.001	mg/L		<0.001	
	Sn	0.01	mg/L		<0.01	
	Tl	0.0001	mg/L		<0.0001	
	U	0.001	mg/L		<0.001	
	V	0.001	mg/L		0.002	
	Zn	0.01	mg/L		0.01	
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1	
	1-methylnaphthalene	0.1	ug/L		<0.1	
	2-methylnaphthalene	0.1	ug/L		<0.1	
	Acenaphthene	0.1	ug/L		<0.1	
	Acenaphthylene	0.1	ug/L		<0.1	
	Anthracene	0.1	ug/L		<0.1	
	Benzo(a)anthracene	0.1	ug/L		<0.1	
	Benzo(a)pyrene	0.01	ug/L		<0.01	
	Benzo(b)fluoranthene	0.05	ug/L		<0.05	
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1	
	Benzo(k)fluoranthene	0.05	ug/L		<0.05	
	Chrysene	0.05	ug/L		<0.05	

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386901 GW 2018-08-28 AEC-GW-1	1386902 GW 2018-08-28 Trip Blank 1
PAH	Dibenzo(a,h)anthracene	0.1	ug/L			<0.1	
	Fluoranthene	0.1	ug/L			<0.1	
	Fluorene	0.1	ug/L			<0.1	
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	
	Naphthalene	0.1	ug/L			<0.1	
	Phenanthrene	0.1	ug/L			<0.1	
	Pyrene	0.1	ug/L			<0.1	
PHC Surrogate	Alpha-androstrane	0	%			115	
Subcontract	Cr(III)	0.001	mg/L			<0.001	
	Cr(VI)	0.001	mg/L			<0.001	
	Hg	0.00001	mg/L			<0.00001	
Subcontract-Inorg	N-NH3	0.02	mg/L			4.46	
	Phenols	0.001	mg/L			0.007	
VOCs Surrogates	Toluene-d8	0	%			123	
Volatiles	Benzene	0.5	ug/L			<0.5	
	Ethylbenzene	0.5	ug/L			<0.5	
	m/p-xylene	0.4	ug/L			<0.4	
	o-xylene	0.4	ug/L			<0.4	
	Toluene	0.5	ug/L			<0.5	
	Xylene; total	0.5	ug/L			<0.5	

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COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352321 **Analysis/Extraction Date** 2018-09-18 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene	<0.1 ug/L		
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352542 **Analysis/Extraction Date** 2018-09-12 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.0001 mg/L	108	89-111
Aluminum	<0.01 mg/L	106	91.5-108.4
Arsenic	<0.001 mg/L	103	91.7-108.2
Boron (total)	<0.01 mg/L	92	84.9-115
Barium	<0.01 mg/L	103	93.4-106.5
Beryllium	<0.0005 mg/L	106	89.5-110.4
Cadmium	<0.0001 mg/L	103	93.5-106.4
Cobalt	<0.0002 mg/L	102	92.7-107.2
Chromium Total	<0.001 mg/L	100	94-106
Copper	<0.001 mg/L	100	92.4-107.6
Iron	<0.03 mg/L	92	91-109
Molybdenum	<0.005 mg/L	95	92.8-107.2
Nickel	<0.005 mg/L	103	93-106.9

Guideline = *** = Guideline Exceedence**

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816506
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Lead	<0.001 mg/L	101	90-110
Antimony	<0.0005 mg/L	110	89.6-110.3
Selenium	<0.001 mg/L	96	87.4-112.6
Sn	<0.01 mg/L	82	80-120
Thallium	<0.0001 mg/L	101	90.4-109.5
Uranium	<0.001 mg/L	94	92.7-107.2
Vanadium	<0.001 mg/L	101	93-106.9
Zinc	<0.01 mg/L	100	91.5-108.4
Run No 352611 **Analysis/Extraction Date** 2018-09-13 **Analyst** Z S **Method** C SM4500-NO3-F			
N-NO2	<0.10 mg/L	100	80-120
N-NO3	<0.10 mg/L	100	80-120
Run No 352651 **Analysis/Extraction Date** 2018-09-13 **Analyst** SKH **Method** EPA 200.8			
P	<0.01 mg/L	90	82-118
Run No 352751 **Analysis/Extraction Date** 2018-09-16 **Analyst** H F **Method** M SM3120B-3500C			
Calcium	<1 mg/L	100	90-110
Potassium	<1 mg/L	105	87-113

Guideline = *** = Guideline Exceedence**

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COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	107	82-118
Run No 352757 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** V 8260B			
Benzene	<0.5 ug/L	91	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Petroleum Hydrocarbons F1	<20 ug/L	86	60-140
Petroleum Hydrocarbons F1-BTEX			
m/p-xylene	<0.4 ug/L	89	60-130
o-xylene	<0.4 ug/L	88	60-130
Toluene	<0.5 ug/L	92	60-130
Run No 352758 **Analysis/Extraction Date** 2018-09-17 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352760 **Analysis/Extraction Date** 2018-09-17 **Analyst** YH **Method** C SM2540			
Total Suspended Solids	<2 mg/L	103	90-110
Run No 352859 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** C SM2340B			

Guideline = *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Hardness as CaCO3			
Run No 352872 **Analysis/Extraction Date** 2018-09-17 **Analyst** AET **Method** POINTECLAIRE			
N-NH3	0.06 mg/L	97	
Run No 352874 **Analysis/Extraction Date** 2018-09-14 **Analyst** AET **Method** SUBCONTRACT P-INORG			
Phenols	<0.001 mg/L	88	69-132
Run No 352881 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SM2320,2510,4500H/F			
Alkalinity (CaCO3)	<5 mg/L	96	90-110
Conductivity	<5 uS/cm	99	90-110
pH		99	90-110
Run No 352890 **Analysis/Extraction Date** 2018-09-18 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	70	60-140
Petroleum Hydrocarbons F3	<50 ug/L	70	60-140
Petroleum Hydrocarbons F4	<50 ug/L	70	60-140
Run No 352965 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			

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Project: RBLR
COC #: 197842

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Mercury	<0.00001 mg/L	100	
Run No 352966 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Chromium VI	<0.001 mg/L	101	
Run No 352967 **Analysis/Extraction Date** 2018-09-19 **Analyst** AET **Method** SUBCONTRACT-A			
Cr(III)			

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Project: RBLR
COC #: 197842

Sample Comment Summary

Sample ID: 1386901 AEC-GW-1 Holding time for N-NO2, N-NO3 analysis was exceeded. Metals bottle used for minerals analysis.

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Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

Eurofins(Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils). Licensed by Ontario MOE for specific tests in drinking water.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

Certificate of Analysis

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Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386910 GW 2018-08-29 AEC-2-GW-1	1386911 GW 2018-08-29 AEC-2-GW-2
Anions	N-NO2	0.10	mg/L			<0.10	<0.10
	N-NO3	0.10	mg/L			<0.10	<0.10
General Chemistry	Alkalinity as CaCO3	5	mg/L			106	437
	Conductivity	5	uS/cm			246	814
	pH	1.00				7.90	7.96
	Total Suspended Solids	2	mg/L			<2	33
Hardness	Hardness as CaCO3	1	mg/L			113	440
Hydrocarbons	F1 (C6-C10)	20	ug/L			<20	<20
	F1-BTEX (C6-C10)	20	ug/L			<20	<20
	F2 (C10-C16)	20	ug/L			<20	<20
	F3 (C16-C34)	50	ug/L			<50	<50
	F4 (C34-C50)	50	ug/L			<50	<50
Metals	Ag	0.0001	mg/L			<0.0001	<0.0001
	Al	0.01	mg/L			0.05	0.92
	As	0.001	mg/L			<0.001	0.007
	B	0.01	mg/L			0.02	0.04
	Ba	0.01	mg/L			0.03	0.10
	Be	0.0005	mg/L			<0.0005	<0.0005
	Ca	1	mg/L			37	148
	Cd	0.0001	mg/L			<0.0001	0.0002
	Co	0.0002	mg/L			<0.0002	0.0030
	Cr	0.001	mg/L			<0.001	0.002
	Cu	0.001	mg/L			<0.001	0.004
	Fe	0.03	mg/L			0.12	8.76
	K	1	mg/L			1	3

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COC #: 197841

Group	Analyte	MRL	Units	Guideline	1386910 GW 2018-08-29 AEC-2-GW-1	1386911 GW 2018-08-29 AEC-2-GW-2
	Lab I.D.				1386910	1386911
	Sample Matrix				GW	GW
	Sample Type					
	Sampling Date				2018-08-29	2018-08-29
	Sample I.D.				AEC-2-GW-1	AEC-2-GW-2
Metals	Mg	1	mg/L		5	17
	Mo	0.005	mg/L		<0.005	<0.005
	Na	2	mg/L		7	14
	Ni	0.005	mg/L		<0.005	0.006
	Pb	0.001	mg/L		<0.001	0.006
	Sb	0.0005	mg/L		0.0008	0.0010
	Se	0.001	mg/L		<0.001	<0.001
	Sn	0.01	mg/L		<0.01	<0.01
	Tl	0.0001	mg/L		<0.0001	<0.0001
	U	0.001	mg/L		<0.001	<0.001
	V	0.001	mg/L		<0.001	0.004
	Zn	0.01	mg/L		0.01	0.01
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1	
	1-methylnaphthalene	0.1	ug/L		<0.1	
	2-methylnaphthalene	0.1	ug/L		<0.1	
	Acenaphthene	0.1	ug/L		<0.1	
	Acenaphthylene	0.1	ug/L		<0.1	
	Anthracene	0.1	ug/L		<0.1	
	Benzo(a)anthracene	0.1	ug/L		<0.1	
	Benzo(a)pyrene	0.01	ug/L		<0.01	
	Benzo(b)fluoranthene	0.05	ug/L		<0.05	
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1	
	Benzo(k)fluoranthene	0.05	ug/L		<0.05	
	Chrysene	0.05	ug/L		<0.05	
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1	

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Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386910 GW 2018-08-29 AEC-2-GW-1	1386911 GW 2018-08-29 AEC-2-GW-2
PAH	Fluoranthene	0.1	ug/L			<0.1	
	Fluorene	0.1	ug/L			<0.1	
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	
	Naphthalene	0.1	ug/L			<0.1	
	Phenanthrene	0.1	ug/L			<0.1	
	Pyrene	0.1	ug/L			<0.1	
PHC Surrogate	Alpha-androstrane	0	%			111	105
Subcontract	Cr(III)	0.001	mg/L			<0.001	0.002
	Cr(VI)	0.001	mg/L			<0.001	<0.001
	Hg	0.00001	mg/L			<0.00001	0.00002
Subcontract-Inorg	N-NH3	0.02	mg/L			0.16	0.49
	Phenols	0.001	mg/L			<0.001	0.025
VOCs Surrogates	Toluene-d8	0	%			127	106
Volatiles	Benzene	0.5	ug/L			<0.5	<0.5
	Ethylbenzene	0.5	ug/L			<0.5	<0.5
	m/p-xylene	0.4	ug/L			<0.4	<0.4
	o-xylene	0.4	ug/L			<0.4	<0.4
	Toluene	0.5	ug/L			<0.5	<0.5
	Xylene; total	0.5	ug/L			<0.5	<0.5

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COC #: 197841

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352321 **Analysis/Extraction Date** 2018-09-18 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene	<0.1 ug/L		
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352542 **Analysis/Extraction Date** 2018-09-12 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.0001 mg/L	108	89-111
Aluminum	<0.01 mg/L	106	91.5-108.4
Arsenic	<0.001 mg/L	103	91.7-108.2
Boron (total)	<0.01 mg/L	92	84.9-115
Barium	<0.01 mg/L	103	93.4-106.5
Beryllium	<0.0005 mg/L	106	89.5-110.4
Cadmium	<0.0001 mg/L	103	93.5-106.4
Cobalt	<0.0002 mg/L	102	92.7-107.2
Chromium Total	<0.001 mg/L	100	94-106
Copper	<0.001 mg/L	100	92.4-107.6
Iron	<0.03 mg/L	92	91-109
Molybdenum	<0.005 mg/L	95	92.8-107.2
Nickel	<0.005 mg/L	103	93-106.9

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Lead	<0.001 mg/L	101	90-110
Antimony	<0.0005 mg/L	110	89.6-110.3
Selenium	<0.001 mg/L	96	87.4-112.6
Sn	<0.01 mg/L	82	80-120
Thallium	<0.0001 mg/L	101	90.4-109.5
Uranium	<0.001 mg/L	94	92.7-107.2
Vanadium	<0.001 mg/L	101	93-106.9
Zinc	<0.01 mg/L	100	91.5-108.4
Run No 352611 **Analysis/Extraction Date** 2018-09-13 **Analyst** Z S **Method** C SM4500-NO3-F			
N-NO2	<0.10 mg/L	100	80-120
N-NO3	<0.10 mg/L	100	80-120
Run No 352751 **Analysis/Extraction Date** 2018-09-16 **Analyst** H F **Method** M SM3120B-3500C			
Calcium	<1 mg/L	100	90-110
Potassium	<1 mg/L	105	87-113
Magnesium	<1 mg/L	98	76-124
Sodium	<2 mg/L	107	82-118

Guideline = *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352757 **Analysis/Extraction Date** 2018-09-13 **Analyst** TJB **Method** V 8260B			
Benzene	<0.5 ug/L	91	60-130
Ethylbenzene	<0.5 ug/L	85	60-130
Petroleum Hydrocarbons F1	<20 ug/L	86	60-140
Petroleum Hydrocarbons F1-BTEX			
m/p-xylene	<0.4 ug/L	89	60-130
o-xylene	<0.4 ug/L	88	60-130
Toluene	<0.5 ug/L	92	60-130
Run No 352758 **Analysis/Extraction Date** 2018-09-17 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 352760 **Analysis/Extraction Date** 2018-09-17 **Analyst** YH **Method** C SM2540			
Total Suspended Solids	<2 mg/L	103	90-110
Run No 352827 **Analysis/Extraction Date** 2018-09-17 **Analyst** AET **Method** SM2320,2510,4500H/F			
Alkalinity (CaCO3)	<5 mg/L	97	90-110
Conductivity	<5 uS/cm	99	90-110

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Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

QC Summary

Analyte	Blank	QC % Rec	QC Limits
pH		99	90-110
Run No 352859 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** C SM2340B			
Hardness as CaCO3			
Run No 352871 **Analysis/Extraction Date** 2018-09-17 **Analyst** AET **Method** POINTECLAIRE			
N-NH3	0.06 mg/L	97	
Run No 352873 **Analysis/Extraction Date** 2018-09-14 **Analyst** AET **Method** SUBCONTRACT P-INORG			
Phenols	<0.001 mg/L	88	69-132
Run No 352890 **Analysis/Extraction Date** 2018-09-18 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	70	60-140
Petroleum Hydrocarbons F3	<50 ug/L	70	60-140
Petroleum Hydrocarbons F4	<50 ug/L	70	60-140
Run No 352965 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Mercury	<0.00001 mg/L	100	

Guideline = *** = Guideline Exceedence**

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Client: Outcome Consultants Inc
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K1Y 0Y2
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Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 352966 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SUBCONTRACT-A			
Chromium VI	<0.001 mg/L	101	
Run No 352967 **Analysis/Extraction Date** 2018-09-19 **Analyst** AET **Method** SUBCONTRACT-A			
Cr(III)			

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Certificate of Analysis

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Report Number: 1816508
Date Submitted: 2018-09-10
Date Reported: 2018-09-19
Project: RBLR
COC #: 197841

Sample Comment Summary

Sample ID: 1386910 AEC-2-GW-1 Holding time for N-NO2, N-NO3 analysis was exceeded for this report.

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Report Number: 1816510
Date Submitted: 2018-09-11
Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Sarah Horner, Inorganics Technician

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed in Ottawa, Ontario (unless otherwise indicated).

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.

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Report Number: 1816510
Date Submitted: 2018-09-11
Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

				Lab I.D.	1386914	1386915
				Sample Matrix	GW	GW
				Sample Type		
				Sampling Date	2018-09-04	2018-09-04
				Sample I.D.	AECL-GW2	AECL-GW3
Group	**Analyte**	**MRL**	**Units**	**Guideline**		
Anions	Br	0.25	mg/L		<0.25	<0.25
	Cl	1	mg/L		15	4
	N-NO2	0.10	mg/L		<0.10	<0.10
	N-NO3	0.10	mg/L		<0.10	<0.10
	SO4	1	mg/L		51	9
General Chemistry	F	0.10	mg/L		<0.10	0.10
	pH	1.00			8.01	7.99
Hydrocarbons	F2 (C10-C16)	20	ug/L		<20	<20
	F3 (C16-C34)	50	ug/L		<50	<50
	F4 (C34-C50)	50	ug/L		<50	<50
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1	<0.1
	1-methylnaphthalene	0.1	ug/L		<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L		<0.1	<0.1
	Acenaphthene	0.1	ug/L		<0.1	<0.1
	Acenaphthylene	0.1	ug/L		<0.1	<0.1
	Anthracene	0.1	ug/L		<0.1	<0.1
	Benzo(a)anthracene	0.1	ug/L		<0.1	<0.1
	Benzo(a)pyrene	0.01	ug/L		<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05	<0.05
	Chrysene	0.05	ug/L		<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1	<0.1
	Fluoranthene	0.1	ug/L		<0.1	<0.1
	Fluorene	0.1	ug/L		<0.1	<0.1

Guideline = *** = Guideline Exceedence**

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Report Number: 1816510
Date Submitted: 2018-09-11
Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1386914 GW 2018-09-04 AECL-GW2	1386915 GW 2018-09-04 AECL-GW3
PAH	Indeno(1,2,3-c,d)pyrene	0.1	ug/L			<0.1	<0.1
	Naphthalene	0.1	ug/L			<0.1	<0.1
	Phenanthrene	0.1	ug/L			<0.1	<0.1
	Pyrene	0.1	ug/L			<0.1	<0.1
PHC Surrogate	Alpha-androstrane	0	%			111	105

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Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2018-09-19 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 352321 **Analysis/Extraction Date** 2018-09-17 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	66	50-140
Methlynaphthalene, 2-	<0.1 ug/L	54	50-140
Acenaphthene	<0.1 ug/L	62	50-140
Acenaphthylene	<0.1 ug/L	64	50-140
Anthracene	<0.1 ug/L	70	50-140
Benz[a]anthracene	<0.1 ug/L	60	50-140
Benzo[a]pyrene	<0.01 ug/L	64	50-140
Benzo[b]fluoranthene	<0.05 ug/L	78	50-140
Benzo[ghi]perylene	<0.1 ug/L	62	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	71	50-140
Dibenz[a h]anthracene	<0.1 ug/L	64	50-140
Fluoranthene	<0.1 ug/L	64	50-140

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Report Number: 1816510
Date Submitted: 2018-09-11
Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.1 ug/L	62	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	62	50-140
Naphthalene	<0.1 ug/L	58	50-140
Phenanthrene	<0.1 ug/L	54	50-140
Pyrene	<0.1 ug/L	64	50-140
Run No 352611 **Analysis/Extraction Date** 2018-09-13 **Analyst** Z S **Method** C SM4500-NO3-F			
N-NO2	<0.10 mg/L	100	80-120
N-NO3	<0.10 mg/L	100	80-120
Run No 352825 **Analysis/Extraction Date** 2018-09-18 **Analyst** H F **Method** SM 4110			
Br	<0.25 mg/L	105	90-110
Chloride	<1 mg/L	104	90-110
SO4	<1 mg/L	111	90-110
Run No 352927 **Analysis/Extraction Date** 2018-09-18 **Analyst** AET **Method** SM2320,2510,4500H/F			
F	<0.10 mg/L	101	90-110
pH		99	90-110

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Date Submitted: 2018-09-11
Date Reported: 2018-09-19
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COC #: 197837

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 353002 **Analysis/Extraction Date** 2018-09-19 **Analyst** RRK **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	80	60-140
Petroleum Hydrocarbons F3	<50 ug/L	80	60-140
Petroleum Hydrocarbons F4	<50 ug/L	80	60-140

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Report Number: 1816510
Date Submitted: 2018-09-11
Date Reported: 2018-09-19
Project: RBLR P2017-06
COC #: 197837

Sample Comment Summary

Sample ID: 1386914 AECL-GW2 Holding time for N-NO2, N-NO3 analysis was exceeded for this report.

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Attention: Jonathan Markiewicz
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Invoice to: Outcome Consultants Inc

Report Number: 1817150
Date Submitted: 2018-09-20
Date Reported: 2018-09-28
Project: P2017-06
COC #: 197848

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

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Certificate of Analysis

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Report Number: 1817150
Date Submitted: 2018-09-20
Date Reported: 2018-09-28
Project: P2017-06
COC #: 197848

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1388761 Soil 2018-09-08 AEC 3 HMPA 1	1388762 Soil 2018-09-16 AEC 3 HMPA 2	1388763 Soil 2018-09-16 AEC 3 HMPA 3
Hydrocarbons	F1 (C6-C10)	10	ug/g		<10	<10	<10
	F1-BTEX (C6-C10)	10	ug/g		<10	<10	<10
	F2 (C10-C16)	10	ug/g		<10	90	<10
	F3 (C16-C34)	20	ug/g		<20	690	<20
	F4 (C34-C50)	20	ug/g		<20	<20	<20
Mercury	Hg	0.1	ug/g		<0.1	<0.1	<0.1
Metals	Ag	0.2	ug/g		<0.2	<0.2	<0.2
	Al	5	ug/g		1940	1930	1670
	As	1	ug/g		1	2	1
	B	5	ug/g		6	11	6
	Ba	1	ug/g		18	147	35
	Be	1	ug/g		<1	<1	<1
	Cd	0.4	ug/g		<0.4	0.5	<0.4
	Co	1	ug/g		1	2	1
	Cr	1	ug/g		7	22	15
	Cr(III)		ug/g		7.00	18.3	10.8
	Cr(VI)	0.20	ug/g		<0.20	3.69	4.2
	Cu	1	ug/g		3	5	4
	Fe	5	ug/g		3340	4760	4200
	Mo	1	ug/g		<1	1	<1
	Ni	1	ug/g		5	5	6
	Pb	1	ug/g		19	78	59
	Sb	1	ug/g		<1	<1	<1
	Se	1	ug/g		<1	<1	<1
	Sn	5	ug/g		<5	<5	<5

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Project: P2017-06
COC #: 197848

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1388761 Soil 2018-09-08 AEC 3 HMPA 1	1388762 Soil 2018-09-16 AEC 3 HMPA 2	1388763 Soil 2018-09-16 AEC 3 HMPA 3
Metals	Tl	1	ug/g			<1	<1	<1
	U	0.5	ug/g			<0.5	<0.5	<0.5
	V	2	ug/g			6	6	6
	Zn	2	ug/g			16	23	22
Moisture	Moisture-Humidite	0.1	%			9.2	8.2	7.8
PAH	1-methylnaphthalene	0.05	ug/g			<0.05	12.4	2.23
	2-methylnaphthalene	0.05	ug/g			<0.05	21.9	3.57
	Acenaphthene	0.05	ug/g			<0.05	0.12	<0.05
	Acenaphthylene	0.05	ug/g			<0.05	0.07	<0.05
	Anthracene	0.05	ug/g			<0.05	0.08	<0.05
	Benzo(a)anthracene	0.05	ug/g			<0.05	<0.05	<0.05
	Benzo(a)pyrene	0.05	ug/g			<0.05	<0.05	<0.05
	Benzo(b)fluoranthene	0.05	ug/g			<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g			<0.05	<0.05	<0.05
	Benzo(k)fluoranthene	0.05	ug/g			<0.05	<0.05	<0.05
	Chrysene	0.05	ug/g			<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g			<0.05	<0.05	<0.05
	Fluoranthene	0.05	ug/g			<0.05	<0.05	<0.05
	Fluorene	0.05	ug/g			<0.05	0.05	<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g			<0.05	<0.05	<0.05
	Naphthalene	0.05	ug/g			<0.05	0.82	0.13
	Phenanthrene	0.05	ug/g			<0.05	0.09	<0.05
	Pyrene	0.05	ug/g			<0.05	<0.05	<0.05
PHC Surrogate	Alpha-androstrane	0	%			72	67	82
VOCs Surrogates	Toluene-d8	0	%			101	97	100

Guideline = *** = Guideline Exceedence**

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Project: P2017-06
COC #: 197848

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1388761 Soil 2018-09-08 AEC 3 HMPA 1	1388762 Soil 2018-09-16 AEC 3 HMPA 2	1388763 Soil 2018-09-16 AEC 3 HMPA 3
Volatiles	Benzene	0.02	ug/g			<0.02	<0.02	<0.02
	Ethylbenzene	0.05	ug/g			<0.05	0.09	<0.05
	m/p-xylene	0.05	ug/g			<0.05	0.08	<0.05
	o-xylene	0.05	ug/g			<0.05	<0.05	<0.05
	Toluene	0.20	ug/g			<0.20	<0.20	<0.20
	Xylene; total	0.05	ug/g			<0.05	0.08	<0.05

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Report Number: 1817150
Date Submitted: 2018-09-20
Date Reported: 2018-09-28
Project: P2017-06
COC #: 197848

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 343956 **Analysis/Extraction Date** 2018-09-27 **Analyst** RRK **Method** C SM2540B			
Moisture-Humidite			80-120
Run No 353067 **Analysis/Extraction Date** 2018-09-24 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.05 ug/g	61	50-140
Methlynaphthalene, 2-	<0.05 ug/g	58	50-140
Acenaphthene	<0.05 ug/g	63	50-140
Acenaphthylene	<0.05 ug/g	59	50-140
Anthracene	<0.05 ug/g	67	50-140
Benz[a]anthracene	<0.05 ug/g	63	50-140
Benzo[a]pyrene	<0.05 ug/g	62	50-140
Benzo[b]fluoranthene	<0.05 ug/g	60	50-140
Benzo[ghi]perylene	<0.05 ug/g	62	50-140
Benzo[k]fluoranthene	<0.05 ug/g	59	50-140
Chrysene	<0.05 ug/g	67	50-140
Dibenz[a h]anthracene	<0.05 ug/g	62	50-140
Fluoranthene	<0.05 ug/g	70	50-140

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K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1817150
Date Submitted: 2018-09-20
Date Reported: 2018-09-28
Project: P2017-06
COC #: 197848

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.05 ug/g	64	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	62	50-140
Naphthalene	<0.05 ug/g	58	50-140
Phenanthrene	<0.05 ug/g	64	50-140
Pyrene	<0.05 ug/g	71	50-140
Run No 353206 **Analysis/Extraction Date** 2018-09-21 **Analyst** SKH **Method** EPA 200.8			
Silver	<0.2 ug/g	95	70-130
Aluminum	6 ug/g	103	70-130
Arsenic	<1 ug/g	103	70-130
Boron (total)	<5 ug/g	106	70-130
Barium	<1 ug/g	106	70-130
Beryllium	<1 ug/g	109	70-130
Cadmium	<0.4 ug/g	109	70-130
Cobalt	<1 ug/g	104	70-130
Chromium Total	<1 ug/g	107	70-130
Copper	<1 ug/g	110	70-130
Iron	20 ug/g	101	70-130

Guideline = *** = Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

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Certificate of Analysis

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Molybdenum	<1 ug/g	100	70-130
Nickel	<1 ug/g	107	70-130
Lead	<1 ug/g	108	70-130
Antimony	<1 ug/g	89	70-130
Selenium	<1 ug/g	104	70-130
Thallium	<1 ug/g	108	70-130
Uranium	<0.5 ug/g	102	70-130
Vanadium	<2 ug/g	105	70-130
Zinc	<2 ug/g	113	70-130
Run No 353255 **Analysis/Extraction Date** 2018-09-27 **Analyst** H D **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	97	80-120
Run No 353361 **Analysis/Extraction Date** 2018-09-21 **Analyst** TJB **Method** V 8260B			
Benzene	<0.02 ug/g	101	60-130
Ethylbenzene	<0.05 ug/g	104	60-130
Petroleum Hydrocarbons F1	<10 ug/g	98	80-120
Petroleum Hydrocarbons F1-BTEX			

Guideline = *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
m/p-xylene	<0.05 ug/g	105	60-130
o-xylene	<0.05 ug/g	102	60-130
Toluene	<0.20 ug/g	105	60-130
Run No 353362 **Analysis/Extraction Date** 2018-09-26 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			
Run No 353418 **Analysis/Extraction Date** 2018-09-26 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	102	80-120
Run No 353436 **Analysis/Extraction Date** 2018-09-26 **Analyst** SKH **Method** EPA 200.8			
Sn	<5 ug/g	77	70-130
Run No 353529 **Analysis/Extraction Date** 2018-09-27 **Analyst** RRK **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	106	80-120
Petroleum Hydrocarbons F3	<20 ug/g	106	80-120
Petroleum Hydrocarbons F4	<20 ug/g	106	80-120
Run No 353541 **Analysis/Extraction Date** 2018-09-28 **Analyst** H D **Method** M US EPA 3060A			

Guideline = *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Cr(III)			
Chromium VI	<0.20 ug/g	102	80-120

Guideline = *** = Guideline Exceedence**

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Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
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K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#:

Report Number: 1817342
Date Submitted: 2018-09-24
Date Reported: 2018-10-01
Project: P2017-06
COC #: 197850
Temperature (C):
Custody Seal:

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1389330	AEC3 Waste	PCB MRL elevated due to matrix interference (dilution was done).

Report Comments:

Addrine Thomas, Inorganics Supervisor

Eurofins Ottawa is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on our CALA scope of accreditation. It can be found at http://www.cala.ca/scopes/2602.pdf.
Eurofins (Ottawa) is certified and accredited for specific parameters by OMAFRA, Ontario Ministry of Agriculture, Food and Rural Affairs (for farm soils).
Licensed by Ontario MOE for specific tests in drinking water.
Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required.

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Date Reported: 2018-10-01
Project: P2017-06
COC #: 197850

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
PHC's F1	353663	10	ug/g		320
PHC's F1-BTEX	353668	10	ug/g		270
PHC's F2	353704	10	ug/g		2220
PHC's F3	353704	20	ug/g		1070
PHC's F4	353704	20	ug/g		31700

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Acenaphthene	353473	0.05	ug/g		<0.05
Acenaphthylene	353473	0.05	ug/g		10.4
Anthracene	353473	0.05	ug/g		5.68
Benz[a]anthracene	353473	0.05	ug/g		4.33
Benzo[a]pyrene	353473	0.05	ug/g		1.07
Benzo[b]fluoranthene	353473	0.05	ug/g		2.10
Benzo[ghi]perylene	353473	0.05	ug/g		<0.05
Benzo[k]fluoranthene	353473	0.05	ug/g		0.97
Chrysene	353473	0.05	ug/g		6.50
Dibenz[a h]anthracene	353473	0.05	ug/g		<0.05
Fluoranthene	353473	0.05	ug/g		5.88
Fluorene	353473	0.05	ug/g		13.6
Indeno[1 2 3-cd]pyrene	353473	0.05	ug/g		<0.05

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PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Methlynaphthalene, 1-	353473	0.05	ug/g		3110
Methlynaphthalene, 2-	353473	0.05	ug/g		6320
Naphthalene	353473	0.05	ug/g		490
Phenanthrene	353473	0.05	ug/g		29.7
Pyrene	353473	0.05	ug/g		8.27

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Benzene	353647	0.02	ug/g		1.79
Ethylbenzene	353647	0.05	ug/g		4.65
Toluene	353647	0.20	ug/g		12.9
Xylene Mixture	353667	0.05	ug/g		26.3
Xylene, m/p-	353647	0.05	ug/g		18.5
Xylene, o-	353647	0.05	ug/g		7.82

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Moisture-Humidite	343956	0.1	%		26.0

PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Aroclor 1242	353712	2	ug/g		<2
Aroclor 1248	353712	2	ug/g		<2
Aroclor 1254	353712	2	ug/g		10
Aroclor 1260	353712	2	ug/g		<2
Polychlorinated Biphenyls	353712	2	ug/g		<2

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PCB Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Decachlorobiphenol	353707		%		N/A

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Alpha-androstrane	353704	0	%		111

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1389330 Sample Matrix Soil153 Sample Type Sample Date 2018-09-17 Sampling Time Sample I.D. AEC3 Waste
Toluene-d8	353647	0	%		103

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
343956	Moisture-Humidite			80-120				
353473	Methlynaphthalene, 1-	<0.05 ug/g	61	50-140		50-140		0-40
353473	Methlynaphthalene, 2-	<0.05 ug/g	58	50-140		50-140		0-40
353473	Acenaphthene	<0.05 ug/g	63	50-140		50-140		0-40
353473	Acenaphthylene	<0.05 ug/g	59	50-140		50-140		0-40
353473	Anthracene	<0.05 ug/g	67	50-140		50-140		0-40
353473	Benz[a]anthracene	<0.05 ug/g	63	50-140		50-140		0-40
353473	Benzo[a]pyrene	<0.05 ug/g	62	50-140		50-140		0-40
353473	Benzo[b]fluoranthene	<0.05 ug/g	60	50-140		50-140		0-40
353473	Benzo[ghi]perylene	<0.05 ug/g	62	50-140		50-140		0-40
353473	Benzo[k]fluoranthene	<0.05 ug/g	59	50-140				0-40
353473	Chrysene	<0.05 ug/g	67	50-140		50-140		0-40
353473	Dibenz[a h]anthracene	<0.05 ug/g	62	50-140		50-140		0-40
353473	Fluoranthene	<0.05 ug/g	70	50-140		50-140		0-40
353473	Fluorene	<0.05 ug/g	64	50-140		50-140		0-40
353473	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	62	50-140		50-140		0-40
353473	Naphthalene	<0.05 ug/g	58	50-140		50-140		0-40
353473	Phenanthrene	<0.05 ug/g	64	50-140		50-140		0-40
353473	Pyrene	<0.05 ug/g	71	50-140		50-140		0-40
353647	Benzene	<0.02 ug/g	101	60-130	97	50-140	0	0-50
353647	Ethylbenzene	<0.05 ug/g	104	60-130	90	50-140	0	0-50
353647	Xylene, m/p-	<0.05 ug/g	105	60-130	97	50-140	0	0-50
353647	Xylene, o-	<0.05 ug/g	102	60-130	97	50-140	0	0-50
353647	Toluene	<0.20 ug/g	105	60-130	99	50-140	0	0-50
353663	PHC's F1	<10 ug/g	94	80-120	88	60-140	0	0-30
353667	Xylene Mixture							
353668	PHC's F1-BTEX							
353704	PHC's F2	<10 ug/g	84	80-120	69	60-140	0	0-30
353704	PHC's F3	<20 ug/g	84	80-120	69	60-140	0	0-30
353704	PHC's F4	<20 ug/g	84	80-120	69	60-140	0	0-30
353712	Aroclor 1242	<2 ug/g	83	60-140	88	60-140	0	0-40
353712	Aroclor 1248	<2 ug/g	83	60-140	88	60-140	0	0-40
353712	Aroclor 1254	<2 ug/g	83	60-140	88	60-140	0	0-40

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Certificate of Analysis

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Invoice to: Outcome Consultants Inc

Report Number: 1817342
Date Submitted: 2018-09-24
Date Reported: 2018-10-01
Project: P2017-06
COC #: 197850

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
353712	Aroclor 1260	<2 ug/g	83	60-140	88	60-140	0	0-40
353712	Polychlorinated Biphenyls	<2 ug/g	83	60-140	88	60-140	0	0-40

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
343956	Moisture-Humidite	Manual	2018-10-01	2018-10-01	RRK	C SM2540B
353473	Methlynaphthalene, 1-		2018-09-27	2018-09-28	C_M	P 8270
353473	Methlynaphthalene, 2-		2018-09-27	2018-09-28	C_M	P 8270
353473	Acenaphthene		2018-09-27	2018-09-27	C_M	P 8270
353473	Acenaphthylene		2018-09-27	2018-09-27	C_M	P 8270
353473	Anthracene		2018-09-27	2018-09-27	C_M	P 8270
353473	Benz[a]anthracene		2018-09-27	2018-09-27	C_M	P 8270
353473	Benzo[a]pyrene		2018-09-27	2018-09-27	C_M	P 8270
353473	Benzo[b]fluoranthene		2018-09-27	2018-09-27	C_M	P 8270
353473	Benzo[ghi]perylene		2018-09-27	2018-09-27	C_M	P 8270
353473	Benzo[k]fluoranthene		2018-09-27	2018-09-27	C_M	P 8270
353473	Chrysene		2018-09-27	2018-09-27	C_M	P 8270
353473	Dibenz[a h]anthracene		2018-09-27	2018-09-27	C_M	P 8270
353473	Fluoranthene		2018-09-27	2018-09-27	C_M	P 8270
353473	Fluorene		2018-09-27	2018-09-27	C_M	P 8270
353473	Indeno[1 2 3-cd]pyrene		2018-09-27	2018-09-27	C_M	P 8270
353473	Naphthalene		2018-09-27	2018-09-27	C_M	P 8270
353473	Phenanthrene		2018-09-27	2018-09-27	C_M	P 8270
353473	Pyrene		2018-09-27	2018-09-27	C_M	P 8270
353647	Benzene	GC/MS	2018-09-26	2018-09-27	TJB	V 8260B
353647	Ethylbenzene	GC/MS	2018-09-26	2018-09-27	TJB	V 8260B
353647	Xylene, m/p-	GC/MS	2018-09-26	2018-09-27	TJB	V 8260B
353647	Xylene, o-	GC/MS	2018-09-26	2018-09-27	TJB	V 8260B
353647	Toluene	GC/MS	2018-09-26	2018-09-27	TJB	V 8260B
353663	PHC's F1	GC/FID	2018-10-01	2018-10-01	TJB	CCME
353667	Xylene Mixture	GC/MS	2018-10-01	2018-10-01	TJB	V 8260B
353668	PHC's F1-BTEX	GC/FID	2018-10-01	2018-10-01	TJB	CCME
353704	PHC's F2	GC/FID	2018-10-01	2018-10-01	RRK	CCME
353704	PHC's F3	GC/FID	2018-10-01	2018-10-01	RRK	CCME
353704	PHC's F4	GC/FID	2018-10-01	2018-10-01	RRK	CCME
353712	Aroclor 1242	GC/ECD	2018-09-27	2018-09-28	R_E	EPA 8081B/8082A
353712	Aroclor 1248	GC/ECD	2018-09-27	2018-09-28	R_E	EPA 8081B/8082A
353712	Aroclor 1254	GC/ECD	2018-09-27	2018-09-28	R_E	EPA 8081B/8082A

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
353712	Aroclor 1260	GC/ECD	2018-09-27	2018-09-28	R_E	EPA 8081B/8082A
353712	Polychlorinated Biphenyls	GC/ECD	2018-09-27	2018-09-28	R_E	EPA 8081B/8082A

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#:

Report Number:	1912355
Date Submitted:	2019-07-15
Date Reported:	2019-07-23
Project:	RBCR P2017-06
COC #:	207023
Temperature (C):	8
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1441091 AEC-1-SW-1-1907 Sodium analysis for this report performed from the nitric acid perserved bottles.

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

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Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
PHC's F1	369518	20	ug/L		<20	<20	<20	<20	<20
PHC's F1-BTEX	369521	20	ug/L		<20	<20	<20	<20	<20
PHC's F2	369292	20	ug/L		<20	<20	<20	<20	<20
PHC's F3	369292	50	ug/L		<50	<50	<50	<50	<50
PHC's F4	369292	50	ug/L		<50	<50	<50	<50	<50

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
PHC's F1	369518	20	ug/L		<20	<20	<20	<20	<20
PHC's F1-BTEX	369521	20	ug/L		<20	<20	<20	<20	<20
PHC's F2	369292	20	ug/L		<20	<20	<20	<20	<20
PHC's F3	369292	50	ug/L		<50	<50	<50	<50	<50
PHC's F4	369292	50	ug/L		<50	<50	<50	<50	<50

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.			
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907	1441104 SURF W 2019-07-09 Trip Blank-1-1907
PHC's F1	369518	20	ug/L		<20	<20	<20	<20
PHC's F1-BTEX	369521	20	ug/L		<20	<20	<20	
PHC's F2	369292	20	ug/L		<20	<20	<20	
PHC's F3	369292	50	ug/L		<50	<50	<50	
PHC's F4	369292	50	ug/L		50	<50	<50	

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Aluminum	369245	0.01	mg/L		<0.01	<0.01	0.01	<0.01	<0.01
Antimony	369245	0.0005	mg/L		0.0012	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Barium	369245	0.01	mg/L		0.09	0.07	0.08	0.03	0.07
Beryllium	369245	0.0005	mg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (total)	369245	0.01	mg/L		0.04	0.02	0.02	0.02	0.02
Cadmium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium III	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Chromium Total	369245	0.001	mg/L		0.002	0.002	0.002	<0.001	0.002
Chromium VI	369408	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	369245	0.0002	mg/L		<0.0002	<0.0002	<0.0002	0.0004	<0.0002
Copper	369245	0.001	mg/L		0.003	<0.001	0.001	<0.001	<0.001
Iron	369245	0.03	mg/L		<0.03	<0.03	<0.03	<0.03	<0.03

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Lead	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	369245	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	369245	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium	369170	2	mg/L		6	6	3	7	3
Thallium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	369245	0.01	mg/L		0.02	<0.01	<0.01	<0.01	<0.01

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Aluminum	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	0.01
Antimony	369245	0.0005	mg/L		<0.0005	0.0005	0.0007	<0.0005	<0.0005
Arsenic	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Barium	369245	0.01	mg/L		0.02	0.06	0.09	0.06	0.06
Beryllium	369245	0.0005	mg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (total)	369245	0.01	mg/L		0.02	0.01	0.05	0.03	0.03
Cadmium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Chromium III	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Chromium Total	369245	0.001	mg/L		0.001	<0.001	<0.001	<0.001	<0.001
Chromium VI	369408	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	369245	0.0002	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Copper	369245	0.001	mg/L		0.005	<0.001	<0.001	<0.001	<0.001
Iron	369245	0.03	mg/L		0.04	<0.03	<0.03	0.04	<0.03
Lead	369245	0.001	mg/L		<0.001	<0.001	<0.001	0.001	<0.001
Mercury	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	369245	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	369245	0.005	mg/L		<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Silver	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium	369170	2	mg/L		4	6	7	7	6
Thallium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	369245	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	369245	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01

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					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
Aluminum	369245	0.01	mg/L		0.02	0.03	0.02
Antimony	369245	0.0005	mg/L		<0.0005	<0.0005	<0.0005
Arsenic	369245	0.001	mg/L		<0.001	<0.001	<0.001
Barium	369245	0.01	mg/L		<0.01	<0.01	<0.01
Beryllium	369245	0.0005	mg/L		<0.0005	<0.0005	<0.0005
Boron (total)	369245	0.01	mg/L		<0.01	<0.01	<0.01
Cadmium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001
Chromium III	369245	0.01	mg/L		<0.01	<0.01	<0.01
Chromium Total	369245	0.001	mg/L		<0.001	<0.001	<0.001
Chromium VI	369408	0.01	mg/L		<0.01	<0.01	<0.01
Cobalt	369245	0.0002	mg/L		<0.0002	<0.0002	<0.0002
Copper	369245	0.001	mg/L		<0.001	<0.001	<0.001
Iron	369245	0.03	mg/L		<0.03	<0.03	<0.03
Lead	369245	0.001	mg/L		<0.001	<0.001	<0.001
Mercury	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001
Molybdenum	369245	0.005	mg/L		<0.005	<0.005	<0.005
Nickel	369245	0.005	mg/L		<0.005	<0.005	<0.005
Selenium	369245	0.001	mg/L		<0.001	<0.001	<0.001
Silver	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001
Sodium	369170	2	mg/L		<2	<2	<2
Thallium	369245	0.0001	mg/L		<0.0001	<0.0001	<0.0001
Tin	369245	0.01	mg/L		<0.01	<0.01	<0.01
Uranium	369245	0.001	mg/L		<0.001	<0.001	<0.001

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Vanadium	369245	0.001	mg/L		<0.001	<0.001	<0.001
Zinc	369245	0.01	mg/L		<0.01	<0.01	<0.01

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	
		1	ug/L						<1
Acenaphthene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	369211	0.1	ug/L		0.1	<0.1	<0.1	<0.1	<0.1
Benz[a]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[a]pyrene	369211	0.01	ug/L		<0.01	<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 1-	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 2-	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1

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					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Naphthalene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
1+2-methylnaphthalene	208523	0.1	ug/L						<0.1
		1	ug/L		<1	<1	<1	<1	
Acenaphthene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benz[a]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[a]pyrene	369211	0.01	ug/L		<0.01	<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	369211	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 1-	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1

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PO#:
Invoice to: Outcome Consultants Inc

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Project: RBCR P2017-06
COC #: 207023

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Methlynaphthalene, 2-	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1	<0.1
Acenaphthene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Acenaphthylene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Benz[a]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Benzo[a]pyrene	369211	0.01	ug/L		<0.01	<0.01	<0.01
Benzo[b]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05
Benzo[ghi]perylene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Benzo[k]fluoranthene	369211	0.05	ug/L		<0.05	<0.05	<0.05
Chrysene	369211	0.05	ug/L		<0.05	<0.05	<0.05
Dibenz[a h]anthracene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Fluoranthene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Fluorene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Methlynaphthalene, 1-	369211	0.1	ug/L		<0.1	<0.1	<0.1

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PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
Methlynaphthalene, 2-	369211	0.1	ug/L		<0.1	<0.1	<0.1
Naphthalene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Phenanthrene	369211	0.1	ug/L		<0.1	<0.1	<0.1
Pyrene	369211	0.1	ug/L		<0.1	<0.1	<0.1

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Benzene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	369519	0.5	ug/L			<0.5	<0.5	<0.5	<0.5
	369520	0.5	ug/L		<0.5				
Xylene, m/p-	369517	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4
Xylene, o-	369517	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Benzene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	369517	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	369519	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	369517	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4
Xylene, o-	369517	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
Benzene	369517	0.5	ug/L		<0.5	<0.5	<0.5
Ethylbenzene	369517	0.5	ug/L		<0.5	<0.5	<0.5
Toluene	369517	0.5	ug/L		<0.5	<0.5	<0.5
Xylene Mixture	369519	0.5	ug/L		<0.5	<0.5	<0.5
Xylene, m/p-	369517	0.4	ug/L		<0.4	<0.4	<0.4
Xylene, o-	369517	0.4	ug/L		<0.4	<0.4	<0.4

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Alpha-androstrane	369292	0	%		118	117	126	111	110

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Alpha-androstrane	369292	0	%		111	111	112	126	115

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
Alpha-androstrane	369292	0	%		117	115	116

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441091 SURF W 2019-07-07 AEC-1-SW-1-1907	1441092 SURF W 2019-07-08 AEC-1-SW-2-1907	1441093 SURF W 2019-07-08 AEC-1-SW-3-1907	1441094 SURF W 2019-07-08 AEC-1-SW-4-1907	1441095 SURF W 2019-07-08 AEC-1-SW-DUP1-1907
Toluene-d8	369517	0	%		101	101	103	105	103

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441096 SURF W 2019-07-08 AEC-2-SW-1-1907	1441097 SURF W 2019-07-08 AEC-2-SW-2-1907	1441098 SURF W 2019-07-08 AEC-2-SW-3-1907	1441099 SURF W 2019-07-08 AEC-2-SW-4-1907	1441100 SURF W 2019-07-08 AEC-2-SW-5-1907
Toluene-d8	369517	0	%		103	104	104	105	102

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1441101 SURF W 2019-07-08 AEC-3-SW-1-1907	1441102 SURF W 2019-07-08 AEC-3-SW-2-1907	1441103 SURF W 2019-07-08 AEC-3-SW-DUP2-1907
Toluene-d8	369517	0	%		103	105	101

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
369170	Sodium	<2 mg/L	94	82-118		80-120	1	0-20
369211	Methlynaphthalene, 1-	<0.1 ug/L	76	50-140		50-140		0-30
369211	Methlynaphthalene, 2-	<0.1 ug/L	72	50-140		50-140		0-30
369211	Acenaphthene	<0.1 ug/L	74	50-140		50-140		0-30
369211	Acenaphthylene	<0.1 ug/L	68	50-140		50-140		0-30
369211	Anthracene	<0.1 ug/L	76	50-140		50-140		0-30
369211	Benz[a]anthracene	<0.1 ug/L	78	50-140		50-140		0-30
369211	Benzo[a]pyrene	<0.01 ug/L	70	50-140		50-140		0-30
369211	Benzo[b]fluoranthene	<0.05 ug/L	89	50-140		50-140		0-30
369211	Benzo[ghi]perylene	<0.1 ug/L	84	50-140		50-140		0-30
369211	Benzo[k]fluoranthene	<0.05 ug/L	78	50-140		50-140		0-30
369211	Chrysene	<0.05 ug/L	83	50-140		50-140		0-30
369211	Dibenz[a h]anthracene	<0.1 ug/L	78	50-140		50-140		0-30
369211	Fluoranthene	<0.1 ug/L	74	50-140		50-140		0-30
369211	Fluorene	<0.1 ug/L	70	50-140		50-140		0-30
369211	Indeno[1 2 3-cd]pyrene	<0.1 ug/L	86	50-140		50-140		0-30
369211	Naphthalene	<0.1 ug/L	76	50-140		50-140		0-30
369211	Phenanthrene	<0.1 ug/L	80	50-140		50-140		0-30
369211	Pyrene	<0.1 ug/L	74	50-140		50-140		0-30
369245	Silver	<0.0001	105	80-120	93	70-130	0	0-20
369245	Aluminum	<0.01 mg/L	107	91.5-108.4	218	70-130	2	0-20
369245	Arsenic	<0.001 mg/L	101	91.7-108.2	102	70-130	0	0-20
369245	Boron (total)	<0.01 mg/L	106	84.9-115	20	70-130	0	0-20
369245	Barium	<0.01 mg/L	103	93.4-106.5	86	70-130	1	0-20
369245	Beryllium	<0.0005	104	89.5-110.4	103	70-130	0	0-20
369245	Cadmium	<0.0001	103	93.5-106.4	105	70-130	0	0-20
369245	Cobalt	<0.0002	100	92.7-107.2	91	70-130	0	0-20
369245	Chromium Total	<0.001 mg/L	102	94-106	100	70-130	0	0-20
369245	Chromium III							
369245	Copper	<0.001 mg/L	99	92.4-107.6	87	70-130	0	0-20
369245	Iron	<0.03 mg/L	98	91-109	8	70-130	0	0-20
369245	Mercury	<0.0001	102	80-120	69	70-130	0	0-20

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
369245	Molybdenum	<0.005 mg/L	104	92.8-107.2	95	70-130	0	0-20
369245	Nickel	<0.005 mg/L	98	93-106.9	84	70-130	0	0-20
369245	Lead	<0.001 mg/L	101	90-110	90	70-130	0	0-20
369245	Antimony	<0.0005	100	89.6-110.3	87	70-130	0	0-20
369245	Selenium	<0.001 mg/L	99	87.4-112.6	110	70-130	0	0-20
369245	Tin	<0.01 mg/L	94	80-120	105	70-130	0	0-20
369245	Thallium	<0.0001	103	90.4-109.5	92	70-130	0	0-20
369245	Uranium	<0.001 mg/L	101	92.7-107.2	89	70-130	0	0-20
369245	Vanadium	<0.001 mg/L	101	93-106.9	100	70-130	0	0-20
369245	Zinc	<0.01 mg/L	95	91.5-108.4	66	70-130	0	0-20
369292	PHC's F2	<20 ug/L	84	60-140		60-140		0-30
369292	PHC's F3	<50 ug/L	84	60-140		60-140		0-30
369292	PHC's F4	<50 ug/L	84	60-140		60-140		0-30
369408	Chromium VI	<0.01 mg/L	91	80-120	100	70-130	0	0-35
369517	Benzene	<0.5 ug/L	106	60-130	99	50-140	0	0-30
369517	Ethylbenzene	<0.5 ug/L	86	60-130	92	50-140	0	0-30
369517	Xylene, m/p-	<0.4 ug/L	84	60-130	88	50-140	0	0-30
369517	Xylene, o-	<0.4 ug/L	82	60-130	86	50-140	0	0-30
369517	Toluene	<0.5 ug/L	89	60-130	93	50-140	0	0-30
369518	PHC's F1	<20 ug/L	94	60-140	102	60-140		0-30
369519	Xylene Mixture							
369520	Xylene Mixture							
369521	PHC's F1-BTEX							

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-07-18	2019-07-18	C_M	P 8270
369170	Sodium	ICP-OES	2019-07-16	2019-07-16	SKH	M SM3120B-3500C
369211	Methlynaphthalene, 1-	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Methlynaphthalene, 2-	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Acenaphthene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Acenaphthylene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Anthracene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Benz[a]anthracene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Benzo[a]pyrene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Benzo[b]fluoranthene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Benzo[ghi]perylene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Benzo[k]fluoranthene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Chrysene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Dibenz[a h]anthracene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Fluoranthene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Fluorene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Indeno[1 2 3-cd]pyrene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Naphthalene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Phenanthrene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369211	Pyrene	GC-MS	2019-07-16	2019-07-17	C_M	P 8270
369245	Silver	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Aluminum	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Arsenic	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Boron (total)	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Barium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Beryllium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Cadmium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Cobalt	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Chromium Total	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Chromium III	ICAPQ-MS	2019-07-22	2019-07-22	H_D	EPA 200.8
369245	Copper	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Iron	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Mercury	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912355
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207023

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
369245	Molybdenum	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Nickel	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Lead	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Antimony	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Selenium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Tin	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Thallium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Uranium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Vanadium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369245	Zinc	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369292	PHC's F2	GC/FID	2019-07-17	2019-07-18	C_M	CCME O.Reg 153/04
369292	PHC's F3	GC/FID	2019-07-17	2019-07-18	C_M	CCME O.Reg 153/04
369292	PHC's F4	GC/FID	2019-07-17	2019-07-18	C_M	CCME O.Reg 153/04
369408	Chromium VI		2019-07-19	2019-07-19	H_D	SM 3500-Cr B
369517	Benzene	GC-MS	2019-07-16	2019-07-16	QL	EPA 8260
369517	Ethylbenzene	GC-MS	2019-07-16	2019-07-16	QL	EPA 8260
369517	Xylene, m/p-	GC-MS	2019-07-16	2019-07-16	QL	EPA 8260
369517	Xylene, o-	GC-MS	2019-07-16	2019-07-16	QL	EPA 8260
369517	Toluene	GC-MS	2019-07-16	2019-07-16	QL	EPA 8260
369518	PHC's F1	GC/FID	2019-07-23	2019-07-23	QL	CCME O.Reg 153/04
369519	Xylene Mixture	GC-MS	2019-07-23	2019-07-23	QL	EPA 8260
369520	Xylene Mixture	GC-MS	2019-07-23	2019-07-23	QL	EPA 8260
369521	PHC's F1-BTEX	GC/FID	2019-07-23	2019-07-23	QL	CCME O.Reg 153/04

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Eurofins 207023

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: 180223

CLIENT INFORMATION

Company: OUTCOME CONSULTANTS INC.
Contact: JONATHAN MARKIEWICZ
Address: 151 HOLLAND AVE - SUITE 200
Telephone: OTTAWA, ON, K1Y0Y2 Cell: 514-984-6405
Email: #1: jmarkiewicz@outcomeinc.ca
Email: #2: jmauchan@outcomeinc.ca
Project: RBCR P2017-06 Quote #: 180223

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: Fax:
Contact: Email: #1:
Address: Email: #2:
Telephone: PO #:

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☒ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ ODWSOG
☐ PWQO
☐ O. Reg 347/558
☒ Other: CCME
☐ None

☐ O. Reg 153
Table # ___, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
☐ Excess Soil, Table: ___ Type: ___

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
☐ Yes ☐ No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details | Sample Analysis Required

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	O.Reg.153 parameters: PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	PHCs F1-F4	BTEX	PAHs	METALS	MERCURY	Cr VI	RN# (Lab Use Only)
AEC-1-SW-1-1907	07/07/19	L	8								X	X	X	X	X	X	1444091
AEC-1-SW-2-1907	08/07/19										X	X	X	X	X	X	92
AEC-1-SW-3-1907											X	X	X	X	X	X	93
AEC-1-SW-4-1907											X	X	X	X	X	X	94
AEC-1-SW-DUP1-1907											X	X	X	X	X	X	95
AEC-2-SW-1-1907											X	X	X	X	X	X	96
AEC-2-SW-2-1907											X	X	X	X	X	X	97
AEC-2-SW-3-1907											X	X	X	X	X	X	98
AEC-2-SW-4-1907											X	X	X	X	X	X	99
AEC-2-SW-5-1907		C	2								X	X	X	X	X	X	100

SURFACE WATER

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	JONATHAN MARKIEWICZ		09/07	
Relinquished By:	JONATHAN MARKIEWICZ		09/07	8
Received By:				

COMMENTS:

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

CLIENT INFORMATION

Company: OUTCOME INC
Contact: JONATHAN MARKIEWICZ
Address: 151 HOLLAND AVE, OTTAWA, ON, K1Y 0X2
Telephone: Cell: 514.984.6405
Email: #1: jmarkiewicz@outcomeinc.ca
Email: #2: jmach, jmauchan@outcomeinc.ca
Project: Quote #:

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES [X] NO [ ])

Company: Fax:
Contact: Email: #1:
Address: Email: #2:
Telephone: PO #:

TURN-AROUND TIME (Business Days)

[ ] 1 Day* (100%) [ ] 2 Day** (50%) [X] 3-5 Days (25%) [ ] 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

[ ] Sanitary Sewer, City:
[ ] Storm Sewer, City:
[ ] ODWSOG
[ ] PWQO
[ ] O. Reg 347/558
[X] Other: CCME
[ ] None

[ ] O. Reg 153
Table # ___, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
[ ] Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
[ ] Yes [ ] No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required

Field Filtered -->

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	O.Reg.153 parameters: PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	Mercury	CrVI	F1	RN# (Lab Use Only)
AEC-3-SW-1-1907	09/07/19	SURFACE WATER	8	X	X		X			X	X	X		01
AEC-3-SW-2-1907	〃	〃	〃	X	X		X			X	X	X		02
AEC-3-SW-DUP2-1907	〃	〃	〃	X	X		X			X	X	X		03
TRIP BLANK-1-1907		W	2		X								X	04

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	JONATHAN MARKIEWICZ		09/07/2019	
Relinquished By:	JONATHAN MARKIEWICZ		09/07/2019 16:30	8
Received By:				

COMMENTS:

CUSTODY SEAL: [ ] YES [ ] NO Ice packs submitted: [ ] Yes [ ] No

Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#:

Report Number:	1912358
Date Submitted:	2019-07-15
Date Reported:	2019-07-23
Project:	RBCR P2017-06
COC #:	207019
Temperature (C):	8
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1441107	AEC-1-SED-3-1907	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1441110	AEC-2-SED-1-1907	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

Report Comments:

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
PHC's F1	369530	10	ug/g		<10	<10	<10	<10	<10
PHC's F1-BTEX	369536	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	369370	10	ug/g		<10	<10	<10	<10	<10
PHC's F3	369370	20	ug/g		<20	<20	130	<20	<20
PHC's F4	369370	20	ug/g		<20	<20	90	<20	<20
PHC's F4g	208523	100	ug/g				<100		

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
PHC's F1	369530	10	ug/g		15	<10	<10	<10	<10
PHC's F1-BTEX	369536	10	ug/g		10	<10	<10	<10	<10
PHC's F2	369370	10	ug/g		1460	<10	<10	20	<10
PHC's F3	369370	20	ug/g		7490	<20	20	<20	<20
PHC's F4	369370	20	ug/g		3120	<20	<20	40	<20
PHC's F4g	208523	100	ug/g		47900				

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
Aluminum	369274	5	ug/g		4450	4040	852	1340	4050
Antimony	369274	1	ug/g		<1	<1	<1	<1	<1
Arsenic	369274	1	ug/g		2	2	<1	<1	2
Barium	369274	1	ug/g		67	49	35	15	50
Beryllium	369274	1	ug/g		<1	<1	<1	<1	<1
Boron (total)	369274	5	ug/g		7	6	<5	<5	6
Cadmium	369274	0.4	ug/g		<0.4	<0.4	<0.4	<0.4	<0.4
Chromium III	369274		ug/g		12.0	12.0	15.7	7.00	11.0
Chromium Total	369274	1	ug/g		12	12	17	7	11
Chromium VI	369496	0.20	ug/g		<0.20	<0.20	1.31	<0.20	<0.20
Cobalt	369274	1	ug/g		3	3	<1	1	3
Copper	369274	1	ug/g		7	5	3	3	5
Iron	369274	5	ug/g		6770	6160	1500	2400	6410
Lead	369274	1	ug/g		6	5	11	4	5
Mercury	369271	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	369274	1	ug/g		<1	<1	<1	<1	<1
Nickel	369274	1	ug/g		8	8	3	5	8
Selenium	369274	1	ug/g		<1	<1	<1	<1	<1
Silver	369274	0.2	ug/g		<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	369274	1	ug/g		<1	<1	<1	<1	<1
Tin	369274	5	ug/g		<5	<5	<5	<5	<5
Uranium	369274	0.5	ug/g		0.6	<0.5	<0.5	<0.5	<0.5
Vanadium	369274	2	ug/g		15	14	4	5	14

Results relate only to the parameters tested on the samples submitted.
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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SE D-1-1907	1441106 Soil 2019-07-08 AEC-1-SE D-2-1907	1441107 Soil 2019-07-08 AEC-1-SE D-3-1907	1441108 Soil 2019-07-08 AEC-1-SE D-4-1907	1441109 Soil 2019-07-08 AEC-1-SE D-DUP1-1
Zinc	369274	2	ug/g		26	17	39	16	18

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SE D-1-1907	1441111 Soil 2019-07-08 AEC-2-SE D-2-1907	1441112 Soil 2019-07-08 AEC-2-SE D-3-1907	1441113 Soil 2019-07-08 AEC-2-SE D-4-1907	1441114 Soil 2019-07-08 AEC-2-SE D-5-1907
Aluminum	369336	5	ug/g		3350	1380	3530	671	2100
Antimony	369336	1	ug/g		<1	<1	<1	<1	<1
Arsenic	369336	1	ug/g		2	<1	2	<1	1
Barium	369336	1	ug/g		107	14	31	8	17
Beryllium	369336	1	ug/g		<1	<1	<1	<1	<1
Boron (total)	369336	5	ug/g		6	<5	6	<5	6
Cadmium	369336	0.4	ug/g		2.6	<0.4	<0.4	<0.4	<0.4
Chromium III	369274		ug/g		14.8	4.00	9.00	4.00	5.00
Chromium Total	369336	1	ug/g		16	4	9	4	5
Chromium VI	369496	0.20	ug/g		1.22	<0.20	<0.20	<0.20	<0.20
Cobalt	369336	1	ug/g		3	<1	2	<1	1
Copper	369336	1	ug/g			4	4	2	4
	369471	10	ug/g		1510				
Iron	369336	5	ug/g		7950	1910	5170	1810	2800
Lead	369336	1	ug/g		67	8	6	6	13
Mercury	369475	0.1	ug/g		0.3	<0.1	<0.1	<0.1	<0.1
Molybdenum	369336	1	ug/g		3	<1	<1	<1	<1
Nickel	369336	1	ug/g		8	2	6	2	4

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
Selenium	369336	1	ug/g		<1	<1	<1	<1	<1
Silver	369336	0.2	ug/g		1.4	<0.2	<0.2	<0.2	<0.2
Thallium	369336	1	ug/g		<1	<1	<1	<1	<1
Tin	369471	5	ug/g		39	<5	<5	<5	<5
Uranium	369336	0.5	ug/g		0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	369336	2	ug/g		7	5	12	4	7
Zinc	369336	2	ug/g		390	11	19	12	19

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
Fluorene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	
	369155	0.05	ug/g						<0.05
Acenaphthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SE D-1-1907	1441111 Soil 2019-07-08 AEC-2-SE D-2-1907	1441112 Soil 2019-07-08 AEC-2-SE D-3-1907	1441113 Soil 2019-07-08 AEC-2-SE D-4-1907	1441114 Soil 2019-07-08 AEC-2-SE D-5-1907
Fluoranthene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	369155	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SE D-1-1907	1441106 Soil 2019-07-08 AEC-1-SE D-2-1907	1441107 Soil 2019-07-08 AEC-1-SE D-3-1907	1441108 Soil 2019-07-08 AEC-1-SE D-4-1907	1441109 Soil 2019-07-08 AEC-1-SE D-DUP1-1 907
Benzene	369533	0.02	ug/g		<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	369533	0.20	ug/g		<0.20	<0.20	<0.20	<0.20	<0.20
Xylene Mixture	369534	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Methods references and/or additional QA/QC information available on request.

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Volatiles

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					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
Benzene	369533	0.02	ug/g		<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	369533	0.20	ug/g		1.33	<0.20	<0.20	<0.20	<0.20
Xylene Mixture	369534	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	369533	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
Moisture-Humidite	369370	0.1	%		12.5	12.7	24.3	7.3	14.6

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
Moisture-Humidite	369370	0.1	%		52.7	17.9	10.6	24.3	12.3

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
Alpha-androstrane	369370	0	%		60	63	62	63	64

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
Alpha-androstrane	369370	0	%		0	66	63	63	75

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441105 Soil 2019-07-07 AEC-1-SED-1-1907	1441106 Soil 2019-07-08 AEC-1-SED-2-1907	1441107 Soil 2019-07-08 AEC-1-SED-3-1907	1441108 Soil 2019-07-08 AEC-1-SED-4-1907	1441109 Soil 2019-07-08 AEC-1-SED-DUP1-1907
Toluene-d8	369533	0	%		98	99	98	98	101

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1441110 Soil 2019-07-08 AEC-2-SED-1-1907	1441111 Soil 2019-07-08 AEC-2-SED-2-1907	1441112 Soil 2019-07-08 AEC-2-SED-3-1907	1441113 Soil 2019-07-08 AEC-2-SED-4-1907	1441114 Soil 2019-07-08 AEC-2-SED-5-1907
Toluene-d8	369533	0	%		98	98	97	101	99

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
208523	PHC's F4g	<100 ug/g	87	80-120		60-140		0-30
369155	1+2-methylnaphthalene	<0.05 ug/g						
369155	Methlynaphthalene, 1-	<0.05 ug/g	75	50-140	91	50-140		0-40
369155	Methlynaphthalene, 2-	<0.05 ug/g	71	50-140	90	50-140		0-40
369155	Acenaphthene	<0.05 ug/g	74	50-140	101	50-140		0-40
369155	Acenaphthylene	<0.05 ug/g	69	50-140	97	50-140		0-40
369155	Anthracene	<0.05 ug/g	76	50-140	95	50-140		0-40
369155	Benz[a]anthracene	<0.05 ug/g	78	50-140	94	50-140		0-40
369155	Benzo[a]pyrene	<0.05 ug/g	70	50-140	100	50-140		0-40
369155	Benzo[b]fluoranthene	<0.05 ug/g	89	50-140	81	50-140		0-40
369155	Benzo[ghi]perylene	<0.05 ug/g	85	50-140	96	50-140		0-40
369155	Benzo[k]fluoranthene	<0.05 ug/g	78	50-140	119			0-40
369155	Chrysene	<0.05 ug/g	83	50-140	110	50-140		0-40
369155	Dibenz[a h]anthracene	<0.05 ug/g	78	50-140	89	50-140		0-40
369155	Fluoranthene	<0.05 ug/g	74	50-140	98	50-140		0-40
369155	Fluorene	<0.05 ug/g	70	50-140	101	50-140		0-40
369155	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	87	50-140	88	50-140		0-40
369155	Naphthalene	<0.05 ug/g	75	50-140	92	50-140		0-40
369155	Phenanthrene	<0.05 ug/g	80	50-140	99	50-140		0-40
369155	Pyrene	<0.05 ug/g	73	50-140	99	50-140		0-40
369271	Mercury	<0.1 ug/g	102	80-120	97	70-130	0	0-30
369274	Silver	<0.2 ug/g	114	70-130	95	70-130	0	0-20
369274	Aluminum	<5 ug/g	114	70-130	505	70-130	1	0-20
369274	Arsenic	<1 ug/g	97	70-130	89	70-130	0	0-20
369274	Boron (total)	<5 ug/g	103	70-130	79	70-130	0	0-20
369274	Barium	<1 ug/g	103	70-130	95	70-130	3	0-20
369274	Beryllium	<1 ug/g	105	70-130	74	70-130	0	0-20
369274	Cadmium	<0.4 ug/g	105	70-130	99	70-130	0	0-20
369274	Cobalt	<1 ug/g	103	70-130	81	70-130	0	0-20
369274	Chromium Total	<1 ug/g	103	70-130	97	70-130	10	0-20
369274	Chromium III	0 ug/g						
369274	Copper	<1 ug/g	107	70-130	84	70-130	0	0-20

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
369274	Iron	<5 ug/g	108	70-130		70-130	9	0-20
369274	Molybdenum	<1 ug/g	103	70-130	93	70-130	0	0-20
369274	Nickel	<1 ug/g	105	70-130	85	70-130	0	0-20
369274	Lead	<1 ug/g	107	70-130	91	70-130	8	0-20
369274	Antimony	<1 ug/g	94	70-130	97	70-130	0	0-20
369274	Selenium	<1 ug/g	103	70-130	96	70-130	0	0-20
369274	Tin	<5 ug/g	132	70-130	3	70-130	0	0-20
369274	Thallium	<1 ug/g	107	70-130	93	70-130	0	0-20
369274	Uranium	<0.5 ug/g	109	70-130	99	70-130	0	0-20
369274	Vanadium	<2 ug/g	99	70-130	89	70-130	11	0-20
369274	Zinc	<2 ug/g	110	70-130	88	70-130	25	0-20
369336	Silver	<0.2 ug/g	113	70-130	104	70-130	3	0-20
369336	Aluminum	<5 ug/g	75	70-130	651	70-130	4	0-20
369336	Arsenic	<1 ug/g	95	70-130	97	70-130	0	0-20
369336	Boron (total)	<5 ug/g	104	70-130	114	70-130	0	0-20
369336	Barium	<1 ug/g	101	70-130	240	70-130	1	0-20
369336	Beryllium	<1 ug/g	103	70-130	91	70-130	0	0-20
369336	Cadmium	<0.4 ug/g	107	70-130	105	70-130	0	0-20
369336	Cobalt	<1 ug/g	100	70-130	95	70-130	0	0-20
369336	Chromium Total	<1 ug/g	102	70-130	148	70-130	1	0-20
369336	Copper	<1 ug/g	105	70-130	314	70-130	0	0-20
369336	Iron	<5 ug/g	110	70-130	510	70-130	1	0-20
369336	Molybdenum	<1 ug/g	99	70-130	99	70-130	0	0-20
369336	Nickel	<1 ug/g	103	70-130	112	70-130	1	0-20
369336	Lead	<1 ug/g	103	70-130	94	70-130	1	0-20
369336	Antimony	<1 ug/g	94	70-130	99	70-130	0	0-20
369336	Selenium	<1 ug/g	105	70-130	96	70-130	0	0-20
369336	Thallium	<1 ug/g	105	70-130	90	70-130	0	0-20
369336	Uranium	<0.5 ug/g	101	70-130	90	70-130	0	0-20
369336	Vanadium	<2 ug/g	98	70-130	113	70-130	0	0-20
369336	Zinc	<2 ug/g	111	70-130	136	70-130	0	0-20
369370	PHC's F2	<10 ug/g	84	80-120	107	60-140	0	0-30
369370	PHC's F3	<20 ug/g	84	80-120	107	60-140	0	0-30

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
369370	PHC's F4	<20 ug/g	84	80-120	107	60-140	0	0-30
369370	Moisture-Humidite		100	80-120			6	
369471	Copper	<10 ug/g	102	70-130	99	70-130	3	0-20
369471	Tin	<5 ug/g	128	70-130		70-130	0	0-20
369475	Mercury	<0.1 ug/g	100	80-120	123	70-130	0	0-30
369496	Chromium VI	<0.20 ug/g	108	80-120	89	70-130	0	0-35
369530	PHC's F1	<10 ug/g	94	80-120	102	60-140		0-30
369533	Benzene	<0.02 ug/g	93	60-130	99	50-140	0	0-50
369533	Ethylbenzene	<0.05 ug/g	91	60-130	103	50-140	0	0-50
369533	Xylene, m/p-	<0.05 ug/g	95	60-130	106	50-140	0	0-50
369533	Xylene, o-	<0.05 ug/g	94	60-130	106	50-140	0	0-50
369533	Toluene	<0.20 ug/g	110	60-130	117	50-140	0	0-50
369534	Xylene Mixture							
369536	PHC's F1-BTEX							

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Report Number: 1912358
Date Submitted: 2019-07-15
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Project: RBCR P2017-06
COC #: 207019

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-07-18	2019-07-18	C_M	P 8270
208523	PHC's F4g	GC/FID	2019-07-19	2019-07-19	C_M	CCME
369155	1+2-methylnaphthalene	GC-MS	2019-07-23	2019-07-23	C_M	P 8270
369155	Methlynaphthalene, 1-	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Methlynaphthalene, 2-	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Acenaphthene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Acenaphthylene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Anthracene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Benz[a]anthracene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Benzo[a]pyrene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Benzo[b]fluoranthene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Benzo[ghi]perylene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Benzo[k]fluoranthene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Chrysene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Dibenz[a h]anthracene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Fluoranthene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Fluorene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Indeno[1 2 3-cd]pyrene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Naphthalene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Phenanthrene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369155	Pyrene	GC-MS	2019-07-16	2019-07-18	C_M	P 8270
369271	Mercury	Cetac Hg Analyzer	2019-07-17	2019-07-17	SKH	M SM3112B-3500B
369274	Silver	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Aluminum	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Arsenic	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Boron (total)	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Barium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Beryllium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Cadmium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Cobalt	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Chromium Total	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Chromium III	ICAPQ-MS	2019-07-22	2019-07-22	H_D	EPA 200.8
369274	Copper	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8

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Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
369274	Iron	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Molybdenum	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Nickel	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Lead	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Antimony	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Selenium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Tin	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Thallium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Uranium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Vanadium	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369274	Zinc	ICAPQ-MS	2019-07-17	2019-07-17	H_D	EPA 200.8
369336	Silver	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Aluminum	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Arsenic	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Boron (total)	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Barium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Beryllium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Cadmium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Cobalt	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Chromium Total	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Copper	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Iron	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Molybdenum	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Nickel	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Lead	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Antimony	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Selenium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Thallium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Uranium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Vanadium	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369336	Zinc	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369370	PHC's F2	GC/FID	2019-07-18	2019-07-19	C_M	CCME
369370	PHC's F3	GC/FID	2019-07-18	2019-07-19	C_M	CCME

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Certificate of Analysis

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912358
Date Submitted: 2019-07-15
Date Reported: 2019-07-23
Project: RBCR P2017-06
COC #: 207019

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
369370	PHC's F4	GC/FID	2019-07-18	2019-07-19	C_M	CCME
369370	Moisture-Humidite	Oven	2019-07-18	2019-07-19	C_M	ASTM 2216
369471	Copper	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369471	Tin	ICAPQ-MS	2019-07-19	2019-07-19	H_D	EPA 200.8
369475	Mercury	Cetac Hg Analyzer	2019-07-20	2019-07-20	SKH	M SM3112B-3500B
369496	Chromium VI	FAA	2019-07-22	2019-07-22	Z_S	M US EPA 3060A
369530	PHC's F1	GC/FID	2019-07-23	2019-07-23	QL	CCME
369533	Benzene	GC-MS	2019-07-16	2019-07-17	QL	V 8260B
369533	Ethylbenzene	GC-MS	2019-07-16	2019-07-17	QL	V 8260B
369533	Xylene, m/p-	GC-MS	2019-07-16	2019-07-17	QL	V 8260B
369533	Xylene, o-	GC-MS	2019-07-16	2019-07-17	QL	V 8260B
369533	Toluene	GC-MS	2019-07-16	2019-07-17	QL	V 8260B
369534	Xylene Mixture	GC-MS	2019-07-23	2019-07-23	QL	V 8260B
369536	PHC's F1-BTEX	GC/FID	2019-07-23	2019-07-23	QL	CCME

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Project: RBCR P2017-06
COC #: 207019

Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH", "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene	Yes	
BTEX was subtracted from F1 fraction	Yes	
If YES, was F1-BTEX (C6-C10) reported	Yes	
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	Yes	
if NO was F4 (C34-C50) gravimetric reported		

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Eurofins 207019

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: 1907358

CLIENT INFORMATION

Company: OUTCOME INC
Contact: JONATHAN MARKIEWICZ
Address: 151 HOLLAND AVE, OTTAWA, ON, K1Y 0Y2
Telephone: Cell: 514-984-6405
Email: #1: jmarkiewicz@outcomeinc.ca
Email: #2: ~~jmarkiewicz~~ jmauchan@outcomeinc.ca
Project: KBLR 2017-06 Quote #: 180223

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES [X] NO [ ])

Company: Fax:
Contact: Email: #1:
Address: Email: #2:
Telephone: PO #:

TURN-AROUND TIME (Business Days)

[ ] 1 Day* (100%) [ ] 2 Day** (50%) [ ] 3-5 Days (25%) [X] 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

[ ] Sanitary Sewer, City:
[ ] Storm Sewer, City:
[ ] ODWSOG
[ ] PWQO
[ ] O. Reg 347/558
[X] Other: CCME
[ ] None

[ ] O. Reg 153
Table # ___, Course / Fine, Surface / subsurface.
Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment
[ ] Excess Soil, Table: Type:

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04
[ ] Yes [ ] No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required

Field Filtered -->

~~O.Reg.153 parameters~~ CCME

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	Mercury	Cr VI	RN# (Lab Use Only)
AEC-1-SED-1-1907	07/07/19	Sediments	4	X	X		X			X	X	X	14
AEC-1-SED-2-1907	08/07/19			X	X		X			X	X	X	06
AEC-1-SED-3-1907				X	X		X			X	X	X	07
AEC-1-SED-4-1907				X	X		X			X	X	X	08
AEC-1-SED-DUP1-1907				X	X		X			X	X	X	09
AEC-2-SED-1-1907				X	X		X			X	X	X	10
AEC-2-SED-2-1907				X	X		X			X	X	X	11
AEC-2-SED-3-1907				X	X		X			X	X	X	12
AEC-2-SED-4-1907				X	X		X			X	X	X	13
AEC-2-SED-5-1907			N	X	X		X			X	X	X	14

& Low Level BTEX

	PRINT	SIGN	DATE/TIME
Sampled By:	JONATHAN MARKIEWICZ		09/07/2019
Relinquished By:	JONATHAN MARKIEWICZ		09/07/2019 16h30
Received By:			

TEMP (°C): 5.0, 5.1, 5.8

COMMENTS:

CUSTODY SEAL: [ ] YES [ ] NO Ice packs submitted: [ ] Yes [ ] No

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912714
Date Submitted: 2019-07-18
Date Reported: 2019-07-26
Project:
COC #: 207021

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
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Report Number: 1912714
Date Submitted: 2019-07-18
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Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442137 Water 2019-07-13 AEC-1-GW-1-1907	1442138 Water 2019-07-13 AEC-2-GW-1-1907	1442139 Water 2019-07-13 AEC-2-GW-2-1907
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
Anions	Br	250	ug/L		<250	<250	<250
	Cl	1000	ug/L	120000	55000	6000	4000
	F	100	ug/L	120	<100	<100	<100
	N-NO2	100	ug/L	60	<100*	<100*	<100*
	N-NO3	100	ug/L	13000	<100	<100	<100
	SO4	1000	ug/L		16000	6000	4000
General Chemistry	Alkalinity as CaCO3	5000	ug/L		317000	127000	190000
	Conductivity	5	uS/cm		735	233	320
	pH	1.00		6.5-9.0	8.12	8.58	8.50
	Total Suspended Solids	2000	ug/L	Narrative	20000	<2000	9000
Hardness	Hardness as CaCO3	1	ug/L		142000	115000	166000
Hydrocarbons	F1 (C6-C10)	20	ug/L		<20	<20	<20
	F1-BTEX (C6-C10)	20	ug/L		<20	<20	<20
	F2 (C10-C16)	20	ug/L		<20	<20	<20
	F3 (C16-C34)	50	ug/L		<50	<50	<50
	F4 (C34-C50)	50	ug/L		<50	<50	<50
Mercury	Hg	0.1	ug/L	0.026	<0.1*	<0.1*	
Metals	Ag	0.1	ug/L	0.25	<0.1	<0.1	<0.1
	Al	10	ug/L	Variable	20	<10	<10
	As	1	ug/L	5	6*	<1	<1
	B	10	ug/L	1500	340	20	40
	Ba	10	ug/L		<10	30	40
	Be	0.5	ug/L	N/V	<0.5	<0.5	<0.5
	Ca	1000	ug/L		42000	38000	55000
	Cd	0.1	ug/L	0.09	0.2*	<0.1*	<0.1*

Guideline = CCME - Freshwater Long Term *** = Guideline Exceedence**

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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eurofins | Environment Testing

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Report Number: 1912714
Date Submitted: 2019-07-18
Date Reported: 2019-07-26
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442137 Water 2019-07-13 AEC-1-GW-1-1907	1442138 Water 2019-07-13 AEC-2-GW-1-1907	1442139 Water 2019-07-13 AEC-2-GW-2-1907
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
Metals	Co	0.2	ug/L		7.9	<0.2	<0.2
	Cr	1	ug/L		<1	<1	<1
	Cr(III)	1	ug/L	8.9	<1	<1	
	Cr(VI)	10	ug/L	1	<10*	<10*	
	Cu	1	ug/L	Equation	8	<1	<1
	Fe	30	ug/L	300	2420*	<30	<30
	K	1000	ug/L		16000	<1000	<1000
	Mg	1000	ug/L		9000	5000	7000
	Mo	5	ug/L	73	<5	<5	<5
	Na	2000	ug/L		41000	5000	3000
	Ni	5	ug/L	Equation	13	<5	<5
	Pb	1	ug/L	Equation	2	<1	<1
	Sb	0.5	ug/L		<0.5	0.7	1.2
	Se	1	ug/L	1	<1	<1	<1
	Sn	10	ug/L		<10	<10	<10
	Tl	0.1	ug/L	0.8	<0.1	<0.1	<0.1
	U	1	ug/L	15	<1	<1	<1
	V	1	ug/L		2	<1	<1
	Zn	10	ug/L	30	20	10	<10
PAH	1+2-methylnaphthalene	0.1	ug/L		<0.1	<0.1	<0.1
	1-methylnaphthalene	0.1	ug/L		0.3	<0.1	<0.1
	2-methylnaphthalene	0.1	ug/L		0.4	<0.1	<0.1
	Acenaphthene	0.1	ug/L	5.8	<0.1	<0.1	<0.1
	Acenaphthylene	0.1	ug/L	N/V	<0.1	<0.1	<0.1
	Anthracene	0.1	ug/L	0.012	<0.1*	<0.1*	<0.1*

Guideline = CCME - Freshwater Long Term

*** = Guideline Exceedence**

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Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912714
Date Submitted: 2019-07-18
Date Reported: 2019-07-26
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442137 Water 2019-07-13 AEC-1-GW-1-1907	1442138 Water 2019-07-13 AEC-2-GW-1-1907	1442139 Water 2019-07-13 AEC-2-GW-2-1907
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
PAH	Benzo(a)anthracene	0.1	ug/L	0.018	<0.1*	<0.1*	<0.1*
	Benzo(a)pyrene	0.01	ug/L	0.015	<0.01	<0.01	<0.01
	Benzo(b)fluoranthene	0.05	ug/L		<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.1	ug/L		<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	0.05	ug/L		<0.05	<0.05	<0.05
	Chrysene	0.05	ug/L	N/V	<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.1	ug/L		<0.1	<0.1	<0.1
	Fluoranthene	0.1	ug/L	0.04	<0.1*	<0.1*	<0.1*
	Fluorene	0.1	ug/L	3	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	0.1	ug/L		<0.1	<0.1	<0.1
	Naphthalene	0.1	ug/L	1.1	0.3	<0.1	<0.1
	Phenanthrene	0.1	ug/L	0.4	<0.1	<0.1	<0.1
	Pyrene	0.1	ug/L	0.025	<0.1*	<0.1*	<0.1*
PHC Surrogate	Alpha-androstrane	0	%		95	102	99
Subcontract-Inorg	Phenols	1	ug/L	4	78*	<1	<1
VOCs Surrogates	Toluene-d8	0	%		92	94	92
Volatiles	Benzene	0.5	ug/L	370	<0.5	<0.5	<0.5
	Ethylbenzene	0.5	ug/L	90	<0.5	<0.5	<0.5
	m/p-xylene	0.4	ug/L		0.6	<0.4	<0.4
	o-xylene	0.4	ug/L		<0.4	<0.4	<0.4
	Toluene	0.5	ug/L	2	1.0	<0.5	<0.5
	Xylene; total	0.5	ug/L		0.6	<0.5	<0.5

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Date Submitted: 2019-07-18
Date Reported: 2019-07-26
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-07-25 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 369211 **Analysis/Extraction Date** 2019-07-23 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.1 ug/L	76	50-140
Methlynaphthalene, 2-	<0.1 ug/L	72	50-140
Acenaphthene	<0.1 ug/L	74	50-140
Acenaphthylene	<0.1 ug/L	68	50-140
Anthracene	<0.1 ug/L	76	50-140
Benz[a]anthracene	<0.1 ug/L	78	50-140
Benzo[a]pyrene	<0.01 ug/L	70	50-140
Benzo[b]fluoranthene	<0.05 ug/L	89	50-140
Benzo[ghi]perylene	<0.1 ug/L	84	50-140
Benzo[k]fluoranthene	<0.05 ug/L	78	50-140
Chrysene	<0.05 ug/L	83	50-140
Dibenz[a h]anthracene	<0.1 ug/L	78	50-140
Fluoranthene	<0.1 ug/L	74	50-140

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.1 ug/L	70	50-140
Indeno[1 2 3-cd]pyrene	<0.1 ug/L	86	50-140
Naphthalene	<0.1 ug/L	76	50-140
Phenanthrene	<0.1 ug/L	80	50-140
Pyrene	<0.1 ug/L	74	50-140
Run No 369358 **Analysis/Extraction Date** 2019-07-19 **Analyst** SKH **Method** M SM3120B-3500C			
Calcium	<1000 ug/L	98	90-110
Potassium	<1000 ug/L	93	87-113
Magnesium	<1000 ug/L	92	76-124
Sodium	<2000 ug/L	92	82-118
Run No 369408 **Analysis/Extraction Date** 2019-07-19 **Analyst** H D **Method** SM 3500-Cr B			
Chromium VI	<10 ug/L	91	80-120
Run No 369419 **Analysis/Extraction Date** 2019-07-19 **Analyst** H D **Method** EPA 200.8			
Silver	<0.1 ug/L	105	80-120
Aluminum	<10 ug/L	99	91.5-108.4
Arsenic	<1 ug/L	101	91.7-108.2

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Boron (total)	<10 ug/L	105	84.9-115
Barium	<10 ug/L	100	93.4-106.5
Beryllium	<0.5 ug/L	104	89.5-110.4
Cadmium	<0.1 ug/L	102	93.5-106.4
Cobalt	<0.2 ug/L	100	92.7-107.2
Chromium Total	<1 ug/L	101	94-106
Cr(III)			
Copper	<1 ug/L	100	92.4-107.6
Iron	<30 ug/L	96	91-109
Molybdenum	<5 ug/L	101	92.8-107.2
Nickel	<5 ug/L	99	93-106.9
Lead	<1 ug/L	101	90-110
Antimony	<0.5 ug/L	99	89.6-110.3
Selenium	<1 ug/L	97	87.4-112.6
Sn	<10 ug/L	88	80-120
Thallium	<0.1 ug/L	102	90.4-109.5
Uranium	<1 ug/L	100	92.7-107.2
Vanadium	<1 ug/L	100	93-106.9

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Zinc	<10 ug/L	98	91.5-108.4
Run No 369453 **Analysis/Extraction Date** 2019-07-20 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/L	102	76-123
Run No 369456 **Analysis/Extraction Date** 2019-07-22 **Analyst** K J **Method** C SM2510B			
Conductivity	<5 uS/cm	98	95-105
Run No 369477 **Analysis/Extraction Date** 2019-07-21 **Analyst** SKH **Method** SM 4110			
Br	<250 ug/L	100	90-110
Chloride	<1000 ug/L	100	90-110
N-NO2	<100 ug/L	95	90-110
N-NO3	<100 ug/L	100	90-110
SO4	<1000 ug/L	95	90-110
Run No 369544 **Analysis/Extraction Date** 2019-07-23 **Analyst** K_J **Method** SM 2320B			
Alkalinity (CaCO3)	<5 ug/L	102	95-105
F	<0.10 ug/L	100	90-110
pH	6.44	100	90-110

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 369601 **Analysis/Extraction Date** 2019-07-24 **Analyst** AET **Method** C SM2340B			
Hardness as CaCO3			
Run No 369611 **Analysis/Extraction Date** 2019-07-25 **Analyst** K J **Method** C SM2540			
Total Suspended Solids	<2 ug/L	99	90-110
Run No 369731 **Analysis/Extraction Date** 2019-07-20 **Analyst** QL **Method** EPA 8260			
Benzene	<0.5 ug/L	84	60-130
Ethylbenzene	<0.5 ug/L	94	60-130
m/p-xylene	<0.4 ug/L	98	60-130
o-xylene	<0.4 ug/L	100	60-130
Toluene	<0.5 ug/L	91	60-130
Run No 369734 **Analysis/Extraction Date** 2019-07-25 **Analyst** QL **Method** EPA 8260			
Xylene Mixture			
Run No 369735 **Analysis/Extraction Date** 2019-07-25 **Analyst** QL **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F1	<20 ug/L	95	60-140

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COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Petroleum Hydrocarbons F1-BTEX	<20 ug/L		
Run No 369743 **Analysis/Extraction Date** 2019-07-22 **Analyst** AET **Method** SUBCONTRACT-E-INORG			
Phenols	<1 ug/L	100	
Run No 369756 **Analysis/Extraction Date** 2019-07-26 **Analyst** C M **Method** CCME O.Reg 153/04			
Petroleum Hydrocarbons F2	<20 ug/L	104	60-140
Petroleum Hydrocarbons F3	<50 ug/L	104	60-140
Petroleum Hydrocarbons F4	<50 ug/L	104	60-140

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Project:
COC #: 207021

Sample Comment Summary

Sample ID: 1442137	AEC-1-GW-1-1907	Minerals analysis for this report performed from the nitirc acid preserved bottle.

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

Dear Jason Mauchan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

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Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

				Lab I.D.	1443937
				Sample Matrix	Soil
				Sample Type	
				Sampling Date	2019-07-21
				Sample I.D.	Spill-2
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30	<10
	F1-BTEX (C6-C10)	10	ug/g		<10
	F2 (C10-C16)	10	ug/g	CWS 150	<10
	F3 (C16-C34)	20	ug/g	CWS 300	60
	F4 (C34-C50)	20	ug/g	CWS 2800	<20
Moisture	Moisture-Humidite	0.1	%		6.3
PAH	1+2-methylnaphthalene	0.05	ug/g		<0.05
	1-methylnaphthalene	0.05	ug/g		<0.05
	2-methylnaphthalene	0.05	ug/g		<0.05
	Acenaphthene	0.05	ug/g		<0.05
	Acenaphthylene	0.05	ug/g		<0.05
	Anthracene	0.05	ug/g		<0.05
	Benzo(a)anthracene	0.05	ug/g	EQG 1	<0.05
	Benzo(a)pyrene	0.05	ug/g	EQG 0.7	<0.05
	Benzo(b)fluoranthene	0.05	ug/g	EQG 1	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g		<0.05
	Benzo(k)fluoranthene	0.05	ug/g	EQG 1	<0.05
	Chrysene	0.05	ug/g		<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g	EQG 1	<0.05
	Fluoranthene	0.05	ug/g		<0.05
	Fluorene	0.05	ug/g		<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g	EQG 1	<0.05
	Naphthalene	0.05	ug/g	EQG 0.6	<0.05
	Phenanthrene	0.05	ug/g	EQG 5	<0.05
	Pyrene	0.05	ug/g	EQG 10	<0.05

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. 1443937 Soil 2019-07-21 Spill-2
PHC Surrogate	Alpha-androstrane	0	%		137
VOCs Surrogates	Toluene-d8	0	%		96
Volatiles	Benzene	0.02	ug/g	CSQG 0.0068	<0.02*
	Ethylbenzene	0.05	ug/g	CSQG 0.018	<0.05*
	m/p-xylene	0.05	ug/g		<0.05
	o-xylene	0.05	ug/g		<0.05
	Toluene	0.20	ug/g	CSQG 0.08	<0.20*
	Xylene; total	0.05	ug/g	CSQG 2.4	<0.05

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Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-08-01 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 369865 **Analysis/Extraction Date** 2019-07-31 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.05 ug/g	76	50-140
Methlynaphthalene, 2-	<0.05 ug/g	74	50-140
Acenaphthene	<0.05 ug/g	80	50-140
Acenaphthylene	<0.05 ug/g	69	50-140
Anthracene	<0.05 ug/g	80	50-140
Benz[a]anthracene	<0.05 ug/g	81	50-140
Benzo[a]pyrene	<0.05 ug/g	78	50-140
Benzo[b]fluoranthene	<0.05 ug/g	76	50-140
Benzo[ghi]perylene	<0.05 ug/g	87	50-140
Benzo[k]fluoranthene	<0.05 ug/g	84	50-140
Chrysene	<0.05 ug/g	93	50-140
Dibenz[a h]anthracene	<0.05 ug/g	80	50-140
Fluoranthene	<0.05 ug/g	86	50-140

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COC #: 207022

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.05 ug/g	75	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	84	50-140
Naphthalene	<0.05 ug/g	79	50-140
Phenanthrene	<0.05 ug/g	90	50-140
Pyrene	<0.05 ug/g	87	50-140
Run No 369974 **Analysis/Extraction Date** 2019-07-31 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	79	80-120
Run No 369987 **Analysis/Extraction Date** 2019-07-30 **Analyst** TJB **Method** V 8260B			
Benzene	<0.02 ug/g	104	60-130
Ethylbenzene	<0.05 ug/g	114	60-130
m/p-xylene	<0.05 ug/g	100	60-130
o-xylene	<0.05 ug/g	114	60-130
Toluene	<0.20 ug/g	104	60-130
Run No 369988 **Analysis/Extraction Date** 2019-07-31 **Analyst** TJB **Method** V 8260B			
Xylene Mixture			

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 369989 **Analysis/Extraction Date** 2019-07-31 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1-BTEX			
Run No 370066 **Analysis/Extraction Date** 2019-08-01 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	96	80-120
Petroleum Hydrocarbons F3	<20 ug/g	96	80-120
Petroleum Hydrocarbons F4	<20 ug/g	96	80-120
Moisture-Humidite		100	80-120

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Rebecca Koshy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

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PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30	<10	<10	<10
	F1-BTEX (C6-C10)	10	ug/g		<10	<10	<10
	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	20
	F3 (C16-C34)	20	ug/g	CWS 300	30	60	180
	F4 (C34-C50)	20	ug/g	CWS 2800	<20	<20	90
	F4 (C34-C50) gravimetric	100	ug/g				400
Mercury	Hg	0.1	ug/g	EQG 6.6	<0.1	<0.1	
Metals	Ag	0.2	ug/g	EQG 20	<0.2	<0.2	
	Al	5	ug/g		1550	4480	
	As	1	ug/g	EQG 12	1	2	
	B	5	ug/g		6	10	
	Ba	1	ug/g	EQG 500	11	66	
	Be	1	ug/g	EQG 4	<1	<1	
	Cd	0.4	ug/g	EQG 10	<0.4	<0.4	
	Co	1	ug/g	EQG 50	1	3	
	Cr	1	ug/g	EQG 87	10	16	
	Cr(III)		ug/g		10.0	16.0	
	Cr(VI)	0.20	ug/g	EQG 0.4	<0.20	<0.20	
	Cu	1	ug/g	EQG 63	2	6	
	Fe	5	ug/g		2910	8730	
	Mo	1	ug/g	EQG 10	<1	<1	
	Ni	1	ug/g	EQG 50	6	11	
	Pb	1	ug/g	EQG 140	3	12	
	Sb	1	ug/g	EQG 20	<1	<1	
	Se	1	ug/g	EQG 1	<1	<1	

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
Metals	Sn	5	ug/g	EQG 50	<5	<5	
	Tl	1	ug/g	EQG 1	<1	<1	
	U	0.5	ug/g		<0.5	0.5	
	V	2	ug/g	EQG 130	6	10	
	Zn	2	ug/g	EQG 200	10	34	
Moisture	Moisture-Humidite	0.1	%		10.1	7.2	6.2
PAH	1+2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	1-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthylene	0.05	ug/g		<0.05	<0.05	<0.05
	Anthracene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(a)anthracene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Benzo(a)pyrene	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05
	Benzo(b)fluoranthene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(k)fluoranthene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Chrysene	0.05	ug/g		<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Fluoranthene	0.05	ug/g		<0.05	<0.05	<0.05
	Fluorene	0.05	ug/g		<0.05	<0.05	<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Naphthalene	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05
	Phenanthrene	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05
	Pyrene	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05

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Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.						
PHC Surrogate	Alpha-androstrane	0	%		69	79	80
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068
	Ethylbenzene	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018
	m/p-xylene	0.030	ug/g		<0.030	<0.030	<0.030
	o-xylene	0.020	ug/g		<0.020	<0.020	<0.020
	Toluene	0.080	ug/g	CSQG 0.08	<0.080	<0.080	<0.080
	Xylene; total	0.050	ug/g	CSQG 2.4	<0.050	<0.050	<0.050
VOCs Surrogates	Toluene-d8	0	%		107	109	104

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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-07-25 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Petroleum Hydrocarbons F4g	<100 ug/g	88	80-120
Run No 369155 **Analysis/Extraction Date** 2019-07-24 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.05 ug/g	75	50-140
Methlynaphthalene, 2-	<0.05 ug/g	71	50-140
Acenaphthene	<0.05 ug/g	74	50-140
Acenaphthylene	<0.05 ug/g	69	50-140
Anthracene	<0.05 ug/g	76	50-140
Benz[a]anthracene	<0.05 ug/g	78	50-140
Benzo[a]pyrene	<0.05 ug/g	70	50-140
Benzo[b]fluoranthene	<0.05 ug/g	89	50-140
Benzo[ghi]perylene	<0.05 ug/g	85	50-140
Benzo[k]fluoranthene	<0.05 ug/g	78	50-140
Chrysene	<0.05 ug/g	83	50-140
Dibenz[a h]anthracene	<0.05 ug/g	78	50-140

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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluoranthene	<0.05 ug/g	74	50-140
Fluorene	<0.05 ug/g	70	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	87	50-140
Naphthalene	<0.05 ug/g	75	50-140
Phenanthrene	<0.05 ug/g	80	50-140
Pyrene	<0.05 ug/g	73	50-140
Run No 369475 **Analysis/Extraction Date** 2019-07-20 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	97	80-120
Run No 369541 **Analysis/Extraction Date** 2019-07-23 **Analyst** SKH **Method** M SM3120B-3050B			
Sn	<5 ug/g	100	45-155
Run No 369550 **Analysis/Extraction Date** 2019-07-22 **Analyst** H D **Method** EPA 200.8			
Silver	<0.2 ug/g	119	70-130
Aluminum	<5 ug/g	82	70-130
Arsenic	<1 ug/g	100	70-130
Boron (total)	<5 ug/g	106	70-130
Barium	<1 ug/g	109	70-130

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Attention: Jonathan Markiewicz
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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Beryllium	<1 ug/g	108	70-130
Cadmium	<0.4 ug/g	111	70-130
Cobalt	<1 ug/g	106	70-130
Chromium Total	<1 ug/g	108	70-130
Cr(III)			
Copper	<1 ug/g	111	70-130
Iron	<5 ug/g	111	70-130
Molybdenum	<1 ug/g	106	70-130
Nickel	<1 ug/g	108	70-130
Lead	<1 ug/g	107	70-130
Antimony	<1 ug/g	106	70-130
Selenium	<1 ug/g	108	70-130
Thallium	<1 ug/g	107	70-130
Uranium	<0.5 ug/g	105	70-130
Vanadium	<2 ug/g	107	70-130
Zinc	<2 ug/g	105	70-130

Run No 369559 **Analysis/Extraction Date** 2019-07-23 **Analyst** Z S
Method M US EPA 3060A

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Report Number: 1912713
Date Submitted: 2019-07-18
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Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chromium VI	<0.20 ug/g	99	80-120
Run No 369652 **Analysis/Extraction Date** 2019-07-24 **Analyst** H D **Method** EPA 200.8			
Chromium Total	<1 ug/g	108	70-130
Run No 369709 **Analysis/Extraction Date** 2019-07-25 **Analyst** HK **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	95	80-120
Petroleum Hydrocarbons F1-BTEX	<10 ug/g		
Run No 369712 **Analysis/Extraction Date** 2019-07-25 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	96	80-120
Petroleum Hydrocarbons F3	<20 ug/g	96	80-120
Petroleum Hydrocarbons F4	<20 ug/g	96	80-120
Moisture-Humidite		100	80-120
Run No 370723 **Analysis/Extraction Date** 2019-08-09 **Analyst** R_K **Method** SUBCONTRACT-A			
Benzene	<0.0068 ug/g	109	
Ethylbenzene	<0.018 ug/g	111	
m/p-xylene	<0.030 ug/g	105	

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Report Number: 1912713
Date Submitted: 2019-07-18
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Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
o-xylene	<0.020 ug/g	106	
Toluene	<0.080 ug/g	112	
Xylene Mixture			

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Project:
COC #: 207021

Sample Comment Summary

Sample ID: 1442136	AEC - 2 spill - 3	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

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Rebecca Koshy, Project Manager

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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
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Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.		
					1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30	<10	<10	<10
	F1-BTEX (C6-C10)	10	ug/g		<10	<10	<10
	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	20
	F3 (C16-C34)	20	ug/g	CWS 300	30	60	180
	F4 (C34-C50)	20	ug/g	CWS 2800	<20	<20	90
	F4 (C34-C50) gravimetric	100	ug/g				400
Mercury	Hg	0.1	ug/g	EQG 6.6	<0.1	<0.1	
Metals	Ag	0.2	ug/g	EQG 20	<0.2	<0.2	
	Al	5	ug/g		1550	4480	
	As	1	ug/g	EQG 12	1	2	
	B	5	ug/g		6	10	
	Ba	1	ug/g	EQG 500	11	66	
	Be	1	ug/g	EQG 4	<1	<1	
	Cd	0.4	ug/g	EQG 10	<0.4	<0.4	
	Co	1	ug/g	EQG 50	1	3	
	Cr	1	ug/g	EQG 87	10	16	
	Cr(III)		ug/g		10.0	16.0	
	Cr(VI)	0.20	ug/g	EQG 0.4	<0.20	<0.20	
	Cu	1	ug/g	EQG 63	2	6	
	Fe	5	ug/g		2910	8730	
	Mo	1	ug/g	EQG 10	<1	<1	
	Ni	1	ug/g	EQG 50	6	11	
	Pb	1	ug/g	EQG 140	3	12	
	Sb	1	ug/g	EQG 20	<1	<1	
	Se	1	ug/g	EQG 1	<1	<1	

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Certificate of Analysis

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

Group	Analyte	MRL	Units	Guideline	1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.						
Metals	Sn	5	ug/g	EQG 50	<5	<5	
	Tl	1	ug/g	EQG 1	<1	<1	
	U	0.5	ug/g		<0.5	0.5	
	V	2	ug/g	EQG 130	6	10	
	Zn	2	ug/g	EQG 200	10	34	
Moisture	Moisture-Humidite	0.1	%		10.1	7.2	6.2
PAH	1+2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	1-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	2-methylnaphthalene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthene	0.05	ug/g		<0.05	<0.05	<0.05
	Acenaphthylene	0.05	ug/g		<0.05	<0.05	<0.05
	Anthracene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(a)anthracene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Benzo(a)pyrene	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05
	Benzo(b)fluoranthene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g		<0.05	<0.05	<0.05
	Benzo(k)fluoranthene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Chrysene	0.05	ug/g		<0.05	<0.05	<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Fluoranthene	0.05	ug/g		<0.05	<0.05	<0.05
	Fluorene	0.05	ug/g		<0.05	<0.05	<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
	Naphthalene	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05
	Phenanthrene	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05
	Pyrene	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Group	Analyte	MRL	Units	Guideline	1442134 Soil 2019-07-14 TSA-SCRNR	1442135 Soil 2019-07-14 THMPA-2-0719	1442136 Soil 2019-07-14 AEC - 2 spill - 3
	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.						
PHC Surrogate	Alpha-androstrane	0	%		69	79	80
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068
	Ethylbenzene	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018
	m/p-xylene	0.030	ug/g		<0.030	<0.030	<0.030
	o-xylene	0.020	ug/g		<0.020	<0.020	<0.020
	Toluene	0.080	ug/g	CSQG 0.08	<0.080	<0.080	<0.080
	Xylene; total	0.050	ug/g	CSQG 2.4	<0.050	<0.050	<0.050
VOCs Surrogates	Toluene-d8	0	%		107	109	104

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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-07-25 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Petroleum Hydrocarbons F4g	<100 ug/g	88	80-120
Run No 369155 **Analysis/Extraction Date** 2019-07-24 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.05 ug/g	75	50-140
Methlynaphthalene, 2-	<0.05 ug/g	71	50-140
Acenaphthene	<0.05 ug/g	74	50-140
Acenaphthylene	<0.05 ug/g	69	50-140
Anthracene	<0.05 ug/g	76	50-140
Benz[a]anthracene	<0.05 ug/g	78	50-140
Benzo[a]pyrene	<0.05 ug/g	70	50-140
Benzo[b]fluoranthene	<0.05 ug/g	89	50-140
Benzo[ghi]perylene	<0.05 ug/g	85	50-140
Benzo[k]fluoranthene	<0.05 ug/g	78	50-140
Chrysene	<0.05 ug/g	83	50-140
Dibenz[a h]anthracene	<0.05 ug/g	78	50-140

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Report Number: 1912713
Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluoranthene	<0.05 ug/g	74	50-140
Fluorene	<0.05 ug/g	70	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	87	50-140
Naphthalene	<0.05 ug/g	75	50-140
Phenanthrene	<0.05 ug/g	80	50-140
Pyrene	<0.05 ug/g	73	50-140
Run No 369475 **Analysis/Extraction Date** 2019-07-20 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	97	80-120
Run No 369541 **Analysis/Extraction Date** 2019-07-23 **Analyst** SKH **Method** M SM3120B-3050B			
Sn	<5 ug/g	100	45-155
Run No 369550 **Analysis/Extraction Date** 2019-07-22 **Analyst** H D **Method** EPA 200.8			
Silver	<0.2 ug/g	119	70-130
Aluminum	<5 ug/g	82	70-130
Arsenic	<1 ug/g	100	70-130
Boron (total)	<5 ug/g	106	70-130
Barium	<1 ug/g	109	70-130

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Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Beryllium	<1 ug/g	108	70-130
Cadmium	<0.4 ug/g	111	70-130
Cobalt	<1 ug/g	106	70-130
Chromium Total	<1 ug/g	108	70-130
Cr(III)			
Copper	<1 ug/g	111	70-130
Iron	<5 ug/g	111	70-130
Molybdenum	<1 ug/g	106	70-130
Nickel	<1 ug/g	108	70-130
Lead	<1 ug/g	107	70-130
Antimony	<1 ug/g	106	70-130
Selenium	<1 ug/g	108	70-130
Thallium	<1 ug/g	107	70-130
Uranium	<0.5 ug/g	105	70-130
Vanadium	<2 ug/g	107	70-130
Zinc	<2 ug/g	105	70-130

Run No 369559 **Analysis/Extraction Date** 2019-07-23 **Analyst** Z S
Method M US EPA 3060A

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Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chromium VI	<0.20 ug/g	99	80-120
Run No 369652 **Analysis/Extraction Date** 2019-07-24 **Analyst** H D **Method** EPA 200.8			
Chromium Total	<1 ug/g	108	70-130
Run No 369709 **Analysis/Extraction Date** 2019-07-25 **Analyst** HK **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	95	80-120
Petroleum Hydrocarbons F1-BTEX	<10 ug/g		
Run No 369712 **Analysis/Extraction Date** 2019-07-25 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	96	80-120
Petroleum Hydrocarbons F3	<20 ug/g	96	80-120
Petroleum Hydrocarbons F4	<20 ug/g	96	80-120
Moisture-Humidite		100	80-120
Run No 370723 **Analysis/Extraction Date** 2019-08-09 **Analyst** R_K **Method** SUBCONTRACT-A			
Benzene	<0.0068 ug/g	109	
Ethylbenzene	<0.018 ug/g	111	
m/p-xylene	<0.030 ug/g	105	

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Date Submitted: 2019-07-18
Date Reported: 2019-07-25
Project:
COC #: 207021

QC Summary

Analyte	Blank	QC % Rec	QC Limits
o-xylene	<0.020 ug/g	106	
Toluene	<0.080 ug/g	112	
Xylene Mixture			

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Project:
COC #: 207021

Sample Comment Summary

Sample ID: 1442136	AEC - 2 spill - 3	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

Dear Jason Mauchan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Rebecca Koshy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

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151 Holland Ave.
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Attention: Jason Mauchan
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Invoice to: Outcome Consultants Inc

Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

				Lab I.D.	1443937
				Sample Matrix	Soil
				Sample Type	
				Sampling Date	2019-07-21
				Sample I.D.	Spill-2
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30	<10
	F1-BTEX (C6-C10)	10	ug/g		<10
	F2 (C10-C16)	10	ug/g	CWS 150	<10
	F3 (C16-C34)	20	ug/g	CWS 300	60
	F4 (C34-C50)	20	ug/g	CWS 2800	<20
Moisture	Moisture-Humidite	0.1	%		6.3
PAH	1+2-methylnaphthalene	0.05	ug/g		<0.05
	1-methylnaphthalene	0.05	ug/g		<0.05
	2-methylnaphthalene	0.05	ug/g		<0.05
	Acenaphthene	0.05	ug/g		<0.05
	Acenaphthylene	0.05	ug/g		<0.05
	Anthracene	0.05	ug/g		<0.05
	Benzo(a)anthracene	0.05	ug/g	EQG 1	<0.05
	Benzo(a)pyrene	0.05	ug/g	EQG 0.7	<0.05
	Benzo(b)fluoranthene	0.05	ug/g	EQG 1	<0.05
	Benzo(g,h,i)perylene	0.05	ug/g		<0.05
	Benzo(k)fluoranthene	0.05	ug/g	EQG 1	<0.05
	Chrysene	0.05	ug/g		<0.05
	Dibenzo(a,h)anthracene	0.05	ug/g	EQG 1	<0.05
	Fluoranthene	0.05	ug/g		<0.05
	Fluorene	0.05	ug/g		<0.05
	Indeno(1,2,3-c,d)pyrene	0.05	ug/g	EQG 1	<0.05
	Naphthalene	0.05	ug/g	EQG 0.6	<0.05
	Phenanthrene	0.05	ug/g	EQG 5	<0.05
	Pyrene	0.05	ug/g	EQG 10	<0.05

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Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

				Lab I.D.	1443937
				Sample Matrix	Soil
				Sample Type	
				Sampling Date	2019-07-21
				Sample I.D.	Spill-2
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
PHC Surrogate	Alpha-androstrane	0	%		137
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068	<0.0068
	Ethylbenzene	0.018	ug/g	CSQG 0.018	<0.018
	m/p-xylene	0.030	ug/g		<0.030
	o-xylene	0.020	ug/g		<0.020
	Toluene	0.080	ug/g	CSQG 0.08	<0.080
	Xylene; total	0.050	ug/g	CSQG 2.4	<0.050
VOCs Surrogates	Toluene-d8	0	%		96

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Report Number: 1913393
Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-08-01 **Analyst** C M **Method** P 8270			
1+2-methylnaphthalene			
Run No 369865 **Analysis/Extraction Date** 2019-07-31 **Analyst** C M **Method** P 8270			
Methlynaphthalene, 1-	<0.05 ug/g	76	50-140
Methlynaphthalene, 2-	<0.05 ug/g	74	50-140
Acenaphthene	<0.05 ug/g	80	50-140
Acenaphthylene	<0.05 ug/g	69	50-140
Anthracene	<0.05 ug/g	80	50-140
Benz[a]anthracene	<0.05 ug/g	81	50-140
Benzo[a]pyrene	<0.05 ug/g	78	50-140
Benzo[b]fluoranthene	<0.05 ug/g	76	50-140
Benzo[ghi]perylene	<0.05 ug/g	87	50-140
Benzo[k]fluoranthene	<0.05 ug/g	84	50-140
Chrysene	<0.05 ug/g	93	50-140
Dibenz[a h]anthracene	<0.05 ug/g	80	50-140
Fluoranthene	<0.05 ug/g	86	50-140

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Fluorene	<0.05 ug/g	75	50-140
Indeno[1 2 3-cd]pyrene	<0.05 ug/g	84	50-140
Naphthalene	<0.05 ug/g	79	50-140
Phenanthrene	<0.05 ug/g	90	50-140
Pyrene	<0.05 ug/g	87	50-140
Run No 369974 **Analysis/Extraction Date** 2019-07-31 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	79	80-120
Run No 369989 **Analysis/Extraction Date** 2019-07-31 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F1-BTEX			
Run No 370066 **Analysis/Extraction Date** 2019-08-01 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	96	80-120
Petroleum Hydrocarbons F3	<20 ug/g	96	80-120
Petroleum Hydrocarbons F4	<20 ug/g	96	80-120
Moisture-Humidite		100	80-120
Run No 370838 **Analysis/Extraction Date** 2019-08-09 **Analyst** R K **Method** SUBCONTRACT-A			

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Date Submitted: 2019-07-26
Date Reported: 2019-08-01
Project: RBLR
COC #: 207022

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Benzene	<0.0068 ug/g	111	
Ethylbenzene	<0.018 ug/g	106	
m/p-xylene	<0.030 ug/g	108	
o-xylene	<0.020 ug/g	104	
Toluene	<0.080 ug/g	108	
Xylene Mixture			

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: 12017-06
Invoice to: Outcome Consultants Inc

Report Number: 1913761
Date Submitted: 2019-08-01
Date Reported: 2019-08-12
Project: RBLR
COC #: 197851

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Rebecca Koshy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

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Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1444781 Soil 2019-07-25 AEC3-1-1	1444782 Soil 2019-07-25 AEC3-1-2	1444783 Soil 2019-07-25 AEC3-1-3	1444784 Soil 2019-07-25 AEC3-1-4
Hydrocarbons	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	260	<20	<20	<20
	F4 (C34-C50)	20	ug/g	CWS 2800	30	<20	<20	<20
Moisture	Moisture-Humidite	0.1	%		9.1	8.1	5.2	3.2
PHC Surrogate	Alpha-androstrane	0	%		72	82	83	88

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1444785 Soil 2019-07-25 AEC3-1-5	1444786 Soil 2019-07-25 AEC3-2-1	1444787 Soil 2019-07-25 AEC3-2-2	1444788 Soil 2019-07-25 AEC3-2-3
Hydrocarbons	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	20	60	140	<20
	F4 (C34-C50)	20	ug/g	CWS 2800	<20	<20	40	<20
Mercury	Hg	0.1	ug/g	EQG 6.6		<0.1	<0.1	<0.1
Metals	Ag	0.2	ug/g	EQG 20		<0.2	<0.2	<0.2
	Al	5	ug/g			2870	2420	2900
	As	1	ug/g	EQG 12		2	2	2
	B	5	ug/g			<5	<5	<5
	Ba	1	ug/g	EQG 500		28	29	30
	Be	1	ug/g	EQG 4		<1	<1	<1
	Cd	0.4	ug/g	EQG 10		<0.4	<0.4	<0.4
	Co	1	ug/g	EQG 50		2	2	2
	Cr	1	ug/g	EQG 87		18	10	10

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1444785 Soil 2019-07-25 AEC3-1-5	1444786 Soil 2019-07-25 AEC3-2-1	1444787 Soil 2019-07-25 AEC3-2-2	1444788 Soil 2019-07-25 AEC3-2-3
Metals	Cr(III)	1	ug/g				18	10	10
	Cr(VI)	0.20	ug/g	EQG 0.4			<0.20	<0.20	<0.20
	Cu	1	ug/g	EQG 63			3	8	5
	Fe	5	ug/g				5370	4820	5380
	Mo	1	ug/g	EQG 10			<1	<1	<1
	Ni	1	ug/g	EQG 50			7	6	5
	Pb	1	ug/g	EQG 140			7	17	17
	Sb	1	ug/g	EQG 20			<1	<1	<1
	Se	1	ug/g	EQG 1			<1	<1	<1
	Sn	5	ug/g	EQG 50			<5	<5	<5
	Tl	1	ug/g	EQG 1			<1	<1	<1
	U	0.5	ug/g				<0.5	<0.5	<0.5
	V	2	ug/g	EQG 130			8	7	8
	Zn	2	ug/g	EQG 200			14	21	17
Moisture	Moisture-Humidite	0.1	%			7.5	17.9	4.9	6.5
PHC Surrogate	Alpha-androstrane	0	%			73	74	77	85

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				Lab I.D.	1444789	1444790	1444791	1444792
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Type				
				Sampling Date	2019-07-25	2019-07-25	2019-07-25	2019-07-25
				Sample I.D.	AEC3-2-4	AEC3-2-5	AEC3-2-6	AEC3-4-1
Group	**Analyte**	**MRL**	**Units**	**Guideline**				
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30				<10
	F1-BTEX (C6-C10)	10	ug/g					<10
	F2 (C10-C16)	10	ug/g	CWS 150	40	<10	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	4200*	<20	20	80
	F4 (C34-C50)	20	ug/g	CWS 2800	760	<20	<20	<20
	F4 (C34-C50) gravimetric	100	ug/g		1400			
Mercury	Hg	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1
Metals	Ag	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2
	Al	5	ug/g		2600	2600	3390	4210
	As	1	ug/g	EQG 12	2	2	2	2
	B	5	ug/g		<5	<5	<5	<5
	Ba	1	ug/g	EQG 500	28	26	36	27
	Be	1	ug/g	EQG 4	<1	<1	<1	<1
	Cd	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4	<0.4
	Co	1	ug/g	EQG 50	2	2	3	3
	Cr	1	ug/g	EQG 87	11	11	8	11
	Cr(III)	1	ug/g		11	11	8	11
	Cr(VI)	0.20	ug/g	EQG 0.4	<0.20	<0.20	<0.20	<0.20
	Cu	1	ug/g	EQG 63	5	3	4	5
	Fe	5	ug/g		5240	5110	6410	7430
	Mo	1	ug/g	EQG 10	<1	<1	<1	<1
	Ni	1	ug/g	EQG 50	7	6	6	8
	Pb	1	ug/g	EQG 140	11	19	9	16
	Sb	1	ug/g	EQG 20	<1	<1	<1	<1
	Se	1	ug/g	EQG 1	<1	<1	<1	<1

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1444789 Soil 2019-07-25 AEC3-2-4	1444790 Soil 2019-07-25 AEC3-2-5	1444791 Soil 2019-07-25 AEC3-2-6	1444792 Soil 2019-07-25 AEC3-4-1
Metals	Sn	5	ug/g	EQG 50		<5	<5	<5	49
	Tl	1	ug/g	EQG 1		<1	<1	<1	<1
	U	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
	V	2	ug/g	EQG 130		7	7	9	11
	Zn	2	ug/g	EQG 200		19	15	18	19
Moisture	Moisture-Humidite	0.1	%			4.1	8.8	17.2	8.2
PHC Surrogate	Alpha-androstrane	0	%			81	73	71	77
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068					<0.0068
	Ethylbenzene	0.018	ug/g	CSQG 0.018					<0.018
	m/p-xylene	0.030	ug/g						<0.030
	o-xylene	0.020	ug/g						<0.020
	Toluene	0.080	ug/g	CSQG 0.08					<0.080
	Xylene; total	0.050	ug/g	CSQG 2.4					<0.050
VOCs Surrogates	Toluene-d8	0	%						92

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				Lab I.D.	1444793	1444794	1444795	1444796
				Sample Matrix	Soil	Soil	Soil	Soil
				Sample Type				
				Sampling Date	2019-07-25	2019-07-26	2019-07-26	2019-07-26
				Sample I.D.	AEC3-4-2	AEC3-3-1	AEC3-3-2	AEC3-3-3
Group	**Analyte**	**MRL**	**Units**	**Guideline**				
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30	<10			
	F1-BTEX (C6-C10)	10	ug/g		<10			
	F2 (C10-C16)	10	ug/g	CWS 150	10	<10	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	950*	<20	<20	<20
	F4 (C34-C50)	20	ug/g	CWS 2800	60	<20	<20	<20
	F4 (C34-C50) gravimetric	100	ug/g		600			
Mercury	Hg	0.1	ug/g	EQG 6.6	<0.1			
Metals	Ag	0.2	ug/g	EQG 20	<0.2			
	Al	5	ug/g		3780			
	As	1	ug/g	EQG 12	2			
	B	5	ug/g		<5			
	Ba	1	ug/g	EQG 500	22			
	Be	1	ug/g	EQG 4	<1			
	Cd	0.4	ug/g	EQG 10	<0.4			
	Co	1	ug/g	EQG 50	3			
	Cr	1	ug/g	EQG 87	12			
	Cr(III)	1	ug/g		12			
	Cr(VI)	0.20	ug/g	EQG 0.4	0.24			
	Cu	1	ug/g	EQG 63	4			
	Fe	5	ug/g		6620			
	Mo	1	ug/g	EQG 10	<1			
	Ni	1	ug/g	EQG 50	8			
	Pb	1	ug/g	EQG 140	14			
	Sb	1	ug/g	EQG 20	<1			
	Se	1	ug/g	EQG 1	<1			

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Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1444793 Soil 2019-07-25 AEC3-4-2	1444794 Soil 2019-07-26 AEC3-3-1	1444795 Soil 2019-07-26 AEC3-3-2	1444796 Soil 2019-07-26 AEC3-3-3
Metals	Sn	5	ug/g	EQG 50		<5			
	Tl	1	ug/g	EQG 1		<1			
	U	0.5	ug/g			<0.5			
	V	2	ug/g	EQG 130		10			
	Zn	2	ug/g	EQG 200		19			
Moisture	Moisture-Humidite	0.1	%			7.2	7.4	12.9	9.5
PHC Surrogate	Alpha-androstrane	0	%			95	73	80	68
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068		<0.0068			
	Ethylbenzene	0.018	ug/g	CSQG 0.018		<0.018			
	m/p-xylene	0.030	ug/g			<0.030			
	o-xylene	0.020	ug/g			<0.020			
	Toluene	0.080	ug/g	CSQG 0.08		<0.080			
	Xylene; total	0.050	ug/g	CSQG 2.4		<0.050			
VOCs Surrogates	Toluene-d8	0	%			93			

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Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1444797 Soil 2019-07-26 AEC3-3-4	1444798 Soil 2019-07-26 AEC3-3-5	1444799 Soil 2019-07-26 AEC3-6-1	1444800 Soil 2019-07-26 AEC3-6-2
Hydrocarbons	F1 (C6-C10)	10	ug/g	CWS 30			1100*	500*
	F1-BTEX (C6-C10)	10	ug/g				1100	500
	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	570*	80
	F3 (C16-C34)	20	ug/g	CWS 300	<20	<20	880*	4700*
	F4 (C34-C50)	20	ug/g	CWS 2800	<20	<20	1250	1150
	F4 (C34-C50) gravimetric	100	ug/g				1900	1900
Mercury	Hg	0.1	ug/g	EQG 6.6			<0.1	<0.1
Metals	Ag	0.2	ug/g	EQG 20			<0.2	<0.2
	Al	5	ug/g				3180	3330
	As	1	ug/g	EQG 12			2	3
	B	5	ug/g				<5	6
	Ba	1	ug/g	EQG 500			82	213
	Be	1	ug/g	EQG 4			<1	<1
	Cd	0.4	ug/g	EQG 10			<0.4	0.7
	Co	1	ug/g	EQG 50			2	3
	Cr	1	ug/g	EQG 87			12	17
	Cr(III)	1	ug/g				5	N/A
	Cr(VI)	0.20	ug/g	EQG 0.4			7.44*	19.5*
	Cu	1	ug/g	EQG 63			11	38
	Fe	5	ug/g				5620	8020
	Mo	1	ug/g	EQG 10			<1	1
	Ni	1	ug/g	EQG 50			6	7
	Pb	1	ug/g	EQG 140			36	82
	Sb	1	ug/g	EQG 20			<1	<1
	Se	1	ug/g	EQG 1			<1	<1

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Metals	Sn	5	ug/g	EQG 50				<5	<5
	Tl	1	ug/g	EQG 1				<1	<1
	U	0.5	ug/g					<0.5	<0.5
	V	2	ug/g	EQG 130				9	10
	Zn	2	ug/g	EQG 200				23	38
Moisture	Moisture-Humidite	0.1	%			17.8	8.0	7.2	10.7
PCBs	Aroclor 1242	0.02	ug/g					<0.02	<0.02
	Aroclor 1248	0.02	ug/g					<0.02	<0.02
	Aroclor 1254	0.02	ug/g					0.25	1.13
	Aroclor 1260	0.02	ug/g					<0.02	<0.02
	Polychlorinated Biphenyls (PCBs)	0.02	ug/g	EQG 1.3				<0.02	<0.02
PHC Surrogate	Alpha-androstrane	0	%			70	71		
		0.1	%					NA	NA
Subcontract	Benzene	0.0068	ug/g	CSQG 0.0068					0.0171*
		0.027	ug/g	CSQG 0.0068				0.033*	
	Ethylbenzene	0.018	ug/g	CSQG 0.018					0.115*
		0.072	ug/g	CSQG 0.018				1.47*	
	m/p-xylene	0.030	ug/g						0.686
		0.12	ug/g					6.82	
	o-xylene	0.020	ug/g						0.450
		0.080	ug/g					4.54	
	Toluene	0.080	ug/g	CSQG 0.08					0.111*
		0.32	ug/g	CSQG 0.08				0.54*	
	Xylene; total	0.050	ug/g	CSQG 2.4					1.14
		0.14	ug/g	CSQG 2.4				11.4*	

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Surrogates	Decachlorobiphenyl		%					82.0	67
VOCs Surrogates	Toluene-d8	0	%					115	106

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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 **Analysis/Extraction Date** 2019-08-08 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F4g	<100 ug/g	85	80-120
Run No 370187 **Analysis/Extraction Date** 2019-08-01 **Analyst** HK **Method** CCME			
Petroleum Hydrocarbons F1	<10 ug/g	94	80-120
Petroleum Hydrocarbons F1-BTEX			
Run No 370220 **Analysis/Extraction Date** 2019-08-02 **Analyst** HK **Method** EPA 8081B/8082A			
Aroclor 1242	<0.02 ug/g	89	60-140
Aroclor 1248	<0.02 ug/g	89	60-140
Aroclor 1254	<0.02 ug/g	89	60-140
Aroclor 1260	<0.02 ug/g	89	60-140
Polychlorinated Biphenyls	<0.02 ug/g	89	60-140
Run No 370241 **Analysis/Extraction Date** 2019-08-06 **Analyst** H D **Method** EPA 200.8			
Silver	<0.2 ug/g	118	70-130
Aluminum	<5 ug/g	86	70-130
Arsenic	<1 ug/g	98	70-130

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: 12017-06
Invoice to: Outcome Consultants Inc

Report Number: 1913761
Date Submitted: 2019-08-01
Date Reported: 2019-08-12
Project: RBLR
COC #: 197851

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Boron (total)	<5 ug/g	102	70-130
Barium	<1 ug/g	106	70-130
Beryllium	<1 ug/g	107	70-130
Cadmium	<0.4 ug/g	109	70-130
Cobalt	<1 ug/g	106	70-130
Chromium Total	<1 ug/g	107	70-130
Copper	<1 ug/g	111	70-130
Iron	<5 ug/g	100	70-130
Molybdenum	<1 ug/g	102	70-130
Nickel	<1 ug/g	109	70-130
Lead	<1 ug/g	107	70-130
Antimony	<1 ug/g	116	70-130
Selenium	<1 ug/g	105	70-130
Sn	<5 ug/g	89	70-130
Thallium	<1 ug/g	106	70-130
Uranium	<0.5 ug/g	100	70-130
Vanadium	<2 ug/g	103	70-130
Zinc	<2 ug/g	105	70-130

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Project: RBLR
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QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 370259 **Analysis/Extraction Date** 2019-08-06 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.1 ug/g	101	80-120
Run No 370339 **Analysis/Extraction Date** 2019-08-08 **Analyst** C M **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	112	80-120
Petroleum Hydrocarbons F3	<20 ug/g	112	80-120
Petroleum Hydrocarbons F4	<20 ug/g	112	80-120
Moisture-Humidite		100	80-120
Run No 370395 **Analysis/Extraction Date** 2019-08-08 **Analyst** Z S **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	98	80-120
Run No 370433 **Analysis/Extraction Date** 2019-08-09 **Analyst** Z S **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	111	80-120
Run No 370490 **Analysis/Extraction Date** 2019-08-09 **Analyst** SKH **Method** EPA 200.8			
Cr(III)			

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Report Number: 1913761
Date Submitted: 2019-08-01
Date Reported: 2019-08-12
Project: RBLR
COC #: 197851

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 370576 **Analysis/Extraction Date** 2019-08-12 **Analyst** SKH **Method** EPA 200.8			
Cr(III)			
Run No 370839 **Analysis/Extraction Date** 2019-08-09 **Analyst** R K **Method** SUBCONTRACT-A			
Benzene	<0.0068 ug/g	109	
Ethylbenzene	<0.018 ug/g	111	
m/p-xylene	<0.030 ug/g	105	
o-xylene	<0.020 ug/g	106	
Toluene	<0.080 ug/g	112	
Xylene Mixture			

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Report Number: 1913761
Date Submitted: 2019-08-01
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Project: RBLR
COC #: 197851

Sample Comment Summary

Sample ID: 1444789	AEC3-2-4	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1444793	AEC3-4-2	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1444799	AEC3-6-1	Surrogate recoveries are not within acceptable limits due to matrix interferences.The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1444800	AEC3-6-2	Surrogate recoveries are not within acceptable limits due to matrix interferences.The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50). Sample was rerun multiple times for Cr(VI), however due to matrix interferences the result for Cr(VI) remains higher than the Cr result. Cr(III) not available.

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eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
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K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number:	1914663
Date Submitted:	2019-08-15
Date Reported:	2019-08-19
Project:	RBLR P2017-06
COC #:	197847
Temperature (C):	12
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1447234	AEC3-5-1	Surrogate recoveries are not within acceptable limits due to matrix interferences.The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1447235	AEC3-5-2	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1447236	AEC3-5-3	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

Report Comments:

Sarah Horner, Inorganics Technician

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: Outcome Consultants Inc
151 Holland Ave.
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Invoice to: Outcome Consultants Inc

Report Number: 1914663
Date Submitted: 2019-08-15
Date Reported: 2019-08-19
Project: RBLR P2017-06
COC #: 197847

CCME - Ind/Com - Soil

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Hydrocarbons				
AEC3-5-1	Petroleum Hydrocarbons F3	840	ug/g	CWS 300
Metals				
AEC3-5-1	Chromium VI	0.54	ug/g	EQG 0.4
AEC3-5-2	Chromium VI	0.43	ug/g	EQG 0.4
AEC3-6-3	Chromium VI	0.49	ug/g	EQG 0.4
AEC3-6-4	Chromium VI	0.51	ug/g	EQG 0.4
AEC3-6-6	Chromium VI	0.61	ug/g	EQG 0.4

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Guideline = CCME - Ind/Com - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6	1447234 Soil153 2019-08-02 11:40 AEC3-5-1
PHC's F1	370842	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	370842	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	370853	10	ug/g	CWS 150	<10	<10	<10	<10	<10
PHC's F3	370853	20	ug/g	CWS 300	<20	<20	<20	<20	840*
PHC's F4	370853	20	ug/g	CWS 2800	<20	<20	<20	<20	640
PHC's F4g	208523	100	ug/g						1200

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1447235 Soil153 2019-08-02 11:45 AEC3-5-2	1447236 Soil153 2019-08-02 11:50 AEC3-5-3	1447237 Soil153 2019-08-02 AEC3-6-7
PHC's F1	370842	10	ug/g	CWS 30	<10	<10	<10
PHC's F1-BTEX	370842	10	ug/g		<10	<10	<10
PHC's F2	370853	10	ug/g	CWS 150	<10	<10	<10
PHC's F3	370853	20	ug/g	CWS 300	<20	40	<20
PHC's F4	370853	20	ug/g	CWS 2800	30	60	<20
PHC's F4g	208523	100	ug/g		<100	200	

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Guideline = CCME - Ind/Com - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6	1447234 Soil153 2019-08-02 11:40 AEC3-5-1
Aluminum	370809	5	ug/g		4160	3190	1970	2440	1370
Antimony	370809	1	ug/g	EQG 20	<1	<1	<1	<1	<1
Arsenic	370809	1	ug/g	EQG 12	2	2	2	1	1
Barium	370809	1	ug/g	EQG 500	60	37	16	36	11
Beryllium	370809	1	ug/g	EQG 4	<1	<1	<1	<1	<1
Boron (total)	370809	5	ug/g		6	10	<5	<5	<5
Cadmium	370809	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium III	370849	1	ug/g		12	14	8	8	5
Chromium Total	370809	1	ug/g	EQG 87	12	14	8	9	6
Chromium VI	370800	0.20	ug/g	EQG 0.4	0.49*	0.51*	0.29	0.61*	0.54*
Cobalt	370809	1	ug/g	EQG 50	3	2	2	2	1
Copper	370809	1	ug/g	EQG 63	7	4	3	3	4
Iron	370809	5	ug/g		5510	4100	3230	3390	2290
Lead	370809	1	ug/g	EQG 140	10	15	15	14	16
Mercury	370809	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	370809	1	ug/g	EQG 10	<1	<1	<1	<1	<1
Nickel	370809	1	ug/g	EQG 50	9	9	6	6	4
Selenium	370809	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Silver	370809	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	370809	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Tin	370809	5	ug/g	EQG 50	<5	<5	<5	<5	<5
Uranium	370809	0.5	ug/g		<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	370809	2	ug/g	EQG 130	12	10	6	7	6

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COC #: 197847

Guideline = CCME - Ind/Com - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1447229	1447230	1447231	1447232	1447234
Sample Matrix					Soil153	Soil153	Soil153	Soil153	Soil153
Sample Type									
Sample Date					2019-08-02	2019-08-02	2019-08-02	2019-08-02	2019-08-02
Sampling Time					15:55	16:05	16:15	16:25	11:40
Sample I.D.					AEC3-6-3	AEC3-6-4	AEC3-6-5	AEC3-6-6	AEC3-5-1
Zinc	370809	2	ug/g	EQG 200	21	22	14	18	14

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1447235	1447236	1447237
Sample Matrix					Soil153	Soil153	Soil153
Sample Type							
Sample Date					2019-08-02	2019-08-02	2019-08-02
Sampling Time					11:45	11:50	
Sample I.D.					AEC3-5-2	AEC3-5-3	AEC3-6-7
Aluminum	370809	5	ug/g		1560	1610	2850
Antimony	370809	1	ug/g	EQG 20	<1	<1	<1
Arsenic	370809	1	ug/g	EQG 12	1	1	2
Barium	370809	1	ug/g	EQG 500	9	12	40
Beryllium	370809	1	ug/g	EQG 4	<1	<1	<1
Boron (total)	370809	5	ug/g		<5	<5	5
Cadmium	370809	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4
Chromium III	370849	1	ug/g		6	5	7
Chromium Total	370809	1	ug/g	EQG 87	6	5	7
Chromium VI	370800	0.20	ug/g	EQG 0.4	0.43*	<0.20	0.22
Cobalt	370809	1	ug/g	EQG 50	1	1	2
Copper	370809	1	ug/g	EQG 63	3	2	10
Iron	370809	5	ug/g		2490	2530	3850
Lead	370809	1	ug/g	EQG 140	5	7	15
Mercury	370809	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1
Molybdenum	370809	1	ug/g	EQG 10	<1	<1	<1
Nickel	370809	1	ug/g	EQG 50	4	4	6
Selenium	370809	1	ug/g	EQG 1	<1	<1	<1

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Guideline = CCME - Ind/Com - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1447235 Soil153 2019-08-02 11:45 AEC3-5-2	1447236 Soil153 2019-08-02 11:50 AEC3-5-3	1447237 Soil153 2019-08-02 AEC3-6-7
Silver	370809	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2
Thallium	370809	1	ug/g	EQG 1	<1	<1	<1
Tin	370809	5	ug/g	EQG 50	<5	<5	<5
Uranium	370809	0.5	ug/g		<0.5	<0.5	<0.5
Vanadium	370809	2	ug/g	EQG 130	6	6	8
Zinc	370809	2	ug/g	EQG 200	11	12	22

Subcontract

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6	1447234 Soil153 2019-08-02 11:40 AEC3-5-1
Benzene	370956	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	370956	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	370956	0.080	ug/g	CSQG 0.08	<0.080	<0.080	<0.080	<0.080	<0.080
Xylene Mixture	370956	0.050	ug/g	CSQG 2.4	<0.050	<0.050	<0.050	<0.050	<0.050
Xylene, m/p-	370956	0.030	ug/g		<0.030	<0.030	<0.030	<0.030	<0.030
Xylene, o-	370956	0.020	ug/g		<0.020	<0.020	<0.020	<0.020	<0.020

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COC #: 197847

Guideline = CCME - Ind/Com - Soil

Subcontract

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1447235 Soil153 2019-08-02 11:45 AEC3-5-2	1447236 Soil153 2019-08-02 11:50 AEC3-5-3	1447237 Soil153 2019-08-02 AEC3-6-7
Benzene	370956	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	370956	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018
Toluene	370956	0.080	ug/g	CSQG 0.08	<0.080	<0.080	<0.080
Xylene Mixture	370956	0.050	ug/g	CSQG 2.4	<0.050	<0.050	<0.050
Xylene, m/p-	370956	0.030	ug/g		<0.030	<0.030	<0.030
Xylene, o-	370956	0.020	ug/g		<0.020	<0.020	<0.020

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6	1447234 Soil153 2019-08-02 11:40 AEC3-5-1
Moisture-Humidite	370788	0.1	%		6.3	6.4	7.0	7.1	9.7

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1914663
Date Submitted: 2019-08-15
Date Reported: 2019-08-19
Project: RBLR P2017-06
COC #: 197847

Guideline = CCME - Ind/Com - Soil

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1447235 Soil153 2019-08-02 11:45 AEC3-5-2	1447236 Soil153 2019-08-02 11:50 AEC3-5-3	1447237 Soil153 2019-08-02 AEC3-6-7
Moisture-Humidite	370788	0.1	%		7.7	8.8	5.5

PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.			
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6
Aroclor 1242	370738	0.02	ug/g		<0.02	<0.02	<0.02	<0.02
Aroclor 1248	370738	0.02	ug/g		<0.02	<0.02	<0.02	<0.02
Aroclor 1254	370738	0.02	ug/g		<0.02	<0.02	<0.02	<0.02
Aroclor 1260	370738	0.02	ug/g		<0.02	<0.02	<0.02	<0.02
Polychlorinated Biphenyls	370738	0.02	ug/g	EQG 1.3	<0.02	<0.02	<0.02	<0.02

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PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1447237 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 Sampling Time Sample I.D. AEC3-6-7
Aroclor 1242	370894	0.02	ug/g		<0.02
Aroclor 1248	370894	0.02	ug/g		<0.02
Aroclor 1254	370894	0.02	ug/g		<0.02
Aroclor 1260	370894	0.02	ug/g		<0.02
Polychlorinated Biphenyls	370894	0.02	ug/g	EQG 1.3	<0.02

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1447229 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 15:55 Sampling Time Sample I.D. AEC3-6-3	Lab I.D. 1447230 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 16:05 Sampling Time Sample I.D. AEC3-6-4	Lab I.D. 1447231 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 16:15 Sampling Time Sample I.D. AEC3-6-5	Lab I.D. 1447232 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 16:25 Sampling Time Sample I.D. AEC3-6-6	Lab I.D. 1447234 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 11:40 Sampling Time Sample I.D. AEC3-5-1
Alpha-androstrane	370853	0	%		101	91	103	98	0

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1447235 Soil153 2019-08-02 11:45 AEC3-5-2	1447236 Soil153 2019-08-02 11:50 AEC3-5-3	1447237 Soil153 2019-08-02 AEC3-6-7
Alpha-androstrane	370853	0	%		90	93	81

Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.			
					1447229 Soil153 2019-08-02 15:55 AEC3-6-3	1447230 Soil153 2019-08-02 16:05 AEC3-6-4	1447231 Soil153 2019-08-02 16:15 AEC3-6-5	1447232 Soil153 2019-08-02 16:25 AEC3-6-6
Decachlorobiphenyl	370738		%		85.0	94.0	78.0	80.0

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Guideline = CCME - Ind/Com - Soil

Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1447237 Sample Matrix Soil153 Sample Type Sample Date 2019-08-02 Sampling Time Sample I.D. AEC3-6-7
Decachlorobiphenyl	370894		%		64.0

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COC #: 197847

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	PHC's F4g	<100 ug/g	87	80-120		60-140		0-30
370738	Aroclor 1242	<0.02 ug/g	83	60-140	74	60-140	0	0-40
370738	Aroclor 1248	<0.02 ug/g	83	60-140	74	60-140	0	0-40
370738	Aroclor 1254	<0.02 ug/g	83	60-140	74	60-140	0	0-40
370738	Aroclor 1260	<0.02 ug/g	83	60-140	74	60-140	0	0-40
370738	Polychlorinated Biphenyls	<0.02 ug/g	83	60-140	74	60-140	0	0-40
370788	Moisture-Humidite		100	80-120			34	
370800	Chromium VI	<0.20 ug/g	101	80-120	92	70-130	0	0-35
370809	Silver	<0.2 ug/g	126	70-130	109	70-130	0	0-20
370809	Aluminum	<5 ug/g	75	70-130	226	70-130	11	0-20
370809	Arsenic	<1 ug/g	102	70-130	87	70-130	10	0-20
370809	Boron (total)	<5 ug/g	110	70-130	98	70-130	0	0-20
370809	Barium	<1 ug/g	110	70-130	100	70-130	12	0-20
370809	Beryllium	<1 ug/g	109	70-130	104	70-130	0	0-20
370809	Cadmium	<0.4 ug/g	117	70-130	110	70-130	0	0-20
370809	Cobalt	<1 ug/g	112	70-130	96	70-130	0	0-20
370809	Chromium Total	<1 ug/g	112	70-130		70-130	32	0-20
370809	Copper	<1 ug/g	121	70-130	86	70-130	9	0-20
370809	Iron	<5 ug/g	116	70-130	134	70-130	8	0-20
370809	Mercury	<0.1 ug/g	100	70-130	96	70-130	0	
370809	Molybdenum	<1 ug/g	105	70-130	88	70-130	0	0-20
370809	Nickel	<1 ug/g	115	70-130		70-130	51	0-20
370809	Lead	<1 ug/g	115	70-130	109	70-130	12	0-20
370809	Antimony	<1 ug/g	95	70-130	105	70-130	0	0-20
370809	Selenium	<1 ug/g	111	70-130	106	70-130	0	0-20
370809	Tin	<5 ug/g	110	70-130	1	70-130	0	0-20
370809	Thallium	<1 ug/g	114	70-130	106	70-130	0	0-20
370809	Uranium	<0.5 ug/g	107	70-130	102	70-130	0	0-20
370809	Vanadium	<2 ug/g	106	70-130	105	70-130	8	0-20
370809	Zinc	<2 ug/g	117	70-130	92	70-130	9	0-20
370842	PHC's F1	<10 ug/g	99	80-120	96	60-140	0	0-30
370842	PHC's F1-BTEX							
370849	Chromium III							

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Project: RBLR P2017-06
COC #: 197847

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
370853	PHC's F2	<10 ug/g	96	80-120	110	60-140	0	0-30
370853	PHC's F3	<20 ug/g	96	80-120	110	60-140	0	0-30
370853	PHC's F4	<20 ug/g	96	80-120	110	60-140	0	0-30
370894	Aroclor 1242	<0.02 ug/g	83	60-140	N/A	60-140	N/A	0-40
370894	Aroclor 1248	<0.02 ug/g	83	60-140	N/A	60-140	N/A	0-40
370894	Aroclor 1254	<0.02 ug/g	83	60-140	N/A	60-140	N/A	0-40
370894	Aroclor 1260	<0.02 ug/g	83	60-140	N/A	60-140	N/A	0-40
370894	Polychlorinated Biphenyls	<0.02 ug/g	83	60-140		60-140		0-40
370956	Benzene	<0.0068	105		113		0	
370956	Ethylbenzene	<0.018 ug/g	107		114		0	
370956	Xylene, m/p-	<0.030 ug/g	105		111		0	
370956	Xylene, o-	<0.020 ug/g	107		114		0	
370956	Toluene	<0.080 ug/g	110		117		0	
370956	Xylene Mixture						0	

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Certificate of Analysis

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COC #: 197847

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	PHC's F4g	GC/FID	2019-08-16	2019-08-16	C_M	CCME
370738	Aroclor 1242	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370738	Aroclor 1248	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370738	Aroclor 1254	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370738	Aroclor 1260	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370738	Polychlorinated Biphenyls	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370788	Moisture-Humidite	Oven	2019-08-15	2019-08-15	C_M	ASTM 2216
370800	Chromium VI	FAA	2019-08-15	2019-08-15	Z_S	M US EPA 3060A
370809	Silver	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Aluminum	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Arsenic	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Boron (total)	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Barium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Beryllium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Cadmium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Cobalt	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Chromium Total	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Copper	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Iron	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Mercury	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Molybdenum	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Nickel	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Lead	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Antimony	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Selenium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Tin	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Thallium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Uranium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Vanadium	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370809	Zinc	ICAPQ-MS	2019-08-15	2019-08-15	H_D	EPA 200.8
370842	PHC's F1	GC/FID	2019-08-16	2019-08-16	TJB	CCME
370842	PHC's F1-BTEX	GC/FID	2019-08-16	2019-08-16	TJB	CCME
370849	Chromium III	ICAPQ-MS	2019-08-16	2019-08-16	SKH	EPA 200.8

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COC #: 197847

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
370853	PHC's F2	GC/FID	2019-08-15	2019-08-16	C_M	CCME
370853	PHC's F3	GC/FID	2019-08-15	2019-08-16	C_M	CCME
370853	PHC's F4	GC/FID	2019-08-15	2019-08-16	C_M	CCME
370894	Aroclor 1242	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370894	Aroclor 1248	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370894	Aroclor 1254	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370894	Aroclor 1260	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370894	Polychlorinated Biphenyls	GC/ECD	2019-08-15	2019-08-15	HK	EPA 8081B/8082A
370956	Benzene		2019-08-15	2019-08-19	R_K	SUBCONTRACT-A
370956	Ethylbenzene		2019-08-15	2019-08-19	R_K	SUBCONTRACT-A
370956	Xylene, m/p-		2019-08-15	2019-08-19	R_K	SUBCONTRACT-A
370956	Xylene, o-		2019-08-15	2019-08-19	R_K	SUBCONTRACT-A
370956	Toluene		2019-08-15	2019-08-19	R_K	SUBCONTRACT-A
370956	Xylene Mixture		2019-08-19	2019-08-19	R_K	SUBCONTRACT-A

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Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH", "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene	Yes	
BTEX was subtracted from F1 fraction	Yes	
If YES, was F1-BTEX (C6-C10) reported	Yes	
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		Naphthalene (PAH) not requested/analysed
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		PAH not requested/analysed
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	No	
if NO was F4 (C34-C50) gravimetric reported	Yes	

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197847

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608 Norris Court, Kingston, ON K7P 2R9 Ph: (613) 634-9307 Fax: (613) 634-9308
380 Vansickle Rd., Unit 630, St. Catharines, ON L2S 0B5 Ph: (905) 680-8887 Fax: (905) 680-4256
2395 Speakman Drive, Mississauga, ON, L5K 1B3 Phone: (905) 822-4111 Fax : (905) 823-1446

LABORATORY USE ONLY
Report #: 1911465

Report Information*:
Client: DDJV
Contact: J MARCHENKO
Address: 151 Hallmond Av
OTTAWA, ON K1Y 0Y2
Email: jmarchenko@outcomeinc.ca Phone: 514-946-4805
Project: BBCR 12017-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #: P2017-06
Quote # *: 180233

Criteria Required*:
☐ ODWSOG ☐ Other, Specify:
☐ PWQO
☐ Ont. Reg. 558
☒ CCME → LOW LEVEL BTEX
☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ Ont. Reg 153/04
Table # ___, Coarse/Fine, Surface/Subsurface
Type: Com-Ind / Res-Park / Agri / GW / Other

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg 153/04 *:
YES / NO

Is this a drinking water sample? YES / NO *
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmarchenko@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☐ PDF ☐ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
☒ 5 Business Days (Standard) (4 SAMPLES)
☐ 3 Business Days (Rush)
☒ 2 Business Days (Rush) (4 SAMPLES
☐ 1 Business Day (Rush)
☐ Other (specifiy date):

Notes:

* Indicates a required field
Please note that incomplete information may result in turnaround time delays.
Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	PHCs F1-F4	Metals	F1/BTEX	PCBs		Lab Use Only
~~AEC-3~~										
AEC3-5-1	2019.08.02 11h40	Sol	4		X	X	X		3 5 DAY TAT	447234
AEC3-5-2	11h45				X	X	X			35
AEC3-5-3	11h50				X	X	X			36
AEC3-6-3	2019.08.02 15h55		5		X	X	X	X		
AEC3-6-4	16h05			MUST CONFIRM PARAMETERS	X	X	X	X	3 2 DAY TAT	
AEC3-6-5	16h15				X	X	X	X		
AEC3-6-6	16h25				X	X	X	X		
AEC3-6-7					X	X	X	X	- 5 DAY TAT	37

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	02/AUG/19 16h45			12	
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Page # ___ of ___	

Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1915186
Date Submitted: 2019-08-22
Date Reported: 2019-08-23
Project: Resolute Bay Landfill REM (RBLR)
COC #: 197853

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
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Invoice to: Outcome Consultants Inc

Report Number: 1915186
Date Submitted: 2019-08-22
Date Reported: 2019-08-23
Project: Resolute Bay Landfill REM (RBLR)
COC #: 197853

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.			
					1448954 Soil 2019-08-19 AEC-3 EX2-7	1448955 Soil 2019-08-19 AEC-3 EX2-8	1448956 Soil 2019-08-19 AEC-3 EX4-3	1448957 Soil 2019-08-19 AEC-3 EX4-4
Hydrocarbons	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	<20	20	70	40
	F4 (C34-C50)	20	ug/g	CWS 2800	<20	50	90	130
	F4 (C34-C50) gravimetric	100	ug/g					100
Moisture	Moisture-Humidite	0.1	%		10.5	2.7	10.6	4.0
PHC Surrogate	Alpha-androstrane	0	%		104	97	88	102

Group	Analyte	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sampling Date / Sample I.D.	
					1448958 Soil 2019-08-20 AEC-3 EX5-4	1448959 Soil 2019-08-20 AEC-3 EX5-5
Hydrocarbons	F2 (C10-C16)	10	ug/g	CWS 150	<10	<10
	F3 (C16-C34)	20	ug/g	CWS 300	20	20
	F4 (C34-C50)	20	ug/g	CWS 2800	30	20
Metals	Cr(VI)	0.20	ug/g	EQG 0.4	<0.20	<0.20
Moisture	Moisture-Humidite	0.1	%		11.7	10.8
PHC Surrogate	Alpha-androstrane	0	%		94	106

Guideline = CCME - Ind/Com - Soil *** = Guideline Exceedence**

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Date Submitted: 2019-08-22
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Project: Resolute Bay Landfill REM (RBLR)
COC #: 197853

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 371213 **Analysis/Extraction Date** 2019-08-22 **Analyst** Z S **Method** M US EPA 3060A			
Chromium VI	<0.20 ug/g	101	80-120
Run No 371254 **Analysis/Extraction Date** 2019-08-23 **Analyst** TJB **Method** CCME			
Petroleum Hydrocarbons F2	<10 ug/g	120	80-120
Petroleum Hydrocarbons F3	<20 ug/g	120	80-120
Petroleum Hydrocarbons F4	<20 ug/g	120	80-120
Petroleum Hydrocarbons F4g	<100 ug/g	100	80-120
Moisture-Humidite		100	80-120

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COC #: 197853

Sample Comment Summary

Sample ID: 1448957 AEC-3 EX4-4 The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

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COC #: 197853

Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH" or Eurofins Mississauga Method 11-09-SP-2322, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene		
BTEX was subtracted from F1 fraction		BTEX not requested/analyzed
If YES, was F1-BTEX (C6-C10) reported		
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		Naphthalene (PAH) not requested/analysed
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		PAH not requested/analysed
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	No	

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if NO was F4 (C34-C50) gravimetric reported	Yes	

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Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854
Temperature (C): 11
Custody Seal:

Dear Jason Mauchan:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1451918	AEC1-SW1-1908	Sodium analysis for this report was performed from the nitric acid preserved bottles.

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

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.
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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

CCME - Freshwater Long Term

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
PAH				
AEC1-SW1-1908	Anthracene	<0.1	ug/L	0.012
AEC1-SW1-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC1-SW1-1908	Fluoranthene	<0.1	ug/L	0.04
AEC1-SW1-1908	Pyrene	<0.1	ug/L	0.025
AEC1-SW2-1908	Anthracene	<0.1	ug/L	0.012
AEC1-SW2-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC1-SW2-1908	Fluoranthene	<0.1	ug/L	0.04
AEC1-SW2-1908	Pyrene	<0.1	ug/L	0.025
AEC1-SW3-1908	Anthracene	<0.1	ug/L	0.012
AEC1-SW3-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC1-SW3-1908	Fluoranthene	<0.1	ug/L	0.04
AEC1-SW3-1908	Pyrene	<0.1	ug/L	0.025
AEC1-SW-DUP-1908	Anthracene	<0.1	ug/L	0.012
AEC1-SW-DUP-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC1-SW-DUP-1908	Fluoranthene	<0.1	ug/L	0.04
AEC1-SW-DUP-1908	Pyrene	<0.1	ug/L	0.025
AEC2-SW1-1908	Anthracene	<0.1	ug/L	0.012
AEC2-SW1-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC2-SW1-1908	Fluoranthene	<0.1	ug/L	0.04
AEC2-SW1-1908	Pyrene	<0.1	ug/L	0.025
AEC2-SW2-1908	Anthracene	<0.1	ug/L	0.012
AEC2-SW2-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC2-SW2-1908	Fluoranthene	<0.1	ug/L	0.04
AEC2-SW2-1908	Pyrene	<0.1	ug/L	0.025
AEC2-SW3-1908	Anthracene	<0.1	ug/L	0.012
AEC2-SW3-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC2-SW3-1908	Fluoranthene	<0.1	ug/L	0.04
AEC2-SW3-1908	Pyrene	<0.1	ug/L	0.025
AEC2-SW4-1908	Anthracene	<0.1	ug/L	0.012
AEC2-SW4-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC2-SW4-1908	Fluoranthene	<0.1	ug/L	0.04
AEC2-SW4-1908	Pyrene	<0.1	ug/L	0.025
AEC2-SW5-1908	Anthracene	<0.1	ug/L	0.012
AEC2-SW5-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC2-SW5-1908	Fluoranthene	<0.1	ug/L	0.04
AEC2-SW5-1908	Pyrene	<0.1	ug/L	0.025
AEC3-SW1-1908	Anthracene	<0.1	ug/L	0.012
AEC3-SW1-1908	Benz[a]anthracene	<0.1	ug/L	0.018
AEC3-SW1-1908	Fluoranthene	<0.1	ug/L	0.04

Results relate only to the parameters tested on the samples submitted.
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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

CCME - Freshwater Long Term

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
AEC3-SW1-1908	Pyrene	<0.1	ug/L	0.025

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COC #: 197854

Guideline = CCME - Freshwater Long Term

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
PHC's F1	372220	20	ug/L		<20	<20	<20	<20	<20
PHC's F1-BTEX	372221	20	ug/L		<20	<20	<20	<20	<20
PHC's F2	372138	20	ug/L		<20	<20	<20	<20	<20
PHC's F3	372138	50	ug/L		<50	<50	<50	<50	<50
PHC's F4	372138	50	ug/L		<50	<50	<50	<50	<50

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
PHC's F1	372220	20	ug/L		<20	<20	<20	<20	<20
PHC's F1-BTEX	372221	20	ug/L		<20	<20	<20	<20	<20
PHC's F2	372138	20	ug/L		20	<20	<20	<20	<20
PHC's F3	372138	50	ug/L		90	<50	<50	<50	<50
PHC's F4	372138	50	ug/L		<50	<50	<50	<50	<50

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Guideline = CCME - Freshwater Long Term

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.	
					1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
PHC's F1	372220	20	ug/L		<20	<20
PHC's F1-BTEX	372221	20	ug/L		<20	<20
PHC's F2	372138	20	ug/L		<20	<20
PHC's F3	372138	50	ug/L		<50	<50
PHC's F4	372138	50	ug/L		<50	<50

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Aluminum	371999	0.01	mg/L	Variable	0.01	<0.01	<0.01	<0.01	<0.01
Antimony	371999	0.0005	mg/L		0.0010	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	371999	0.001	mg/L	5	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	371999	0.01	mg/L		0.12	0.07	0.09	0.03	0.06
Beryllium	371999	0.0005	mg/L	N/V	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (total)	371999	0.01	mg/L	1500	0.11	0.09	0.09	0.01	0.04
Cadmium	371999	0.0001	mg/L	0.09	0.0002	<0.0001	<0.0001	0.0001	<0.0001
Chromium III	372318	0.001	mg/L	8.9	0.002	0.001	0.001	<0.001	
Chromium Total	371999	0.001	mg/L		0.002	0.001	0.001	<0.001	<0.001
Chromium VI	372318	0.01	mg/L	1	<0.01	<0.01	<0.01	<0.01	
Cobalt	371999	0.0002	mg/L		<0.0002	<0.0002	<0.0002	0.0006	<0.0002
Copper	371999	0.001	mg/L	Equation	0.004	<0.001	0.001	<0.001	<0.001
Iron	371999	0.03	mg/L	300	0.07	<0.03	<0.03	<0.03	<0.03

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Guideline = CCME - Freshwater Long Term

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Lead	371999	0.001	mg/L	Equation	0.002	<0.001	<0.001	<0.001	<0.001
Mercury	371999	0.0001	mg/L	0.026	<0.0001	<0.0001	<0.0001	<0.0001	
Molybdenum	371999	0.005	mg/L	73	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	371999	0.005	mg/L	Equation	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	371999	0.001	mg/L	1	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	371999	0.0001	mg/L	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium	372109	2	mg/L		42	40	39	21	34
Thallium	371999	0.0001	mg/L	0.8	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	371999	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	371999	0.001	mg/L	15	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	371999	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	371999	0.01	mg/L	30	0.06	<0.01	<0.01	<0.01	<0.01

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Aluminum	371999	0.01	mg/L	Variable	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	371999	0.0005	mg/L		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic	371999	0.001	mg/L	5	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	371999	0.01	mg/L		0.02	0.04	0.10	0.07	0.06
Beryllium	371999	0.0005	mg/L	N/V	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron (total)	371999	0.01	mg/L	1500	0.06	0.03	0.06	0.04	0.05
Cadmium	371999	0.0001	mg/L	0.09	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

Guideline = CCME - Freshwater Long Term

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Chromium III	372318	0.001	mg/L	8.9	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium Total	371999	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Chromium VI	372318	0.01	mg/L	1	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	371999	0.0002	mg/L		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Copper	371999	0.001	mg/L	Equation	0.003	0.002	<0.001	<0.001	<0.001
Iron	371999	0.03	mg/L	300	<0.03	<0.03	<0.03	<0.03	<0.03
Lead	371999	0.001	mg/L	Equation	<0.001	<0.001	<0.001	<0.001	<0.001
Mercury	371999	0.0001	mg/L	0.026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	371999	0.005	mg/L	73	<0.005	<0.005	<0.005	<0.005	<0.005
Nickel	371999	0.005	mg/L	Equation	<0.005	<0.005	<0.005	<0.005	<0.005
Selenium	371999	0.001	mg/L	1	<0.001	<0.001	<0.001	<0.001	<0.001
Silver	371999	0.0001	mg/L	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Sodium	372109	2	mg/L		27	21	35	25	23
Thallium	371999	0.0001	mg/L	0.8	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	371999	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Uranium	371999	0.001	mg/L	15	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	371999	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	371999	0.01	mg/L	30	<0.01	<0.01	<0.01	<0.01	<0.01

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451928 Sample Matrix SURF W Sample Type Sample Date 2019-08-28 Sampling Time 06:30 Sample I.D. AEC3-SW 1-1908	Lab I.D. 1451929 Sample Matrix SURF W Sample Type Sample Date 2019-08-28 Sampling Time 06:45 Sample I.D. AEC2-SW 2-1908
Aluminum	371999	0.01	mg/L	Variable	0.01	<0.01
Antimony	371999	0.0005	mg/L		<0.0005	<0.0005
Arsenic	371999	0.001	mg/L	5	<0.001	<0.001
Barium	371999	0.01	mg/L		<0.01	<0.01
Beryllium	371999	0.0005	mg/L	N/V	<0.0005	<0.0005
Boron (total)	371999	0.01	mg/L	1500	0.02	0.03
Cadmium	371999	0.0001	mg/L	0.09	<0.0001	<0.0001
Chromium III	372318	0.001	mg/L	8.9	<0.001	<0.001
Chromium Total	371999	0.001	mg/L		<0.001	<0.001
Chromium VI	372318	0.01	mg/L	1	<0.01	<0.01
Cobalt	371999	0.0002	mg/L		<0.0002	<0.0002
Copper	371999	0.001	mg/L	Equation	<0.001	<0.001
Iron	371999	0.03	mg/L	300	<0.03	<0.03
Lead	371999	0.001	mg/L	Equation	<0.001	<0.001
Mercury	371999	0.0001	mg/L	0.026	<0.0001	<0.0001
Molybdenum	371999	0.005	mg/L	73	<0.005	<0.005
Nickel	371999	0.005	mg/L	Equation	<0.005	<0.005
Selenium	371999	0.001	mg/L	1	<0.001	<0.001
Silver	371999	0.0001	mg/L	0.25	<0.0001	<0.0001
Sodium	372109	2	mg/L		14	15
Thallium	371999	0.0001	mg/L	0.8	<0.0001	<0.0001
Tin	371999	0.01	mg/L		<0.01	<0.01
Uranium	371999	0.001	mg/L	15	<0.001	<0.001

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.	
					1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
Vanadium	371999	0.001	mg/L		<0.001	<0.001
Zinc	371999	0.01	mg/L	30	<0.01	<0.01

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	371959	0.1	ug/L	5.8	<0.1	<0.1	<0.1		<0.1
Acenaphthylene	371959	0.1	ug/L	N/V	<0.1	<0.1	<0.1		<0.1
Anthracene	371959	0.1	ug/L	0.012	<0.1*	<0.1*	<0.1*		<0.1*
Benz[a]anthracene	371959	0.1	ug/L	0.018	<0.1*	<0.1*	<0.1*		<0.1*
Benzo[a]pyrene	371959	0.01	ug/L	0.015	<0.01	<0.01	<0.01		<0.01
Benzo[b]fluoranthene	371959	0.05	ug/L		<0.05	<0.05	<0.05		<0.05
Benzo[ghi]perylene	371959	0.1	ug/L		<0.1	<0.1	<0.1		<0.1
Benzo[k]fluoranthene	371959	0.05	ug/L		<0.05	<0.05	<0.05		<0.05
Chrysene	371959	0.05	ug/L	N/V	<0.05	<0.05	<0.05		<0.05
Dibenz[a h]anthracene	371959	0.1	ug/L		<0.1	<0.1	<0.1		<0.1
Fluoranthene	371959	0.1	ug/L	0.04	<0.1*	<0.1*	<0.1*		<0.1*
Fluorene	371959	0.1	ug/L	3	<0.1	<0.1	<0.1		<0.1
Indeno[1 2 3-cd]pyrene	371959	0.1	ug/L		<0.1	<0.1	<0.1		<0.1
Methlynaphthalene, 1-	371959	0.1	ug/L		<0.1	<0.1	<0.1		<0.1
Methlynaphthalene, 2-	371959	0.1	ug/L		<0.1	<0.1	<0.1		<0.1
Naphthalene	371959	0.1	ug/L	1.1	<0.1	<0.1	<0.1		<0.1

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Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Phenanthrene	371959	0.1	ug/L	0.4	<0.1	<0.1	<0.1		<0.1
Pyrene	371959	0.1	ug/L	0.025	<0.1*	<0.1*	<0.1*		<0.1*

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	371959	0.1	ug/L	5.8	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	371959	0.1	ug/L	N/V	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	371959	0.1	ug/L	0.012	<0.1*	<0.1*	<0.1*	<0.1*	<0.1*
Benz[a]anthracene	371959	0.1	ug/L	0.018	<0.1*	<0.1*	<0.1*	<0.1*	<0.1*
Benzo[a]pyrene	371959	0.01	ug/L	0.015	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	371959	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371959	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	371959	0.05	ug/L		<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371959	0.05	ug/L	N/V	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371959	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	371959	0.1	ug/L	0.04	<0.1*	<0.1*	<0.1*	<0.1*	<0.1*
Fluorene	371959	0.1	ug/L	3	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	371959	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 1-	371959	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 2-	371959	0.1	ug/L		<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	371959	0.1	ug/L	1.1	<0.1	<0.1	<0.1	<0.1	<0.1

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Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D. 1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Phenanthrene	371959	0.1	ug/L	0.4	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	371959	0.1	ug/L	0.025	<0.1*	<0.1*	<0.1*	<0.1*	<0.1*

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D. 1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
1+2-methylnaphthalene	208523	0.1	ug/L		<0.1	<0.1
Acenaphthene	371959	0.1	ug/L	5.8	<0.1	<0.1
Acenaphthylene	371959	0.1	ug/L	N/V	<0.1	<0.1
Anthracene	371959	0.1	ug/L	0.012	<0.1*	<0.1*
Benz[a]anthracene	371959	0.1	ug/L	0.018	<0.1*	<0.1*
Benzo[a]pyrene	371959	0.01	ug/L	0.015	<0.01	<0.01
Benzo[b]fluoranthene	371959	0.05	ug/L		<0.05	<0.05
Benzo[ghi]perylene	371959	0.1	ug/L		<0.1	<0.1
Benzo[k]fluoranthene	371959	0.05	ug/L		<0.05	<0.05
Chrysene	371959	0.05	ug/L	N/V	<0.05	<0.05
Dibenz[a h]anthracene	371959	0.1	ug/L		<0.1	<0.1
Fluoranthene	371959	0.1	ug/L	0.04	<0.1*	<0.1*
Fluorene	371959	0.1	ug/L	3	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	371959	0.1	ug/L		<0.1	<0.1
Methlynaphthalene, 1-	371959	0.1	ug/L		<0.1	<0.1
Methlynaphthalene, 2-	371959	0.1	ug/L		<0.1	<0.1
Naphthalene	371959	0.1	ug/L	1.1	<0.1	<0.1

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Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908	
Phenanthrene	371959	0.1	ug/L	0.4	<0.1	<0.1	
Pyrene	371959	0.1	ug/L	0.025	<0.1*	<0.1*	

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Benzene	372213	0.5	ug/L	370	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	372213	0.5	ug/L	90	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	372213	0.5	ug/L	2	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	372214	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	372213	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4
Xylene, o-	372213	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Benzene	372213	0.5	ug/L	370	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	372213	0.5	ug/L	90	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	372213	0.5	ug/L	2	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Mixture	372214	0.5	ug/L		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m/p-	372213	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4
Xylene, o-	372213	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	<0.4

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D. 1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
Benzene	372213	0.5	ug/L	370	<0.5	<0.5
Ethylbenzene	372213	0.5	ug/L	90	<0.5	<0.5
Toluene	372213	0.5	ug/L	2	<0.5	<0.5
Xylene Mixture	372214	0.5	ug/L		<0.5	<0.5
Xylene, m/p-	372213	0.4	ug/L		<0.4	<0.4
Xylene, o-	372213	0.4	ug/L		<0.4	<0.4

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D. 1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Alpha-androstrane	372138	0	%		105	108	95	106	105

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

Guideline = CCME - Freshwater Long Term

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Alpha-androstrane	372138	0	%		106	91	97	106	89

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.	
					1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
Alpha-androstrane	372138	0	%		103	105

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COC #: 197854

Guideline = CCME - Freshwater Long Term

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451918 SURF W 2019-08-27 20:00 AEC1-SW 1-1908	1451919 SURF W 2019-08-27 20:15 AEC1-SW 2-1908	1451920 SURF W 2019-08-27 20:30 AEC1-SW 3-1908	1451921 SURF W 2019-08-27 20:45 AEC1-SW 4-1908	1451922 SURF W 2019-08-28 AEC1-SW-DUP-1908
Toluene-d8	372213	0	%		90	92	91	92	89

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451923 SURF W 2019-08-28 08:20 AEC2-SW 1-1908	1451924 SURF W 2019-08-28 08:35 AEC2-SW 2-1908	1451925 SURF W 2019-08-28 08:50 AEC2-SW 3-1908	1451926 SURF W 2019-08-28 09:05 AEC2-SW 4-1908	1451927 SURF W 2019-08-28 09:20 AEC2-SW 5-1908
Toluene-d8	372213	0	%		90	90	89	92	90

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Certificate of Analysis

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151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jason Mauchan
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Guideline = CCME - Freshwater Long Term

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.	
					1451928 SURF W 2019-08-28 06:30 AEC3-SW 1-1908	1451929 SURF W 2019-08-28 06:45 AEC2-SW 2-1908
Toluene-d8	372213	0	%		91	90

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Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
371959	Methlynaphthalene, 1-	<0.1 ug/L	66	50-140		50-140		0-30
371959	Methlynaphthalene, 2-	<0.1 ug/L	66	50-140		50-140		0-30
371959	Acenaphthene	<0.1 ug/L	74	50-140		50-140		0-30
371959	Acenaphthylene	<0.1 ug/L	70	50-140		50-140		0-30
371959	Anthracene	<0.1 ug/L	92	50-140		50-140		0-30
371959	Benz[a]anthracene	<0.1 ug/L	78	50-140		50-140		0-30
371959	Benzo[a]pyrene	<0.01 ug/L	92	50-140		50-140		0-30
371959	Benzo[b]fluoranthene	<0.05 ug/L	76	50-140		50-140		0-30
371959	Benzo[ghi]perylene	<0.1 ug/L	90	50-140		50-140		0-30
371959	Benzo[k]fluoranthene	<0.05 ug/L	115	50-140		50-140		0-30
371959	Chrysene	<0.05 ug/L	97	50-140		50-140		0-30
371959	Dibenz[a h]anthracene	<0.1 ug/L	94	50-140		50-140		0-30
371959	Fluoranthene	<0.1 ug/L	86	50-140		50-140		0-30
371959	Fluorene	<0.1 ug/L	82	50-140		50-140		0-30
371959	Indeno[1 2 3-cd]pyrene	<0.1 ug/L	92	50-140		50-140		0-30
371959	Naphthalene	<0.1 ug/L	60	50-140		50-140		0-30
371959	Phenanthrene	<0.1 ug/L	72	50-140		50-140		0-30
371959	Pyrene	<0.1 ug/L	86	50-140		50-140		0-30
371999	Silver	<0.0001	104	80-120	58	70-130	0	0-20
371999	Aluminum	<0.01 mg/L	100	91.5-108.4	98	70-130	2	0-20
371999	Arsenic	<0.001 mg/L	99	91.7-108.2	101	70-130	0	0-20
371999	Boron (total)	<0.01 mg/L	106	84.9-115	102	70-130	0	0-20
371999	Barium	<0.01 mg/L	99	93.4-106.5	85	70-130	0	0-20
371999	Beryllium	<0.0005	107	89.5-110.4	113	70-130	0	0-20
371999	Cadmium	<0.0001	99	93.5-106.4	107	70-130	0	0-20
371999	Cobalt	<0.0002	100	92.7-107.2	99	70-130	0	0-20
371999	Chromium Total	<0.001 mg/L	102	94-106	102	70-130	0	0-20
371999	Copper	<0.001 mg/L	100	92.4-107.6		70-130	0	0-20
371999	Iron	<0.03 mg/L	99	91-109	95	70-130	0	0-20
371999	Mercury	<0.0001	85	80-120	87	70-130	0	0-20
371999	Molybdenum	<0.005 mg/L	103	92.8-107.2	99	70-130	0	0-20
371999	Nickel	<0.005 mg/L	101	93-106.9	98	70-130	0	0-20

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151 Holland Ave.
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Invoice to: Outcome Consultants Inc

Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
371999	Lead	<0.001 mg/L	103	90-110	107	70-130	0	0-20
371999	Antimony	<0.0005	100	89.6-110.3	86	70-130	0	0-20
371999	Selenium	<0.001 mg/L	95	87.4-112.6	102	70-130	0	0-20
371999	Tin	<0.01 mg/L	96	80-120	101	70-130	0	0-20
371999	Thallium	<0.0001	107	90.4-109.5	111	70-130	0	0-20
371999	Uranium	<0.001 mg/L	101	92.7-107.2	99	70-130	0	0-20
371999	Vanadium	<0.001 mg/L	101	93-106.9	100	70-130	0	0-20
371999	Zinc	<0.01 mg/L	99	91.5-108.4	92	70-130	0	0-20
372109	Sodium	<2 mg/L	106	82-118		80-120	1	0-20
372138	PHC's F2	<20 ug/L	120	60-140		60-140		0-30
372138	PHC's F3	<50 ug/L	120	60-140		60-140		0-30
372138	PHC's F4	<50 ug/L	120	60-140		60-140		0-30
372213	Benzene	<0.5 ug/L	104	60-130	91	50-140	0	0-30
372213	Ethylbenzene	<0.5 ug/L	118	60-130	94	50-140	0	0-30
372213	Xylene, m/p-	<0.4 ug/L	114	60-130	89	50-140	0	0-30
372213	Xylene, o-	<0.4 ug/L	113	60-130	93	50-140	0	0-30
372213	Toluene	<0.5 ug/L	107	60-130	86	50-140	0	0-30
372214	Xylene Mixture							
372220	PHC's F1	<20 ug/L	94	60-140	96	60-140	0	0-30
372221	PHC's F1-BTEX							
372318	Chromium III	<0.01 mg/L						
372318	Chromium VI	<0.01 mg/L	96	80-120	102	70-130	0	0-35

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K1Y 0Y2
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PO#: P2017-06
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Report Number: 1916161
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017-06
COC #: 197854

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-09-12	2019-09-12	C_M	P 8270
371959	Methlynaphthalene, 1-	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Methlynaphthalene, 2-	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Acenaphthene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Acenaphthylene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Anthracene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Benz[a]anthracene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Benzo[a]pyrene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Benzo[b]fluoranthene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Benzo[ghi]perylene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Benzo[k]fluoranthene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Chrysene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Dibenz[a h]anthracene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Fluoranthene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Fluorene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Indeno[1 2 3-cd]pyrene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Naphthalene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Phenanthrene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371959	Pyrene	GC-MS	2019-09-10	2019-09-11	C_M	P 8270
371999	Silver	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Aluminum	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Arsenic	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Boron (total)	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Barium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Beryllium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Cadmium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Cobalt	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Chromium Total	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Copper	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Iron	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Mercury	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Molybdenum	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Nickel	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
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Report Number: 1916161
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COC #: 197854

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
371999	Lead	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Antimony	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Selenium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Tin	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Thallium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Uranium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Vanadium	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
371999	Zinc	ICAPQ-MS	2019-09-05	2019-09-05	H_D	EPA 200.8
372109	Sodium	ICP-OES	2019-09-09	2019-09-09	SKH	M SM3120B-3500C
372138	PHC's F2	GC/FID	2019-09-09	2019-09-10	C_M	CCME O.Reg 153/04
372138	PHC's F3	GC/FID	2019-09-09	2019-09-10	C_M	CCME O.Reg 153/04
372138	PHC's F4	GC/FID	2019-09-09	2019-09-10	C_M	CCME O.Reg 153/04
372213	Benzene	GC-MS	2019-09-06	2019-09-06	TJB	EPA 8260
372213	Ethylbenzene	GC-MS	2019-09-06	2019-09-06	TJB	EPA 8260
372213	Xylene, m/p-	GC-MS	2019-09-06	2019-09-06	TJB	EPA 8260
372213	Xylene, o-	GC-MS	2019-09-06	2019-09-06	TJB	EPA 8260
372213	Toluene	GC-MS	2019-09-06	2019-09-06	TJB	EPA 8260
372214	Xylene Mixture	GC-MS	2019-09-11	2019-09-11	TJB	EPA 8260
372220	PHC's F1	GC/FID	2019-09-11	2019-09-11	TJB	CCME O.Reg 153/04
372221	PHC's F1-BTEX	GC/FID	2019-09-11	2019-09-11	TJB	CCME O.Reg 153/04
372318	Chromium III		2019-09-12	2019-09-12	H_D	SM 3500-Cr B
372318	Chromium VI		2019-09-12	2019-09-12	H_D	SM 3500-Cr B

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CHAIN OF CUSTODY

197854

eurofins

146 Colonnade Rd., Unit 8, Ottawa, ON K2E 7Y1 Ph: (613) 727-5692 Fax: (613) 727-5222
☐ 608 Norris Court, Kingston, ON K7P 2R9 Ph: (613) 634-9307 Fax: (613) 634-9308
☐ 380 Vansickle Rd., Unit 630, St. Catharines, ON L2S 0B5 Ph: (905) 680-8887 Fax: (905) 680-4256
☐ 2395 Speakman Drive, Mississauga, ON, L5K 1B3 Phone: (905) 822-4111 Fax: (905) 823-1446

LABORATORY USE ONLY
Report #: 191661

Report Information*:
Client: DBA OUTCOME
Contact: J MARKIEWICZ
Address: 151 HOLLAND AV
OTTAWA ON K1Y 0Y2
Email: jmarkiewicz@outcomeinc.ca Phone:
Project: P2017-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #: P2017-06
Quote # *: 180233

Criteria Required*:
☐ ODWSOG ☐ Other, Specify:
☐ PWQO
☐ Ont. Reg. 558
☒ CCME
☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ Ont. Reg 153/04
Table # ___, Coarse/Fine, Surface/Subsurface
Type: Com-Ind / Res-Park / Agri / GW / Other

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 *:
YES / NO

Is this a drinking water sample? YES / NO *
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmauchan@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☒ PDF ☒ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
☒ 5 Business Days (Standard)
☐ 3 Business Days (Rush)
☐ 2 Business Days (Rush)
☐ 1 Business Day (Rush)
☐ Other (specifiy date):

Notes: 3 COOLERS

* Indicates a required field
Please note that incomplete information may result in turnaround time delays.
Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	Parameters: PHC F1-F4	BTEX	Dissolved Metals	PAHs	Cr VI	Hg Tot						Lab Use Only
AEC1-SW1-1908	27/08/19 8pm	Surface Water	7		X	X	X	X	X	X					14S	18
AEC1-SW2-1908	27/08/19 8:15pm				X	X	X	X	X	X						19
AEC1-SW3-1908	8:30pm				X	X	X	X	X	X						20
AEC1-SW4-1908	8:45pm				X	X	X	X	X	X	→ LAMP Limited Sample					21
~~AEC1-SW5-1908~~	~~9:00pm~~															22
AEC2-SW-DUP-1908	28/08/19		5		X	X	X	X	X	X		No Hg/CrVI				23
AEC2-SW1-1908	8:20 AM				X	X	X	X	X	X						24
AEC2-SW2-1908	8:35 AM				X	X	X	X	X	X						25
AEC2-SW3-1908	8:50 AM				X	X	X	X	X	X						
AEC2-SW4-1908	9:05 AM				X	X	X	X	X	X						26

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	30/08/19 14h00			11	
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Page # 1 of 2	
			3/9/19 1310		

CHAIN OF CUSTODY

197855

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LABORATORY USE ONLY
Report #: 191161

Report Information*:
Client: OUTCOME
Contact: J MAUCHAN/CZ
Address: 151 IDLEWYLD AV OTTAWA, ON, K1Y 0Y2
Email: jmauchan@outcomeinc.ca Phone:
Project: RBCA P2017-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #: P2017-06
Quote # *: 180233

Criteria Required*:
- ☐ ODWSOG
- ☐ PWQO
- ☐ Ont. Reg. 558
- ☒ CCME
- ☐ Sanitary Sewer, City:
- ☐ Storm Sewer, City:
- ☐ Ont. Reg 153/04
  Table # ___, Coarse/Fine, Surface/Subsurface
  Type: Com-Ind / Res-Park / Agri / GW / Other
- ☐ Other, Specify:

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 *: YES / NO

Is this a drinking water sample? YES / NO
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmauchan@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☒ PDF ☒ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
- ☒ 5 Business Days (Standard)
- ☐ 3 Business Days (Rush)
- ☐ 2 Business Days (Rush)
- ☐ 1 Business Day (Rush)
- ☐ Other (specify date):

Notes:

* Indicates a required field
Please note that incomplete information may result in turnaround time delays.
Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	Parameters: PHC, F1-F4	BTEX	PAHs	Ni, Tl, Sr, Be, Metals	Cr VI	Hg	Tot	Lab Use Only
AEC2-SW5-1908	28/08/19 9:20am	Surface Water	7		X	X	X	X	X	X		27
AEC3-SW1-1908	" 6:30am	"	"		X	X	X	X	X	X		28
AEC3-SW2-1908	" 6:45am	"	"		X	X	X	X	X	X		29

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	30/08/19 14h00			11°	
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Page # 2 of 2	
			3/9/19 13h		

AFSTDCOC.3

Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number:	1916162
Date Submitted:	2019-09-05
Date Reported:	2019-09-12
Project:	P2017.06
COC #:	197846
Temperature (C):	11
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

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Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Report Number: 1916162
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197846

Guideline = CCME - Res/Park - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451930 Soil 2019-08-30 RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	372201	10	ug/g	CWS 150	<10	20	<10	<10	<10
PHC's F3	372201	20	ug/g	CWS 300	<20	20	30	<20	<20
PHC's F4	372201	20	ug/g	CWS 2800	<20	20	20	<20	<20

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	372201	10	ug/g	CWS 150	<10	<10	<10	<10	<10
PHC's F3	372201	20	ug/g	CWS 300	<20	<20	<20	<20	<20
PHC's F4	372201	20	ug/g	CWS 2800	<20	<20	<20	<20	<20

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Guideline = CCME - Res/Park - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D. 1451940 / Soil / 2019-08-30 / RBL-DUP-1908
PHC's F1	372205	10	ug/g	CWS 30	<10
PHC's F1-BTEX	372207	10	ug/g		<10
PHC's F2	372201	10	ug/g	CWS 150	<10
PHC's F3	372201	20	ug/g	CWS 300	<20
PHC's F4	372201	20	ug/g	CWS 2800	<20

Metals

Analyte	Batch No	MRL	Units	Guideline	1451930 / Soil / 2019-08-30 / RBL-1-SGS-1908	1451931 / Soil / 2019-08-31 / RBL-2-SGS-1908	1451932 / Soil / 2019-08-31 / RBL-3-SGS-1908	1451933 / Soil / 2019-08-30 / RBL-5-SGS-1908	1451934 / Soil / 2019-08-30 / RBL-7-SGS-1908
Aluminum	372036	5	ug/g		1930	1690	744	2070	749
Antimony	372036	1	ug/g	EQG 20	<1	<1	<1	<1	<1
Arsenic	372036	1	ug/g	EQG 12	<1	1	<1	2	<1
Barium	372036	1	ug/g	EQG 500	11	10	10	46	8
Beryllium	372036	1	ug/g	EQG 4	<1	<1	<1	<1	<1
Boron (total)	372036	5	ug/g		<5	<5	<5	7	<5
Cadmium	372036	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium III	372318	1	ug/g		12	7	2	13	8
Chromium Total	372036	1	ug/g	EQG 64	12	7	2	13	8
Chromium VI	372243	0.20	ug/g	EQG 0.4	<0.20	0.21	<0.20	<0.20	<0.20
Cobalt	372036	1	ug/g	EQG 50	1	1	<1	1	<1
Copper	372036	1	ug/g	EQG 63	3	3	1	4	<1
Iron	372036	5	ug/g		2200	2600	1460	3520	1210

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Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451930	1451931	1451932	1451933	1451934
Sample Matrix					Soil	Soil	Soil	Soil	Soil
Sample Type									
Sample Date					2019-08-30	2019-08-31	2019-08-31	2019-08-30	2019-08-30
Sampling Time									
Sample I.D.					RBL-1-SG S-1908	RBL-2-SG S-1908	RBL-3-SG S-1908	RBL-5-SG S-1908	RBL-7-SG S-1908
Lead	372036	1	ug/g	EQG 140	3	4	3	3	9
Mercury	372036	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	372036	1	ug/g	EQG 10	<1	<1	<1	<1	<1
Nickel	372036	1	ug/g	EQG 50	6	5	2	8	4
Selenium	372036	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Silver	372036	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	372036	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Tin	372036	5	ug/g	EQG 50	<5	<5	<5	<5	<5
Uranium	372036	0.5	ug/g		<0.5	<0.5	<0.5	0.5	<0.5
Vanadium	372036	2	ug/g	EQG 130	7	5	3	9	3
Zinc	372036	2	ug/g	EQG 200	14	20	12	14	13

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451935	1451936	1451937	1451938	1451939
Sample Matrix					Soil	Soil	Soil	Soil	Soil
Sample Type									
Sample Date					2019-08-30	2019-08-30	2019-08-30	2019-08-30	2019-08-30
Sampling Time									
Sample I.D.					RBL-10-S GS-1908	RBL-11-S GS-1908	RBL-12-S GS-1908	RBL-14-S GS-1908	RBL-15-S GS-1908
Aluminum	372036	5	ug/g		2700	2480	2530		
	372113	5	ug/g					1640	2600
Antimony	372036	1	ug/g	EQG 20	<1	<1	<1		
	372113	1	ug/g	EQG 20				<1	<1
Arsenic	372036	1	ug/g	EQG 12	2	2	2		
	372113	1	ug/g	EQG 12				1	2
Barium	372036	1	ug/g	EQG 500	14	12	14		
	372113	1	ug/g	EQG 500					25

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Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
				Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
Barium	372154	1	ug/g	EQG 500				13	
Beryllium	372036	1	ug/g	EQG 4	<1	<1	<1		
	372113	1	ug/g	EQG 4				<1	<1
Boron (total)	372036	5	ug/g		6	7	7		
	372113	5	ug/g					5	8
Cadmium	372036	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4		
	372113	0.4	ug/g	EQG 10				<0.4	<0.4
Chromium III	372318	1	ug/g		27	16	20	6	10
Chromium Total	372036	1	ug/g	EQG 64	27	16	20		
	372113	1	ug/g	EQG 64				6	10
Chromium VI	372243	0.20	ug/g	EQG 0.4	<0.20	<0.20	0.29	<0.20	<0.20
Cobalt	372036	1	ug/g	EQG 50	2	2	2		
	372113	1	ug/g	EQG 50				2	2
Copper	372036	1	ug/g	EQG 63	3	3	3		
	372113	1	ug/g	EQG 63				2	4
Iron	372036	5	ug/g		5040	4560	4760		
	372113	5	ug/g					3070	4320
Lead	372036	1	ug/g	EQG 140	7	6	7		
	372113	1	ug/g	EQG 140				7	4
Mercury	372036	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1		
	372113	0.1	ug/g	EQG 6.6				<0.1	<0.1
Molybdenum	372036	1	ug/g	EQG 10	<1	<1	<1		
	372113	1	ug/g	EQG 10				<1	<1
Nickel	372036	1	ug/g	EQG 50	14	9	11		

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Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Nickel	372113	1	ug/g	EQG 50				5	6
Selenium	372036	1	ug/g	EQG 1	<1	<1	<1		
	372113	1	ug/g	EQG 1				<1	<1
Silver	372036	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2		
	372113	0.2	ug/g	EQG 20				<0.2	<0.2
Thallium	372036	1	ug/g	EQG 1	<1	<1	<1		
	372113	1	ug/g	EQG 1				<1	<1
Tin	372036	5	ug/g	EQG 50	<5	<5	<5		
	372113	5	ug/g	EQG 50				<5	<5
Uranium	372036	0.5	ug/g		<0.5	<0.5	<0.5		
	372113	0.5	ug/g					<0.5	<0.5
Vanadium	372036	2	ug/g	EQG 130	8	7	7		
	372113	2	ug/g	EQG 130				6	10
Zinc	372036	2	ug/g	EQG 200	15	13	16		
	372113	2	ug/g	EQG 200				23	13

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451940 Sample Matrix Soil Sample Type Sample Date 2019-08-30 Sampling Time Sample I.D. RBL-DUP-1908
Aluminum	372113	5	ug/g		1190
Antimony	372113	1	ug/g	EQG 20	<1
Arsenic	372113	1	ug/g	EQG 12	<1
Barium	372113	1	ug/g	EQG 500	6
Beryllium	372113	1	ug/g	EQG 4	<1
Boron (total)	372113	5	ug/g		<5
Cadmium	372113	0.4	ug/g	EQG 10	<0.4
Chromium III	372318	1	ug/g		6
Chromium Total	372113	1	ug/g	EQG 64	6
Chromium VI	372243	0.20	ug/g	EQG 0.4	<0.20
Cobalt	372113	1	ug/g	EQG 50	<1
Copper	372113	1	ug/g	EQG 63	2
Iron	372113	5	ug/g		1480
Lead	372113	1	ug/g	EQG 140	3
Mercury	372113	0.1	ug/g	EQG 6.6	<0.1
Molybdenum	372113	1	ug/g	EQG 10	<1
Nickel	372113	1	ug/g	EQG 50	3
Selenium	372113	1	ug/g	EQG 1	<1
Silver	372113	0.2	ug/g	EQG 20	<0.2
Thallium	372113	1	ug/g	EQG 1	<1
Tin	372113	5	ug/g	EQG 50	<5
Uranium	372113	0.5	ug/g		<0.5
Vanadium	372113	2	ug/g	EQG 130	6

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Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451940 / Soil / / 2019-08-30 / / RBL-DUP-1908
Zinc	372113	2	ug/g	EQG 200	13

PAH

Analyte	Batch No	MRL	Units	Guideline	1451930 Soil 2019-08-30 RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05	<0.05	<0.05

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Project: P2017.06
COC #: 197846

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	1451930 Soil 2019-08-30 RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Pyrene	371871	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05	<0.05	<0.05

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916162
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197846

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Pyrene	371871	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	1451940 Soil 2019-08-30 RBL-DUP-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05
Acenaphthene	371871	0.05	ug/g		<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05
Anthracene	371871	0.05	ug/g		<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05
Chrysene	371871	0.05	ug/g		<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05
Fluorene	371871	0.05	ug/g		<0.05
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05

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Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451940 Sample Matrix Soil Sample Type Sample Date 2019-08-30 Sampling Time Sample I.D. RBL-DUP-1908
Pyrene	371871	0.05	ug/g	EQG 10	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451930 Sample Matrix Soil Sample Type Sample Date 2019-08-30 Sampling Time Sample I.D. RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
Acetone	372209	0.50	ug/g					<0.50	
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	372147	0.05	ug/g					<0.05	
Bromoform	372147	0.05	ug/g					<0.05	
Bromomethane	372147	0.05	ug/g					<0.05	
Carbon Tetrachloride	372147	0.05	ug/g					<0.05	
Chlorobenzene	372147	0.05	ug/g	EQG 1				<0.05	
Chloroform	372147	0.05	ug/g					<0.05	
Dibromochloromethane	372147	0.05	ug/g					<0.05	
Dichlorobenzene, 1,2-	372147	0.05	ug/g	EQG 1				<0.05	
Dichlorobenzene, 1,3-	372147	0.05	ug/g	EQG 1				<0.05	
Dichlorobenzene, 1,4-	372147	0.05	ug/g	EQG 1				<0.05	
Dichlorodifluoromethane	372147	0.05	ug/g					<0.05	
Dichloroethane, 1,1-	372147	0.05	ug/g	EQG 5				<0.05	
Dichloroethane, 1,2-	372147	0.05	ug/g	EQG 5				<0.05	
Dichloroethylene, 1,1-	372147	0.05	ug/g	EQG 5				<0.05	
Dichloroethylene, 1,2-cis-	372147	0.05	ug/g	EQG 5				<0.05	
Dichloroethylene, 1,2-trans-	372147	0.05	ug/g					<0.05	

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Guideline = CCME - Res/Park - Soil

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451930	1451931	1451932	1451933	1451934
Sample Matrix					Soil	Soil	Soil	Soil	Soil
Sample Type									
Sample Date					2019-08-30	2019-08-31	2019-08-31	2019-08-30	2019-08-30
Sampling Time									
Sample I.D.					RBL-1-SG S-1908	RBL-2-SG S-1908	RBL-3-SG S-1908	RBL-5-SG S-1908	RBL-7-SG S-1908
Dichloropropane, 1,2-	372147	0.05	ug/g					<0.05	
Dichloropropene,1,3-	372206	0.05	ug/g					<0.05	
Dichloropropene,1,3-cis-	372147	0.05	ug/g					<0.05	
Dichloropropene,1,3-trans-	372147	0.05	ug/g					<0.05	
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Ethylene dibromide	372147	0.05	ug/g					<0.05	
Hexane (n)	372147	0.05	ug/g					<0.05	
Methyl Ethyl Ketone	372209	0.50	ug/g					<0.50	
Methyl Isobutyl Ketone	372209	0.50	ug/g					<0.50	
Methyl tert-Butyl Ether (MTBE)	372209	0.05	ug/g					<0.05	
Methylene Chloride	372147	0.05	ug/g					<0.05	
Styrene	372147	0.05	ug/g					<0.05	
Tetrachloroethane, 1,1,1,2-	372147	0.05	ug/g					<0.05	
Tetrachloroethane, 1,1,2,2-	372147	0.05	ug/g	EQG 5				<0.05	
Tetrachloroethylene	372147	0.05	ug/g	EQG 0.2				<0.05	
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Trichloroethane, 1,1,1-	372147	0.05	ug/g	EQG 5				<0.05	
Trichloroethane, 1,1,2-	372147	0.05	ug/g	EQG 5				<0.05	
Trichloroethylene	372147	0.05	ug/g	EQG 3				<0.05	
Trichlorofluoromethane	372147	0.05	ug/g					<0.05	
Vinyl Chloride	372147	0.02	ug/g					<0.02	
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	1451940 Soil 2019-08-30 RBL-DUP-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05
Xylene, o-	372147	0.05	ug/g		<0.05

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Guideline = CCME - Res/Park - Soil

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451930 Soil 2019-08-30 RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
Moisture-Humidite	372201	0.1	%		11.4	15.6	17.1	9.6	8.0

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Moisture-Humidite	372201	0.1	%		13.3	6.7	3.7	11.3	9.3

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451940 / Soil / / 2019-08-30 / / RBL-DUP-1908
Moisture-Humidite	372201	0.1	%		11.4

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451930 / Soil / 2019-08-30 / RBL-1-SGS-1908	1451931 / Soil / 2019-08-31 / RBL-2-SGS-1908	1451932 / Soil / 2019-08-31 / RBL-3-SGS-1908	1451933 / Soil / 2019-08-30 / RBL-5-SGS-1908	1451934 / Soil / 2019-08-30 / RBL-7-SGS-1908
Alpha-androstrane	372201	0	%		92	90	83	93	85

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Certificate of Analysis

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Alpha-androstrane	372201	0	%		86	94	83	92	104

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451940 Soil 2019-08-30 RBL-DUP-1908
Alpha-androstrane	372201	0	%		100

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451930 Soil 2019-08-30 RBL-1-SG S-1908	1451931 Soil 2019-08-31 RBL-2-SG S-1908	1451932 Soil 2019-08-31 RBL-3-SG S-1908	1451933 Soil 2019-08-30 RBL-5-SG S-1908	1451934 Soil 2019-08-30 RBL-7-SG S-1908
1,2-dichloroethane-d4	372147	0	%					93	
4-bromofluorobenzene	372147	0	%					114	
Toluene-d8	372147	0	%		91	90	94	93	92

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451935 Soil 2019-08-30 RBL-10-S GS-1908	1451936 Soil 2019-08-30 RBL-11-S GS-1908	1451937 Soil 2019-08-30 RBL-12-S GS-1908	1451938 Soil 2019-08-30 RBL-14-S GS-1908	1451939 Soil 2019-08-30 RBL-15-S GS-1908
Toluene-d8	372147	0	%		91	90	93	91	92

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Guideline = CCME - Res/Park - Soil

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451940 Sample Matrix Soil Sample Type Sample Date 2019-08-30 Sampling Time Sample I.D. RBL-DUP-1908
Toluene-d8	372147	0	%		92

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
371871	Methlynaphthalene, 1-	<0.05 ug/g	67	50-140	73	50-140	0	0-40
371871	Methlynaphthalene, 2-	<0.05 ug/g	65	50-140	78	50-140	0	0-40
371871	Acenaphthene	<0.05 ug/g	74	50-140	79	50-140	0	0-40
371871	Acenaphthylene	<0.05 ug/g	69	50-140	77	50-140	0	0-40
371871	Anthracene	<0.05 ug/g	91	50-140	91	50-140	0	0-40
371871	Benz[a]anthracene	<0.05 ug/g	78	50-140	72	50-140	0	0-40
371871	Benzo[a]pyrene	<0.05 ug/g	92	50-140	69	50-140	0	0-40
371871	Benzo[b]fluoranthene	<0.05 ug/g	76	50-140	61	50-140	0	0-40
371871	Benzo[ghi]perylene	<0.05 ug/g	90	50-140	71	50-140	0	0-40
371871	Benzo[k]fluoranthene	<0.05 ug/g	115	50-140	84		0	0-40
371871	Chrysene	<0.05 ug/g	97	50-140	64	50-140	0	0-40
371871	Dibenz[a h]anthracene	<0.05 ug/g	94	50-140	64	50-140	0	0-40
371871	Fluoranthene	<0.05 ug/g	85	50-140	91	50-140	0	0-40
371871	Fluorene	<0.05 ug/g	81	50-140	71	50-140	0	0-40
371871	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	92	50-140	73	50-140	0	0-40
371871	Naphthalene	<0.05 ug/g	61	50-140	76	50-140	0	0-40
371871	Phenanthrene	<0.05 ug/g	72	50-140	70	50-140	0	0-40
371871	Pyrene	<0.05 ug/g	87	50-140	94	50-140	0	0-40
372036	Silver	<0.2 ug/g	116	70-130	131	70-130	0	0-20
372036	Aluminum	<5 ug/g	95	70-130	520	70-130	3	0-20
372036	Arsenic	<1 ug/g	101	70-130	120	70-130	0	0-20
372036	Boron (total)	<5 ug/g	107	70-130	114	70-130	0	0-20
372036	Barium	<1 ug/g	112	70-130	123	70-130	3	0-20
372036	Beryllium	<1 ug/g	105	70-130	120	70-130	0	0-20
372036	Cadmium	<0.4 ug/g	115	70-130	136	70-130	0	0-20
372036	Cobalt	<1 ug/g	107	70-130	119	70-130	2	0-20
372036	Chromium Total	<1 ug/g	109	70-130	126	70-130	9	0-20
372036	Copper	<1 ug/g	121	70-130	117	70-130	2	0-20
372036	Iron	<5 ug/g	110	70-130		70-130	3	0-20
372036	Mercury	<0.1 ug/g	90	70-130	97	70-130	0	
372036	Molybdenum	<1 ug/g	104	70-130	121	70-130	0	0-20
372036	Nickel	<1 ug/g	110	70-130	120	70-130	6	0-20

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K1Y 0Y2
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PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916162
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197846

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372036	Lead	<1 ug/g	114	70-130	110	70-130	3	0-20
372036	Antimony	<1 ug/g	91	70-130	129	70-130	0	0-20
372036	Selenium	<1 ug/g	114	70-130	127	70-130	0	0-20
372036	Tin	<5 ug/g	106	70-130	2	70-130	0	0-20
372036	Thallium	<1 ug/g	114	70-130	128	70-130	0	0-20
372036	Uranium	<0.5 ug/g	108	70-130	123	70-130	0	0-20
372036	Vanadium	<2 ug/g	105	70-130	129	70-130	3	0-20
372036	Zinc	<2 ug/g	122	70-130	93	70-130	3	0-20
372113	Silver	<0.2 ug/g	106	70-130	120	70-130	0	0-20
372113	Aluminum	<5 ug/g	80	70-130	898	70-130	3	0-20
372113	Arsenic	<1 ug/g	92	70-130	121	70-130	0	0-20
372113	Boron (total)	<5 ug/g	95	70-130	134	70-130	0	0-20
372113	Barium	<1 ug/g	99	70-130	105	70-130	32	0-20
372113	Beryllium	<1 ug/g	97	70-130	115	70-130	0	0-20
372113	Cadmium	<0.4 ug/g	104	70-130	121	70-130	0	0-20
372113	Cobalt	<1 ug/g	100	70-130	130	70-130	0	0-20
372113	Chromium Total	<1 ug/g	101	70-130	153	70-130	4	0-20
372113	Copper	<1 ug/g	113	70-130	124	70-130	0	0-20
372113	Iron	<5 ug/g	103	70-130	681	70-130	3	0-20
372113	Mercury	<0.1 ug/g	80	70-130	87	70-130	0	
372113	Molybdenum	<1 ug/g	97	70-130	128	70-130	0	0-20
372113	Nickel	<1 ug/g	103	70-130	130	70-130	0	0-20
372113	Lead	<1 ug/g	103	70-130	119	70-130	1	0-20
372113	Antimony	<1 ug/g	86	70-130	119	70-130	0	0-20
372113	Selenium	<1 ug/g	101	70-130	113	70-130	0	0-20
372113	Tin	<5 ug/g	90	70-130	1	70-130	0	0-20
372113	Thallium	<1 ug/g	103	70-130	116	70-130	0	0-20
372113	Uranium	<0.5 ug/g	98	70-130	114	70-130	0	0-20
372113	Vanadium	<2 ug/g	96	70-130	156	70-130	0	0-20
372113	Zinc	<2 ug/g	115	70-130	130	70-130	0	0-20
372147	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	80	60-130	67	50-140	0	0-50
372147	Trichloroethane, 1,1,1-	<0.05 ug/g	103	60-130	90	50-140	0	0-50
372147	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	93	60-130	123	50-140	0	0-30

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372147	Trichloroethane, 1,1,2-	<0.05 ug/g	95	60-130	110	50-140	0	0-50
372147	Dichloroethane, 1,1-	<0.05 ug/g	102	60-130	98	50-140	0	0-50
372147	Dichloroethylene, 1,1-	<0.05 ug/g	99	60-130	88	50-140	0	0-50
372147	Dichlorobenzene, 1,2-	<0.05 ug/g	89	60-130	107	50-140	0	0-50
372147	Dichloroethane, 1,2-	<0.05 ug/g	92	60-130	92	50-140	0	0-50
372147	Dichloropropane, 1,2-	<0.05 ug/g	92	60-130	84	50-140	0	0-50
372147	Dichlorobenzene, 1,3-	<0.05 ug/g	88	60-130	99	50-140	0	0-50
372147	Dichlorobenzene, 1,4-	<0.05 ug/g	80	60-130	90	50-140	0	0-50
372147	Benzene	<0.0068	94	60-130	90	50-140	0	0-50
372147	Bromodichloromethane	<0.05 ug/g	90	60-130	96	50-140	0	0-50
372147	Bromoform	<0.05 ug/g	94	60-130	121	50-140	0	0-50
372147	Bromomethane	<0.05 ug/g	96	60-130	61	50-140	0	0-50
372147	Dichloroethylene, 1,2-cis-	<0.05 ug/g	93	60-130	91	50-140	0	0-50
372147	Dichloropropene,1,3-cis-	<0.05 ug/g	95	60-130	98	50-140	0	0-50
372147	Carbon Tetrachloride	<0.05 ug/g	106	60-130	94	50-140	0	0-50
372147	Chloroform	<0.05 ug/g	93	60-130	97	50-140	0	0-50
372147	Dibromochloromethane	<0.05 ug/g	86	60-130	99	50-140	0	0-50
372147	Dichlorodifluoromethane	<0.05 ug/g	109	60-130	80	50-140	0	0-50
372147	Methylene Chloride	<0.05 ug/g	100	60-130	84	50-140	0	0-50
372147	Ethylbenzene	<0.018 ug/g	102	60-130	100	50-140	0	0-50
372147	Ethylene dibromide	<0.05 ug/g	92	60-130		50-140		0-50
372147	Hexane (n)	<0.05 ug/g	117	60-130	91	50-140	0	0-50
372147	Xylene, m/p-	<0.05 ug/g	97	60-130	99	50-140	0	0-50
372147	Chlorobenzene	<0.05 ug/g	91	60-130	93	50-140	0	0-50
372147	Xylene, o-	<0.05 ug/g	94	60-130	109	50-140	0	0-50
372147	Styrene	<0.05 ug/g	81	60-130	83	50-140	0	0-50
372147	Dichloroethylene, 1,2-trans-	<0.05 ug/g	97	60-130	86	50-140	0	0-50
372147	Dichloropropene,1,3-trans-	<0.05 ug/g	90	60-130	81	50-140	0	0-50
372147	Tetrachloroethylene	<0.05 ug/g	116	60-130	105	50-140	0	0-50
372147	Toluene	<0.08 ug/g	94	60-130	90	50-140	0	0-50
372147	Trichloroethylene	<0.05 ug/g	100	60-130	95	50-140	0	0-50
372147	Trichlorofluoromethane	<0.05 ug/g	104	60-130	76	50-140	0	0-50
372147	Vinyl Chloride	<0.02 ug/g	107	60-130	96	50-140	0	0-50

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Certificate of Analysis

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COC #: 197846

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372154	Barium	<1 ug/g	112	70-130	131	70-130	3	0-20
372186	Xylene Mixture							
372201	PHC's F2	<10 ug/g	96	80-120	106	60-140	0	0-30
372201	PHC's F3	<20 ug/g	96	80-120	106	60-140	0	0-30
372201	PHC's F4	<20 ug/g	96	80-120	106	60-140	0	0-30
372201	Moisture-Humidite		100	80-120			7	
372205	PHC's F1	<10 ug/g	96	80-120	96	60-140	0	0-30
372206	Dichloropropene,1,3-							
372207	PHC's F1-BTEX							
372209	Acetone	<0.50 ug/g	103	60-130	95	50-140	0	0-50
372209	Methyl Ethyl Ketone	<0.50 ug/g	86	60-130	88	50-140	0	0-50
372209	Methyl Isobutyl Ketone	<0.50 ug/g	85	60-130	90	50-140	0	0-50
372209	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	85	60-130	86	50-140	0	0-50
372243	Chromium VI	<0.20 ug/g	87	80-120	81	70-130	0	0-35
372318	Chromium III							

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-09-11	2019-09-11	C_M	P 8270
371871	Methlynaphthalene, 1-	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Methlynaphthalene, 2-	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Acenaphthene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Acenaphthylene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Anthracene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Benz[a]anthracene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Benzo[a]pyrene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Benzo[b]fluoranthene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Benzo[ghi]perylene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Benzo[k]fluoranthene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Chrysene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Dibenz[a h]anthracene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Fluoranthene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Fluorene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Indeno[1 2 3-cd]pyrene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Naphthalene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Phenanthrene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
371871	Pyrene	GC-MS	2019-09-09	2019-09-09	C_M	P 8270
372036	Silver	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Aluminum	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Arsenic	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Boron (total)	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Barium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Beryllium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Cadmium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Cobalt	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Chromium Total	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Copper	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Iron	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Mercury	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Molybdenum	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Nickel	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
372036	Lead	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Antimony	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Selenium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Tin	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Thallium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Uranium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Vanadium	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372036	Zinc	ICAPQ-MS	2019-09-06	2019-09-06	H_D	EPA 200.8
372113	Silver	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Aluminum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Arsenic	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Boron (total)	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Barium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Beryllium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cadmium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cobalt	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Chromium Total	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Copper	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Iron	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Mercury	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Molybdenum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Nickel	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Lead	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Antimony	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Selenium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Tin	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Thallium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Uranium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Vanadium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Zinc	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372147	Tetrachloroethane, 1,1,1,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Trichloroethane, 1,1,1-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Tetrachloroethane, 1,1,2,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B

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Test Summary

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372147	Trichloroethane, 1,1,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloroethane, 1,1-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloroethylene, 1,1-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichlorobenzene, 1,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloroethane, 1,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloropropane, 1,2-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichlorobenzene, 1,3-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichlorobenzene, 1,4-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Benzene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Bromodichloromethane	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Bromoform	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Bromomethane	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloroethylene, 1,2-cis-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloropropene,1,3-cis-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Carbon Tetrachloride	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Chloroform	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dibromochloromethane	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichlorodifluoromethane	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Methylene Chloride	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Ethylbenzene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Ethylene dibromide	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Hexane (n)	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Xylene, m/p-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Chlorobenzene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Xylene, o-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Styrene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloroethylene, 1,2-trans-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Dichloropropene,1,3-trans-	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Tetrachloroethylene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Toluene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Trichloroethylene	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Trichlorofluoromethane	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B
372147	Vinyl Chloride	GC-MS	2019-09-05	2019-09-07	TJB	V 8260B

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916162
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197846

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
372154	Barium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372186	Xylene Mixture	GC-MS	2019-09-11	2019-09-11	TJB	V 8260B
372201	PHC's F2	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	PHC's F3	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	PHC's F4	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	Moisture-Humidite	Oven	2019-09-10	2019-09-11	C_M	ASTM 2216
372205	PHC's F1	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372206	Dichloropropene,1,3-	GC-MS	2019-09-11	2019-09-11	TJB	V 8260B
372207	PHC's F1-BTEX	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372209	Acetone	GC-MS	2019-09-06	2019-09-07	TJB	V 8260B
372209	Methyl Ethyl Ketone	GC-MS	2019-09-06	2019-09-07	TJB	V 8260B
372209	Methyl Isobutyl Ketone	GC-MS	2019-09-06	2019-09-07	TJB	V 8260B
372209	Methyl tert-Butyl Ether (MTBE)	GC-MS	2019-09-06	2019-09-07	TJB	V 8260B
372243	Chromium VI	FAA	2019-09-11	2019-09-11	Z_S	M US EPA 3060A
372318	Chromium III	ICAPQ-MS	2019-09-12	2019-09-12	H_D	EPA 200.8

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CHAIN OF CUSTODY

197846

eurofins

- ☒ 146 Colonnade Rd., Unit 8, Ottawa, ON K2E 7Y1 Ph: (613) 727-5692 Fax: (613) 727-5222
- ☐ 608 Norris Court, Kingston, ON K7P 2R9 Ph: (613) 634-9307 Fax: (613) 634-9308
- ☐ 380 Vansickle Rd., Unit 630, St. Catharines, ON L2S 0B5 Ph: (905) 680-8887 Fax: (905) 680-4256
- ☐ 2395 Speakman Drive, Mississauga, ON, L5K 1B3 Phone: (905) 822-4111 Fax : (905) 823-1446

LABORATORY USE ONLY
Report #: 191662

Report Information*:
Client: OUTCOME
Contact: J MARKIEWICZ
Address: 151 HOWARD AV
OTTAWA ON K1Y0Y2
Email: jmarkiewicz@outcomeinc.ca Phone:
Project: P2017-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #: P2017-06
Quote # *: 180233

Criteria Required*:
- ☐ ODWSOG
- ☐ PWQO
- ☐ Ont. Reg. 558
- ☒ CCME Low Level BTEX
- ☐ Sanitary Sewer, City:
- ☐ Storm Sewer, City:
- ☐ Ont. Reg 153/04
  Table # ___, Coarse/Fine, Surface/Subsurface
  Type: Com-Ind / Res-Park / Agri / GW / Other
- ☐ Other, Specify:

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 *: YES / NO

Is this a drinking water sample? YES / NO *
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmarkiewicz@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☒ PDF ☒ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
- ☒ 5 Business Days (Standard)
- ☐ 3 Business Days (Rush)
- ☐ 2 Business Days (Rush)
- ☐ 1 Business Day (Rush)
- ☐ Other (specifiy date):

Notes: 1/2 Cooler

* Indicates a required field

Please note that incomplete information may result in turnaround time delays.

Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	Parameters: DIK F1-F4	Low Level BTEX	PAHs	ORI METALS	Hg	CrVI	VOCs	Lab Use Only
RBL-1-SGS-1908	30 AUG 19	SOIL	4		X	X	X	X	X	X		30
RBL-2-SGS-1908	31 AUG 19				X	X	X	X	X	X		31
RBL-3 SGS-1908	~~30~~ AUG 19				X	X	X	X	X	X		32
RBL-5-SGS-1908	30 AUG-19				X	X	X	X	X	X	X	33
~~RBL-6-SGS-1908~~					X	X	X	X	X	X		
RBL-7-SGS-1908					X	X	X	X	X	X		34
RBL 10-SGS-1908					X	X	X	X	X	X		35
RBL-11-SGS-1908					X	X	X	X	X	X		36
RBL-12-SGS-1908					X	X	X	X	X	X		37
RBL-13 ~~SGS-1908~~					X	X	X	X	X	X		38

14/5/19

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	31/08/19 1800				
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:		

Page # 1 of 2

eurofins 207510

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: _____

CLIENT INFORMATION

Company: OUTCOME

Contact: J MARKIEWICZ

Address: 151 HOLLAND AVE, OTTAWA, ON

Telephone: _____ Cell: _____

Email: #1: jmarkiewicz@outcomeinc.ca

Email: #2: jmanchan@outcomeinc.ca

Project: P2017-06 Quote #: ~~1800218023~~

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES ☒ NO ☐)

Company: _____ Fax: _____

Contact: _____ Email: #1: _____

Address: _____ Email: #2: _____

Telephone: _____ PO #: _____

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☐ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: _____

☐ Storm Sewer, City: _____

☐ ODWSOG

☐ PWQO

☐ O. Reg 347/558

☒ Other: CCME (ON Cover BTEX)

☐ None

☐ O. Reg 153

Table # ___, Course / Fine, Surface / subsurface.

Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment

☐ Excess Soil, Table: _____ Type: _____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 ☐ Yes ☐ No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required

Field Filtered --> CCME ~~O.Reg.153~~ parameters

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	HT	CrVI	RN# (Lab Use Only)
RBL-15-SGS-1908	30/08/19	Soil	4	X	X		X			X	X	X	39
RBL-DUP-1908	30/08/19	"	"	X	X		X			X	X	X	40

PRINT / SIGN / DATE/TIME / TEMP (°C)

Sampled By: JONATHAN MARKIEWICZ — DATE/TIME: 30/08/19 1600 — TEMP (°C): 11

Relinquished By: _____

Received By: _____

COMMENTS: 1/2 Cooler

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

Certificate of Analysis

eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number:	1916163
Date Submitted:	2019-09-05
Date Reported:	2019-09-12
Project:	P2017.06
COC #:	207511
Temperature (C):	11
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1451941	AEC1-SD1-1908	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1451943	AEC1-SD3-1908	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1451945	AEC2-SD1-1908	Surrogate recoveries are not within acceptable limits due to matrix interferences.The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).
Sample ID: 1451950	AEC2-SD-DUP-1908	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

CCME - Res/Park - Soil

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Hydrocarbons				
AEC2-SD1-1908	Petroleum Hydrocarbons F1	40	ug/g	CWS 30
AEC2-SD1-1908	Petroleum Hydrocarbons F2	1390	ug/g	CWS 150
AEC2-SD1-1908	Petroleum Hydrocarbons F3	6270	ug/g	CWS 300
Metals				
AEC1-SD1-1908	Chromium VI	0.93	ug/g	EQG 0.4
AEC1-SD3-1908	Chromium VI	0.44	ug/g	EQG 0.4
AEC2-SD1-1908	Copper	502	ug/g	EQG 63
AEC2-SD-DUP-1908	Chromium VI	0.97	ug/g	EQG 0.4
Volatiles				
AEC2-SD1-1908	Toluene	1.16	ug/g	CSQG 0.08

Results relate only to the parameters tested on the samples submitted.
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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	40*
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	40
PHC's F2	372201	10	ug/g	CWS 150	30	<10	<10	<10	1390*
PHC's F3	372201	20	ug/g	CWS 300	280	20	100	<20	6270*
PHC's F4	372201	20	ug/g	CWS 2800	140	30	70	<20	2090
PHC's F4g	208523	100	ug/g		1200		400		9900

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	372276	10	ug/g	CWS 150	<10	<10	<10	<10	50
PHC's F3	372276	20	ug/g	CWS 300	80	30	220	<20	210
PHC's F4	372276	20	ug/g	CWS 2800	80	<20	<20	<20	110
PHC's F4g	208523	100	ug/g		300				800

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Aluminum	372113	5	ug/g		1750	2540	939	1680	2260
Antimony	372113	1	ug/g	EQG 20	<1	<1	<1	<1	<1
Arsenic	372113	1	ug/g	EQG 12	1	1	<1	1	2
Barium	372113	1	ug/g	EQG 500	94	51	17	14	67
Beryllium	372113	1	ug/g	EQG 4	<1	<1	<1	<1	<1
Boron (total)	372113	5	ug/g		12	6	<5	<5	5
Cadmium	372113	0.4	ug/g	EQG 10	0.7	<0.4	<0.4	<0.4	1.1
Chromium III	372318	1	ug/g		17	8	11	7	10
Chromium Total	372113	1	ug/g	EQG 64	18	8	11	7	10
Chromium VI	372243	0.20	ug/g	EQG 0.4	0.93*	<0.20	0.44*	0.24	<0.20
Cobalt	372113	1	ug/g	EQG 50	2	2	<1	1	2
Copper	372113	1	ug/g	EQG 63	11	4	2	2	502*
Iron	372113	5	ug/g		3170	4170	1490	2740	5370
Lead	372113	1	ug/g	EQG 140	14	5	6	4	30
Mercury	372113	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	372113	1	ug/g	EQG 10	1	<1	<1	<1	2
Nickel	372113	1	ug/g	EQG 50	6	6	4	5	6
Selenium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Silver	372113	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2	0.5
Thallium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Tin	372113	5	ug/g	EQG 50	<5	<5	<5	<5	13
Uranium	372113	0.5	ug/g		<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	372113	2	ug/g	EQG 130	7	9	4	7	7

Results relate only to the parameters tested on the samples submitted.
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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Zinc	372113	2	ug/g	EQG 200	194	32	24	18	189

Metals

Analyte	Batch No	MRL	Units	Guideline	1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Aluminum	372113	5	ug/g		1330	2410	1170	1720	1180
Antimony	372113	1	ug/g	EQG 20	<1	<1	<1	<1	<1
Arsenic	372113	1	ug/g	EQG 12	<1	1	1	1	2
Barium	372113	1	ug/g	EQG 500	15	22	12	17	43
Beryllium	372113	1	ug/g	EQG 4	<1	<1	<1	<1	<1
Boron (total)	372113	5	ug/g		6	<5	<5	6	7
Cadmium	372113	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium III	372318	1	ug/g		7	16	8	6	10
Chromium Total	372113	1	ug/g	EQG 64	7	16	8	6	11
Chromium VI	372243	0.20	ug/g	EQG 0.4	<0.20	<0.20	<0.20	0.24	0.97*
Cobalt	372113	1	ug/g	EQG 50	<1	2	1	<1	1
Copper	372113	1	ug/g	EQG 63	21	5	2	4	5
Iron	372113	5	ug/g		2200	4120	2210	2390	2900
Lead	372113	1	ug/g	EQG 140	7	11	10	11	8
Mercury	372113	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	372113	1	ug/g	EQG 10	<1	<1	<1	<1	1
Nickel	372113	1	ug/g	EQG 50	5	9	5	4	7
Selenium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451946	1451947	1451948	1451949	1451950
Sample Matrix					Sed	Sed	Sed	Sed	Sed
Sample Type									
Sample Date					2019-08-31	2019-08-31	2019-08-31	2019-08-31	2019-08-31
Sampling Time									
Sample I.D.					AEC2-SD2-1908	AEC2-SD3-1908	AEC2-SD4-1908	AEC2-SD5-1908	AEC2-SD-DUP-1908
Silver	372113	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Tin	372113	5	ug/g	EQG 50	<5	<5	<5	<5	<5
Uranium	372113	0.5	ug/g		0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	372113	2	ug/g	EQG 130	6	10	6	6	6
Zinc	372113	2	ug/g	EQG 200	21	20	14	20	91

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451941	1451942	1451943	1451944	1451945
Sample Matrix					Sed	Sed	Sed	Sed	Sed
Sample Type									
Sample Date					2019-08-31	2019-08-31	2019-08-31	2019-08-31	2019-08-31
Sampling Time									
Sample I.D.					AEC1-SD1-1908	AEC1-SD2-1908	AEC1-SD3-1908	AEC1-SD4-1908	AEC2-SD1-1908
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451941	1451942	1451943	1451944	1451945
Sample Matrix					Sed	Sed	Sed	Sed	Sed
Sample Type									
Sample Date					2019-08-31	2019-08-31	2019-08-31	2019-08-31	2019-08-31
Sampling Time									
Sample I.D.					AEC1-SD1-1908	AEC1-SD2-1908	AEC1-SD3-1908	AEC1-SD4-1908	AEC2-SD1-1908
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	371871	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451946	1451947	1451948	1451949	1451950
Sample Matrix					Sed	Sed	Sed	Sed	Sed
Sample Type									
Sample Date					2019-08-31	2019-08-31	2019-08-31	2019-08-31	2019-08-31
Sampling Time									
Sample I.D.					AEC2-SD2-1908	AEC2-SD3-1908	AEC2-SD4-1908	AEC2-SD5-1908	AEC2-SD-DUP-1908
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	371871	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05	<0.05	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	1.16*
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Moisture-Humidite	372201	0.1	%		53.6	10.4	26.2	10.8	34.0

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Moisture-Humidite	372276	0.1	%		22.1	15.6	9.6	10.4	48.4

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Alpha-androstrane	208523	0.1	%						NA
	372201	0	%		76	110	95	100	

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Alpha-androstrane	372276	0	%		70	90	85	82	75

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451941 Sed 2019-08-31 AEC1-SD1-1908	1451942 Sed 2019-08-31 AEC1-SD2-1908	1451943 Sed 2019-08-31 AEC1-SD3-1908	1451944 Sed 2019-08-31 AEC1-SD4-1908	1451945 Sed 2019-08-31 AEC2-SD1-1908
Toluene-d8	372147	0	%		90	91	92	94	95

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Certificate of Analysis

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451946 Sed 2019-08-31 AEC2-SD2-1908	1451947 Sed 2019-08-31 AEC2-SD3-1908	1451948 Sed 2019-08-31 AEC2-SD4-1908	1451949 Sed 2019-08-31 AEC2-SD5-1908	1451950 Sed 2019-08-31 AEC2-SD-DUP-1908
Toluene-d8	372147	0	%		94	105	94	94	95

Results relate only to the parameters tested on the samples submitted.
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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
208523	PHC's F4g	<100 ug/g	88	80-120		60-140		0-30
371871	Methlynaphthalene, 1-	<0.05 ug/g	67	50-140	73	50-140	0	0-40
371871	Methlynaphthalene, 2-	<0.05 ug/g	65	50-140	78	50-140	0	0-40
371871	Acenaphthene	<0.05 ug/g	74	50-140	79	50-140	0	0-40
371871	Acenaphthylene	<0.05 ug/g	69	50-140	77	50-140	0	0-40
371871	Anthracene	<0.05 ug/g	91	50-140	91	50-140	0	0-40
371871	Benz[a]anthracene	<0.05 ug/g	78	50-140	72	50-140	0	0-40
371871	Benzo[a]pyrene	<0.05 ug/g	92	50-140	69	50-140	0	0-40
371871	Benzo[b]fluoranthene	<0.05 ug/g	76	50-140	61	50-140	0	0-40
371871	Benzo[ghi]perylene	<0.05 ug/g	90	50-140	71	50-140	0	0-40
371871	Benzo[k]fluoranthene	<0.05 ug/g	115	50-140	84		0	0-40
371871	Chrysene	<0.05 ug/g	97	50-140	64	50-140	0	0-40
371871	Dibenz[a h]anthracene	<0.05 ug/g	94	50-140	64	50-140	0	0-40
371871	Fluoranthene	<0.05 ug/g	85	50-140	91	50-140	0	0-40
371871	Fluorene	<0.05 ug/g	81	50-140	71	50-140	0	0-40
371871	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	92	50-140	73	50-140	0	0-40
371871	Naphthalene	<0.05 ug/g	61	50-140	76	50-140	0	0-40
371871	Phenanthrene	<0.05 ug/g	72	50-140	70	50-140	0	0-40
371871	Pyrene	<0.05 ug/g	87	50-140	94	50-140	0	0-40
372113	Silver	<0.2 ug/g	106	70-130	143	70-130	0	0-20
372113	Aluminum	<5 ug/g	80	70-130	214	70-130	3	0-20
372113	Arsenic	<1 ug/g	92	70-130	131	70-130	0	0-20
372113	Boron (total)	<5 ug/g	95	70-130	148	70-130	0	0-20
372113	Barium	<1 ug/g	99	70-130	105	70-130	32	0-20
372113	Beryllium	<1 ug/g	97	70-130	129	70-130	0	0-20
372113	Cadmium	<0.4 ug/g	104	70-130	146	70-130	0	0-20
372113	Cobalt	<1 ug/g	100	70-130	133	70-130	0	0-20
372113	Chromium Total	<1 ug/g	101	70-130	136	70-130	4	0-20
372113	Copper	<1 ug/g	113	70-130	135	70-130	0	0-20
372113	Iron	<5 ug/g	103	70-130		70-130	3	0-20
372113	Mercury	<0.1 ug/g	80	70-130	87	70-130	0	
372113	Molybdenum	<1 ug/g	97	70-130	136	70-130	0	0-20

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372113	Nickel	<1 ug/g	103	70-130	146	70-130	0	0-20
372113	Lead	<1 ug/g	103	70-130	107	70-130	1	0-20
372113	Antimony	<1 ug/g	86	70-130	138	70-130	0	0-20
372113	Selenium	<1 ug/g	101	70-130	134	70-130	0	0-20
372113	Tin	<5 ug/g	90	70-130	1	70-130	0	0-20
372113	Thallium	<1 ug/g	103	70-130	140	70-130	0	0-20
372113	Uranium	<0.5 ug/g	98	70-130	135	70-130	0	0-20
372113	Vanadium	<2 ug/g	96	70-130	138	70-130	0	0-20
372113	Zinc	<2 ug/g	115	70-130	865	70-130	0	0-20
372147	Benzene	<0.0068	94	60-130	90	50-140	0	0-50
372147	Ethylbenzene	<0.018 ug/g	102	60-130	100	50-140	0	0-50
372147	Xylene, m/p-	<0.05 ug/g	97	60-130	99	50-140	0	0-50
372147	Xylene, o-	<0.05 ug/g	94	60-130	109	50-140	0	0-50
372147	Toluene	<0.08 ug/g	94	60-130	90	50-140	0	0-50
372186	Xylene Mixture							
372201	PHC's F2	<10 ug/g	96	80-120	106	60-140	0	0-30
372201	PHC's F3	<20 ug/g	96	80-120	106	60-140	0	0-30
372201	PHC's F4	<20 ug/g	96	80-120	106	60-140	0	0-30
372201	Moisture-Humidite		100	80-120			7	
372205	PHC's F1	<10 ug/g	96	80-120	96	60-140	0	0-30
372207	PHC's F1-BTEX							
372243	Chromium VI	<0.20 ug/g	87	80-120	81	70-130	0	0-35
372276	PHC's F2	<10 ug/g	92	80-120	85	60-140	0	0-30
372276	PHC's F3	<20 ug/g	92	80-120	85	60-140	0	0-30
372276	PHC's F4	<20 ug/g	92	80-120	85	60-140	1	0-30
372276	Moisture-Humidite		100	80-120			11	
372318	Chromium III							

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-09-11	2019-09-11	C_M	P 8270
208523	PHC's F4g	GC/FID	2019-09-11	2019-09-11	C_M	CCME
371871	Methlynaphthalene, 1-	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Methlynaphthalene, 2-	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Acenaphthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Acenaphthylene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benz[a]anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[a]pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[b]fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[ghi]perylene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[k]fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Chrysene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Dibenz[a h]anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Fluorene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Indeno[1 2 3-cd]pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Naphthalene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Phenanthrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
372113	Silver	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Aluminum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Arsenic	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Boron (total)	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Barium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Beryllium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cadmium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cobalt	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Chromium Total	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Copper	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Iron	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Mercury	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Molybdenum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8

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Certificate of Analysis

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916163
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 207511

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
372113	Nickel	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Lead	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Antimony	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Selenium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Tin	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Thallium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Uranium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Vanadium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Zinc	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372147	Benzene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Ethylbenzene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Xylene, m/p-	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Xylene, o-	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Toluene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372186	Xylene Mixture	GC-MS	2019-09-11	2019-09-11	TJB	V 8260B
372201	PHC's F2	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	PHC's F3	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	PHC's F4	GC/FID	2019-09-10	2019-09-11	C_M	CCME
372201	Moisture-Humidite	Oven	2019-09-10	2019-09-11	C_M	ASTM 2216
372205	PHC's F1	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372207	PHC's F1-BTEX	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372243	Chromium VI	FAA	2019-09-11	2019-09-11	Z_S	M US EPA 3060A
372276	PHC's F2	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	PHC's F3	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	PHC's F4	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	Moisture-Humidite	Oven	2019-09-11	2019-09-12	C_M	ASTM 2216
372318	Chromium III	ICAPQ-MS	2019-09-12	2019-09-12	H_D	EPA 200.8

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eurofins 207511

STANDARD CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #: 196163

CLIENT INFORMATION

Company: OUTCOME

Contact: J MARKIEWICZ

Address: 151 IOTLAND LN, OTTAWA, ON K1X6X2

Telephone: Cell:

Email: #1: jmarkiewicz@outcomeinc.ca

Email: #2: jmauchan@outcomeinc.ca

Project: Quote #: 180233

INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES [X] NO [ ])

Company: Fax:

Contact: Email: #1:

Address: Email: #2:

Telephone: PO #:

TURN-AROUND TIME (Business Days)

[ ] 1 Day* (100%) [ ] 2 Day** (50%) [ ] 3-5 Days (25%) [X] 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

[ ] Sanitary Sewer, City:

[ ] Storm Sewer, City:

[ ] ODWSOG

[ ] PWQO

[ ] O. Reg 347/558

[X] Other: CCME SEDIMENTS

[ ] None

[ ] O. Reg 153

Table # ___, Course / Fine, Surface / subsurface.

Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment

[ ] Excess Soil, Table: Type:

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04

[ ] Yes [X] No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

Sample Details / Sample Analysis Required

Field Filtered --> CCME

O.Reg 153 parameters

Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	ORP	Metals only	1+2 Tot	Cr VI	RN# (Lab Use Only)
AEC1-SD1-1908	31 Aug 2019	SED	4	X	X		X				X	X	X	145941
AEC1-SD2-1908				X	X		X				X	X	X	42
AEC1-SD3-1908				X	X		X				X	X	X	43
AEC1-SD4-1908				X	X		X				X	X	X	44
AEC2-SD1-1908				X	X		X				X	X	X	45
AEC2-SD2-1908				X	X		X				X	X	X	46
AEC2-SD3-1908				X	X		X				X	X	X	47
AEC2-SD4-1908				X	X		X				X	X	X	48
AEC2-SD5-1908				X	X		X				X	X	X	49
AEC2-SD-DUP-1908				X	X		X				X	X	X	50

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:				
Relinquished By:				
Received By:				

COMMENTS: 1/2 COOLER

CUSTODY SEAL: [ ] YES [ ] NO Ice packs submitted: [ ] Yes [ ] No

Certificate of Analysis

eurofins | Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#: P2017-06

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856
Temperature (C): 11
Custody Seal:

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1451958	AEC3-6-15	Fe mrl elevated due to positive blk.
Sample ID: 1451959	AEC3-6-16	Fe mrl elevated due to positive blk.
Sample ID: 1451960	AEC3-6-17	Fe mrl elevated due to positive blk.
Sample ID: 1451961	AEC3-6-18	Fe mrl elevated due to positive blk.

Report Comments:

Addrine Thomas, Inorganics Supervisor

Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

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151 Holland Ave.
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Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

CCME - Res/Park - Soil

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Metals				
AEC3-6-10	Chromium VI	1.42	ug/g	EQG 0.4

Results relate only to the parameters tested on the samples submitted.
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Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451951 Soil 2019-08-28 AEC3-6-8	1451952 Soil 2019-08-28 AEC3-6-9	1451953 Soil 2019-08-29 AEC3-6-10	1451954 Soil 2019-08-29 AEC3-6-11	1451955 Soil 2019-08-29 AEC3-6-12
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	372276	10	ug/g	CWS 150	<10	<10	<10	<10	<10
PHC's F3	372276	20	ug/g	CWS 300	<20	<20	30	40	<20
PHC's F4	372276	20	ug/g	CWS 2800	<20	<20	20	30	<20

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
PHC's F1	372205	10	ug/g	CWS 30	<10	<10	<10	<10	<10
PHC's F1-BTEX	372207	10	ug/g		<10	<10	<10	<10	<10
PHC's F2	372276	10	ug/g	CWS 150	<10	<10	<10	<10	<10
PHC's F3	372276	20	ug/g	CWS 300	<20	<20	<20	<20	20
PHC's F4	372276	20	ug/g	CWS 2800	<20	<20	<20	<20	<20

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 / Soil / / 2019-08-29 / / AEC3-6-18
PHC's F1	372205	10	ug/g	CWS 30	<10
PHC's F1-BTEX	372207	10	ug/g		<10
PHC's F2	372276	10	ug/g	CWS 150	<10
PHC's F3	372276	20	ug/g	CWS 300	<20
PHC's F4	372276	20	ug/g	CWS 2800	<20

Metals

Analyte	Batch No	MRL	Units	Guideline	1451951 / Soil / 2019-08-28 / AEC3-6-8	1451952 / Soil / 2019-08-28 / AEC3-6-9	1451953 / Soil / 2019-08-29 / AEC3-6-10	1451954 / Soil / 2019-08-29 / AEC3-6-11	1451955 / Soil / 2019-08-29 / AEC3-6-12
Aluminum	372113	5	ug/g		3180	3600	1690	2820	3570
Antimony	372113	1	ug/g	EQG 20	<1	<1	<1	<1	<1
Arsenic	372113	1	ug/g	EQG 12	2	2	<1	1	2
Barium	372113	1	ug/g	EQG 500	56	75	28	41	56
Beryllium	372113	1	ug/g	EQG 4	<1	<1	<1	<1	<1
Boron (total)	372113	5	ug/g		7	7	7	7	8
Cadmium	372113	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium III	372318	1	ug/g		11	9	4	7	10
Chromium Total	372113	1	ug/g	EQG 64	11	9	5	7	
	372154	1	ug/g	EQG 64					10
Chromium VI	372315	0.20	ug/g	EQG 0.4	<0.20	<0.20	1.42*	<0.20	<0.20
Cobalt	372113	1	ug/g	EQG 50	2	2	1	2	2
Copper	372113	1	ug/g	EQG 63	5	5	3	4	5

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451951 Soil 2019-08-28 AEC3-6-8	1451952 Soil 2019-08-28 AEC3-6-9	1451953 Soil 2019-08-29 AEC3-6-10	1451954 Soil 2019-08-29 AEC3-6-11	1451955 Soil 2019-08-29 AEC3-6-12
Iron	372113	5	ug/g		5150	5590	2750	4350	5390
Lead	372113	1	ug/g	EQG 140	11	10	27	20	6
Mercury	372113	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	372113	1	ug/g	EQG 10	<1	<1	<1	<1	<1
Nickel	372113	1	ug/g	EQG 50	9	8	5	6	7
Selenium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Silver	372113	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	372113	1	ug/g	EQG 1	<1	<1	<1	<1	<1
Tin	372113	5	ug/g	EQG 50	<5	<5	<5	<5	<5
Uranium	372113	0.5	ug/g		<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	372113	2	ug/g	EQG 130	9	11	7	9	11
Zinc	372113	2	ug/g	EQG 200	23	21	15	19	17

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Aluminum	372113	5	ug/g		2610	1470			
	372154	5	ug/g				3050	3990	2660
Antimony	372113	1	ug/g	EQG 20	<1	<1			
	372154	1	ug/g	EQG 20			<1	<1	<1
Arsenic	372113	1	ug/g	EQG 12	2	<1			
	372154	1	ug/g	EQG 12			2	2	2
Barium	372113	1	ug/g	EQG 500	24	14			

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K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1451956	1451957	1451958	1451959	1451960
					Sample Matrix	Soil	Soil	Soil	Soil	Soil
					Sample Type					
					Sample Date	2019-08-29	2019-08-29	2019-08-29	2019-08-29	2019-08-29
					Sampling Time					
					Sample I.D.	AEC3-6-13	AEC3-6-14	AEC3-6-15	AEC3-6-16	AEC3-6-17
Barium	372154	1	ug/g	EQG 500				38	48	38
Beryllium	372113	1	ug/g	EQG 4		<1	<1			
	372154	1	ug/g	EQG 4				<1	<1	<1
Boron (total)	372113	5	ug/g			7	7			
	372154	5	ug/g					7	9	7
Cadmium	372113	0.4	ug/g	EQG 10		<0.4	<0.4			
	372154	0.4	ug/g	EQG 10				<0.4	<0.4	<0.4
Chromium III	372318	1	ug/g			7	5	8	8	7
Chromium Total	372113	1	ug/g	EQG 64		7	5			
	372154	1	ug/g	EQG 64				8	8	7
Chromium VI	372315	0.20	ug/g	EQG 0.4		<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt	372113	1	ug/g	EQG 50		2	1			
	372154	1	ug/g	EQG 50				2	3	2
Copper	372113	1	ug/g	EQG 63		3	2			
	372154	1	ug/g	EQG 63				4	5	3
Iron	372113	5	ug/g			4460	2340			
	372154	15	ug/g					4500	5900	4460
Lead	372113	1	ug/g	EQG 140		17	36			
	372154	1	ug/g	EQG 140				17	14	18
Mercury	372113	0.1	ug/g	EQG 6.6		<0.1	<0.1			
	372154	0.1	ug/g	EQG 6.6				<0.1	<0.1	<0.1
Molybdenum	372113	1	ug/g	EQG 10		<1	<1			
	372154	1	ug/g	EQG 10				<1	<1	<1
Nickel	372113	1	ug/g	EQG 50		6	4			

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Nickel	372154	1	ug/g	EQG 50			6	7	5
Selenium	372113	1	ug/g	EQG 1	<1	<1			
	372154	1	ug/g	EQG 1			<1	<1	<1
Silver	372113	0.2	ug/g	EQG 20	<0.2	<0.2			
	372154	0.2	ug/g	EQG 20			<0.2	<0.2	<0.2
Thallium	372113	1	ug/g	EQG 1	<1	<1			
	372154	1	ug/g	EQG 1			<1	<1	<1
Tin	372113	5	ug/g	EQG 50	<5	<5			
	372154	5	ug/g	EQG 50			<5	<5	<5
Uranium	372113	0.5	ug/g		<0.5	<0.5			
	372154	0.5	ug/g				<0.5	<0.5	<0.5
Vanadium	372113	2	ug/g	EQG 130	8	5			
	372154	2	ug/g	EQG 130			7	11	9
Zinc	372113	2	ug/g	EQG 200	19	18			
	372154	2	ug/g	EQG 200			20	21	21

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Guideline = CCME - Res/Park - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 / Soil / / 2019-08-29 / / AEC3-6-18
Aluminum	372154	5	ug/g		1700
Antimony	372154	1	ug/g	EQG 20	<1
Arsenic	372154	1	ug/g	EQG 12	<1
Barium	372154	1	ug/g	EQG 500	20
Beryllium	372154	1	ug/g	EQG 4	<1
Boron (total)	372154	5	ug/g		8
Cadmium	372154	0.4	ug/g	EQG 10	<0.4
Chromium III	372318	1	ug/g		8
Chromium Total	372154	1	ug/g	EQG 64	8
Chromium VI	372315	0.20	ug/g	EQG 0.4	<0.20
Cobalt	372154	1	ug/g	EQG 50	1
Copper	372154	1	ug/g	EQG 63	2
Iron	372154	15	ug/g		2630
Lead	372154	1	ug/g	EQG 140	46
Mercury	372154	0.1	ug/g	EQG 6.6	<0.1
Molybdenum	372154	1	ug/g	EQG 10	<1
Nickel	372154	1	ug/g	EQG 50	5
Selenium	372154	1	ug/g	EQG 1	<1
Silver	372154	0.2	ug/g	EQG 20	<0.2
Thallium	372154	1	ug/g	EQG 1	<1
Tin	372154	5	ug/g	EQG 50	<5
Uranium	372154	0.5	ug/g		<0.5
Vanadium	372154	2	ug/g	EQG 130	6

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Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 / Soil / / 2019-08-29 / / AEC3-6-18
Zinc	372154	2	ug/g	EQG 200	21

PAH

Analyte	Batch No	MRL	Units	Guideline	1451951 Soil 2019-08-28 AEC3-6-8	1451952 Soil 2019-08-28 AEC3-6-9	1451953 Soil 2019-08-29 AEC3-6-10	1451954 Soil 2019-08-29 AEC3-6-11	1451955 Soil 2019-08-29 AEC3-6-12
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	0.26
Acenaphthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benz[a]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[a]pyrene	371871	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	0.12
Methlynaphthalene, 2-	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	0.14
Naphthalene	371871	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05	<0.05	0.05
Phenanthrene	371871	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05	<0.05	<0.05

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COC #: 197856

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451951	1451952	1451953	1451954	1451955
					Sample Matrix Soil	Soil	Soil	Soil	Soil
					Sample Type				
					Sample Date 2019-08-28	2019-08-28	2019-08-29	2019-08-29	2019-08-29
					Sampling Time				
					Sample I.D. AEC3-6-8	AEC3-6-9	AEC3-6-10	AEC3-6-11	AEC3-6-12
Pyrene	371871	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05	<0.05	<0.05

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451956	1451957	1451958	1451959	1451960
					Sample Matrix Soil	Soil	Soil	Soil	Soil
					Sample Type				
					Sample Date 2019-08-29	2019-08-29	2019-08-29	2019-08-29	2019-08-29
					Sampling Time				
					Sample I.D. AEC3-6-13	AEC3-6-14	AEC3-6-15	AEC3-6-16	AEC3-6-17
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Benz[a]anthracene	371871	0.1	ug/g	EQG 1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[a]pyrene	371871	0.01	ug/g	EQG 0.7	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo[ghi]perylene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	371871	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz[a h]anthracene	371871	0.1	ug/g	EQG 1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	371871	0.1	ug/g	EQG 1	<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 1-	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Methlynaphthalene, 2-	371871	0.1	ug/g		<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	371871	0.1	ug/g	EQG 0.6	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	371871	0.1	ug/g	EQG 5	<0.1	<0.1	<0.1	<0.1	<0.1

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Report Number: 1916164
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Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.									
Pyrene	371871	0.1	ug/g	EQG 10	<0.1	<0.1	<0.1	<0.1	<0.1

PAH

Analyte	Batch No	MRL	Units	Guideline	1451961 Soil 2019-08-29 AEC3-6-18
Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.					
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05
Acenaphthene	371871	0.1	ug/g		<0.1
Acenaphthylene	371871	0.1	ug/g		<0.1
Anthracene	371871	0.1	ug/g		<0.1
Benz[a]anthracene	371871	0.1	ug/g	EQG 1	<0.1
Benzo[a]pyrene	371871	0.01	ug/g	EQG 0.7	<0.01
Benzo[b]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05
Benzo[ghi]perylene	371871	0.1	ug/g		<0.1
Benzo[k]fluoranthene	371871	0.05	ug/g	EQG 1	<0.05
Chrysene	371871	0.05	ug/g		<0.05
Dibenz[a h]anthracene	371871	0.1	ug/g	EQG 1	<0.1
Fluoranthene	371871	0.1	ug/g		<0.1
Fluorene	371871	0.1	ug/g		<0.1
Indeno[1 2 3-cd]pyrene	371871	0.1	ug/g	EQG 1	<0.1
Methlynaphthalene, 1-	371871	0.1	ug/g		<0.1
Methlynaphthalene, 2-	371871	0.1	ug/g		<0.1
Naphthalene	371871	0.1	ug/g	EQG 0.6	<0.1
Phenanthrene	371871	0.1	ug/g	EQG 5	<0.1

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Guideline = CCME - Res/Park - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451961 Sample Matrix Soil Sample Type Sample Date 2019-08-29 Sampling Time Sample I.D. AEC3-6-18
Pyrene	371871	0.1	ug/g	EQG 10	<0.1

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451951 Sample Matrix Soil Sample Type Sample Date 2019-08-28 Sampling Time Sample I.D. AEC3-6-8	1451952 Soil 2019-08-28 AEC3-6-9	1451953 Soil 2019-08-29 AEC3-6-10	1451954 Soil 2019-08-29 AEC3-6-11	1451955 Soil 2019-08-29 AEC3-6-12
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	0.09
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	0.09
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1451956 Sample Matrix Soil Sample Type Sample Date 2019-08-29 Sampling Time Sample I.D. AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05
Xylene, o-	372147	0.05	ug/g		<0.05	<0.05	<0.05	<0.05	<0.05

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Guideline = CCME - Res/Park - Soil

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 / Soil / / 2019-08-29 / / AEC3-6-18
Benzene	372147	0.0068	ug/g	CSQG 0.0068	<0.0068
Ethylbenzene	372147	0.018	ug/g	CSQG 0.018	<0.018
Toluene	372147	0.08	ug/g	CSQG 0.08	<0.08
Xylene Mixture	372186	0.05	ug/g	CSQG 2.4	<0.05
Xylene, m/p-	372147	0.05	ug/g		<0.05
Xylene, o-	372147	0.05	ug/g		<0.05

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451951 / Soil / / 2019-08-28 / / AEC3-6-8	1451952 / Soil / / 2019-08-28 / / AEC3-6-9	1451953 / Soil / / 2019-08-29 / / AEC3-6-10	1451954 / Soil / / 2019-08-29 / / AEC3-6-11	1451955 / Soil / / 2019-08-29 / / AEC3-6-12
Moisture-Humidite	372276	0.1	%		7.4	7.8	13.2	8.3	7.2

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Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Moisture-Humidite	372276	0.1	%		6.7	11.1	6.5	7.9	7.1

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 Soil 2019-08-29 AEC3-6-18
Moisture-Humidite	372276	0.1	%		11.5

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#: P2017-06
Invoice to: Outcome Consultants Inc

Report Number: 1916164
Date Submitted: 2019-09-05
Date Reported: 2019-09-12
Project: P2017.06
COC #: 197856

Guideline = CCME - Res/Park - Soil

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451951 Soil 2019-08-28 AEC3-6-8	1451952 Soil 2019-08-28 AEC3-6-9	1451953 Soil 2019-08-29 AEC3-6-10	1451954 Soil 2019-08-29 AEC3-6-11	1451955 Soil 2019-08-29 AEC3-6-12
Alpha-androstrane	372276	0	%		79	84	64	81	79

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Alpha-androstrane	372276	0	%		75	78	78	78	78

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PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 / Soil / / 2019-08-29 / / AEC3-6-18
Alpha-androstrane	372276	0	%		78

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451951 / Soil / / 2019-08-28 / / AEC3-6-8	1451952 / Soil / / 2019-08-28 / / AEC3-6-9	1451953 / Soil / / 2019-08-29 / / AEC3-6-10	1451954 / Soil / / 2019-08-29 / / AEC3-6-11	1451955 / Soil / / 2019-08-29 / / AEC3-6-12
Toluene-d8	372147	0	%		96	92	92	94	100

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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.				
					1451956 Soil 2019-08-29 AEC3-6-13	1451957 Soil 2019-08-29 AEC3-6-14	1451958 Soil 2019-08-29 AEC3-6-15	1451959 Soil 2019-08-29 AEC3-6-16	1451960 Soil 2019-08-29 AEC3-6-17
Toluene-d8	372147	0	%		94	94	94	96	94

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.
					1451961 Soil 2019-08-29 AEC3-6-18
Toluene-d8	372147	0	%		100

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
371871	Methlynaphthalene, 1-	<0.05 ug/g	67	50-140	73	50-140	0	0-40
371871	Methlynaphthalene, 2-	<0.05 ug/g	65	50-140	78	50-140	0	0-40
371871	Acenaphthene	<0.05 ug/g	74	50-140	79	50-140	0	0-40
371871	Acenaphthylene	<0.05 ug/g	69	50-140	77	50-140	0	0-40
371871	Anthracene	<0.05 ug/g	91	50-140	91	50-140	0	0-40
371871	Benz[a]anthracene	<0.05 ug/g	78	50-140	72	50-140	0	0-40
371871	Benzo[a]pyrene	<0.05 ug/g	92	50-140	69	50-140	0	0-40
371871	Benzo[b]fluoranthene	<0.05 ug/g	76	50-140	61	50-140	0	0-40
371871	Benzo[ghi]perylene	<0.05 ug/g	90	50-140	71	50-140	0	0-40
371871	Benzo[k]fluoranthene	<0.05 ug/g	115	50-140	84		0	0-40
371871	Chrysene	<0.05 ug/g	97	50-140	64	50-140	0	0-40
371871	Dibenz[a h]anthracene	<0.05 ug/g	94	50-140	64	50-140	0	0-40
371871	Fluoranthene	<0.05 ug/g	85	50-140	91	50-140	0	0-40
371871	Fluorene	<0.05 ug/g	81	50-140	71	50-140	0	0-40
371871	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	92	50-140	73	50-140	0	0-40
371871	Naphthalene	<0.05 ug/g	61	50-140	76	50-140	0	0-40
371871	Phenanthrene	<0.05 ug/g	72	50-140	70	50-140	0	0-40
371871	Pyrene	<0.05 ug/g	87	50-140	94	50-140	0	0-40
372113	Silver	<0.2 ug/g	106	70-130	143	70-130	0	0-20
372113	Aluminum	<5 ug/g	80	70-130	214	70-130	10	0-20
372113	Arsenic	<1 ug/g	92	70-130	131	70-130	0	0-20
372113	Boron (total)	<5 ug/g	95	70-130	148	70-130	0	0-20
372113	Barium	<1 ug/g	99	70-130	105	70-130	15	0-20
372113	Beryllium	<1 ug/g	97	70-130	129	70-130	0	0-20
372113	Cadmium	<0.4 ug/g	104	70-130	146	70-130	0	0-20
372113	Cobalt	<1 ug/g	100	70-130	133	70-130	0	0-20
372113	Chromium Total	<1 ug/g	101	70-130	136	70-130	13	0-20
372113	Copper	<1 ug/g	113	70-130	135	70-130	14	0-20
372113	Iron	<5 ug/g	103	70-130		70-130	14	0-20
372113	Mercury	<0.1 ug/g	80	70-130	87	70-130	0	
372113	Molybdenum	<1 ug/g	97	70-130	136	70-130	0	0-20
372113	Nickel	<1 ug/g	103	70-130	146	70-130	19	0-20

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COC #: 197856

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372113	Lead	<1 ug/g	103	70-130	107	70-130	15	0-20
372113	Antimony	<1 ug/g	86	70-130	138	70-130	0	0-20
372113	Selenium	<1 ug/g	101	70-130	134	70-130	0	0-20
372113	Tin	<5 ug/g	90	70-130	1	70-130	0	0-20
372113	Thallium	<1 ug/g	103	70-130	140	70-130	0	0-20
372113	Uranium	<0.5 ug/g	98	70-130	135	70-130	0	0-20
372113	Vanadium	<2 ug/g	96	70-130	138	70-130	0	0-20
372113	Zinc	<2 ug/g	115	70-130	865	70-130	12	0-20
372147	Benzene	<0.0068	94	60-130	90	50-140	0	0-50
372147	Ethylbenzene	<0.018 ug/g	102	60-130	100	50-140	0	0-50
372147	Xylene, m/p-	<0.05 ug/g	97	60-130	99	50-140	0	0-50
372147	Xylene, o-	<0.05 ug/g	94	60-130	109	50-140	0	0-50
372147	Toluene	<0.08 ug/g	94	60-130	90	50-140	0	0-50
372154	Silver	<0.2 ug/g	116	70-130	118	70-130	0	0-20
372154	Aluminum	<5 ug/g	93	70-130	903	70-130	13	0-20
372154	Arsenic	<1 ug/g	102	70-130	113	70-130	0	0-20
372154	Boron (total)	<5 ug/g	109	70-130	132	70-130	0	0-20
372154	Barium	<1 ug/g	112	70-130	131	70-130	2	0-20
372154	Beryllium	<1 ug/g	106	70-130	111	70-130	0	0-20
372154	Cadmium	<0.4 ug/g	109	70-130	114	70-130	0	0-20
372154	Cobalt	<1 ug/g	112	70-130	116	70-130	0	0-20
372154	Chromium Total	<1 ug/g	113	70-130	119	70-130	3	0-20
372154	Copper	<1 ug/g	123	70-130	113	70-130	0	0-20
372154	Iron	<15 ug/g	115	70-130	138	70-130	4	0-20
372154	Mercury	<0.1 ug/g	90	70-130	89	70-130	0	
372154	Molybdenum	<1 ug/g	108	70-130	117	70-130	0	0-20
372154	Nickel	<1 ug/g	115	70-130	112	70-130	9	0-20
372154	Lead	<1 ug/g	114	70-130	108	70-130	0	0-20
372154	Antimony	<1 ug/g	94	70-130	120	70-130	0	0-20
372154	Selenium	<1 ug/g	109	70-130	115	70-130	0	0-20
372154	Tin	<5 ug/g	108	70-130		70-130	0	0-20
372154	Thallium	<1 ug/g	115	70-130	114	70-130	0	0-20
372154	Uranium	<0.5 ug/g	109	70-130	112	70-130	0	0-20

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Report Number: 1916164
Date Submitted: 2019-09-05
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Project: P2017.06
COC #: 197856

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
372154	Vanadium	<2 ug/g	108	70-130	147	70-130	0	0-20
372154	Zinc	<2 ug/g	114	70-130	117	70-130	3	0-20
372186	Xylene Mixture							
372205	PHC's F1	<10 ug/g	96	80-120	96	60-140	0	0-30
372207	PHC's F1-BTEX							
372276	PHC's F2	<10 ug/g	92	80-120	85	60-140	0	0-30
372276	PHC's F3	<20 ug/g	92	80-120	85	60-140	0	0-30
372276	PHC's F4	<20 ug/g	92	80-120	85	60-140	1	0-30
372276	Moisture-Humidite		100	80-120			11	
372315	Chromium VI	<0.20 ug/g	102	80-120	97	70-130	0	0-35
372318	Chromium III							

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-09-11	2019-09-11	C_M	P 8270
371871	Methlynaphthalene, 1-	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Methlynaphthalene, 2-	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Acenaphthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Acenaphthylene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benz[a]anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[a]pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[b]fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[ghi]perylene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Benzo[k]fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Chrysene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Dibenz[a h]anthracene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Fluoranthene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Fluorene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Indeno[1 2 3-cd]pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Naphthalene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Phenanthrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
371871	Pyrene	GC-MS	2019-09-09	2019-09-10	C_M	P 8270
372113	Silver	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Aluminum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Arsenic	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Boron (total)	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Barium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Beryllium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cadmium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Cobalt	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Chromium Total	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Copper	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Iron	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Mercury	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Molybdenum	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Nickel	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8

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COC #: 197856

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
372113	Lead	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Antimony	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Selenium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Tin	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Thallium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Uranium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Vanadium	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372113	Zinc	ICAPQ-MS	2019-09-09	2019-09-09	H_D	EPA 200.8
372147	Benzene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Ethylbenzene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Xylene, m/p-	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Xylene, o-	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372147	Toluene	GC-MS	2019-09-05	2019-09-09	TJB	V 8260B
372154	Silver	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Aluminum	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Arsenic	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Boron (total)	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Barium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Beryllium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Cadmium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Cobalt	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Chromium Total	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Copper	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Iron	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Mercury	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Molybdenum	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Nickel	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Lead	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Antimony	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Selenium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Tin	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Thallium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Uranium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8

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Certificate of Analysis

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Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
372154	Vanadium	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372154	Zinc	ICAPQ-MS	2019-09-10	2019-09-10	H_D	EPA 200.8
372186	Xylene Mixture	GC-MS	2019-09-11	2019-09-11	TJB	V 8260B
372205	PHC's F1	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372207	PHC's F1-BTEX	GC/FID	2019-09-11	2019-09-11	TJB	CCME
372276	PHC's F2	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	PHC's F3	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	PHC's F4	GC/FID	2019-09-11	2019-09-12	C_M	CCME
372276	Moisture-Humidite	Oven	2019-09-11	2019-09-12	C_M	ASTM 2216
372315	Chromium VI	FAA	2019-09-12	2019-09-12	Z_S	M US EPA 3060A
372318	Chromium III	ICAPQ-MS	2019-09-12	2019-09-12	H_D	EPA 200.8

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Methods references and/or additional QA/QC information available on request.

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CHAIN OF CUSTODY

197856

eurofins

☒ 146 Colonnade Rd., Unit 8, Ottawa, ON K2E 7Y1 Ph: (613) 727-5692 Fax: (613) 727-5222
☐ 608 Norris Court, Kingston, ON K7P 2R9 Ph: (613) 634-9307 Fax: (613) 634-9308
☐ 380 Vansickle Rd., Unit 630, St. Catharines, ON L2S 0B5 Ph: (905) 680-8887 Fax: (905) 680-4256
☐ 2395 Speakman Drive, Mississauga, ON, L5K 1B3 Phone: (905) 822-4111 Fax : (905) 823-1446

LABORATORY USE ONLY
Report #: 911864

Report Information*:
Client: OUTCOME
Contact: JM/ARCHIBALD
Address: 151 HOLLAND AV
OTTAWA ON K1Y0Y2
Email: JMarkiewicz@outcomeinc.ca Phone:
Project: P2017-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #: P2017-06
Quote # *: 180233

Criteria Required*:
☐ ODWSOG ☐ Other, Specify:
☐ PWQO
☐ Ont. Reg. 558
☒ CCME LOW LEVEL BTEX
☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ Ont. Reg 153/04
Table # ___, Coarse/Fine, Surface/Subsurface
Type: Com-Ind / Res-Park / Agri / GW / Other

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 *:
YES / NO

Is this a drinking water sample? YES / NO *
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmarchan@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☒ PDF ☒ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
☒ 5 Business Days (Standard)
☐ 3 Business Days (Rush)
☐ 2 Business Days (Rush)
☐ 1 Business Day (Rush)
☐ Other (specifiy date):

Notes:
1 COOLER

* Indicates a required field
Please note that incomplete information may result in turnaround time delays.
Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	Parameters: PHC F1-F4	LOW LEVEL BTEX	DATES	OC PESTICIDES	Hg	CrVI	Lab Use Only
AEC3-6-8	28/08/19	SOIL	4		X	X	X	X	X	X	1
AEC3-6-9	28/08/19				X	X	X	X	X	X	2
AEC3-6-10	29/08/19				X	X	X	X	X	X	3
AEC3-6-11					X	X	X	X	X	X	4
AEC3-6-12					X	X	X	X	X	X	5
AEC3-6-13					X	X	X	X	X	X	6
AEC3-6-14					X	X	X	X	X	X	7
AEC3-6-15					X	X	X	X	X	X	8
AEC3-6-16					X	X	X	X	X	X	9
AEC3-6-17					X	X	X	X	X	X	10

- 145195

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	30/08/19 1400				
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:		

CHAIN OF CUSTODY

197845

eurofins

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☐ 608 Norris Court, Kingston, ON K7P 2R9 Ph: (613) 634-9307 Fax: (613) 634-9308
☐ 380 Vansickle Rd., Unit 630, St. Catharines, ON L2S 0B5 Ph: (905) 680-8887 Fax: (905) 680-4256
☐ 2395 Speakman Drive, Mississauga, ON, L5K 1B3 Phone: (905) 822-4111 Fax : (905) 823-1446

LABORATORY USE ONLY
Report #:

Report Information*:
Client: OUTCOME
Contact: J MARKIEWICZ
Address: 151 HOLLAND AV
OTTAWA ON K1Y0Z2
Email: jmarkiewicz@outcomeinc.ca Phone:
Project: P107-06

Invoice Information*:
Invoice to the same as above? Yes / No, or:
Client:
Contact:
Address:
Email: Phone:
Purchase Order #:
Quote # *:

Criteria Required*:
☐ ODWSOG ☐ Other, Specify:
☐ PWQO
☐ Ont. Reg. 558
☑ CCME LOW LOW BTEX
☐ Sanitary Sewer, City:
☐ Storm Sewer, City:
☐ Ont. Reg 153/04
Table # ___, Coarse/Fine, Surface/Subsurface
Type: Com-Ind / Res-Park / Agri / GW / Other

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 *:
YES / NO

Is this a drinking water sample? YES / NO *
If yes, complete the drinking water COC

Additional Email/Fax:
1. Email: jmauchan@outcomeinc.ca
2. Email:
3. Email:
Fax:

Report Format:
☑ PDF ☐ Excel ☐ Other, Specify:

Turnaround Time (*rush surcharges may apply*)*:
☑ 5 Business Days (Standard)
☐ 3 Business Days (Rush)
☐ 2 Business Days (Rush)
☐ 1 Business Day (Rush)
☐ Other (specifiy date):

Notes: 1 COOLER

* Indicates a required field
Please note that incomplete information may result in turnaround time delays.
Samples should be kept cool (4-10°C) from sampling time through drop-off at the laboratory.

Sample ID*	Date/Time Sampled*	Sample Matrix*	# Bottles	Sample Location	Parameters: PHC F1-F4	Low Level BTEX	PAHs	Excl Naphthalene	Hg	CrVI	Lab Use Only
MEC3-6-18	29/08/19	Soil	4		X	X	X	X	X	X	01

Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:	Temperature:	Condition:
	30/08/19 1460			11	
Samples Relinquished By:	Date/Time:	Samples Received By:	Date/Time:		
				Page # 2 of 2	

Certificate of Analysis

Environment Testing

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
Invoice to: Outcome Consultants Inc
PO#:

Report Number:	1917387
Date Submitted:	2019-09-24
Date Reported:	2019-10-01
Project:	RBCR P2017-06
COC #:	207509
Temperature (C):	10
Custody Seal:	

Dear Jonathan Markiewicz:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Sample Comment Summary

Sample ID: 1455421	AEC-1-GEN-POST	The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50).

Report Comments:

Rebecca Koshy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated
.
Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accrteditation. The scope is available at http://www.cala.ca/scopes/2602.pdf

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

CCME - Ind/Com - Soil

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Hydrocarbons				
AEC-1-GEN-POST	Petroleum Hydrocarbons F3	340	ug/g	CWS 300

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Guideline = CCME - Ind/Com - Soil

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1455420 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-SCR-POST	Lab I.D. 1455421 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-GEN-POST	Lab I.D. 1455422 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-STR-POST
PHC's F1	373237	10	ug/g	CWS 30	<10	<10	<10
PHC's F1-BTEX	373237	10	ug/g		<10	<10	<10
PHC's F2	373015	10	ug/g	CWS 150	<10	60	<10
PHC's F3	373015	20	ug/g	CWS 300	50	340*	<20
PHC's F4	373015	20	ug/g	CWS 2800	<20	280	<20
PHC's F4g	208523	100	ug/g			400	

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. 1455420 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-SCR-POST	Lab I.D. 1455421 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-GEN-POST	Lab I.D. 1455422 Sample Matrix Soil153 Sample Type Sample Date 2019-09-20 Sampling Time Sample I.D. AEC-1-STR-POST
Antimony	373011	1	ug/g	EQG 20	<1	<1	<1
Arsenic	373011	1	ug/g	EQG 12	2	1	2
Barium	373011	1	ug/g	EQG 500	34	67	23
Beryllium	373011	1	ug/g	EQG 4	<1	<1	<1
Boron (Hot Water Soluble)	373095	0.5	ug/g		<0.5	<0.5	<0.5
Boron (total)	373011	5	ug/g		7	5	7
Cadmium	373011	0.4	ug/g	EQG 10	<0.4	<0.4	<0.4
Chromium Total	373011	1	ug/g	EQG 87	9	11	16
Chromium VI	373174	0.20	ug/g	EQG 0.4	<0.20	<0.20	<0.20
Cobalt	373011	1	ug/g	EQG 50	2	2	3
Copper	373011	1	ug/g	EQG 63	3	12	5
Lead	373011	1	ug/g	EQG 140	6	10	7
Mercury	373011	0.1	ug/g	EQG 6.6	<0.1	<0.1	<0.1

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Guideline = CCME - Ind/Com - Soil

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SC R-POST	1455421 Soil153 2019-09-20 AEC-1-GE N-POST	1455422 Soil153 2019-09-20 AEC-1-ST R-POST
Molybdenum	373011	1	ug/g	EQG 10	<1	<1	<1
Nickel	373011	1	ug/g	EQG 50	7	7	10
Selenium	373011	1	ug/g	EQG 1	<1	<1	<1
Silver	373011	0.2	ug/g	EQG 20	<0.2	<0.2	<0.2
Thallium	373011	1	ug/g	EQG 1	<1	<1	<1
Uranium	373011	0.5	ug/g		<0.5	<0.5	<0.5
Vanadium	373011	2	ug/g	EQG 130	8	7	7
Zinc	373011	2	ug/g	EQG 200	24	33	16

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SC R-POST	1455421 Soil153 2019-09-20 AEC-1-GE N-POST	1455422 Soil153 2019-09-20 AEC-1-ST R-POST
1+2-methylnaphthalene	208523	0.05	ug/g		<0.05	<0.05	<0.05
Acenaphthene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Acenaphthylene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Anthracene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Benz[a]anthracene	372776	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
Benzo[a]pyrene	372776	0.05	ug/g	EQG 0.7	<0.05	<0.05	<0.05
Benzo[b]fluoranthene	372776	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
Benzo[ghi]perylene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Benzo[k]fluoranthene	372776	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
Chrysene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Dibenz[a h]anthracene	372776	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Guideline = CCME - Ind/Com - Soil

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Fluoranthene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Fluorene	372776	0.05	ug/g		<0.05	<0.05	<0.05
Indeno[1 2 3-cd]pyrene	372776	0.05	ug/g	EQG 1	<0.05	<0.05	<0.05
Methlynaphthalene, 1-	372776	0.05	ug/g		<0.05	<0.05	<0.05
Methlynaphthalene, 2-	372776	0.05	ug/g		<0.05	<0.05	<0.05
Naphthalene	372776	0.05	ug/g	EQG 0.6	<0.05	<0.05	<0.05
Phenanthrene	372776	0.05	ug/g	EQG 5	<0.05	<0.05	<0.05
Pyrene	372776	0.05	ug/g	EQG 10	<0.05	<0.05	<0.05

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Benzene	373237	0.0068	ug/g	CSQG 0.0068	<0.0068	<0.0068	<0.0068
Ethylbenzene	373237	0.018	ug/g	CSQG 0.018	<0.018	<0.018	<0.018
Toluene	373237	0.08	ug/g	CSQG 0.08	<0.08	<0.08	<0.08
Xylene Mixture	373238	0.05	ug/g	CSQG 2.4	<0.05	<0.05	<0.05
Xylene, m/p-	373237	0.05	ug/g		<0.05	<0.05	<0.05
Xylene, o-	373237	0.05	ug/g		<0.05	<0.05	<0.05

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Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Guideline = CCME - Ind/Com - Soil

Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Cyanide (CN-)	373140	0.02	ug/g		<0.02	<0.02	<0.02
Electrical Conductivity	373115	0.05	mS/cm		0.19	0.17	0.15
pH - CaCl2	372828	2.00			8.21	7.89	7.96
Sodium Adsorption Ratio	373195	0.01			0.63	0.42	0.34

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Moisture-Humidite	373015	0.1	%		1.7	5.7	4.3

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Guideline = CCME - Ind/Com - Soil

PHC Surrogate

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Alpha-androstrane	373015	0	%		95	99	99

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. / Sample Matrix / Sample Type / Sample Date / Sampling Time / Sample I.D.		
					1455420 Soil153 2019-09-20 AEC-1-SCR-POST	1455421 Soil153 2019-09-20 AEC-1-GEN-POST	1455422 Soil153 2019-09-20 AEC-1-STR-POST
Toluene-d8	373237	0	%		99	101	96

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Outcome Consultants Inc
151 Holland Ave.
Ottawa, ON
K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
208523	1+2-methylnaphthalene							
208523	PHC's F4g	<100 ug/g	85	80-120		60-140		0-30
372776	Methlynaphthalene, 1-	<0.05 ug/g	73	50-140	56	50-140	0	0-40
372776	Methlynaphthalene, 2-	<0.05 ug/g	74	50-140	54	50-140	0	0-40
372776	Acenaphthene	<0.05 ug/g	90	50-140	68	50-140	0	0-40
372776	Acenaphthylene	<0.05 ug/g	87	50-140	74	50-140	0	0-40
372776	Anthracene	<0.05 ug/g	88	50-140	74	50-140	0	0-40
372776	Benz[a]anthracene	<0.05 ug/g	87	50-140	75	50-140	0	0-40
372776	Benzo[a]pyrene	<0.05 ug/g	70	50-140	50	50-140	0	0-40
372776	Benzo[b]fluoranthene	<0.05 ug/g	79	50-140	52	50-140	0	0-40
372776	Benzo[ghi]perylene	<0.05 ug/g	86	50-140	50	50-140	0	0-40
372776	Benzo[k]fluoranthene	<0.05 ug/g	82	50-140	65		0	0-40
372776	Chrysene	<0.05 ug/g	98	50-140	72	50-140	0	0-40
372776	Dibenz[a h]anthracene	<0.05 ug/g	82	50-140	50	50-140	0	0-40
372776	Fluoranthene	0.05 ug/g	99	50-140	73	50-140	0	0-40
372776	Fluorene	<0.05 ug/g	90	50-140	70	50-140	0	0-40
372776	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	85	50-140	52	50-140	0	0-40
372776	Naphthalene	<0.05 ug/g	81	50-140	60	50-140	0	0-40
372776	Phenanthrene	<0.05 ug/g	99	50-140	70	50-140	0	0-40
372776	Pyrene	<0.05 ug/g	99	50-140	75	50-140	0	0-40
372828	pH - CaCl2	5.68		90-110			0	
373011	Silver	<0.2 ug/g	96	70-130	93	70-130	0	0-20
373011	Arsenic	<1 ug/g	97	70-130	86	70-130	0	0-20
373011	Boron (total)	<5 ug/g	106	70-130	113	70-130	0	0-20
373011	Barium	<1 ug/g	101	70-130	114	70-130	3	0-20
373011	Beryllium	<1 ug/g	106	70-130	93	70-130	0	0-20
373011	Cadmium	<0.4 ug/g	103	70-130	92	70-130	0	0-20
373011	Cobalt	<1 ug/g	103	70-130	88	70-130	2	0-20
373011	Chromium Total	<1 ug/g	103	70-130	102	70-130	2	0-20
373011	Copper	<1 ug/g	109	70-130	95	70-130	1	0-20
373011	Mercury	<0.1 ug/g	90	70-130	89	70-130	0	
373011	Molybdenum	<1 ug/g	102	70-130	90	70-130	0	0-20
373011	Nickel	<1 ug/g	106	70-130	93	70-130	3	0-20

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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K1Y 0Y2
Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
373011	Lead	<1 ug/g	101	70-130	96	70-130	0	0-20
373011	Antimony	<1 ug/g	79	70-130	82	70-130	0	0-20
373011	Selenium	<1 ug/g	105	70-130	90	70-130	0	0-20
373011	Thallium	<1 ug/g	102	70-130	90	70-130	0	0-20
373011	Uranium	<0.5 ug/g	94	70-130	87	70-130	0	0-20
373011	Vanadium	<2 ug/g	99	70-130	112	70-130	0	0-20
373011	Zinc	<2 ug/g	114	70-130	138	70-130	1	0-20
373015	PHC's F2	<10 ug/g	100	80-120	127	60-140	0	0-30
373015	PHC's F3	<20 ug/g	100	80-120	127	60-140	0	0-30
373015	PHC's F4	<20 ug/g	100	80-120	127	60-140	0	0-30
373015	Moisture-Humidite		100	80-120			11	
373095	Boron (Hot Water Soluble)	<0.5 ug/g	112	70-130	127	75-125	0	0-30
373115	Electrical Conductivity	<0.05	103	90-110			0	0-10
373140	Cyanide (CN-)	<0.02 ug/g	78	75-125	78	70-130	0	0-20
373174	Chromium VI	<0.20 ug/g	110	80-120	108	70-130	0	0-35
373195	Sodium Adsorption Ratio	<0.01					3	
373237	Benzene	<0.0068	94	60-130	90	50-140	0	0-50
373237	Ethylbenzene	<0.018 ug/g	102	60-130	100	50-140	0	0-50
373237	PHC's F1	<10 ug/g	98	80-120	89	60-140	0	0-30
373237	PHC's F1-BTEX							
373237	Xylene, m/p-	<0.05 ug/g	97	60-130	99	50-140	0	0-50
373237	Xylene, o-	<0.05 ug/g	94	60-130	109	50-140	0	0-50
373237	Toluene	<0.08 ug/g	94	60-130	90	50-140	0	0-50
373238	Xylene Mixture							

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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
208523	1+2-methylnaphthalene	GC-MS	2019-09-25	2019-09-25	C_M	P 8270
208523	PHC's F4g	GC/FID	2019-09-26	2019-09-26	C_M	CCME
372776	Methlynaphthalene, 1-	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Methlynaphthalene, 2-	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Acenaphthene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Acenaphthylene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Anthracene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Benz[a]anthracene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Benzo[a]pyrene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Benzo[b]fluoranthene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Benzo[ghi]perylene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Benzo[k]fluoranthene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Chrysene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Dibenz[a h]anthracene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Fluoranthene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Fluorene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Indeno[1 2 3-cd]pyrene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Naphthalene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Phenanthrene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372776	Pyrene	GC-MS	2019-09-26	2019-09-26	C_M	P 8270
372828	pH - CaCl2	pH Meter	2019-09-25	2019-09-25	SG	Ag Soil
373011	Silver	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Arsenic	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Boron (total)	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Barium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Beryllium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Cadmium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Cobalt	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Chromium Total	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Copper	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Mercury	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Molybdenum	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Nickel	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8

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Certificate of Analysis

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Attention: Jonathan Markiewicz
PO#:
Invoice to: Outcome Consultants Inc

Report Number: 1917387
Date Submitted: 2019-09-24
Date Reported: 2019-10-01
Project: RBCR P2017-06
COC #: 207509

Test Summary

Batch No	Analyte	Instrument	Prep aration Date	Analysis Date	Analyst	Method
373011	Lead	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Antimony	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Selenium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Thallium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Uranium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Vanadium	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373011	Zinc	ICAPQ-MS	2019-09-25	2019-09-25	H_D	EPA 200.8
373015	PHC's F2	GC/FID	2019-09-24	2019-09-26	C_M	CCME
373015	PHC's F3	GC/FID	2019-09-24	2019-09-26	C_M	CCME
373015	PHC's F4	GC/FID	2019-09-24	2019-09-26	C_M	CCME
373015	Moisture-Humidite	Oven	2019-09-24	2019-09-26	C_M	ASTM 2216
373095	Boron (Hot Water Soluble)	iCAP OES	2019-09-26	2019-09-26	SKH	Boron HWE
373115	Electrical Conductivity	Electrical Conductivity Mete	2019-09-27	2019-09-27	OA	Cond-Soil
373140	Cyanide (CN-)	Skalar CN Analyzer	2019-09-27	2019-09-27	H_D	MOECC E3015
373174	Chromium VI	FAA	2019-09-30	2019-09-30	Z_S	M US EPA 3060A
373195	Sodium Adsorption Ratio	iCAP OES	2019-09-27	2019-09-27	SKH	Ag Soil
373237	Benzene	GC-MS	2019-09-24	2019-09-25	TJB	V 8260B
373237	Ethylbenzene	GC-MS	2019-09-24	2019-09-25	TJB	V 8260B
373237	PHC's F1	GC/FID	2019-10-01	2019-10-01	TJB	CCME
373237	PHC's F1-BTEX	GC/FID	2019-10-01	2019-10-01	TJB	CCME
373237	Xylene, m/p-	GC-MS	2019-09-24	2019-09-25	TJB	V 8260B
373237	Xylene, o-	GC-MS	2019-09-24	2019-09-25	TJB	V 8260B
373237	Toluene	GC-MS	2019-09-24	2019-09-25	TJB	V 8260B
373238	Xylene Mixture	GC-MS	2019-10-01	2019-10-01	TJB	V 8260B

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Petroleum Hydrocarbons - CCME Checklist

Samples were analysed by Eurofins Ottawa Method AMCCME2, "Petroleum Hydrocarbons in Water and Soil, CCME/TPH", "Petroleum Hydrocarbons in Water and Soil, CCME/TPH". These methods comply with the reference method for the CCME CWS PHC and are validated for use in the laboratory. Eurofins Ottawa is accredited by CALA (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Eurofins Mississauga is accredited by SCC (ISO 17025) for all CCME F1-F4 fractions as listed in this report. Data for QC samples (blank, duplicate, spike) are available on request

Holding/Analysis Times	Yes/No	If NO, then reasons
All fractions analyzed within recommended hold times/analysis times?	Yes	
F1		
nC6 and nC10 response factors within 30% of toluene	Yes	
BTEX was subtracted from F1 fraction	Yes	
If YES, was F1-BTEX (C6-C10) reported	Yes	
F2		
nC10, nC16 and nC34 response factors within 10% of their average (F2-F4)	Yes	
Linearity within 15% (F2-F4)	Yes	
Napthalene was subtracted from F2 fraction		Naphthalene (PAH) not requested/analysed
If YES was F2-Napthalene reported		
F3		
PAH (selected compounds) subtracted from F3 fraction		PAH not requested/analysed
If YES was F3-PAH reported		
F4		
C50 response factor within 70% of nC10+nC16+nC34 average	Yes	
Chromatogram descended to baseline by retention time of C50	Yes	
if NO was F4 (C34-C50) gravimetric reported		

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Appendix E

Water Licence

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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: 1BR-RBL1929

May 13, 2019

Holly Poklitar
Kelly Hunnie
Transport Canada
344 Edmonton St
Winnipeg, MB R3C 0P6

Email: holly.poklitar@tc.gc.ca
kelly.hunnie@tc.gc.ca

RE: NWB Amended Renewal Water Licence No. 1BR-RBL1929

Dear Holly Poklitar, Kellie Hunnie:

Please find attached Licence No. 1BR-RBL1929 issued to Transport Canada by the Nunavut Water Board (NWB) pursuant to its authority under Article 13 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada* (*Nunavut Agreement*). The terms and conditions of the attached Licence related to the use of Water and the deposit of Waste are an integral part of this approval.

If the Licensee contemplates the continuing of this Undertaking after the Water Licence expires, it is the responsibility of the Licensee to apply to the NWB for a renewal water licence. The past performance of the Licensee, new documentation and information, and issues raised during a public hearing, if the NWB is required to hold one, will be used to determine the terms and conditions of the renewal Water Licence. Note that if the Licence expires before the NWB issues a new one, then the use of Water and the deposit of Waste must cease, or the Licensee may be in contravention of the *Nunavut Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSRTA)*. However, the expiry or cancellation of a licence does not relieve the holder from any obligations imposed by the licence. The NWB recommends that an application for the renewal of this Licence be filed at least **three (3) months** prior to the Licence expiry date. It should be noted that in accordance with s. 75(1)(a) of the *Nunavut Planning and Project Assessment Act* (*NuPPAA*), the Board is not allowed to issue a permit or authorization for any project proposal that has not been submitted to the Nunavut Planning Commission (NPC) in accordance with s. 76 of *NuPPAA*.

If the Licensee contemplates or requires an amendment to this licence, the NWB may decide, in the public's interest, to hold a public hearing. The Licensee should submit applications for

amendment as soon as possible to give the NWB sufficient time to go through the amendment process. The process and timing may vary depending on the scope of the amendment, however, a minimum of **sixty (60) days** is required from time of acceptance by the NWB. It is the responsibility of the Licensee to ensure that all application materials have been received and are acknowledged by the Manager of Licensing.

The NWB strongly recommends that the Licensee consult the comments received by CIRNAC on issues identified. This information is attached for your consideration.[1]

Sincerely,

Lootie Toomasie
Nunavut Water Board,
Chair

LT/ak/rqd

Enclosure: Renewal Licence No. 1BR-RBL1929

Comments – CIRNAC

Cc: Distribution List – Qikiqtani

[1] Crown-Indigenous and Northern Affairs Canada (CIRNAC), March 8, 2019.

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DECISION

LICENCE NUMBER: 1BR-RBL1929

This is the decision of the Nunavut Water Board (NWB) with respect to an application dated January 31, 2019 for a renewal of a Water Licence made by:

TRANSPORT CANADA

to allow for the deposit of Waste associated with the Resolute Bay Landfill Remediation Project located within the Qikiqtani Region, Nunavut, generally located at the geographical coordinates as follows:

Project Extents:

Latitude: 74° 44' 44.77" N	Longitude: 94° 01' 55.13" W
Latitude: 74° 44' 52.46" N	Longitude: 95° 01' 20.17" W
Latitude: 74° 42' 48.04" N	Longitude: 94° 58' 40.22" W
Latitude: 74° 42' 45.01" N	Longitude: 95° 00' 09.30" W

DECISION

After having been satisfied that the Application is for a proposal that is in conformity with the North Baffin Regional Land Use Plan subject to the attached requirements as determined by the Nunavut Planning Commission (NPC)[1] and as determined by the Nunavut Impact Review Board (NIRB)[2], a review of the Project is not required in accordance with s. 92(1)(a) of *NuPPAA*, subject to the terms and conditions recommended by NIRB's Screening Decision Report, the NWB decided that the application could proceed through the regulatory process. In accordance with s. 55.1 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* (*NWNSRTA* or *Act*) and Article 13 of the *Nunavut Agreement*, public notice of the Application was given and interested persons were invited to make representations to the NWB.

After reviewing the submission of the Applicant and considering the representations made by interested persons, the NWB, having given due regard to the facts and circumstances, the merits of the submissions made to it and to the purpose, scope and intent of the *Nunavut Agreement* and of the *Act*, waived the requirement to hold a public hearing, and determined that:

Amended Renewal Licence No. 1BR-RBL1929 be issued subject to the terms and conditions contained therein (Motion #: 2019-B1-004).

[1] Nunavut Planning Commission, Conformity Determination, March 27, 2018.
2 Nunavut Impact Review Board (NIRB) Screening Decision, June 22, 2018.

Signed this 13th day of May, 2019 at Gjoa Haven, NU.

Lootie Toomasie
Nunavut Water Board,
Chair

LT/ak/rqd

INTRODUCTION

The Resolute Bay Landfill Remediation Project (Project) involves the implementation of remediation activities planned for the Waste Disposal Facilities comprised of a Solid Waste Landfill (AEC 1), a Historical Landfill (AEC 2), and a Vehicle Storage Area (AEC 3), all of which are located proximal to the Resolute Bay Airport on Cornwallis Island, approximately 5 kilometres northwest of the current Resolute Bay Airport in the Qikiqtani Region of Nunavut.

Part of the preparatory work carried out for the project involved a Phase II/III Environmental Site Assessment (ESA) that took into consideration previous environmental studies and/or assessments carried out for the site. The following is a summary of the activities/undertakings proposed by the Licensee to achieve the Project's remediation objectives:

- Ship the remaining collected hazardous waste materials to a licensed hazardous waste disposal facility;
- Collect and consolidate the steel from AEC 2 into AEC 1;
- Develop one or more borrow sites on the airport property to create the gravel required for the landfill capping;
- Stabilize the landfill slopes at AEC 2 and AEC 1, along with grading and construction of drainage swales at both locations;
- Excavate approximately 125 m^3 of contaminated soil from AEC 3 and dispose at an approved facility;
- Cap both landfills with a layer of gravel to minimize water infiltration; and
- Install sampling wells for groundwater monitoring.

After the completion of above stated activities, the Licensee will undertake site monitoring.

PROCEDURAL HISTORY

On July 11, 2014, the Nunavut Water Board issued a type "B" Water Licence 1BR-RBL1419 to Transport Canada to allow for the deposit of waste during the remediation activities at the Resolute Bay Landfill Remediation located proximal to the Resolute Bay Airport in the Qikiqtani Region, Nunavut. The Licence was set to expire on July 10, 2019.

The NWB acknowledged receipt on February 8, 2019 of the following documents as part of the water licence renewal application (Application) by Transport Canada for the Project:

- Water Licence Renewal Application;
- Nunavut Airports aggregate approval (July 5, 2018);
- Plan of Construction Operations (PCO) (July 5, 2018);
- Nav Canada approval in principle (June 21, 2018);
- Executive Summaries in English and Inuktitut;
- Topographical Map;
- NPC Determination dated March 2018;
- NPC Determination dated May 2011;
- NIRB Screening Decision dated February 2012;

- NIRB Screening Decision dated June 2018; and
- Health and Safety Plan.

On March 27, 2018, the Nunavut Planning Commission (NPC) issued correspondence indicating that the project proposal conforms to the North Baffin Regional Land Use Plan. On June 22, 2018, the Nunavut Impact Review Board issued its Screening Decision notifying that a review of the project is not required in accordance with paragraph 92(1)(a) of the Nunavut Planning and Project Assessment Act (NuPPAA). The Screening Decision was issued with recommendations.

GENERAL CONSIDERATIONS

A. Term of the Licence

In accordance with the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* S. 45, the NWB may issue a licence for a term not exceeding twenty-five years. The applicant requested a ten-year term for the licence, which the NWB believes is consistent with and appropriate for the type of undertaking and schedule of activities proposed in the application. The Board has therefore granted the requested term.

B. Annual Report

Part B of the Licence addresses the general terms and conditions that apply to the undertaking, such as annual report submission, protocols for handling documents related to the Licence, posting of signage at sites associated with the undertaking, and more.

C. Water Use

No water use is authorized under this Licence except for the purposes of groundwater monitoring and sampling.

D. Deposit of Waste

Aggregate Sources

Information contained in the Phase II/III Environmental Site Assessment Report accompanying Application indicates that aggregate will be required to cap the landfills being remediated irrespective of the remediation option being chosen and implemented by the proponent. Conditions have been included under Part E in the Licence to ensure that aggregates used for any facilities associated with the project do not possess acid generating and/or metal leaching characteristics. In cases where it is determined that the materials are suitable for use, the Licensee is required to implement appropriate drainage control measures to prevent sediment loading into nearby water bodies. The NWB has included conditions under Part D and Part J to ensure that quality of effluent from borrow pits and quarries is monitored.

Solid Waste Landfill (AEC 1)

The Solid Waste Landfill, which has a surface area of approximately 40,000 m^2 and located proximal to the Resolute Bay Airport's Sewage Lagoon Facility, was used as a dump during the 1960s and 1970s, mainly. A new landfill was constructed southeast of the Hamlet in 1995; however, the information provided suggests that the Solid Waste Landfill had continued to be used unofficially as a dump up to 2005. The environmental assessment and audit carried out on the site identified a variety of waste types including drums, scrap metals and plastic scattered

near the site. Pools of standing water near the landfill, evidence of leachate containing petroleum hydrocarbons and metals, and significant vegetative growth were also observed near the landfill during the ESA. Drainage from the landfill discharges towards the west into Allen Bay while the area behind the toe of the landfill drains into a small unnamed creek and several small ponds. The NWB has included terms and conditions under Part D and Part J in the Licence requiring the Licensee to monitor this facility during and after remediation.

Historic Landfill (AEC 2)

The Historical Landfill covers an area of approximately 145,000 m^2 and is located southwest of the airport terminal building. The site was used from the period 1947 to 1996. The Canadian and American Military Forces used the site from 1947 to 1964 while Transport Canada and various airport tenants used the site from 1964 to 1995. Information provided as part of the application indicates that although disposal activities had ended in the early 1970s, the use of the landfill did not officially cease until 1996. The environmental assessment carried out on the site identified significant vegetative growth proximal to the landfill. The community water supply, Strip Lake, is located several kilometres to the south of the landfill and a hotel project is currently being developed along the northeast boundary of the Historic Landfill. Drainage from historical Historic Landfill is described as a complex of interconnected lakes and drainage channels that ultimately discharge towards the south into Resolute Bay. Three small lakes west of the landfill capture runoff and drainage from the landfill and eventually drain into Meretta Lake onto Resolute Lake and finally into Resolute Bay. A patchy, discontinuous wetland has developed at the toe of the Historic Landfill along its southern extents. Conditions have been included under Part D and Part J in the Licence to ensure that this facility is monitored before, during and after remediation activities.

Vehicle Storage Area (AEC 3)

The Vehicle Storage Area consists of two sites with areas of 3750 m^2 and 900 m^2, respectively, and that are located 1 to 3 kilometers northwest of the airport terminal. The site has been used as an area for the disposal of vehicles and other equipment including drums, tires, tanks, glass, etc. Although the site was identified in an audit conducted in 1993, it was not included in the investigation carried out for the Solid Waste Landfill and Historic Landfill. Drainage from the Vehicle Storage Area discharges towards the west into Allen Bay and surficial flow drains into McMaster River Valley. The NWB has included conditions under Part D and Part J to ensure that potential runoff or leachate from this facility is monitored before, during and after remediation activities.

E. Camps, Access Infrastructures and Operations

The Licensee is required to submit to the Board for approval within sixty (60) days following the completion of remediation of the Waste Disposal Facilities, an Operation and Maintenance (O&M) Manual for the Waste Disposal Facilities.

F. Drilling Operations

The Licensee is authorized to drill for the purposes of installing monitoring wells and/or

thermistors, and other instrumentation required for the monitoring of the Waste Disposal Facilities.

G. Construction and Modifications

The Applicant is required to obtain permission from the NWB for modifications that do not meet the definition of modifications or the criteria of Part G, Item 1 of the Licence. Without written consent from the NWB, the Licensee is not allowed to carry out any modifications. Changes that do not meet the definition of modification under the Licence or the requirements of Part G may be considered amendments to the Licence.

H. Spill Contingency Planning

The Licensee shall implement the updated Plan submitted as additional information in section 10 "*Spill Contingency Plan*" of the Plan entitled "*Specific Health and Safety Plan*" dated June 2018.

I. Closure and Reclamation or Temporary Closure

Under Part I, the Licensee is required to submit to the Board for review, within sixty (60) days following the completion of remediation activities, an updated stand-alone Remedial Action Plan that reflects documented remediation options implemented for the Resolute Bay Landfill Remediation Project.

J. Monitoring Program

The Licensee shall submit to the Board for approval, at least sixty (60) days prior to initiating Long-Term Monitoring for the Project, a Post-closure Monitoring Plan for the site that includes information on Long-Term Monitoring of the Waste Disposal Facilities and that addresses water quality monitoring, site stability and the need for thermal monitoring and ground water monitoring. Conditions have been included that require the Licensee to monitor water quality up-gradient and down-gradient of the Solid Waste Landfill, Historic Landfill and proximal to the Vehicle Storage Area, as well as runoff from borrow pits and quarries. In addition, the Licensee is required to submit to the Board for review sixty (60) days prior to the first release of any effluent, a Quality Assurance/Quality Control (QA/QC) Plan. The Plan must receive approval from an analyst confirming Plan's acceptability. All of the monitoring results, along with analyses carried out on the results, are to be provided to the NWB as part of the annual reporting requirements.

NUNAVUT WATER BOARD
WATER LICENCE AMENDMENT

Licence No. 1BR-RBL1929

Pursuant to the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*, the Nunavut Water Board, hereinafter referred to as the Board, hereby grants to

TRANSPORT CANADA

(Licensee)

344 EDMONTON ST, WINNIPEG, MB R3C 0P6

(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water or dispose of Waste for a period subject to restrictions and conditions contained within this Licence Amendment:

Licence Number/Type:	**1BR-RBL1929 / TYPE "B"**
Water Management Area:	**BATHURST AND CORNWALLIS ISLANDS WATERSHED (55)**
Location:	**QIKIQTANI REGION, NUNAVUT**
Classification:	**MINING UNDERTAKING**
Purpose:	**WATER USE FOR MONITORING AND DEPOSIT OF WASTE**
Quantity of Water use not to Exceed:	**USE OF WATER IS NOT AUTHORIZED**
Date of Licence Issuance:	**MAY 13, 2019**
Expiry of Licence:	**MAY 12, 2029**

This Licence amendment, issued and recorded at Gjoa Haven, Nunavut, includes and is subject to the annexed conditions.

Lootie Toomasie
Nunavut Water Board, Chair

PART A: SCOPE, DEFINITIONS AND ENFORCEMENT

1. Scope

This Licence allows for the use of Water and deposit of Waste for an Industrial undertaking classified as per Schedule 1 of the *Regulations* at the Resolute Bay Landfill Remediation Project, located approximately 5 kilometres northwest of the Hamlet of Resolute Bay within the Qikiqtani Region, Nunavut.

a. This Licence is issued subject to the conditions contained herein with respect to the taking of Water and the deposit of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing *Regulations* are amended by the Governor in Council under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be subject to such requirements; and

b. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

"**Act**" means the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Addendum**" means the supplemental text that is added to a full plan or report usually included at the end of the document and is not intended to require a full resubmission of the revised report;

"**Amendment**" means a change to original terms and conditions of this Licence requiring correction, addition or deletion of specific terms and conditions of the Licence; modifications inconsistent with the terms of the set terms and conditions of the Licence;

"**Applicant**" means the Licensee;

"**Appurtenant Undertaking**" means an undertaking in relation to which a use of water or a deposit of Waste is permitted by a licence issued by the Board;

"**Board**" means the Nunavut Water Board established under the *Nunavut Agreement* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act;*

"**Borrow Pits**" means sites for which materials, such as gravel or sand, are excavated for the purposes of constructing site infrastructure and facilities;

"**Closure and Reclamation Plan**" means a Plan developed to reach the closure goal and taking in account the "Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories" 2013;

"**Effluent**" means treated or untreated liquid Waste material that is discharged into the environment from a structure such as a settling pond, landfarm or a treatment plant;

"**Engineer**" means a professional engineer registered to practice in Nunavut in accordance with the *Consolidation of Engineers and Geoscientists Act S. Nu 2008, c.2* and the *Engineering and Geoscience Professions Act S.N.W.T. 2006, c.16 Amended by S.N.W.T. 2009, c.12*;

"**Final Discharge Point**" means the point at which the Licensee no longer exerts care and/or control over the quality and/or quantity of the effluent from a treatment process;

"**Greywater**" means all liquid Wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include toilet Wastes;

"**Hazardous waste**" means waste classified as "hazardous" by Nunavut Territorial or Federal Legislation, or as "dangerous goods" under the *Transportation of Dangerous Goods Act* at the time of clean-up;

"**High Water Mark**" means the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land (ref. Department of Fisheries and Oceans Canada, Operational Statement: Mineral Exploration Activities);

"**Inspector**" means an Inspector designated by the Minister under Section 85 (1) of the *Act*;

"**Licensee**" means the holder of this Licence;

"**Modification**" means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"**Nunavut Agreement**" means the *"Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada*", including its preamble and schedules, and any amendments to that agreement made pursuant to it;

"**Quarry or Quarries**" means the areas of surface excavation for extracting rock material for use as construction materials in the development of infrastructure and facilities for the Resolute Bay Landfill Remediation Project;

"**Regulations**" means the *Nunavut Waters Regulations* SOR/2013-69 18th April, 2013;

"**Secondary Containment**" means an impermeable structure, external to and separate from primary containment, which prevents unplanned spills of hazardous materials and

provides a minimum capacity of 110% of the original vessel. Where multiple vessels are stored within the containment, it must provide a minimum capacity equal to the sum of the largest vessel and 10% of the aggregate volume of all other vessels located in the containment. This structure shall also provide containment and control of hoses and nozzles;

"**Sewage**" means all toilet Wastes and greywater;

"**Spill Contingency Plan**" means a Plan developed to deal with unforeseen petroleum and hazardous materials events that may occur during the operations conducted under the Licence;

"**Sump or Sumps**" A structure or depression that collects, controls, and filters liquid Waste before it is released to the environment. This structure should be designed to prevent erosion while allowing percolation of liquid Waste;

"**Toilet Wastes**" means all human excreta and associated products, but does not include greywater;

"**Type A Soil**" means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of lubricating oil and grease (F3 – F4 Fractions);

"**Type B Soil**" means soil contaminated with hydrocarbons in which the primary petroleum product present in the soil as determined by laboratory analysis consists of fuel oil and/or diesel fuel and /or gasoline (F1 – F2 Fractions);

"**Waste**" means, as defined in s. 4 of the *Act*, any substance that, by itself or in combination with other substances found in water, would have the effect of altering the quality of any water to which the substance is added to an extent that is detrimental to its use by people or by any animal, fish or plant, or any water that would have that effect because of the quantity or concentration of the substances contained in it or because it has been treated or changed, by heat or other means;

"**Waste Disposal Facilities**" means all facilities designated for the purpose of disposing and/or treating waste including the Solid Waste Landfill, Historical Landfill and the Vehicle Storage Area as described in the original Application, which the NWB acknowledged receiving on June 23, 2011;

"**Water**" **or** "**Waters**" means waters as defined in section 4 of the Act.

3. **Enforcement**

a. Failure to comply with this Licence will be a violation of the *Act*, subjecting the Licensee to the enforcement measures and the penalties provided for in the *Act*;

b. All inspection and enforcement services regarding this Licence will be provided by Inspectors appointed under the *Act*; and

c. For the purpose of enforcing this Licence and with respect to the use of water and deposit or discharge of Waste by the Licensee, Inspectors appointed under the *Act*, hold all powers, privileges and protections that are conferred upon them by the *Act* or by other applicable law.

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31st of the year following the calendar year being reported, containing the following information:

   a. A summary report of Water use and Waste disposal activities;
   b. Quantity of Waste disposed of on on-site Waste disposal facility;
   c. Quantity of Waste backhauled to approved facility for disposal;
   d. A list of unauthorized discharges and a summary of follow-up actions taken;
   e. Any revisions to the management plans, as required by Part B, Item 6, submitted in the form of an Addendum;
   f. A description of all progressive and or final reclamation work undertaken, including photographic records of site conditions before, during and after completion of operations;
   g. A summary of all information requested and results of the Monitoring Program;
   h. A summary, including photographic records before, during and after any relevant construction activities or Modifications and/or major maintenance work carried out on facilities under this Licence and an outline of any work anticipated for the next year;
   i. If applicable, a description of any trenches and sumps excavated, including but not limited to the following: GPS coordinates, dimensions, depth below active layer, and secondary containment features;
   j. A summary of public consultation/participation, describing consultation with local organizations and residents of the nearby communities, if any were conducted;
   k. A summary of work done to address concerns or deficiencies listed in inspection reports and/or compliance reports prepared by an Inspector;
   l. An executive summary in English and Inuktitut of all plans, reports, or studies conducted under this Licence; and
   m. Any other details on Waste disposal requested by the Board by the 1st November of the year being reported.

2. The Licensee shall notify the NWB of any changes in operating plans or conditions associated with this project at least thirty (30) days prior to any such change.

3. The Licensee shall, for all Plans submitted under this Licence, include a proposed timetable for implementation. Plans submitted, cannot be undertaken without subsequent written Board approval and direction. The Board may alter or modify a Plan if necessary to achieve the legislative objectives and will notify the Licensee in writing of acceptance, rejection or alteration of the Plan.

4. The Licensee shall, for all Plans submitted under this Licence, implement the Plan as approved by the Board in writing.

5. The Licensee shall review the Plans referred to in this Licence, as required by changes in operation and/or technology, and modify the Plan accordingly. Revisions to the Plans shall be submitted in the form of an Addendum to be included with the Annual Report.

6. Every Plan to be carried out pursuant to the terms and conditions of this Licence shall become a part of this Licence, and any additional terms and conditions imposed upon approval of a Plan by the Board become part of this Licence. All terms and conditions of the Licence should be contemplated in the development of a Plan where appropriate.

7. The Licensee shall ensure a copy of this Licence is maintained at the site of operations at all times. Any communication with respect to this Licence shall be made in writing to the attention of:

(a) Manager of Licensing:
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0
Telephone: (867) 360-6338
Fax: (867) 360-6369
Email: licensing@nwb-oen.ca

(b) Inspector Contact:
Manager of Field Operations, CIRNAC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0
Telephone: (867) 975-4295
Fax: (867) 979-6445

8. The Licensee shall submit an electronic copy of all reports, studies, and plans to the Board. Reports or studies submitted to the Board by the Licensee shall include a detailed executive summary in Inuktitut.

9. The Licensee shall ensure that all documents or correspondence submitted by the Licensee to the NWB are received and acknowledged by the Manager of Licensing.

10. This Licence is assignable as provided for in Section 44 of the *Act*.

11. The expiry or cancellation of this Licence does not relieve the Licensee from any obligation imposed by the Licence, or any other regulatory requirement.

PART C: CONDITIONS APPLYING TO WATER USE

1. Water use is not authorized under this Licence except for the purposes of groundwater sampling.

2. The Licensee shall not conduct any work below the ordinary High Water Mark of any water body unless approved by the Board in writing.

3. The Licensee shall not cause erosion to the banks of any body of Water and shall provide necessary controls to prevent such erosion.

4. Sediment and erosion control measures shall be implemented prior to and maintained during the undertaking to prevent entry of sediment into Water.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall locate areas designated for Waste disposal at a minimum distance of thirty-one (31) metres from the ordinary High Water Mark of any water body such that the quality, quantity or flow of Water is not impaired, unless otherwise approved by the Board in writing.

2. The Licensee shall not practice on-site land filling of domestic Waste, unless otherwise approved by the Board in writing.

3. The Licensee is authorized to dispose of all acceptable food Waste, paper Waste and untreated wood products in an incinerator.

4. The Licensee shall not open burn plastics, wood treated with preservatives, electric wire, Styrofoam, asbestos or painted wood to prevent the deposition of Waste materials of incomplete combustion and/or leachate from contaminated ash residual, from impacting any surrounding Waters, unless otherwise approved by the Board in writing.

5. The Licensee shall direct appropriate Waste originating from the Resolute Bay Landfill Remediation Project to the Waste Disposal Facilities authorized under this Licence or as otherwise approved by the Board in writing.

6. The Licensee shall provide to the Board documented authorization from all communities in Nunavut receiving Waste from the Resolute Bay Landfill Remediation Project prior to any backhauling and disposal of Wastes to those communities.

7. The Licensee shall backhaul and dispose of all hazardous Waste, Waste oil and non-combustible Waste generated through the course of the operation at a licensed Waste disposal site.

8. The Licensee shall maintain records of all Waste backhauled and records of confirmation of proper disposal of backhauled Waste and include this information within the Annual Report, under Part B, Item 1. These records shall be made available to an Inspector upon request. The Licensee shall not transport hazardous wastes prior to registering with the

Government of Nunavut as a waste generator and utilizing the prescribed manifests.

9. The Licensee shall dispose of any hazardous materials including Polychlorinated Biphenyl (PCB) amended paints or lead painted products, and Petroleum Hydrocarbon Contaminated Soils that do not meet incineration criteria, off site at a currently approved treatment facility.

10. The Licensee shall provide notice to an Inspector at least ten (10) days prior to initiating any decant or discharge from the Waste Disposal Facilities.

11. All contact water associated with the Waste Disposal Facilities including seepage from Monitoring Program Stations shall meet the following Effluent quality limits prior to being released onto land at a location that is at least thirty-one (31) metres away from the ordinary High Water Mark of any adjacent water body, where direct flow into a water body is not possible and no additional impacts are created:

Parameter	Maximum Allowable Concentration (mg/L)
pH	6 to 9 (pH units)
TSS	50
Oil and Grease	15 and no visible sheen
Total Lead	0.001
Benzene	0.37
Toluene	0.002
Ethylbenzene	0.090

12. If the effluent associated with Part D, Item 11 does not meet the Effluent limits under Part D, Item 11, it shall be considered hazardous waste and disposed off-site at an approved facility or as otherwise approved by the Board in writing.

13. All surface runoff and/or discharge from borrow pits and quarries, and drainage management systems, during the construction of any facilities and infrastructure associated with this project, where flow may directly or indirectly enter a water body, at Monitoring Program Station(s) RBL-X shall not exceed the following Effluent quality limits:

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of Any Grab Sample (mg/L)
Total Suspended Solids	50.0	100
Oil and Grease	15,000 and no visible sheen	15,000 and no visible sheen
pH	Between 6.5 and 9.5	Between 6.0 and 9.5

14. All water being pumped from excavated areas and borrow pits shall be contained at holding facility and shall be treated if necessary, to meet Effluent quality limits set in Part D, Item 13, prior to being released.

15. The Licensee shall dispose of all scrap metal, discarded machinery and parts, and other bulky material in a manner that conforms to the remedial option selected in the "Conceptual Remedial or Risk Management Action Plan" Section of the Phase II/III Environmental Site Assessment Final Report, Resolute Bay Airport Landfill Sites, Resolute Bay Nunavut, dated March 2010.

PART E: CONDITIONS FOR CAMPS, ACCESS INFRASTRUCTURES AND OPERATIONS

1. No camp activities are authorized under the provisions of this Licence.

2. The Licensee may use aggregates for the purposes specified in the "*Conceptual Remedial or Risk Management Action Plan*" Section of the Phase II/III Environmental Site Assessment Final Report, Resolute Bay Airport Landfill Sites, Resolute Bay Nunavut, dated March 2010, provided that the aggregate sources are approved by an Inspector, free of contaminants.

3. The Licensee shall submit to the Board for approval, within sixty (60) days following the completion of remediation of the Waste Disposal Facilities, an Operation and Maintenance Manual for all facilities operated at the Resolute Bay Landfill Remediation Project. The manual shall be prepared in accordance with the "*Guidelines for the Preparation of an Operation and Maintenance Manual for Sewage and Solid Waste Disposal Facilities in the Northwest Territories*; 1996".

4. The Operations and Maintenance Manual referred to in Part E, Item 3 shall address the following items:
    a. As-built construction drawings of the facility (stamped by a professional Engineer registered in Nunavut);
    b. Feasibility of alternative disposal methods and sites;
    c. Operation and maintenance procedures for each facility;
    d. Runoff diversion and management;
    e. Monitoring Program for both water and soil.

5. The Licensee shall, upon the failure of any constructed facilities, repair such facilities immediately to the appropriate standards as recommended by an Engineer.

6. The Licensee shall implement proper handling, storage and transportation procedures for hazardous materials during remediation activities.

7. The Licensee shall minimize disturbance to terrain, permafrost and drainage during extraction of granular material, development and closure of landfills, movement of contractor's equipment and personnel around the site and removal of site debris.

8. The Licensee shall not cause erosion to the banks of any body of water and shall provide and implement necessary controls prior to and maintained during the activities to prevent such erosion and entry of sediment into Water.

9. The Licensee shall design and construct all stream crossings to minimize erosion and/or deposition of Waste into water.

10. The Licensee shall ensure that existing creek channels are maintained at their normal width and depth to the extent possible, during and after construction.

11. Granular materials and rock rip-rap used for any temporary stream crossings, approaches or required for bank stabilization must be obtained from a source that is approved by an Inspector, and is clean and free of contaminants as outlined in Part E, Item 2. Such material must not be removed or gathered from below the ordinary High Water Mark of any water body.

12. All sites affected by construction or removal activities shall be stabilized, landscaped as necessary, and suitable erosion control measures implemented to minimize sediment deposition into watercourses located on or adjacent to the site.

13. The Licensee shall restore and stabilize all areas affected by the undertaking upon completion of the work.

14. The Licensee shall not deposit Waste in any water body, or on the banks thereof, which may impair the quality, quantity, or flow of water.

15. The Licensee shall not store material on the surface of frozen streams or lakes including the immediate banks except what is for immediate use.

16. The Licensee shall conduct all activities in such a way as to minimize impacts on surface drainage and the Licensee shall immediately undertake corrective measures in the event of any impacts on surface drainage.

17. The Licensee shall construct all winter lake and stream crossings, including ice bridges, entirely of Water, ice or snow. The Licensee shall minimize disturbance by locating ice bridges in an area that requires the minimum approach grading and the shortest crossing route. Stream crossings shall be removed or the ice notched prior to spring break-up.

18. Stream crossing shall be a minimum of five hundred (500) meters from spawning areas.

19. With respect to access road, pad construction or other earthworks, the deposition of debris or sediment into or onto any water body is prohibited. These materials shall be disposed a distance of at least thirty-one (31) metres from the ordinary High Water Mark in such a fashion that they do not enter the Water.

20. The Licensee shall not mobilize heavy equipment or vehicles for trenching or other activities unless the ground surface is capable of fully supporting the equipment or vehicles without rutting or gouging. Overland travel of equipment or vehicles shall be suspended if rutting occurs.

21. The Licensee shall conduct quarrying activities in accordance with all applicable legislation, guidelines, and industry standards including the *Northern Land Use*

Guidelines - Pits and Quarries (2009).

22. The Licensee shall maintain a minimum of thirty-one (31) metres large undisturbed buffer zone between the periphery of quarry sites and the ordinary High Water Mark of any water body.

23. The Licensee shall not excavate and/or remove material from the quarry/borrow area beyond a depth of one (1) metre above the ordinary High Water Mark or above the groundwater table, to prevent contamination of groundwater.

PART F: CONDITIONS APPLYING TO DRILLING OPERATIONS

1. The Licensee is authorized to drill for the purposes of installing monitoring wells and/or thermistors, and other instrumentation required for the monitoring of the Waste Disposal Facilities.

PART G: CONDITIONS APPLYING TO CONSTRUCTION AND MODIFICATIONS

1. The Licensee may, without written consent from the Board, carry out Modifications to the Water Supply Facilities and Waste Disposal Facilities provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:

    a. the Licensee has notified the Board in writing of such proposed Modifications at least sixty (60) days prior to beginning the Modifications;
    b. such Modifications do not place the Licensee in contravention of the Licence or the *Act*;
    c. such Modifications are consistent with the NIRB Screening Decision;
    d. the Board has not, during the sixty (60) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than sixty (60) days; and
    e. the Board has not rejected the proposed Modifications.

2. Modifications for which all of the conditions referred to in Part G, Item 1 have not been met can be carried out only with written approval from the Board.

3. The Licensee shall provide as-built plans and drawings of the Modifications referred to in this Licence within ninety (90) days of completion of the Modification. These plans and drawings shall be stamped by an Engineer.

PART H: CONDITIONS APPLYING TO SPILL CONTINGENCY PLANNING

1. The Licensee shall implement the updated Plan submitted as additional information in section 10 "*Spill Contingency Plan*" of the Plan entitled "*Specific Health and Safety Plan*"

dated June 2018.

2. The Licensee shall prevent any chemicals, petroleum products or Wastes associated with the project from entering Water. All Sumps and fuel caches shall be located at a distance of at least thirty-one (31) metres from the ordinary High Water Mark of any adjacent water body and inspected on a regular basis.

3. The Licensee shall conduct any equipment maintenance and servicing in designated areas and shall implement special procedures (such as the use of drip pans) to manage motor fluids and other Waste and contain potential spills.

4. If during the term of this Licence, an unauthorized discharge of Waste occurs, or if such a discharge is foreseeable, the Licensee shall:

   a. Employ the approved Spill Contingency Plan;
   b. Report the spill immediately to the 24-Hour Spill Line at (867) 920-8130 and to the Inspector at (867) 975-4295; and
   c. For each spill occurrence, submit to the Inspector, no later than thirty (30) days after initially reporting the event, a detailed report that will include the amount and type of spilled product, the GPS location of the spill, and the measures taken to contain and clean up the spill site.

5. The Licensee shall, in addition to Part H, Item 4, regardless of the quantity of releases of harmful substances, report to the NWT/NU Spill Line if the release is near or into a Water body.

PART I: CONDITIONS APPLYING TO CLOSURE AND RECLAMATION OR TEMPORARY CLOSURE

1. The Licensee shall carry out remediation activities on the Waste Disposal Facilities in accordance with the option selected under the "Conceptual Remedial or Risk Management Action Plan" Section of the Phase II/III Environmental Site Assessment Final Report, Resolute Bay Airport Landfill Sites, Resolute Bay Nunavut, dated March 2010. The Licensee is required to submit to the Board for review within sixty (60) days following the completion of remediation activities an updated stand-alone Remedial Action Plan that reflects the actual remedial options implemented for the Resolute Bay Landfill Remediation Project.

2. The Licensee shall complete all restoration work prior to the expiry of this Licence.

3. The Licensee shall carry out progressive reclamation of any components of the project no longer required for the Licensee's operations.

4. The Licensee shall remove from the site, all infrastructure and site materials, including all fuel caches, drums, barrels, buildings and contents, docks, water intakes, pumps and lines, material and equipment prior to the expiry of this Licence.

5. All roads, if any, shall be re-graded to match natural contour to reduce erosion.

6. Areas that have been contaminated by hydrocarbons from normal fuel transfer procedures shall be reclaimed to meet objectives as outlined in the Government of Nunavut's Environmental Guideline for Site Remediation, 2010. The use of reclaimed soils for the purpose of back fill or general site grading may be carried out only upon consultation and approval by the Government of Nunavut, Department of Environment and an Inspector.

7. The Licensee shall contour and stabilize all disturbed areas to reduce erosion and sedimentation to Water, upon completion of the undertaking.

8. All disturbed areas shall be stabilized and re-vegetated as required, upon completion of work, and restored as practically as possible to a pre-disturbed state.

PART J: CONDITIONS APPLYING TO THE MONITORING PROGRAM

1. The Licensee shall submit to the Board for approval, at least sixty (60) days prior to initiating Long-Term Monitoring for the Project, a Post-closure Monitoring Plan for the site that includes information on Long-Term Monitoring of the Waste Disposal Facilities and that addresses water quality monitoring, site stability and the need for thermal monitoring and ground water monitoring.

2. The Licensee shall maintain Monitoring Program Stations at the following locations:

Monitoring Program Station Number	Description	Status
RBL-1	Monitoring Well installed up-gradient of the Solid Waste Landfill	Active (Water Quality)
RBL-2	Monitoring Well installed down-gradient of the Solid Waste Landfill	Active (Water Quality)
RBL-3	Monitoring Well installed down-gradient of the Solid Waste Landfill	Active (Water Quality
RBL-4	Discharge from the Solid Waste Landfill	Active (Water Quality
RBL-5	Monitoring Well installed up-gradient of the Historic Landfill	Active (Water Quality)
RBL-6	Monitoring Well installed down-gradient of the Historic Landfill	Active (Water Quality)
RBL-7	Monitoring Well installed down-gradient of the Historic Landfill	Active (Water Quality)
RBL-8	Discharge from the Historic Landfill	Active (Water Quality)
RBL-10	Monitoring Well installed up-gradient of the Vehicle Storage Area (Site 1)	Active (Water Quality)
RBL-11	Monitoring Well installed down-gradient of the Vehicle Storage Area (Site 1)	Active (Water Quality)

RBL-12	Monitoring Well installed down-gradient of the Vehicle Storage Area (Site 1)	Active (Water Quality)
RBL-13	Discharge from the Vehicle Storage Area (Site 1)	Active (Water Quality)
RBL-14	Monitoring Well installed up-gradient of the Vehicle Storage Area (Site 2)	Active (Water Quality)
RBL-15	Monitoring Well installed down-gradient of the Vehicle Storage Area (Site 2)	Active (Water Quality)
RBL-15	Monitoring Well installed down-gradient of the Vehicle Storage Area (Site 2)	Active (Water Quality)
RBL-16	Discharge from the Vehicle Storage Area (Site 2)	Active (Water Quality)
RBL-X where X refers to a number of a Station	Discharge from quarries and/or borrow pits	Active (Water Quality)

3. The Licensee shall measure and record, in cubic metres, the daily quantities of Effluent discharged from the Waste Disposal Facilities at Monitoring Program Stations RBL-4, RBL-8, RBL-13, RBL-16 and RBL-X.

4. The Licensee shall sample the Effluent, prior to discharge, at Monitoring Program Stations RBL-4, RBL-8, RBL-13, RBL-16 and RBL-X analyze for the following parameters:

pH	Conductivity
Total Suspended Solids (TSS)	Ammonia Nitrogen
Nitrate – Nitrite	Oil and Grease (visual)
Total Phenols	Sulphate
Total Hardness	Total Alkalinity
Sodium	Potassium
Magnesium	Calcium
Chloride	Total Cadmium
Total Copper	Total Chromium
Total Iron	Total Lead
Total Mercury	Total Nickel
Total Zinc	Total Phosphorous
Total Aluminum	Total Manganese
Total Cobalt	Total Arsenic
Polycyclic Aromatic Hydrocarbons (PAH)	Total Petroleum Hydrocarbons (TPH)
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	

5. The Licensee shall sample twice per year (once during spring freshet and once during mid-summer) water at Monitoring Program Stations RBL-1, RBL-2, RBL-3, RBL-5, RBL-6, RBL-7, RBL-9, RBL-10, RBL-11, RBL-12, RBL-14 and RBL-15 for the purpose of analyzing samples for the parameters listed under Part J Item 4.

6. The Licensee shall determine the GPS co-ordinates (in degrees, minutes and seconds of latitude and longitude) of all locations where wastes associated with the project operations are deposited.

7. The Licensee shall monitor compliance with respect to Part D Item 11, by collecting a representative sample once at the beginning of discharge, upon initial release and prior to the end of discharge, from the Final Discharge Points of the Waste Disposal Facilities at Monitoring Program Stations RBL-4, RBL-8, RBL-13, RBL-16, and with respect to Part D, Item 13 at the Monitoring Stations RBL-X.

8. The Licensee shall monitor compliance with respect to Part D Items 11 and 13 by collecting a representative composite sample from the total volume to be released from the Final Discharge Points identified in Part J, Item 2 of this Licence.

9. The Licensee shall assess and record, when carrying out the project, the concentration of F1 – F4 fractions in petroleum hydrocarbon contaminated soil, according to the *CCME Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil*, from all sources and excavations associated with the project.

10. All sampling, sample preservation and analyses shall be conducted in accordance with methods prescribed in the current edition of *Standard Methods for the Examination of Water and Wastewater*, or by such other methods approved by the Board in writing.

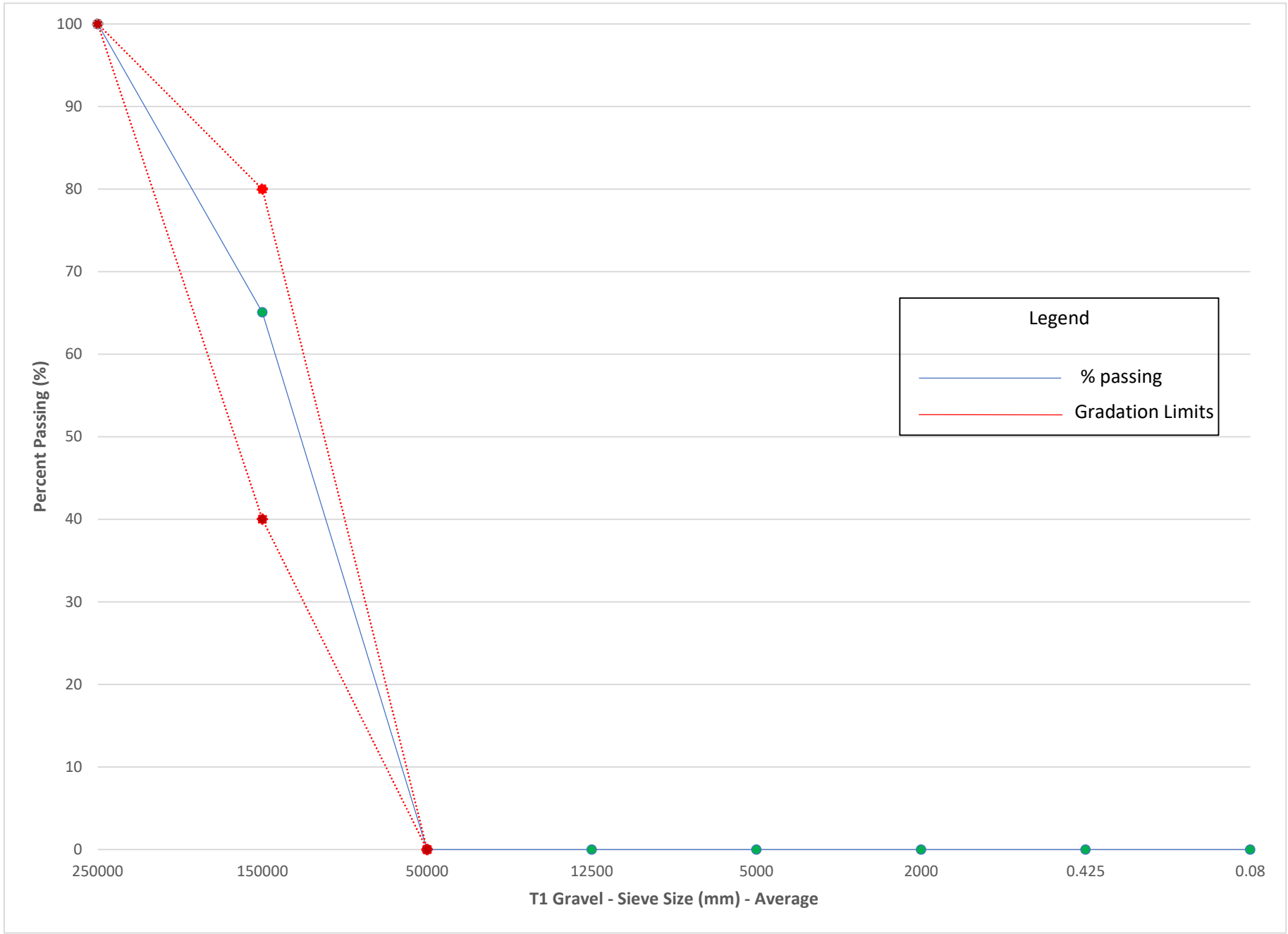
11. All analyses shall be performed in a laboratory accredited according to ISO/IEC Standard 17025. The accreditation shall be current and in good standing.

12. The Licensee shall submit to the Board for review, at least sixty (60) days prior to the first release of any effluent, a Quality Assurance/Quality Control Plan that conforms to the guidance document *"Quality Assurance (QA) and Quality Control (QC) Guidelines For Use by Class "B" Licensees in Collecting Representative Water Samples in the Field and for Submission of a QAQC Plan*" INAC (1996). The Plan shall be acceptable to an accredited laboratory and include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under the Licence.

13. The Licensee shall include in the Annual Report required under Part B, Item 1 all data, monitoring results and information required by this Part.

Appendix F

Grain Size Analyses Tables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60
50
40
30
20
10
0
Percent Passing (%)
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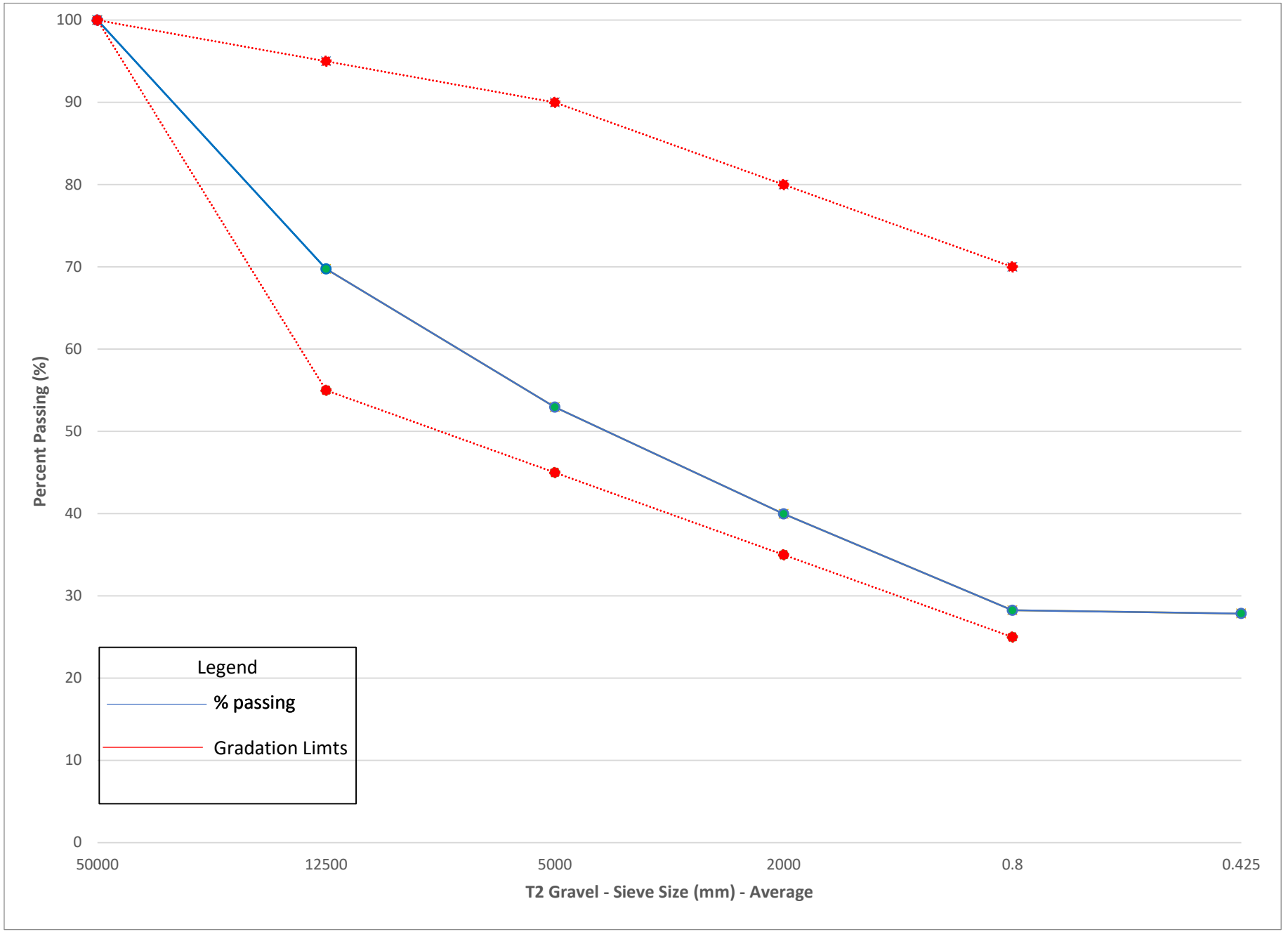
150000
50000
12500
5000
2000
0.425
0.08
T1 Gravel - Sieve Size (mm) - Average
Legend
% passing
Gradation Limits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90
80
70
60
50
40
30
20
10
0
Percent Passing (%)
50000
12500
5000
2000
0.8
0.425
T2 Gravel - Sieve Size (mm) - Average
Legend
% passing
Gradation Limts

Appendix G

Daily Reports

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date:Aug.14.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	Arrived to Resolute at 6:00pm. 6:00 pm – 8:30 pm
Field Personnel on site	Donny Li, Jason Mauchan
Daily Progress	Donny & Jason arrived to site Conducted initial site tour of AEC 1, 2, 3 Kudlik crew arrived 9:30pm
Planned Activities (next day)	Meet Kudlik crew, review planned tasks and identify hazmat locations and materials
Schedule update	n/a
Health /Safety Issue	n/a
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	n/a
Weather & ground cover conditions	Partly cloudy, well exposed ground surface
Lab summary	n/a

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Aug.15.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	Donny Li, Jason Mauchan, Kudlik Crew
Daily Progress	Donny & Jason met with Marcel (site supervisor) Surveyor onsite, establishing base station Mechanic onsite Daniel Blais (Hazmat Specialist) on site, bagged asbestos, consolidated batteries, pipes and fire extinguishers within AEC 3 sub area (not officially bagged and transported) Donny, Jason, & Daniel conducted an initial hazmat sweep of AEC 1 & 3 - Relocated batteries incase of snowfall Kudlik began consolidating hazmat at AEC 1
Planned Activities (next day)	Continue with hazmat and survey work
Schedule update	n/a
Health /Safety	Toolbox Meeting Topics: - Weather specific PPE - High wind speeds/heavy rain - Sharp objects
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	n/a
Weather & ground cover conditions	Heavy rain, high wind speeds (>60km/h), cloudy. Well exposed ground cover
Lab summary	n/a

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Aug.16.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator, surveyor, hazmat specialist)
Daily Progress	- DRs inspected exterior of all the sea containers and interior of four. No concerns. Sea cans are in good condition - Kudlik hazmat specialist (Daniel Blais) and operator (Mario Houle) moved consolidated hazmat materials from AEC 3 subarea to Sea Can by AEC 1 - Daniel and Mario started consolidating and moving hazmat from AEC 1 to nearby Sea Can - Surveyor conducting baseline survey - Donny & Jason met with airport manager briefly, on-site meeting scheduled for Friday at 9am
Planned Activities (next day)	Continue with hazmat and survey work Site super (Marcel Deziel) plans to hire local people on Friday. Kudlik plans to establish Hazmat Processing Area for drum contents in the next 2 days. Note that hazmat contents consolidated to date have been put directly into seacan. DRs to meet Steve Piercy on-site and discuss AEC-2 items.
Schedule update	n/a
Health /Safety	Toolbox Meeting Topics: - Heavy loads - Falling objects/debris - Watch your step
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Internet issue has been resolved. Kudlik upgraded the internet for the DRs. 1-2 photos will be included in daily reports commencing with the Aug 17, 2018 daily.
Weather & ground cover conditions	Snow/rain, cloudy, windy Well exposed ground conditions
Lab summary	n/a

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Aug.17.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator, surveyor, hazmat specialist, Inuit Wildlife Monitor)
Daily Progress	- Donny & Jason toured AEC 2 with Steve Piercy - Kudlik established temporary hazmat processing area (THMPA-1) at AEC 1 - Donny & Jason collected baseline soil samples at THMPA-1 - Marcel hired one Inuit wildlife monitor personnel (Paddy Aqatusuk) - Marcel conducted English site orientation with Paddy - Donny & Jason conducted thorough site tour of AEC 2 & 3 for any remaining drums and/or transformers
Planned Activities (next day)	Continue with hazmat and survey work DRs to conduct seacan inspection
Schedule update	Sealifts currently scheduled to arrive on September 3rd & 9th
Health /Safety	Toolbox Meeting Topics: - Heavy lifting - Fall/Slip/Trip - Sharp Objects - Worker Orientation Seminar for Paddy completed with site super today. Note that original Kudlik crew of 3 has completed Worker Orientation Seminar in French and the DRs completed Worker Orientation Seminar in English.
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	No issues
Weather & ground cover conditions	Overcast, very foggy, rain Well exposed ground cover
Lab summary	2 x soil samples collected from THMPA-1

Figure 1: Establishing THMPA-1

Figure 2: Soil samples collected from THMPA-1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Aug.18.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator, surveyor, hazmat specialist) Inuit Personnel (Heavy Equipment Operator)
Daily Progress	- Donny & Jason conducted thorough site tour of AEC 1 for any remaining drums and/or transformers - Donny & Jason conducted Sea Container inspection - Kudlik crew processing hazmat materials in AEC 1 - Marcel hired and conducted site orientation with Inuit HEO (Ross Puddluk)
Planned Activities (next day)	Continue with hazmat work Plan to flatten ground at planned location of screener Inuit personnel to start work on Sunday, Aug 19, 2018
Schedule update	Baseline survey completed, surveyor leaving site on Sunday, Aug 19, 2018
Health /Safety	Toolbox Meeting Topics: - Falling/blowing objects - Slip/trip/fall - Watch your step
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	First Air cargo arrived (soil sampling equipment)
Weather & ground cover conditions	Morning: 1˚C, cloudy Well exposed ground cover Afternoon: 1˚C, cloudy Well exposed ground cover
Lab summary	n/a

Figure 1: Hazmat processing in AEC-1. Orange container for transporting bagged ACM

Figure 2: Sea Container inspection

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday Aug.19.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator, hazmat specialist) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Kudlik and DRs measured weights for ACM & batteries o Material weights recorded and reviewed by Donny, Jason & Marcel o For ACM - weights measured today include all identified and observed ACM from AEC-1 and AEC-3 apart from brake pads from equipment in AEC-3. No ACM identified at AEC-2. o For batteries – weights measured today include all identified and observed batteries from AEC-1 and AEC-3 apart from batteries associated with vehicles in AEC-3. No batteries identified at AEC-2 - Dozer started to flatten ground at planned location of screener and planned location for site office - Kudlik consolidated transformer liquids from AEC-1 transformers - Kudlik collected 11 transformers from AEC-2
Planned Activities (next day)	Continue with hazmat work Continue with dozer work to flatten ground at north end of west borrow source. Use the loader to start moving scattered debris closer to the slope and crest of AEC-1 landfill.
Schedule update	Schedule to be discussed at the Tuesday August 21, 2018 construction meeting
Health /Safety	Toolbox Meeting Topics: - Drive safely, note snow fall - Slips/trips/falls, watch your step due to snow/ice - Watch for potholes when driving
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Engine oil spill from dozer of approximately 3 litres near AEC-1. Spill contingency measures enacted immediately by Kudlik
Weather & ground cover conditions	Morning: -1˚C, overcast Ground covered in snow Afternoon: 1˚C, snow/rain, overcast Ground partially covered in snow Note: majority of the snow cover had disappeared by afternoon with the rain
Lab summary	n/a

Figure 1: Dozer flattening west burrow area for screening area and temporary office

Figure 2: Packaged ACM & batteries to be weighted

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday Aug.20.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO, hazmat specialist) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Inuit HEO continuing flattening ground of planned screener area at north end of west burrow area - Kudlik consolidated and packaged transformers from AEC 2 - Kudlik moved scattered non-hazardous debris to edge of AEC-1 landfill
Planned Activities (next day)	Continue with hazmat work Use the loader to continue to move scattered debris closer to the slope and crest of AEC-1 landfill. Use the dozer to build short access route between road and screener location
Schedule update	Schedule to be discussed at the Tuesday August 21, 2018 construction meeting
Health /Safety	Toolbox Meeting Topics: - Slip containment - Make eye contact with equipment operators
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	
Weather & ground cover conditions	Morning: 0˚C, fog, overcast Light snow cover in the morning in some areas Afternoon: 2˚C, partly cloudy Well exposed ground cover, snow melted by end of day
Lab summary	n/a

Figure 1: Dozer moving non-hazardous material to edge of AEC-1

Figure 2: Drained and packaged transformers from AEC-2

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday Aug.21.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO, hazmat specialist) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Donny, Jason & Marcel participated in construction meeting #1 with PSPC, TC, Kudlik and OCI - Inuit HEO continuing work at screener area at west burrow area o Started a base for future aggregate stock piling, ~200 m^3 used to build a raised area for planned location of screener aggregate - Moving scattered non-hazardous debris to edge of AEC-1 landfill - Kudlik packaged two fridges (potentially containing freon) from AEC-1 - Kudlik emptied & re-contained drum contents into new & labelled drums - Donny & Jason established photo hub locations at AEC-1 & AEC-3. The plan is to take photos from hub locations over time to track progress and identify if any dumping occurs at areas over the course of the coming winter
Planned Activities (next day)	Continue with hazmat work Use the loader to move scattered debris closer to the slope and crest of AEC-1 landfill. DRs will establish photo hub locations at AEC-2
Schedule update	Discussed at construction meeting
Health /Safety	Toolbox Meeting Topics: -always wear your hard hat at the job site -use appropriate gloves for the task
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Note that the DRs are taking lots of daily photos.(photo hubs, hazmat, and activities), however, only a few are included each day in the daily report.
Weather & ground cover conditions	Morning: -1˚C, snowing Ground partially covered in snow Afternoon: 5˚C, partly cloudy Well exposed ground cover
Lab summary	n/a

Figure 1: Processed, sealed and packaged hazardous drum contents

Figure 2: Stockpiling at north end of west burrow area

Figure 3: Progress photo at AEC-1.8

Figure 4: Progress photo at AEC-1.11

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday Aug.22.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO, hazmat specialist) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Kudlik wrapping up hazmat work with hazmat specialist - Kudlik started to move scattered debris from gully of AEC-3 - Donny & Jason conducted detailed site investigation of pre-existing monitoring wells in AEC-1, 2 & 3
Planned Activities (next day)	Continue with hazmat work Use the loader to move scattered debris closer to the slope and crest of AEC-1 landfill. Minor grading work at AEC-1 to establish 2% slope
Schedule update	The ice has blown out of the bay which would allow for the sealift barge to access Resolute landing area.
Health /Safety	Toolbox Meeting Topics: -radio communication and hand signals for gully work -safe distances away from tow wire for gully work
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Flat tire on Marcel's pickup truck, fixed by ATCO.
Weather & ground cover conditions	Morning: 1˚C, sunny Well exposed ground cover Afternoon: 5˚C, sunny Well exposed ground cover
Lab summary	n/a

Figure 1: Kudlik moving non-hazardous debris up from gully of AEC-3

Figure 2: Broken monitoring well (MW) downstream of AEC-1. Note that there are other MWs downstream of AEC-1 in good condition.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Thursday Aug.23.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator, hazmat specialist) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Kudlik moved large scattered debris objects which were collected from gully of AEC-3 to AEC-1 - Kudlik moved 5 sea containers to AEC-3 in preparation for loading them with lead-painted equipment, lead-paint items have not been moved but items have been flagged (flagging tape) by DRs - At end of day, Kudlik began rental of an excavator in order to crush/compact objects which are on the top of landfill in AEC-1 - Access road from adjacent to AEC-1 to planned locations of screener and site office is complete
Planned Activities (next day)	Continue using the excavator to crush/compact objects Hire labourers for hand picking scattered debris from extents of AEC areas. Mechanic scheduled to arrive. Mechanic will drain fluids from vehicles in advance of either moving them to AEC-1 (non lead-paint items) or being cut with shear (lead-paint items)
Schedule update	- Kudlik hazmat specialist outbound - Kudlik mechanic inbound (to start on August 24, 2018) - Reminder: the shear, site office, screener, etc. are on the sealift
Health /Safety	Toolbox Meeting Topics: -heavy equipment communication, use radio to communicate, approach heavy equipment from the front with visual contact with operator
Deviations from workplan	In total, to date: -5 x fire extinguishers identified as possibly containing residual contents -2 x fridges identified as possibly containing refrigerants -2 x propane tanks identified as possibly containing residual contents
Notes Include visitors, Any equipment issues etc	Brad Suley (Stantec) working in the treatment cell zone. This area, although near to AEC-1, is not being used by Kudlik. All parties (Kudlik, Outcome, Stantec, ATCO) aware of work activities in the respective areas.
Weather & ground cover conditions	Morning: 1˚C, sunny Well exposed ground cover Afternoon: -1˚C, snowing, overcast Well exposed ground cover
Lab summary	Sediment samples collected from AEC-1 in locations beyond the proposed toe

Photo 1: Empty tank transported from AEC-3 to AEC-1 ↑

Photo 2: The access to the sewage lagoon is being maintained ↑

Photo 3: Seacans placed at AEC-3 ↑

Photo 4: Wildlife Monitor on patrol. View west from AEC-1 ↑

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday August.24.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO, mechanic) Inuit Personnel (HEO, wildlife monitor)
Daily Progress	- Marcel conducted weekly safety meeting with Kudlik crew (in French) and with Inuit personnel, Donny & Jason (In English) - Kudlik moved large scattered debris objects from AEC-3 to AEC-1 - Inuit HEO moved non-hazardous debris from AEC-3 to AEC-1 - Kudlik crushed/compacted objects at toe of landfill in AEC-1 - Kudlik mechanic started checking and draining equipment in AEC-3 - Donny & Jason flagged LEAD paint objects in AEC-3
Planned Activities (next day)	Continue using the excavator to crush/compact objects This weekend: Kudlik plans to hire labourers for hand picking scattered debris from extents of AEC areas. Mechanic will drain fluids from vehicles in advance of either moving them to AEC-1 (non lead-paint items) or being cut with shear (lead-paint items)
Schedule update	-
Health /Safety	Toolbox Meeting Topics: - Keeping work area (including vehicles and heavy equipment) clean - Ergonomics for heavy lifting - Don't overwork yourself, personal health and safety comes first - Dress appropriately for cold weather (wind) and wear proper PPE - No harassment or intimidation on site
Deviations from workplan	
Notes Include visitors, Any equipment issues etc	- Sealift w/ fuel has arrived
Weather & ground cover conditions	Morning: 1˚C, overcast Well exposed ground cover Afternoon: 1˚C, overcast Well exposed ground cover
Lab summary	n.a.

Figure 1: Inuit HEO moving non-hazardous debris from AEC-3 to AEC-1

Figure 2: Kudlik operator compacting debris at toe of AEC-1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday August.25.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator,) Inuit Personnel (wildlife monitor, labourer, mechanic)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Kudlik crushed/compacted objects at toe and slope of landfill in AEC-1 - Mechanic drained equipment in AEC-3 - Kudlik started digging drainage ditch around AEC-1 o Uncovered 4 transformers. Two were intact and therefore potentially contain PCBs. Two were previously damaged/crushed/punctured and are dry. - Donny & Jason measured and estimated pre-collapsed volume of equipment, large objects and vehicles containing lead-amended paint o Volume totals reviewed with Marcel. To date, total equals 515 m^3 but this does not include scattered pipes and smaller items. - Kudlik hired and conducted site orientation with an Inuit labourer
Planned Activities (next day)	Continue using the excavator to crush/compact objects Labourerd hired will collect scattered debris from extents of AEC areas. Mechanic will continue to drain fluids from vehicles in advance of either moving them to AEC-1 (non lead-paint items) or being cut with shear (lead-paint items) Move lead-amended paint items into seacan, only items which have an agreed pre-collapsed item will be moved.
Schedule update	- Weekly construction meeting scheduled for Tuesday August 28, 2018
Health /Safety	Toolbox Meeting Topics: - Make eye contact with equipment operators - Slip/trip/fall - Keep work zones clean
Deviations from workplan	
Notes Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 30%
Weather & ground cover conditions	Morning: 1˚C, overcast Well exposed ground cover Afternoon: 1˚C, overcast Well exposed ground cover
Lab summary	Note: Baseline soil samples from drum processing area and sediment samples from AEC-1 have been shipped to lab.

Figure 1: Compacted slope at south face of AEC-1 slope

Figure 2: Kudlik operator digging out ditch at AEC-1 with uncovered transformers

Figure 3: Drained vehicle at AEC-3

Figure 4: Non-hazardous debris at AEC-1 moved from AEC-3

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday August.26.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator) Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Mechanic drained equipment in AEC-3 - Kudlik operator dug drainage ditch at north and south extents of EC-1 landfill - Inuit HEO, using dozer, stockpiling at northeast burrow area - Donny, Jason & Marcel reviewed and flagged all lead-amended paint materials (large and small items) in AEC-3 to be packaged and disposed of according to specifications - Donny & Jason collected sediments samples at AEC-2 - Donny and Jason characterized the 'mystery drum'. It is an intact drum containing 125 litres of waste fuel (watery fuel, mixed liquid waste) - Blue car from AEC-2 moved to AEC-3 in order for mechanic to drain
Planned Activities (next day)	- Labourer to collect scattered debris from extents of AEC areas. Collected non-haz debris will go to AEC-1. - Mechanic will continue to drain fluids from vehicles in advance of either moving them to AEC-1 (non lead-paint items) or being cut with shear (lead-paint items) - Move lead-amended paint items into seacan, only items which have an agreed pre-collapsed volume will be moved. - Continue stockpiling at northeast burrow area
Schedule update	
Health /Safety	Toolbox Meeting Topics: - Wear proper PPE - Watch your step - Slip/trip/fall
Deviations from workplan	
Notes Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 33% - Laboratory coolers arrived in Resolute. DRs have all necessary sampling equipment on-site.
Weather & ground cover conditions	Morning: 1˚C, overcast Well exposed ground cover Afternoon: 1˚C, overcast Well exposed ground cover
Lab summary	- 5 sediment samples were collected at AEC-2

Figure 1: Blue car moved from AEC-2 to AEC-3 to be drained by mechanic

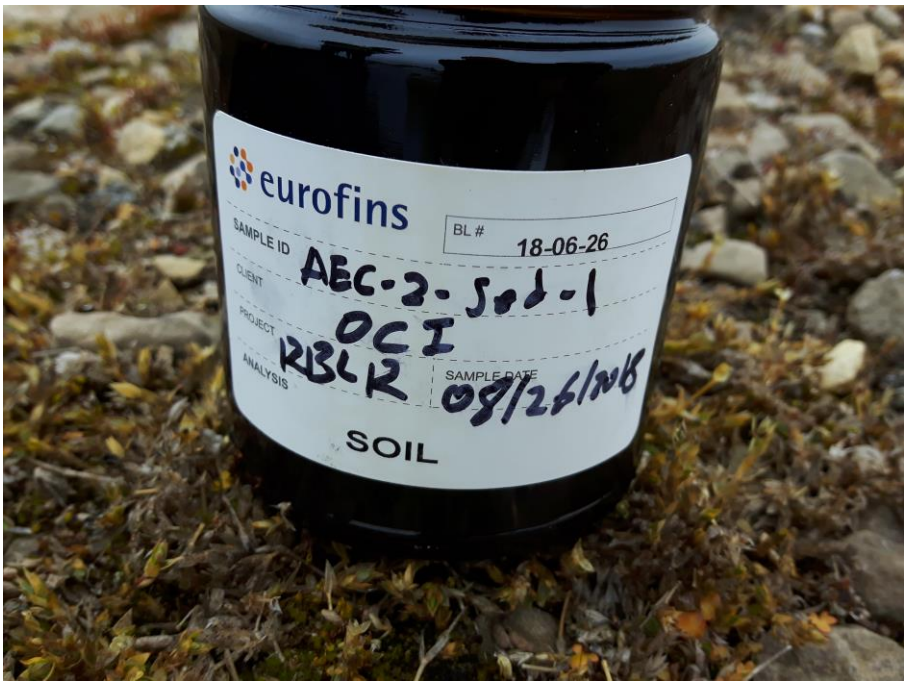

Figure 2: Sediment sample collected at AEC-2

Figure 3: Compacted debris at slope of AEC-1

Figure 4: Non-hazardous debris moved from AEC-3 to AEC-1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday August.27.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Mechanic drained equipment in AEC-3 - HEO started regrading cap at AEC-1 - Processing (cutting, crushing and packing) lead-amended paint items into seacans at AEC-3 - Donny & Jason collected surface water samples at AEC-1
Planned Activities (next day)	- Regrade cap at AEC-1 - Move lead-amended paint items into seacans - Weekly construction meeting
Schedule update	- To be discussed at weekly construction meeting
Health /Safety	Toolbox Meeting Topics: - Make eye contact with heavy equipment operators - Heavy lifting - Slip/trip/fall
Deviations from workplan	
Notes Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 33%
Weather & ground cover conditions	Morning: -1˚C, heavy fog Ground covered in snow Afternoon: 1˚C, overcast Well exposed ground cover
Lab summary	- 5 surface water samples collected at AEC-1

Figure 1: Crushing lead amended paint materials at AEC-3

Figure 2: Storing lead amended paint materials in seacans at AEC-3

Figure 3: Stockpiling at northeast burrow area

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday August.28.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation (RBLR)
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew: (site super, HEO) with Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- Completed - All equipment in AEC-3 has been drained - In progress - Regrading slope at AEC-1 - In progress - Processing (cutting, crushing and packing) lead-amended paint items into seacans at AEC-3 - Donny & Jason identified remaining debris to be collected in AEC-3 gully - Weekly construction meeting held today
Planned Activities (next day)	- Labourer to collect scattered debris from extents of AEC areas. - Move lead-amended paint items into seacans - Prepare seacans to be shipped south for the sealift (strapping and paperwork)
Schedule update	Discussed at the weekly meeting On-site Mtg - Monday September 10th, 2018 (charter will depart from Quebec on morning of September 10th, 2018 DRs – Jonathan to arrive September 1, 2018; Donny departing September 2nd, Jason departing September 4th.
Health /Safety	Toolbox Meeting Topics: - Pinch points - Keep speeds down - Slips/trips/falls
Deviations from workplan	Alternative labourer to be hired. Planned labourer who had completed the Worker Orientation Seminar did not show up for work today.
Notes Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 37%
Weather & ground cover conditions	Morning: -1˚C, heavy fog Ground covered in snow Afternoon: -2˚C, overcast Well exposed ground cover
Lab summary	- 2 surface water samples were collected at AEC-3 - 1 ground water sample was collected at AEC-1

Figure 1: Crushing of lead amended paint material in AEC-3

Figure 2: Scattered debris in gully of AEC-3.

Figure 3: Regrading slope at AEC-1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday August.29.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, operator) Inuit Personnel (wildlife monitor, HEO, mechanic, labourer)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Mechanic drained equipment in AEC-3 - HEO started regrading slope at AEC-1 - Kudlik processing (cutting, crushing and packing) lead-amended paint items into seacans at AEC-3 - Kudlik hired Inuit labourer; started collecting debris in AEC-3 - Donny & Jason collected 2 groundwater samples at AEC-2 - Donny & Jason took progress photos at AEC-1 & AEC-3
Planned Activities (next day)	- Mechanic to remove batteries from vehicles in AEC-3 - Move lead-amended paint items into seacan, only items which have an agreed pre-collapsed item will be moved.
Schedule update	- The weather and the sealift are key factors
Health /Safety	Toolbox Meeting Topics: - Dress for the weather, proper PPE - Heavy lifting - Keep eye contact with equipment operator
Deviations from workplan	
Notes Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 40%
Weather & ground cover conditions	Morning: -1˚C, overcast Ground covered in snow Afternoon: -2˚C, overcast Well exposed ground cover
Lab summary	- 2 groundwater samples were collected at AEC-2

Figure 1: Collecting groundwater samples at AEC-2

Figure 2: Packaging lead amended paint material into sea containers in AEC-3

Figure 3: Progress photo at AEC-1

Figure 4: Progress photo at AEC-3

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Thursday August.30.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic, labourer)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Mechanic removed batteries from equipment in AEC-3 - HEO started east burrow area preparation in advance of screening - Kudlik processing (cutting, crushing and packing) lead-amended paint items into seacans at AEC-3 - Labourer collected smaller debris in AEC-3 - Kudlik moved three sea cans (filled with lead amended paint material) to beach area for upcoming sealift - DRs collected 5 surface water samples at AEC-2 - Donny, Jason & Marcel weighed batteries from equipment in AEC-3. Total weight of vehicle batteries equalled 124 kgs. Therefore, total weight of batteries = (1166 kg + 124 kg) = 1290 kgs
Planned Activities (next day)	- Continue collecting scattered debris from extents of AEC areas. - DRs and Marcel will review and agree upon liquid volumes from vehicles - Prepare the secans which are being transported south this year. The secans contain agreed upon weights/numbers/volumes of hazmat
Schedule update	-
Health /Safety	Toolbox Meeting Topics: - Slip/trip/fall - Watch your step - Keep work area clean
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 40%
Weather & ground cover conditions	Morning: -1˚C, overcast Ground partially covered in snow Afternoon: -2˚C, overcast Well exposed ground cover
Lab summary	- 5 surface water samples collected at AEC-2 - 1 soil sample collected at AEC-1 (from temp drum processing area which has been decommissioned)

Photo 1: 3 x light brown seacans at Resolute shore ready for sealift. These three seacans contain items with lead-amended paint

Photo 2: East borrow area preparation.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday August.31.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:30am to 7:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic, labourer)
Daily Progress	- HEO moved non-hazardous debris into pile within AEC-3 - Mechanic finished draining equipment in AEC-3 - HEO stockpiling at east burrow area - Labourer collecting debris in gully of AEC-3 - Marcel conducted weekly safety meeting - Donny & Jason took progress photos at AEC-2 - Drained liquids and batteries from equipment at AEC-3 was packaged and moved to beach area for sealift
Planned Activities (next day)	- Collect scattered debris from gully, prepare for sealift
Schedule update	- Desgagnes sealift scheduled to arrive September 1st, 2018 - NEAS sealift scheduled to arrive September 4th, 2018 - Jonathan Markiewicz scheduled to arrive September 1st, 2018
Health /Safety	Weekly Safety Meeting Topics: - Ensure proper PPE is worn at all times on site - Check equipment/tools before operation, ensure guards are always on - Spill kit is near sea containers at AEC-1 should any incidents occur - Adjust driving speeds in heavy fog and higher traffic - Keep your back straight and lift heavy materials with your legs - Don't exceed your personal work capacity - Always ensure you are working in a safe manner - Keep visual contact with any heavy equipment operators
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 42%
Weather & ground cover conditions	Morning: 1˚C, overcast, fog Well exposed ground cover Afternoon: 1˚C, partly cloudy Well exposed ground cover
Lab summary	- n/a

Photo 1: Non-hazardous debris in AEC-3 ready for transport to AEC-1

Photo 2: Five seacans ready for transport south on sealift

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday September.1.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:30pm
Field Personnel on site	DRs: Donny Li, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic, labourer)
Daily Progress	- HEO moved non-hazardous debris from AEC-3 to AEC-1 - Kudlik finished stockpiling aggregates in advance of screening, approx. 2500 m^3 ready to screen - Collected debris in gully of AEC-3 - Total volume of liquids is 1950 L
Planned Activities (next day)	- Continue collecting scattered debris from extents of AEC areas, including gully of AEC-3
Schedule update	- Donny Li scheduled to leave site on September 2, 2018 - NEAS sealift off shore at Resolute Bay, however, ice in bay. If significant ice in bay, sealift will go to Grise Fiord and return next week - Jonathan Markiewicz arrived on site
Health /Safety	Toolbox Meeting Topics: - Make eye contact with equipment operators - Key work area clean - Proper PPE
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	- The Inuit on-site labour hours % to-date is 42%
Weather & ground cover conditions	Morning: 1˚C, partly cloudy Well exposed ground cover Afternoon: 1˚C, partly cloudy Well exposed ground cover
Lab summary	- n/a

Photo 1: Collecting debris from AEC-3 gully

Photo 2: Preparation for towing debris from AEC-3 gully

Photo 3: View of AEC-3. Note the overall reduced amount of debris in AEC-3

Photo 4: Sealift off shore at Resolute. However, note the ice near shore.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday September.2.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:30pm
Field Personnel on site	DRs: Jonathan Markiewicz, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- Moved empty seacans adjacent to AEC-3 in preparation for loading with lead-amended paint items - Began loading seacans with lead-amended paint items - HEO moved non-hazardous debris from AEC-3 to AEC-1 - Collected debris in AEC-3 sub area - Note that 6 seacans are at Resolute shore ready for transport south
Planned Activities (next day)	- Load seacans with lead-amended paint items from AEC-3
Schedule update	- Sealift #1 did not offload items due to ice in the bay. Sealift #1 scheduled to return next week. Sealift #2 scheduled to be in Resolute on September 4, 2018.
Health /Safety	Toolbox Meeting Topics: - Wet surfaces due to rain/sleet - Keep windshields clean - Proper PPE for the weather
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	- The ATCO loader required the mechanic today. Loader fixed in the afternoon.
Weather & ground cover conditions	Morning: -1˚C, wet snow/rain Well exposed ground cover Afternoon: 1˚C, light rain Well exposed ground cover
Lab summary	- Baseline samples collected by DRs from aggregate material; Samples collected from Borrow Area East, Borrow Area North East, and Borrow Area West - Sample collected from AEC-1 northern swale (ditch) in area where 4 transformers were located when Kudlik dug the ditch

Photo 1: View from shore near barge landing area. Sealift #1 did not offload items. Sealift #1 departed Resolute on the morning of Sept 2, 2018, will return next week.

Photo 2: View of AEC-1 northern swale in area where 4 transformers were located last week

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday September.3.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm, 7:00pm to 8:00pm
Field Personnel on site	DRs: Jonathan Markiewicz, Jason Mauchan Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- Began loading seacan with lead-amended paint items from AEC3 subarea - Collected debris in AEC-3 sub area - HEO moved non-hazardous debris from AEC-3 subarea to AEC-1 - Note that 6 seacans are at Resolute shore ready for transport south
Planned Activities (next day)	- Load seacans with lead-amended paint items from AEC-3 subarea - Move Non-hazardous debris from AEC-3 aubarea to AEC-1
Schedule update	- Sealift #1 did not offload items due to ice in the bay. Sealift #1 scheduled to return next week. Sealift #2 scheduled to be in Resolute on September 4, 2018.
Health /Safety	Toolbox Meeting Topics: - Wet surfaces due to rain/sleet - Keep windshields clean - Proper PPE for the weather
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	
Weather & ground cover conditions	Morning: -2˚C, light snow Very light snow ground cover Afternoon: -3˚C, overcast Very light snow ground cover
Lab summary	- Existing monitoring wells 1-MW13 and 1-MW14 were located and purged, too little water volume to collect a sample, with exception of F1/BTEX from 1-MW13 - Sample collected and submitted for Pb Paint from the antennas in AEC2

Photo 1: View from shore east of barge landing area.
Sealift #1 will return next week. Sealift #2 unlikely to land before weekend.

Photo 2: View of AEC-3 subarea, Pb painted wastes in foreground manipulated by loader and non-hazardous debris in background loaded by hand into excavator bucket

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday September.4.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, HEO) Inuit Personnel (wildlife monitor, HEO, mechanic)
Daily Progress	- Finished loading seacan with lead-amended paint items from AEC3 subarea - Collected debris in AEC-3 sub area and from the Ravine - HEO moved non-hazardous debris from AEC-3 subarea to AEC-1
Planned Activities (next day)	- Load seacans with lead-amended paint items from AEC-3 - Move Non-hazardous debris from AEC-3 to AEC-1
Schedule update	- Sealift #1 did not offload items due to ice in the bay. Sealift #1 scheduled to return next week. Sealift #2 scheduled to be in Resolute on September 11, 2018.
Health /Safety	Toolbox Meeting Topics: - Wet surfaces due to rain/sleet - Keep windshields clean - Proper PPE for the weather
Deviations from workplan	
Notes: Include visitors, Any equipment issues etc	- Excavator broke down at 11h00 due to hydraulic oil line break. The spill was less than 5-L and the majority of it was spilt onto the equipment which was wiped with sorbent pads. The soils under the excavator (0.2mx0.2mx.1m) will be excavated once the machine is removed and transported off-site by Kudlik. - New hose needs to be flown in to repair ATCO equipment, due to arrive on Friday.
Weather & ground cover conditions	Morning: -4˚C, light snow Very light snow ground cover Afternoon: -2˚C, overcast Very light snow ground cover
Lab summary	- Existing monitoring wells 1-MW13 and 1-MW14 were sampled for majority of bottles, except for PAHs and F1/BTEX due to battery for pump exhausted and needing to be recharged over night.

Photo 1: View from east of last pile of Non-Hazardous debris at AEC-3 subarea and the broken down excavator.

Photo 2: View of AEC-3 subarea - Ravine, Non-Hazardous debris being loaded onto a sledge and pulled up the slope

Less Than 100 Liters

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL (867) 920-8130
FAX (867) 873-6924
EMAIL spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE MONTH – DAY – YEAR: Sept 4 2018	REPORT TIME: 11:00	☑ ORIGINAL SPILL REPORT, OR	REPORT NUMBER:
B	OCCURRENCE DATE MONTH – DAY – YEAR	OCCURRENCE TIME	☐ UPDATE # TO THE ORIGINAL SPILL REPORT	
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM THE NAMED LOCATION: Resolute North west Airstrip 2.5km	REGION: ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR		
E	LATITUDE DEGREES 74 MINUTES 44 SECONDS 51.33	LONGITUDE DEGREES 95 MINUTES 01 SECONDS 22.27		
F	RESPONSIBLE PARTY OR VESSEL NAME: ATCO	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED: Kudlik	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED: Hydraulique Oil	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: 5 Liters	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE: excavator CAT 330	SPILL CAUSE: Hose Break	AREA OF CONTAMINATION IN SQUARE METRES: .5m X .5m	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS: -Wipe All oil we see - we will digue The ground and put The gravel in A QUATREX			

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION: Station operator	EMPLOYER	LOCATION CALLED: Yellowknife, NT	REPORT LINE NUMBER: (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Marcel Dezy

Page 1 of

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday September.5.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 0:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, HEO) Inuit Personnel (HEO)
Daily Progress	- Collected debris in AEC-3 sub area from the Ravine - Move Seacans and HazMat wastes to staging area for Sealift Retrograde removal - Assist in unloading and staging Sealift delivered materials
Planned Activities (next day)	- Assist in unloading and staging Sealift delivered materials - Assist in loading of Retrograde HazMat - Move Equipment and Supplies to AEC-1
Schedule update	- Sealift #1 was able to unload at a non-standard location. Sealift #2 scheduled to be in Resolute on September 11, 2018.
Health /Safety	Toolbox Meeting Topics: - Keep roads and work areas clear of debris - Proper PPE for the weather
Deviations from workplan	- Stopped working at AEC-3 in afternoon to facilitate Sealift unloading
Notes: Include visitors, Any equipment issues etc	- Shear has minor damage from shipment, new parts arriving Friday
Weather & ground cover conditions	Morning: -2˚C, clear with north wind Very light snow ground cover Afternoon: -0˚C, overcast with north wind Very light snow ground cover
Lab summary	- Existing monitoring wells 1-MW13 and 1-MW14 were sampled for last bottles, PAHs and F1/BTEX. Samples and Equipment shipped south

Photo 1: First barge load of equipment and supplies from the Sealift.

Photo 2: Retrograde HazMat containers (6 Seacans on left, 3 pallets right) staged for transport to the Sealift for off-site transport

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Thursday September.6.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	0:00am TO 2:00am, 6:00am to 6:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, HEO) Inuit Personnel (HEO)
Daily Progress	- Assist in unloading and staging Sealift delivered materials - Assist in loading of Retrograde HazMat
Planned Activities (next day)	- Move Equipment and Supplies to AEC-1 - Commence shearing Non-Hazardous Wastes in AEC-1
Schedule update	- Sealift #2 scheduled to be in Resolute on September 11, 2018. - Low-bed trailer needed from second sealift to start borrow development
Health /Safety	Toolbox Meeting Topics: - Drive carefully on the road - Be aware of Sealift activities and give space to the crew
Deviations from workplan	-
Notes: Include visitors, Any equipment issues etc	- Shear has minor damage from shipment, new parts arriving Friday
Weather & ground cover conditions	Morning: -3˚C, overcast with north wind Very light snow ground cover Afternoon: -2˚C, overcast with southeast wind Very light snow ground cover
Lab summary	-

Photo 1: Two Rock Trucks (Komatsu HM-300) staged at AEC-1.

Photo 2: Retrograde HazMat containers (6 Seacans) on the barge to the Sealift for off-site transport

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday September.7.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO) Inuit Personnel (HEO)
Daily Progress	- Move Equipment and Supplies to AEC-1 - Commence shearing Non-Hazardous Wastes in AEC-1
Planned Activities (next day)	- Continue Shearing Non-Hazardous Wastes in AEC-1 - Construct HMPA in AEC-3 for processing Pb painted wastes - Potentially commence shearing Pb wastes at AEC-3
Schedule update	- Sealift #2 scheduled to be in Resolute on September 11, 2018. - Low-bed trailer needed from second sealift to start borrow development
Health /Safety	Toolbox Meeting Topics: - Weekly Safety Meeting - Lifting alone and in pairs - Stay 30' from shear while operating
Deviations from workplan	-
Notes: Include visitors, Any equipment issues etc	- Shear was fixed - 2 new HEOs arrived
Weather & ground cover conditions	Morning: -1˚C, 1-2cm of snow overnight Light snow ground cover Afternoon: -1˚C, light snow, Fog Light snow ground cover
Lab summary	-

Photo 1: Shear processing Non-Hazardous debris at AEC-1.

Photo 2: Sorting and staging equipment and supplies inSeacans

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday September.8.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO) Inuit Personnel (HEO,Wildlife Monitor)
Daily Progress	- Move Equipment and Supplies to AEC-1 - Shearing Non-Hazardous Wastes in AEC-1 - Constructed the HMPA in AEC3 for shearing Pb Painted wastes
Planned Activities (next day)	- Continue Shearing Non-Hazardous Wastes in AEC-1 - Potentially commence shearing Pb wastes at AEC-3
Schedule update	- Sealift #2 scheduled to be in Resolute on September 11, 2018. - Low-bed trailer needed from second sealift to start borrow development
Health /Safety	Toolbox Meeting Topics: - Drive on proper side of road with lights on - Stay 30' from shear while operating
Deviations from workplan	-
Notes: Include visitors, Any equipment issues etc	-
Weather & ground cover conditions	Morning: -1˚C, overcast Light snow ground cover Afternoon: 0˚C, overcast Light snow ground cover
Lab summary	- Collected 1 Soil sample from the HMPA prior to placing the liner

Photo 1: Processed Non-Hazardous debris at AEC-1.

Photo 2: Dump Truck staged on AEC3 HMPA for processing

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday September.9.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm – 6:30pm to 0:00AM
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO) Inuit Personnel (2x HEO,Wildlife Monitor, 1x Labourer)
Daily Progress	- Move Equipment and Supplies to AEC-1 - Shearing Non-Hazardous Wastes in AEC-1 - Moving AEC-3 Non-Haz Wastes to AEC-1 - Started shearing Pb Painted wastes in AEC-3 HMPA. - Sealift #2 unloading assistance
Planned Activities (next day)	- Move supplies and equipment from shore to AEC-1 - Continue shearing Pb wastes at AEC-3 - Containerizing processed Pb wastes into Sea Cans in AEC-3
Schedule update	- Sealift #2 arrived. - Aggregates may not be processed this year
Health /Safety	Toolbox Meeting Topics: - Drive safely with 2-way traffic, add sand to roads due to snow/ice - Work areas are slippery - Wear appropriate PPE for the task, check with Marcel PPE requirements before commencing new tasks
Deviations from workplan	- Aggregates are unlikely to be processed this year due to frozen soil conditions
Notes: Include visitors, Any equipment issues etc	-
Weather & ground cover conditions	Morning: -2˚C, partly cloudy Light snow ground cover Afternoon: 0˚C, partly cloudy Light snow ground cover
Lab summary	-

Photo 1: Two new fire-extinguishers found inside the Ice Melter in AEC-3. Propane tanks are empty and without valves; deemed Non-Hazardous.

Photo 2: Processing the Dump Truck on AEC3 HMPA

Photo 3: Transporting AEC-3 non-hazardous debris to AEC-1.

Photo 4: NEAS Sealift #2 being unloaded. Kudlik's excavator on the barge.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday September.10.2018 Consultant Name: DOJV
Author | Donny Li	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm, 7:00pm to 8:30pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO) Inuit Personnel (2x HEO,Wildlife Monitor, 1x Labourer)
Daily Progress	- Move Equipment and Supplies to AEC-1 - Shearing Pb Painted wastes in AEC-3 HMPA. - Shearing stopped at 15h50 for regular maintenance - Sealift #2 unloading assistance - Site Tours (PSPC/TC and Kudlik PM)
Planned Activities (next day)	- Move supplies and equipment from shore to AEC-1 - Finish Maintenance on Shear and restart shearing Pb wastes at AEC-3 - Containerizing processed Pb wastes into Sea Cans in AEC-3 - Project Meeting #2 – on-site with PSPC and TC
Schedule update	- Sealift #2 arrived. - Aggregates may not be processed this year
Health /Safety	Toolbox Meeting Topics: - Stay 30' away from shear when operating - Stay alert while loading in the Sealift staging area, there is much activity
Deviations from workplan	- Aggregates are unlikely to be processed this year due to frozen soil conditions
Notes: Include visitors, Any equipment issues etc	- 3 Polar bears observed west of AEC-3 along shoreline, not near site
Weather & ground cover conditions	Morning: -2˚C, partly cloudy Light snow ground cover Afternoon: 0˚C, partly cloudy Light snow ground cover
Lab summary	-

Photo 1: Processed Pb Hazardous waste in HMPA and the grader staged for processing.

Photo 2: 3rd Rock Truck being mobilized to the site from the sealift

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday September.11.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:30am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Surveyor) Inuit Personnel (2x HEO,Wildlife Monitor, 1x Labourer)
Daily Progress		- Project Progress Meeting #2 - Move Equipment and Supplies to AEC-1 - Transporting Non-Haz from AEC-3 to AEC-1 - Shearing stopped for regular maintenance - Sealift #2 unloading assistance - Site Survey work - Started working no 3:1 slope in AEC-1
Planned Activities (next day)		- Shearing Pb wastes at AEC-3 - Containerizing processed Pb wastes into Sea Cans in AEC-3 - Work on AEC-1 3:1 slope
Schedule update		- Aggregates will not be processed this year - 7-10 Days of work remaining for this year, followed by winterizing
Health /Safety		Toolbox Meeting Topics: - Stay 30' away from shear when operating - Stay alert while loading in the Sealift staging area, there is much activity
Deviations from workplan		- Aggregates are unlikely to be processed this year due to frozen soil conditions
Notes: Include visitors, Any equipment issues etc		-
Weather & ground cover conditions		Morning: -2˚C, partly cloudy Light snow ground cover Afternoon: 0˚C, partly cloudy Light snow ground cover
Lab summary		- Attempted to collect Surface Water chemistry samples but the water was frozen except for a thin layer above the sediments.

Photo 1: Regular maintenance on the Shear.

Photo 2: Starting 3:1 cut on AEC-1 slope

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday September.12.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:30am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic, Surveyor) Inuit Personnel (2x HEO, Wildlife Monitor, 1x Labourer)
Daily Progress		- Transporting Non-Haz from AEC-3 to AEC-1 - Shearing of Pb Hazardous Wastes in AEC-3 HMPA - Site Survey work - Working no 3:1 slope in AEC-1
Planned Activities (next day)		- Containerizing processed Pb wastes into Sea Cans in AEC-3 - Work on AEC-1 3:1 slope - Start winterizing non-essential equipment
Schedule update		- Aggregates will not be processed this year - 7 Days of work remaining for this year, followed by winterizing
Health /Safety		Toolbox Meeting Topics: - Stay 30' away from Shear - Walk carefully on slopes, unstable ground, near wastes, etc. Use previous paths when possible.
Deviations from workplan		- Aggregates will not be processed this year due to frozen soil conditions
Notes: Include visitors, Any equipment issues etc		- While slope is being cut, DR traverses the cut areas along the slope and toe to observe any new Hazardous Materials, none observed
Weather & ground cover conditions		Morning: -2˚C, overcast Light snow ground cover Afternoon: 0˚C, partly cloudy Light snow ground cover
Lab summary		- Light Towers confirmed to have Pb paint

Photo 1: Mixing aggregates with the waste to stabilize the AEC-1 3:1 slope.

Photo 2: Looking south along AEC-1 slope at both stabilized and un-stabilized wastes in the slope

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday September.13.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:30am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic, Surveyor) Inuit Personnel (2x HEO, Wildlife Monitor, 1x Labourer)
Daily Progress		- Load Pb Hazardous Wastes into Seacans AEC-3 HMPA - Site Survey work (alternate borrow source survey) - Working no 3:1 slope in AEC-1
Planned Activities (next day)		- Containerizing processed Pb wastes into Sea Cans in AEC-3 - Shearing of remaining Pb Wastes - Work on AEC-1 3:1 slope - Continue winterizing non-essential equipment
Schedule update		- Aggregates will not be processed this year - 7 Days of work remaining for this year, followed by winterizing
Health /Safety		Toolbox Meeting Topics: - Ladders are not to be used due to snow and ice conditions - Keep 30' away from Seacans while they are being filled
Deviations from workplan		- Aggregates will not be processed this year due to frozen soil conditions
Notes: Include visitors, Any equipment issues etc		- Pb Wastes in AEC-2 quantified as 15.6 m3 - 4 new transformers observed in-side the light tower bases
Weather & ground cover conditions		Morning: -1˚C, overcast, snow Light snow ground cover Afternoon: 2˚C, partly cloudy, windy Light snow ground cover
Lab summary		-

Photo 1: Magnet on excavator used to load seacans with Pb waste.

Photo 2: Stabilized section of the AEC-1 3:1 slope

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday September.14.2018 Consultant Name: DOJV
Author: Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:30am to 6:00pm
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic, Surveyor) Inuit Personnel (2x HEO, Wildlife Monitor, 1x Labourer)
Daily Progress	- Shear Pb Hazardous Wastes in AEC-3 HMPA - Site Survey work (alternate borrow source survey) - Working no 3:1 slope in AEC-1 - Transported AEC-2 Non-Haz Debris to AEC-1 for processing - Transported AEC-2 Pb HazMat Waste to AEC-3 for processing
Planned Activities (next day)	- Containerizing processed Pb wastes into Sea Cans in AEC-3 - Shearing of remaining Pb Wastes - Work on AEC-1 3:1 slope - Continue winterizing non-essential equipment
Schedule update	- Aggregates will not be processed this year - 3 Days of work remaining for this year, with concurrent winterizing - Site Closed down for Winter Monday September 17, 2018 - Demobilization September 18, 2019
Health /Safety	Weekly Safety Meeting Topics: - PPE - Change in weather – colder, more ice/snow - Work methodically not too fast and not beyond individual capacity
Deviations from workplan	- Aggregates will not be processed this year due to frozen soil conditions - AEC-1 swale not constructed – part of slope to be left unfinished for final wastes collected in 2019
Notes: Include visitors, Any equipment issues etc	-
Weather & ground cover conditions	Morning: -2˚C, overcast, Light snow ground cover Afternoon: -1˚C, partly cloudy, windy Light snow ground cover
Lab summary	-

Photo 1: Crushed wastes on North slope, no aggregate stabilization.

Photo 2: Collecting and transporting Non-Hazardous debris from AEC-2 to AEC-1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday September.15.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:30am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic, Surveyor) Inuit Personnel (2x HEO, Wildlife Monitor, 1x Labourer)
Daily Progress		- Finished Shearing Pb Hazardous Wastes in AEC-3 HMPA - Site Survey work (alternate borrow source survey) - Working no 3:1 slope in AEC-1, Used aggregate from top 2% slope grading to stabilize sections of the 3:1 slope - Containerizing processed Pb wastes into Sea Cans in AEC-3
Planned Activities (next day)		- Cut with torch remaining oversized Pb Waste - Work on AEC-1 3:1 slope - Continue winterizing non-essential equipment
Schedule update		- Aggregates will not be processed this year - Site Closed down for Winter Monday September 17, 2018 - Demobilization September 18, 2019
Health /Safety		Weekly Safety Meeting Topics: - PPE - Change in weather – colder, more ice/snow - Work methodically not too fast and not beyond individual capacity
Deviations from workplan		- Eye contact with operators and stay out of blind spots - Foggy – take extra care driving and walking
Notes: Include visitors, Any equipment issues etc		- Too much Fog and Snow to take the End of Season Photos. Will attempt tomorrow.
Weather & ground cover conditions		Morning: -7˚C, FOG, snow Light snow ground cover Afternoon: -4˚C, Fog, overcast, snow Light snow ground cover
Lab summary		-

Photo 1: Last pile of sheared Pb wastes in AEC-3

Photo 2: Stabilizing slope side wastes with aggregates on AEC-1 slope.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday September.16.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm, 7:00pm to 8:30pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic) Inuit Personnel (2x HEO, Wildlife Monitor, 1x Labourer)
Daily Progress		- Sheard final oversized Pb Hazardous Waste in AEC-3 HMPA - Sheared final oversized Non-Haz materials at AEC-1, pushed over slope. - Working no 3:1 slope in AEC-1, flattened beyond the toe - Containerizing processed Pb wastes into Sea Cans in AEC-3 - Containerized the non-metallic wastes generated from shearing and liner for the AEC-3 HMPA in 7 Quatrexs, scraped surface soils in area of the AEC-3 HMPA and sea can filling area - Collected confirmatory samples - Winterizing equipment and supplies
Planned Activities (next day)		- Finish winterizing the equipment and supplies - Site walk through
Schedule update		- Aggregates will not be processed this year - Site Closed down for Winter Monday September 17, 2018 - Demobilization September 18, 2019
Health /Safety		Daily Tailgate Meeting Topics: - Snow (4cm of snow over night) covered debris – slips and trips - Work methodically not too fast and not beyond individual capacity
Deviations from workplan		-
Notes: Include visitors, Any equipment issues etc		-
Weather & ground cover conditions		Morning: -4˚C, light snow, white out conditions 4-cm snow ground cover Afternoon: -4˚C, light snow, white out conditions 4-cm snow ground cover
Lab summary		- Collected 2 samples from the AEC-3 HMPA, shipped south to Lab

Photo 1: TC stored wastes removed to AEC-1 (Non-Haz Debris) for shearing and integration into the slope and AEC-3 HMPA (HazMat) for processing and containerization.

Photo 2: Last oversized piece of Pb HazMat waste being sheared in AEC-3 HMPA

Photo 3: Integrating the last of the remaining sheared Non-Haz wastes from AEC-2 and AEC-3.

Photo 4: AEC-1 side slope (west side looking south). Snow covered areas have been stabilized with aggregates, voids in remaining waste needs to be filled.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Monday September.17.2018 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:30am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 3x HEO, Mechanic) Inuit Personnel (1x HEO, Wildlife Monitor)
Daily Progress		- Finished working no 3:1 slope in AEC-1, flattened beyond the toe - Winterizing equipment and supplies
Planned Activities (next day)		- Demobilization
Schedule update		- Aggregates will not be processed this year - Site Closed down for Winter Monday September 17, 2018 - Demobilization September 18, 2019
Health /Safety		Daily Tailgate Meeting Topics: - Snow (4cm of snow over night) covered debris – slips and trips -
Deviations from workplan		-
Notes: Include visitors, Any equipment issues etc		-
Weather & ground cover conditions		Morning: -4˚C, heavy snow, white out conditions 4-cm snow ground cover Afternoon: -6˚C, Clear 6-cm snow ground cover
Lab summary		- Collected 1 composite sample from the AEC-3 Waste containerized in Quatrex.

Photo 1: Top of AEC-1 cleared of Non-Haz Debris. North end, looking south

Photo 2: Top of AEC-1 cleared of Non-Haz Debris. North end, looking south

Photo 3: AEC-1 side slope, exposed debris that requires aggregate stabilization. Area will receive wastes generated (Swales, AEC-2 beyond slope) next year.

Photo 4: Supplies and equipment staged and winterized in AEC-1.

Photo 5: Equipment winterized and staged in West Borrow Source area south of AEC-1.

Photo 6: GNU equipment staged in AEC-2. TC wastes removed (looking west).

Photo 7: AEC-2 exposed debris beyond the slope. (looking north)

Photo 8: Exposed debris on the slope, centre of AEC-2 looking north.

Photo 9: AEC-2 top clear of debris, looking south

Photo 10: AEC-3 Vehicle dump cleared of surface waste (non-haz and haz), looking east.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: June 30, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 2x operators, 2x mechanics, 1x Wildlife Monitor) Inuit Personnel 2x	
Daily Progress		Kudlik activities: - Stockpiled materials in the East borrow area - Heavy Equipment preparations for Season (HM-300-2) - Screener preparations - Cleared snow off AEC-2 to assist in melting DR Activities - Observed Kudlik activities - Site Tour with Kudlik Site Supervisor (>8-hrs together)	
Planned Activities (next day)		Kudlik activities: - Stockpiled materials in the East borrow area - Hauling East borrow material to Screener - Test Screener and assess processed materials	
Schedule update		n/a	
Health /Safety		Toolbox Meeting Topics: o PPE for Debris handling – Leather gloves, glasses, hard hat. o Lift with legs, as a pair when needed, no lift and twist.	
Deviations from workplan		n/a	
Notes Include visitors, Any equipment issues etc		Interseason Oil release, unknown volume (<50-L), from stored Quatrex HazMat containers. Inferred Freshet water levels exceeded one or more the bags, allowing oils to be released. Sorbents placed on Snow and Ice, include booms. Impacts to gravel.	
Key Communications		Regarding the Release - Kudlik to clean the impacts once the pallets are free from ice, at their costs. Kudlik to re-package the Quatrex bags and wastes as required to provide safe and environmentally sound transport of wastes.	
Weather & ground cover conditions		2^{o}C low Sunny, Clear Some snow and ice cover	8^{o}C high Sunny, Clear Some snow and ice cover
Lab summary			

Photo 1: Stockpiling materials in the East borrow Area.

Photo 2: Screener Set-up and preparations.

Photo 3: Interseason release from Quatrex bag; unknown volume (<50-L).

Photo 4: Kudlik placing sorbents onto the snow/ice to contain the spill as the snow melts.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 1, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jason, Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 2x operator, 2x mechanics, 1x Wildlife Monitor) Inuit Personnel 2x	
Daily Progress		Kudlik activities: - Kudlik started hauling East borrow material to Screener feed pile - Kudlik built Loader ramp to screener - Kudlik started processing material - Kudlik got additional Heavy equipment operational DR Activities - Observed Kudlik activities - Started lab set-up and inventory of equipment/supplies	
Planned Activities (next day)		Kudlik activities: - Kudlik to continue hauling East borrow material to Screener feed pile - Kudlik to process material with Screener - Surveyors to survey AEC-1 DR Activities - DR MW inspection and water levels	
Schedule update		n/a	
Health /Safety		Toolbox Meeting Topics: o 3-pt contact while climbing onto screener	
Deviations from workplan		n/a	
Notes Include visitors, Any equipment issues etc		Screener 2-hrs of operations issues with aggregates getting stuck in chute and ype 1 belt.	
Key Communications			
Weather & ground cover conditions		9^{o}C low Sunny, clear, no wind Well exposed ground conditions	15^{o}C high Sunny, no clouds, no wind Well exposed ground conditions
Lab summary		n/a	

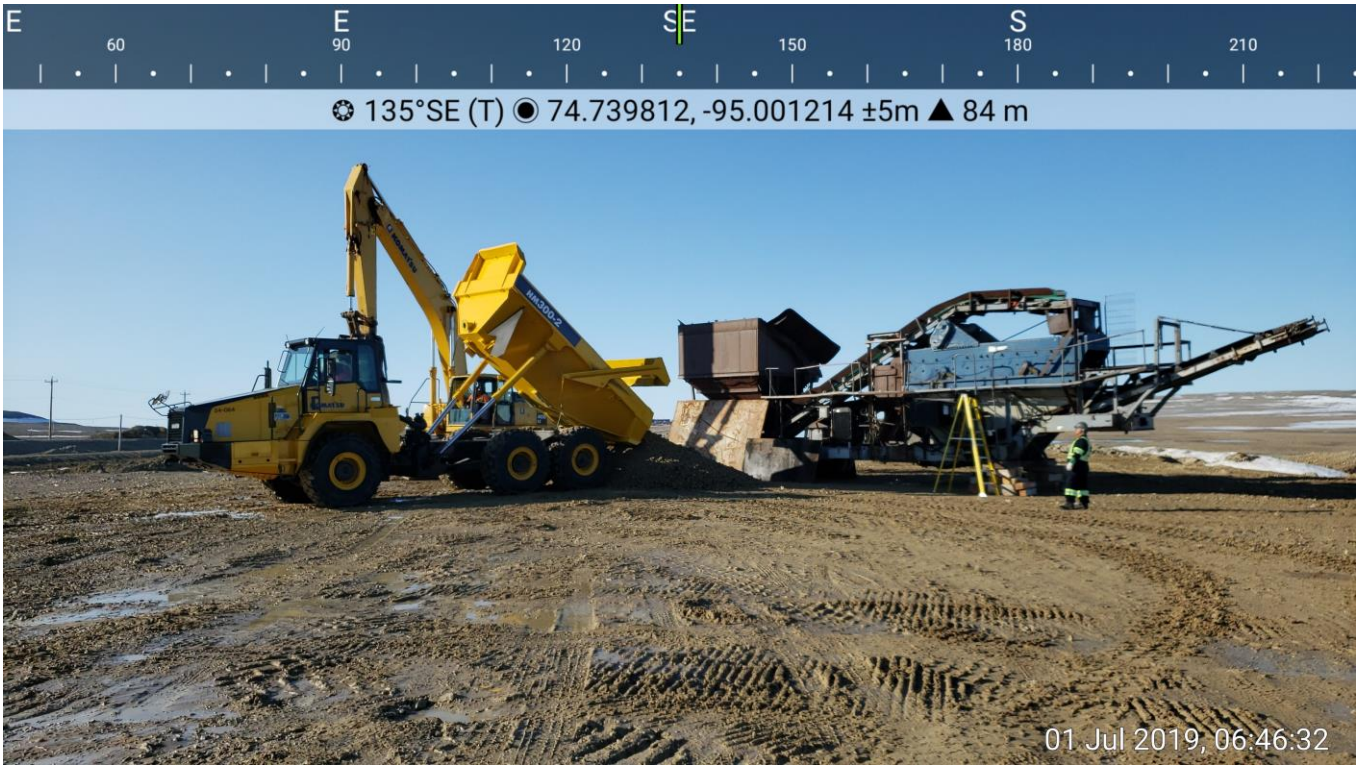

Photo 1: Building ramp to feed the screener.

Photo 2: Excavator feeding the Screener. Type 2 (fine) process pile on left.

Photo 3: Stockpiled materials in the East borrow area..

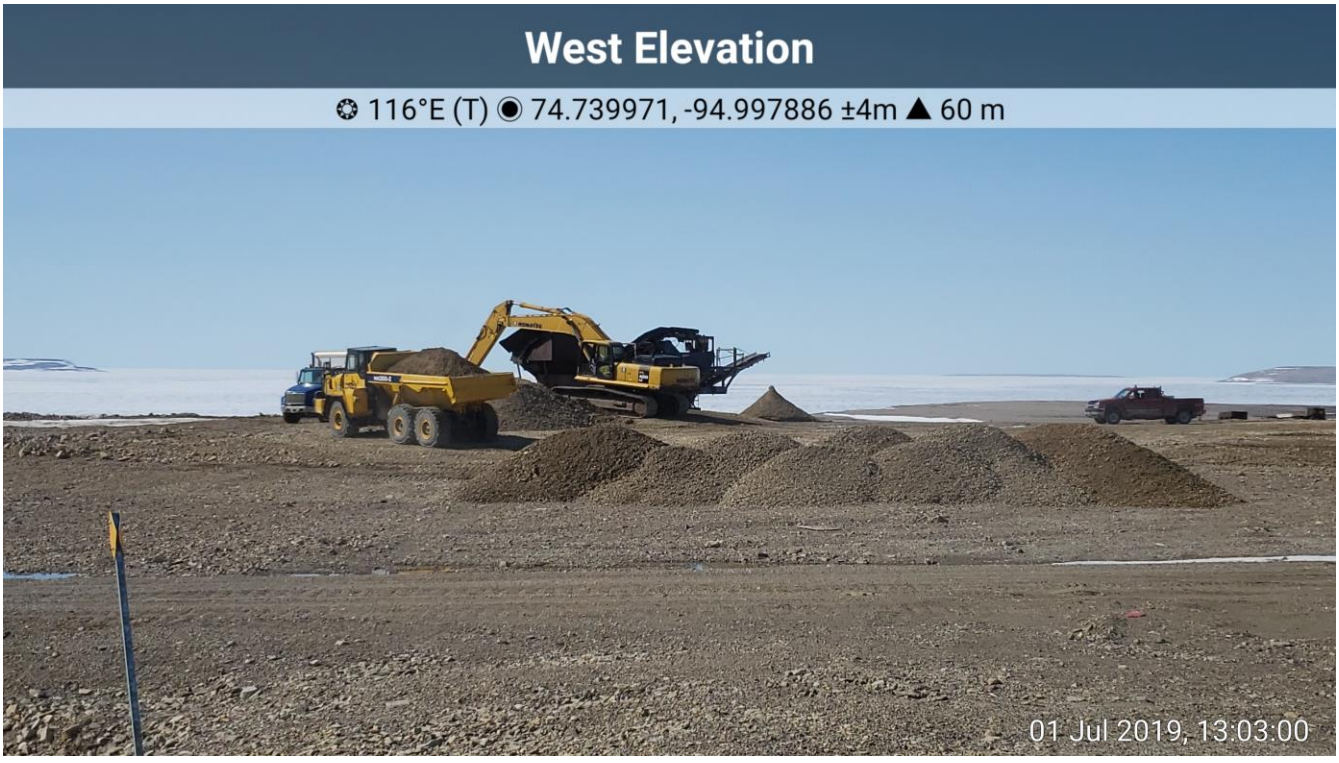

Photo 4: Hauled East borrow materials to a Screener feed pile..

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 2, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason, Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 2x operator, 2x mechanics, 1x Wildlife Monitor) Inuit Personnel 2x
Daily Progress		Kudlik activities: - Kudlik to continue hauling East borrow material to Screener feed pile - Kudlik to continue repairs on Screener DR Activities - Observed Kudlik activities - Water levels and MW inspection
Planned Activities (next day)		Kudlik activities: - Kudlik to continue hauling East borrow material to Screener feed pile - Kudlik to continue repairs on Screener DR Activities - DR work on Aggregate Lab set-up
Schedule update		n/a
Health /Safety		Toolbox Meeting Topics: - Travel on Public Road o Slow to 10-km when passing Public small vehicles o Stop for Walkers and ATVs
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Screener 2-hrs of operations Screener Hydraulic Leak - 15-L of hydraulic oil spill at screener when rock hit and broke a fitting. Kudlik stopped leak immediately and had a spill kit in area to start clean-up right away. Sorbents used, contaminated sorbents Soils to be remediated, at Kudliks cost, after screening. Spill location does not affect clean processing of aggregates. AEC-1 MWs damaged and should be replaced as part of LTM :1-MW-13 and 1-MW-14 AEC-2 MWs damaged:2-MW-2, FL-MW3, FL-MW-4 and FL-MW8. Use FL-MW7 and 2-MW8 for LTM, need protective casing
Key Communications		n/a
Weather & ground cover conditions		10°C low Sunny, clear, no wind Well exposed ground conditions 13°C high Sunny, clear, no wind Well exposed ground conditions
Lab summary		n/a

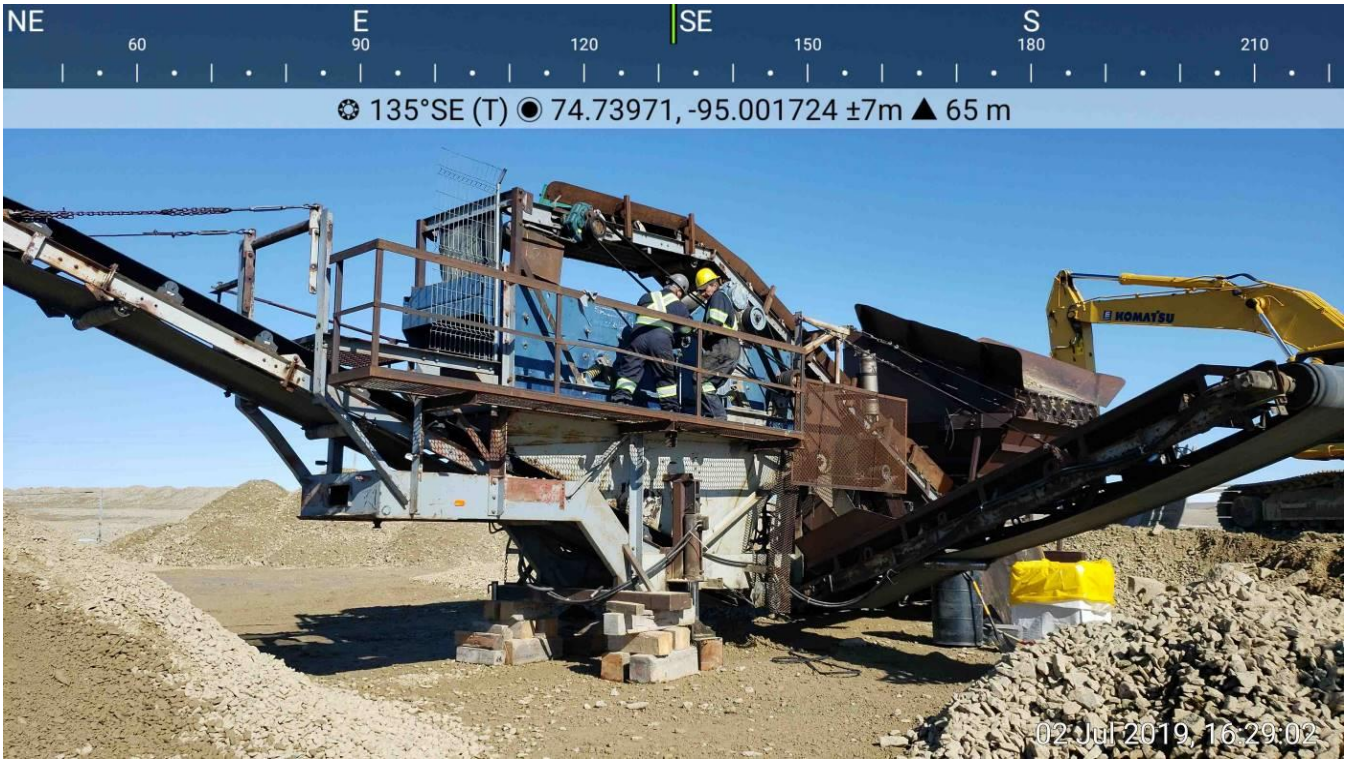

Photo 1: Main belt drive modifications on Screener. Type 1 (coarse) material pile on right, Type 2 (fine) material pile on left.

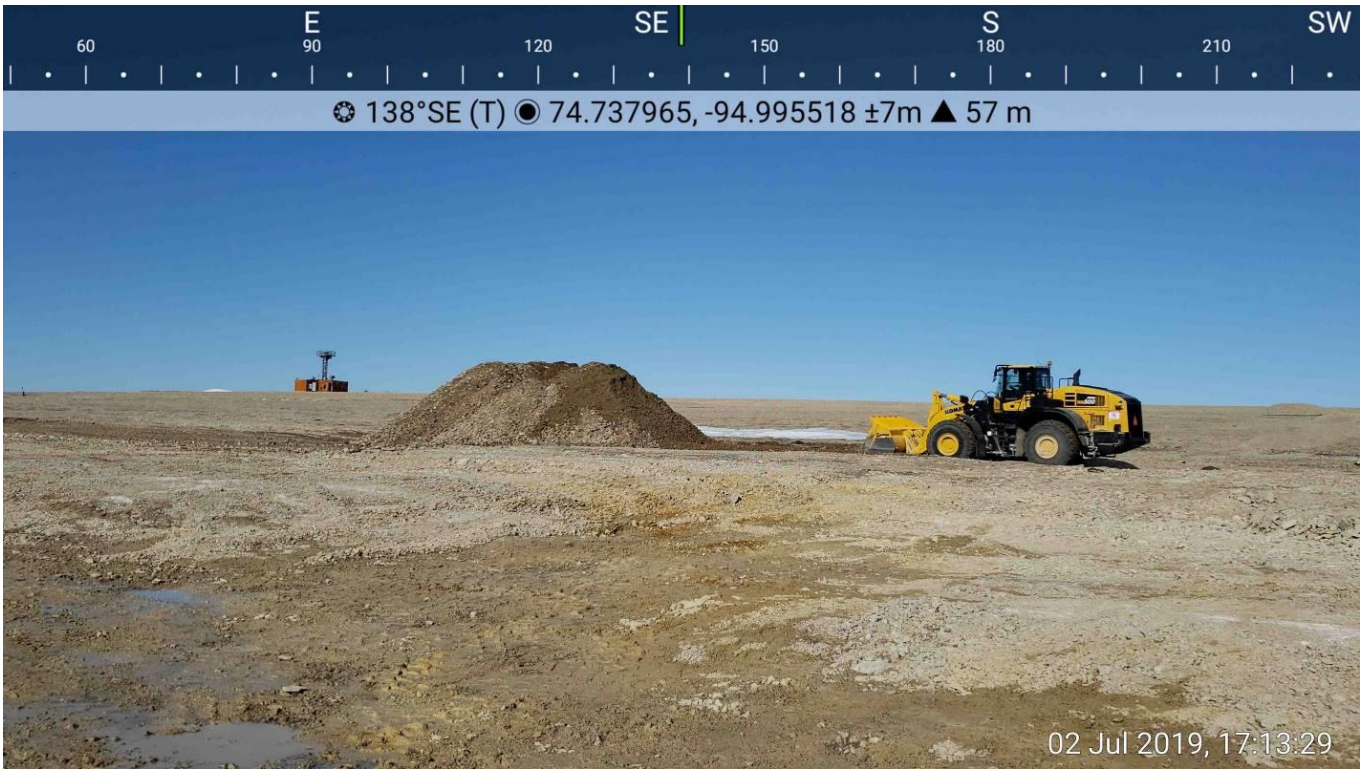

Photo 2: Stripping the unfrozen surface soils in East borrow area into a stockpile.

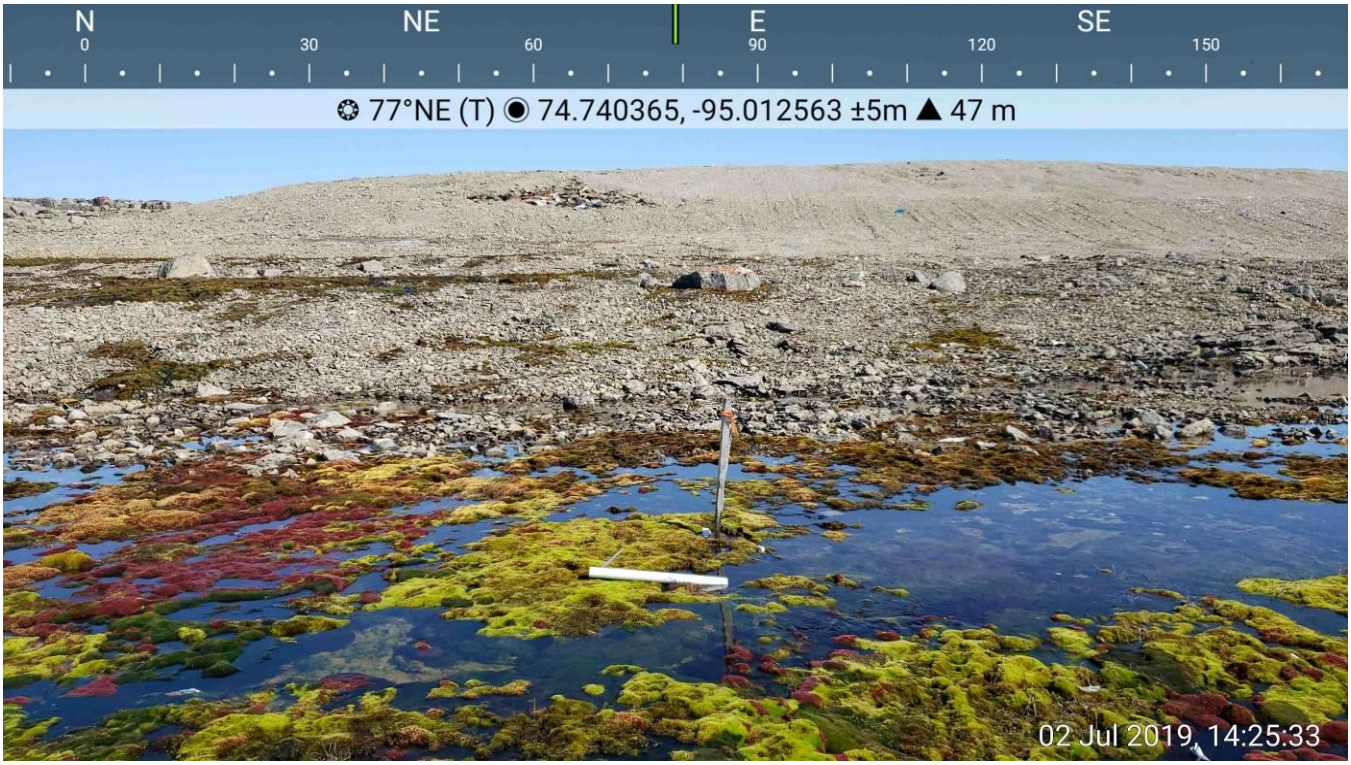

Photo 3: Monitoring Well 1-MW-13 located south of AEC-1, recommended to be replaced for LTM program.

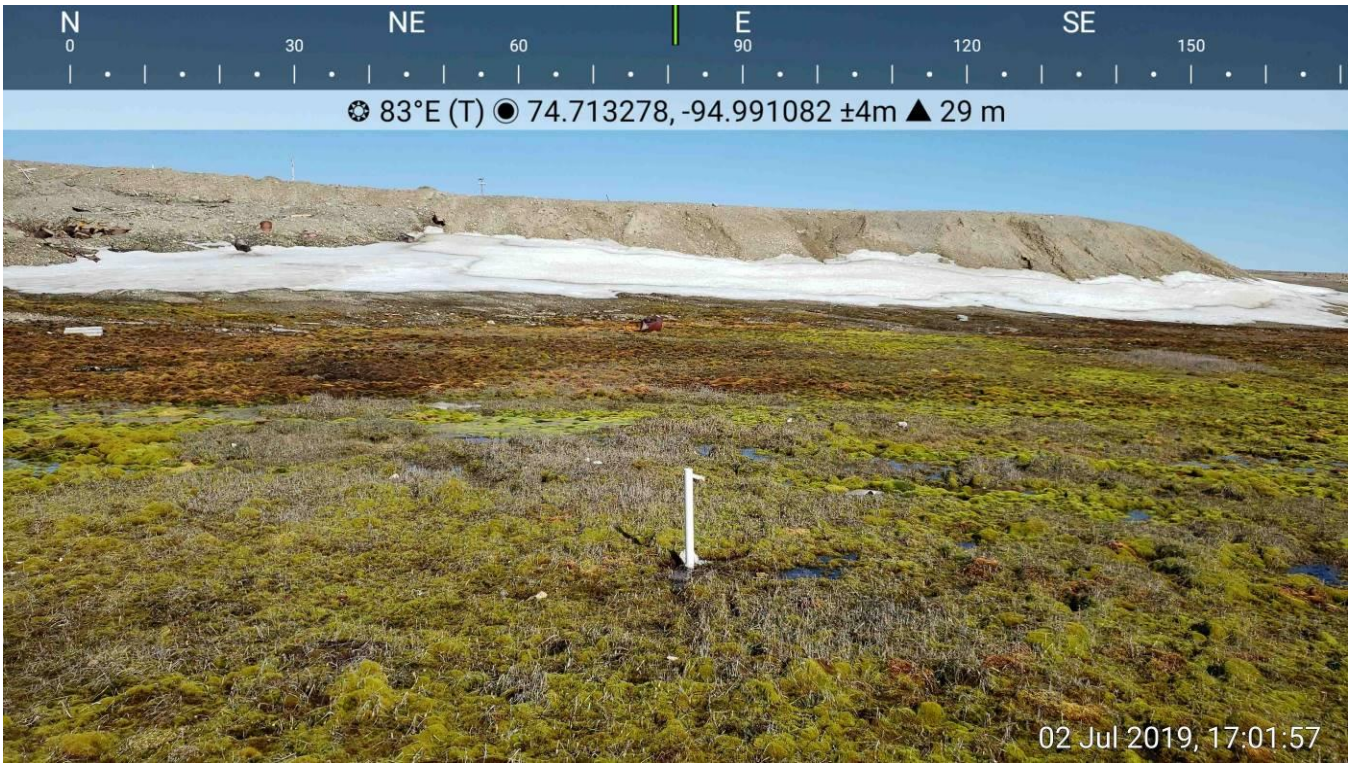

Photo 4: Monitoring Well 2-MW-8 located south of AEC-2, recommended for LTM program.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 3, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason, Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew (site super, 4x operator, 2x surveyor, 2x mechanics, 1x screener operator) Inuit Personnel 3x
Daily Progress		Kudlik activities: - Surveyor conducting seasonal baseline survey of AEC-1 - 2x 30T Rock Trucks, 500 Loader and D6 Dozer used to stockpile East Borrow materials next to screener as a feed pile - 3x Mechanics working on Screener – Modified main belt drive, started modifications on feed chute - 500 Loader required minor repair to steering system. DR Activities - Observed Kudlik activities - Picked up Sample Delivery #1, organized Env Sampling Equipment
Planned Activities (next day)		Kudlik activities: - Kudlik to rip, strip and stockpile in East Borrow - Kudlik to continue hauling East borrow material to Screener feed pile - Kudlik to finish repairs on Screener and start processing using the PC200 - Kudlik to finish AEC-1 survey and start AEC-2 survey DR Activities - DR inspect winter laydown area - DR to start collecting interseason preconstruction samples in AEC-2
Schedule update		n/a
Health /Safety		Toolbox Meeting Topics: - Wear appropriate PPE for the task being completed - First Aid and Eye Wash Station locations - Spill Response protocols
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Screener 0-hrs of operations 500 Loader minor repairs
Key Communications		1- DR / SS – Alternate borrow source will be sampled for environmental quality before use. DR to assist in determining the contaminant of concerns and observe sampling. DR to provide Eurofins jars. Alternate borrow to be stockpiled separately until results are reviewed.
Weather & ground cover conditions	7°C low Sunny, light partial clouds, no wind Well exposed ground conditions	12°C high Sunny, light partial clouds, no wind Well exposed ground conditions
Lab summary		n/a

Photo 1: Hauling East borrow materials to the Screener feed pile.

Photo 2: D6 managing stockpiled borrow materials at Screener feed pile.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 4, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan, Shaun Dagenais	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm, 7:00pm to 8:00pm (Site tour DRs)	
Field Personnel on site		DR: Jonathan Markiewicz, Shaun Dagenais (arrived at 6:00pm) Kudlik Crew (site super, 4x operator, 2x mechanics, 2x Surveyors, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x	
Daily Progress		Kudlik activities: - Stockpiled materials in the East borrow area - Continued modifications on Screener hopper - Surface debris pick-up at AEC-2 DR Activities - Observed Kudlik activities - Finished Aggregate Lab setup	
Planned Activities (next day)		Kudlik activities: - Stockpiled materials in the East borrow area - Hauling East borrow material to Screener feed pile - Kudlik to continue modifications on Screener - Install power to the Aggregates laboratory DR Activities - Collect Type 1 aggregate gradation sample	
Schedule update		n/a	
Health /Safety		Toolbox Meeting Topics: o PPE for Debris handling – Leather gloves, glasses, hard hat. o Lift with legs, as a pair when needed, no lift and twist.	
Deviations from workplan		n/a	
Notes Include visitors, Any equipment issues etc		Screener 0-hrs of operations	
Key Communications		n/a	
Weather & ground cover conditions		6^{o}C low Sunny, light clouds, light wind Well exposed ground conditions	10^{o}C high Sunny, light clouds, light wind Well exposed ground conditions
Lab summary		Kudlik collected 2x samples from the Alternate Borrow Area for PHCs and Metals. DRs supervised the stockpile sampling.	

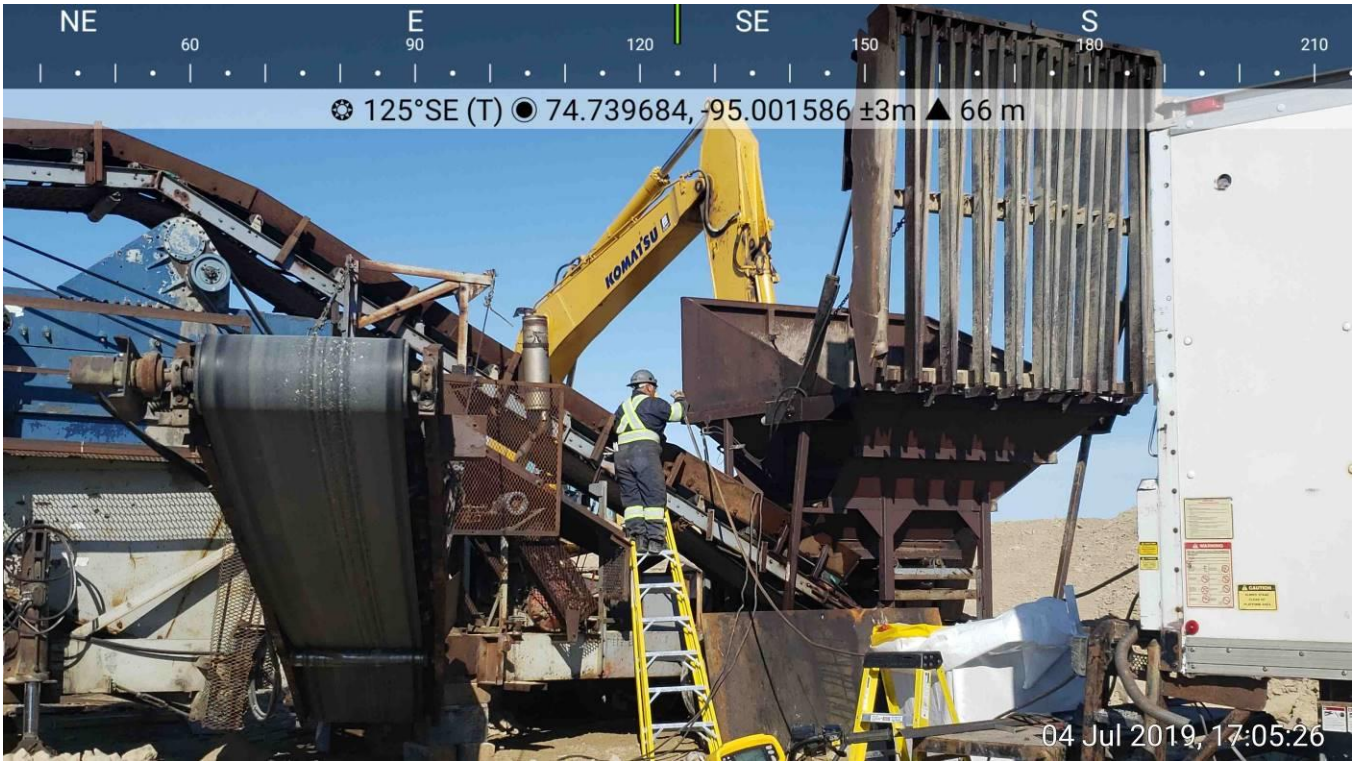

Photo 1: Screener hopper modifications, addition of plates to steepen chute.

Photo 2: Debris consolidation in AEC-2, focus on woods and plastics..

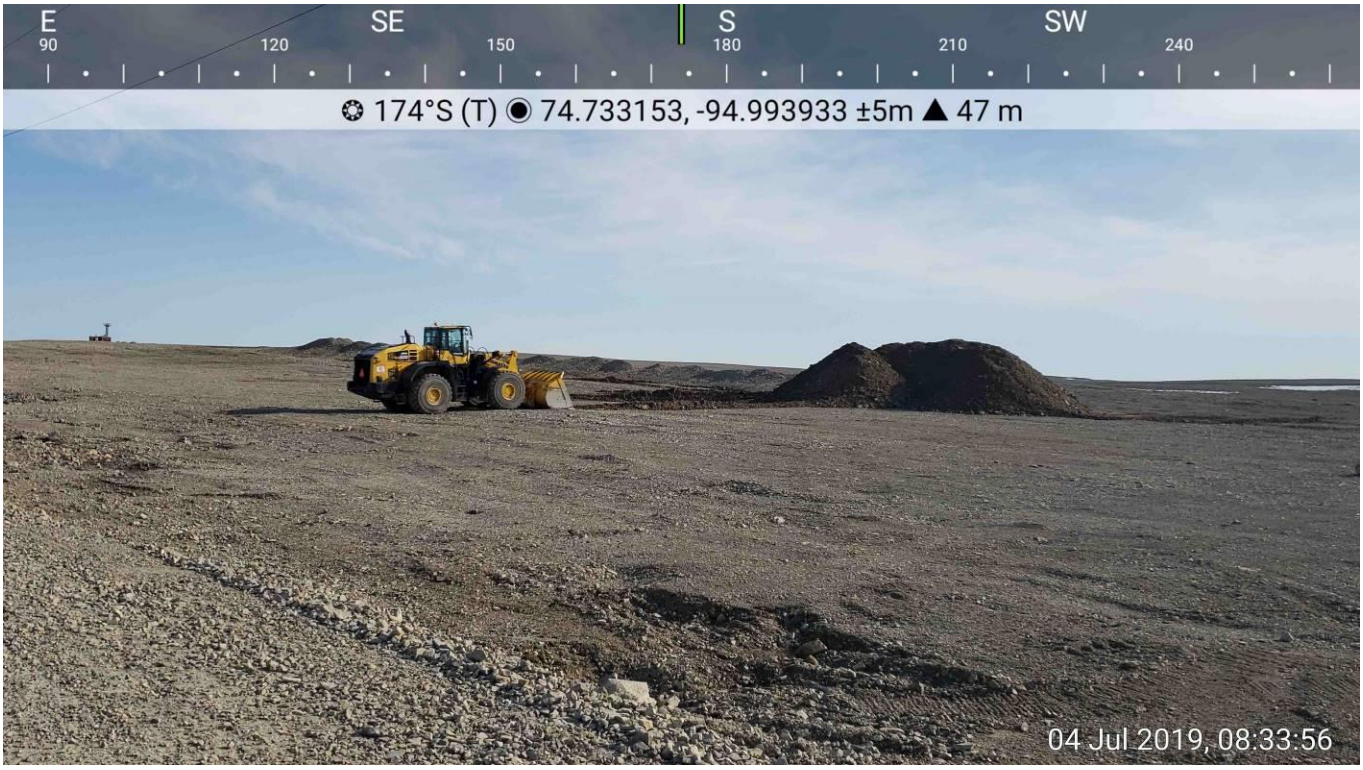

Photo 3: Stripping and stockpiling of East borrow source aggregates.

Photo 4: Kudlik collecting environmental samples from stockpiled material in the proposed Alternate Borrow source.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 5, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan, Shaun Dagenais
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz, Shaun Dagenais Kudlik Crew (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x
Daily Progress		Kudlik activities: - Stockpiled materials in the East borrow area - Continued modifications on Screener chute - Surface debris pick-up at AEC-2 - Survey of AEC-2 and North East borrow area DR Activities - Observed Kudlik activities - Aggregate Gradation test of Type 1 material - Preparation for Pre-Construction Sampling
Planned Activities (next day)		Kudlik activities: - Stockpile materials in the East and North East borrow areas - Hauling East borrow material to Screener feed pile - Surface debris pick-up at AEC-2 - Survey of AEC-2 - Finsh Screener modifications and Screener test in the Afternoon DR Activities - Start Type 2 aggregate sieve test - Start Pre-Construction sampling
Schedule update		n/a
Health /Safety		Toolbox Meeting Topics: - Extreme wind today (guts upto 80-km/hr) o Careful up airborne dusts, wear safety glasses o Secure and close doors, including seacans, to prevent blowing open or damage o Lifting materials for Screener repairs must be properly secured and personnel on the upwind side during lift.
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Screener 0-hrs of operations
Key Communications		n/a
Weather & ground cover conditions	3^{o}C low Sunny, no clouds, High wind gusts (>50km/hr) Well exposed ground conditions	8^{o}C high Sunny, no clouds, High wind gusts (>50km/hr) Well exposed ground conditions
Lab summary	DR completed a Type 1 (Coarse) aggregate gradation test. Met Spec DR collected a Type 2 (Fine) aggregate sample, but no power in lab to dry sample	

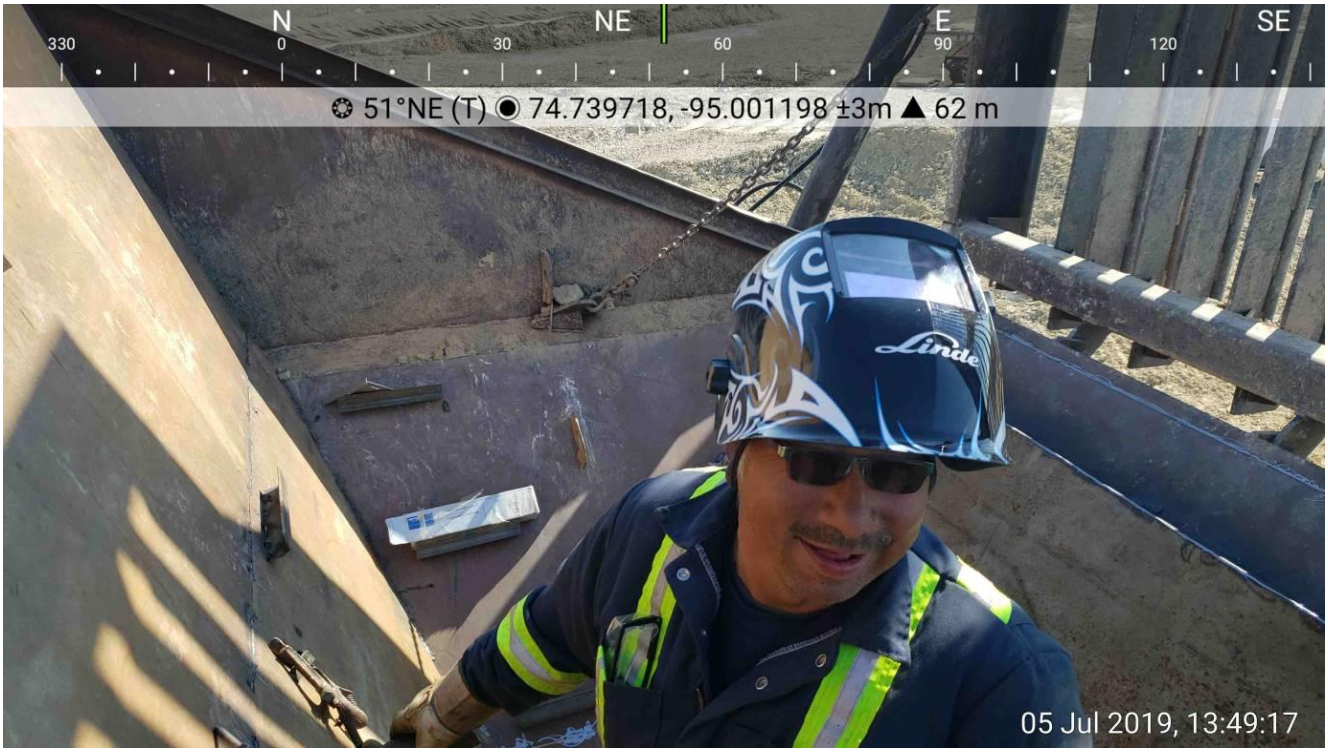

Photo 1: New plate steel being welded in hopper to increase angles and cover structural elements that were causing materials to collect/block..

Photo 2: Survey of AEC-2.

Photo 3: Stockpiling in the south end of the East borrow area.

Photo 4: Stripping and stockpiling in the North-East borrow area.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 6, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan, Shaun Dagenais
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz, Shaun Dagenais Kudlik Crew (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x
Daily Progress		Kudlik activities: - Stockpiled materials in the North East and East borrow area - Continued modifications on Screener hopper - Start Screening material - Surface debris pick-up at AEC-2 - Survey of AEC-2 DR Activities - Observed Kudlik activities - Started Aggregate Gradation sieve tests of Type 2 material
Planned Activities (next day)		Kudlik activities: - Stockpile materials in the East borrow areas - Hauling East borrow material to Screener feed pile - Survey of AEC-2 - Screening material DR Activities - Type 1 & 2 aggregate sieve test - Start Pre-Construction sampling
Schedule update		n/a
Health /Safety		Toolbox Meeting Topics: - Extreme wind today (guts upto 80-km/hr) o Careful up airborne debris, pick up debris before it becomes a projectile - AED location (Airport Hotel – Left of main entrance) and use
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Screener 5-hrs of operations
Key Communications		Kudlik informed that they must segregate and mark any wastes derived by construction related activities different than those wastes to be disposed of as part of the contract (eg. spill response /clean-up)
Weather & ground cover conditions	3^{o}C low Sunny, no clouds, High wind gusts (>50km/hr) Well exposed ground conditions	10^{o}C high Sunny, no clouds, High wind gusts (>50km/hr) Well exposed ground conditions
Lab summary	DR started the Sieve test for Type 2 (Fine) aggregate sample	

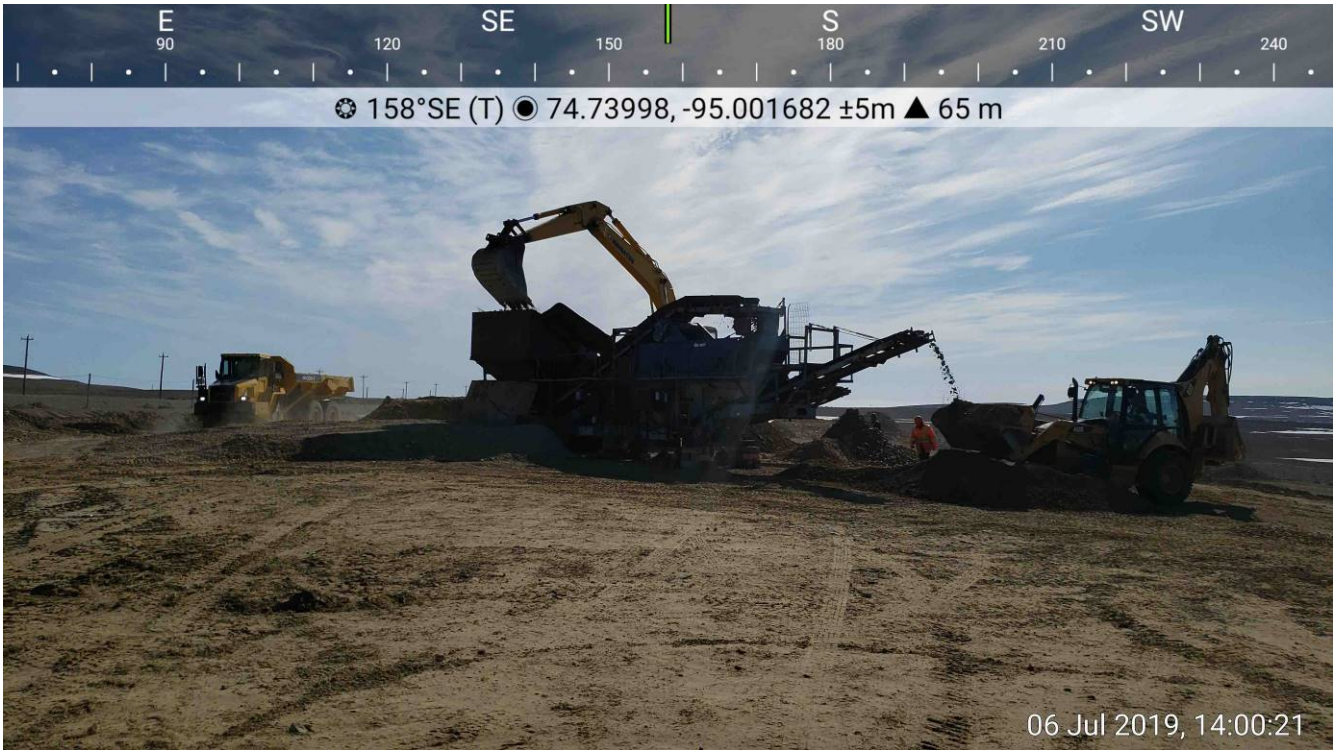

Photo 1: Screening plant utilizing Rock Truck, Excavator and Backhoe

Photo 2: Stripping, stockpiling and hauling of East borrow area materials to the Screener feed pile.

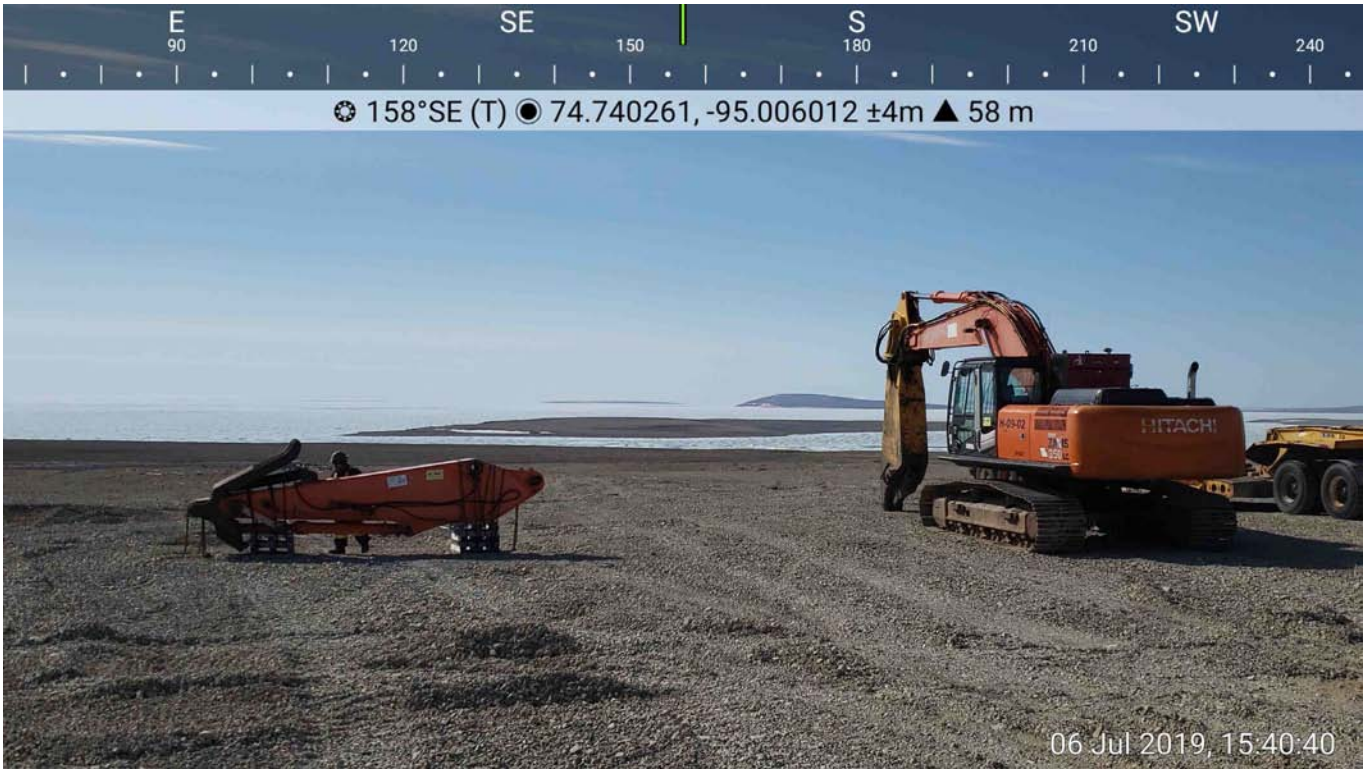

Photo 3: Preparation to remove the shear from the Excavator.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 7, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan, Shaun Dagenais
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm
Field Personnel on site		DR: Jonathan Markiewicz, Shaun Dagenais Kudlik Crew (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x
Daily Progress		Kudlik activities: - Stockpiled materials in the East borrow area - Screening material - Processed material laydown area enlarged - Survey of AEC-2 DR Activities - Observed Kudlik activities - Started Pre-Construction Sampling
Planned Activities (next day)		Kudlik activities: - Stockpile materials in the East borrow areas - Hauling East borrow material to Screener feed pile - Survey of AEC-2 - Surface debris pickup in AEC-2 with Excavator and Truck - Screening material DR Activities - Type 1 & 2 aggregate sieve test - Continue Pre-Construction sampling
Schedule update		n/a
Health /Safety		Toolbox Meeting Topics: - Less wind today, but still windy (gusts upto 40-km/hr) - No unnecessary personnel near screener as there are a lot of dusts blowing off of the screener.
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Screener 8-hrs of operations
Key Communications		Kudlik informed that the initial sieve tests for Type 1 (coarse) and Type 2 (fines) are within specification. DOJV noted that the Type 2 (fine) material is very close to the bottom of the curve. DOJV confirmed that it passes, but it may be beneficial to chase areas with more fines.
Weather & ground cover conditions	6^{o}C low Sunny, moderate wind (~20km/hr) Well exposed ground conditions	9^{o}C high Cloudy, light rain, moderate wind (~20km/hr) Well exposed ground conditions
Lab summary		DR completed the Sieve tests for Type 1 (coarse) & Type 2 (Fine) aggregate samples; both within spec. DR started collecting Sediment/Surface Water samples at AEC-1

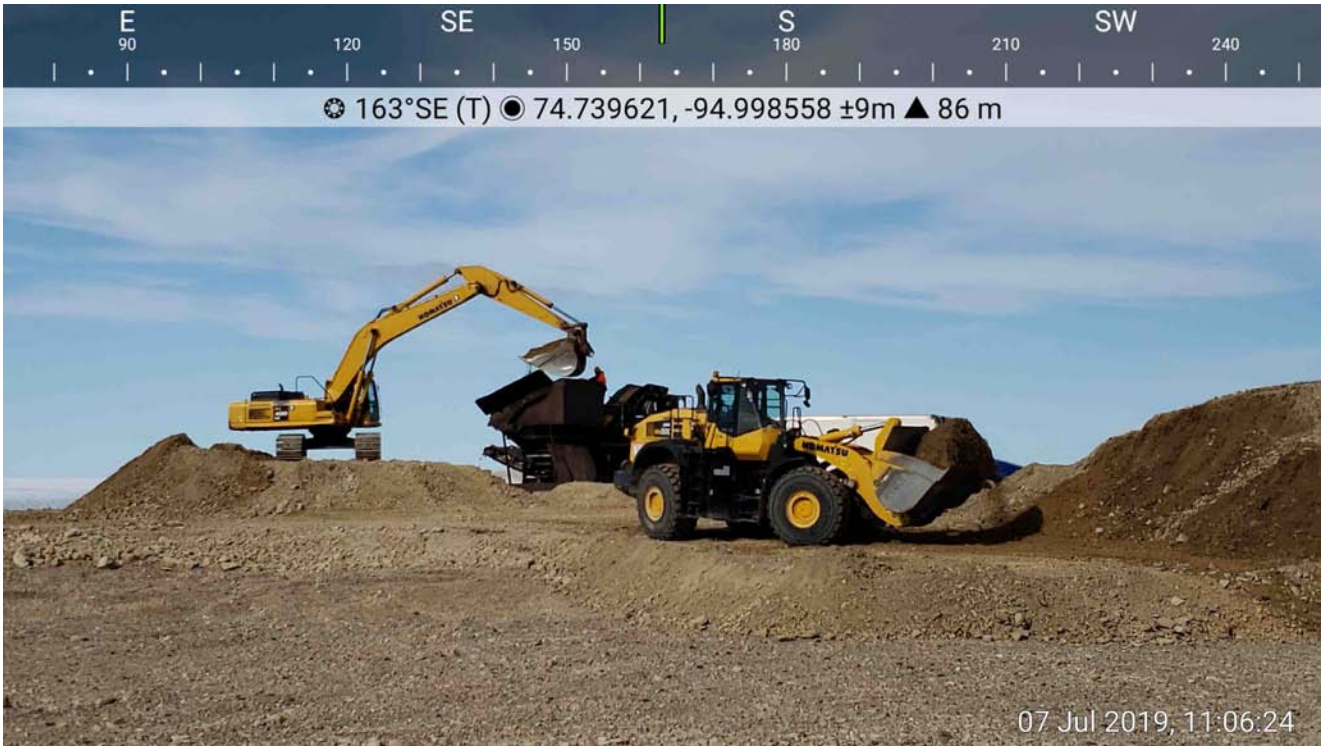

Photo 1: Material from the Feed pile moved adjacent to screener so Excavator can feed the Screener.

Photo 2: Stripping and stockpiling East borrow area materials.

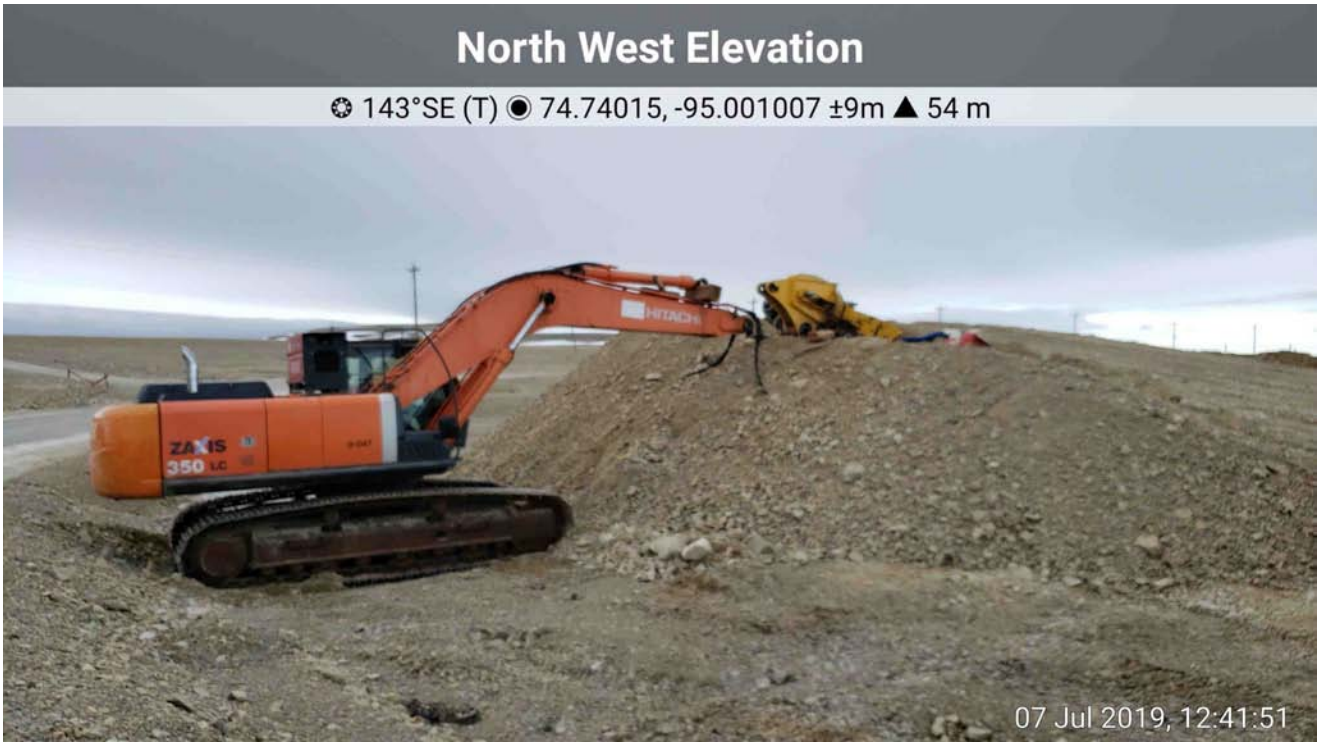

Photo 3: Removal of shear from the 350 Excavator. Use of Feed pile to provide safe work space for the mechanics.

Photo 4: Surface Water and Sediment samples collected from AEC-1.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: July 8, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jason Mauchan, Shaun Dagenais	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm; 7:15pm to 8:30pm (Site Tour)	
Field Personnel on site		DR: Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan (arrived at 17h30) Kudlik Crew (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x	
Daily Progress		Kudlik activities: - Stockpiled materials in the East borrow area, stripping second layer at north end. - Shaping of AEC-2 top of landfill - Screening material and material management - Survey of AEC-1 and AEC-2 DR Activities - Observed Kudlik activities - Continues Pre-Construction Sampling	
Planned Activities (next day)		Kudlik activities: - Stockpile materials in the East borrow areas - Hauling East borrow material to Screener feed pile - Survey of AEC-2 - Surface debris pickup in AEC-2 with Excavator and Truck - Screening material DR Activities - Type 1 & 2 aggregate sieve test - Pre-Construction sampling (AEC-3)	
Schedule update		n/a	
Health /Safety		Toolbox Meeting Topics: - Eye Contact with Operators before moving - All-Stop hand signal (fist in palm) - 3 point contact while climbing (screener, equipment, etc.)	
Deviations from workplan		n/a	
Notes Include visitors, Any equipment issues etc		Screener 8-hrs of operations	
Key Communications			
Weather & ground cover conditions		3^{o}C low Cloudy, light rain, moderate wind (~20km/hr) Well exposed ground conditions	6^{o}C high Cloudy, moderate wind (~20km/hr) Well exposed ground conditions
Lab summary		DR completed a Sieve test for Type 2 (Fine); within spec. DR finished Sediment/Surface Water sampling at AEC-1 and AEC-2	

Photo 1: Material from the Feed pile moved adjacent to screener so Excavator can feed the Screener.

Photo 2: Approved Type 1 (fine) processed stockpile.

Photo 3: AEC-2 top of landfill rough grading.

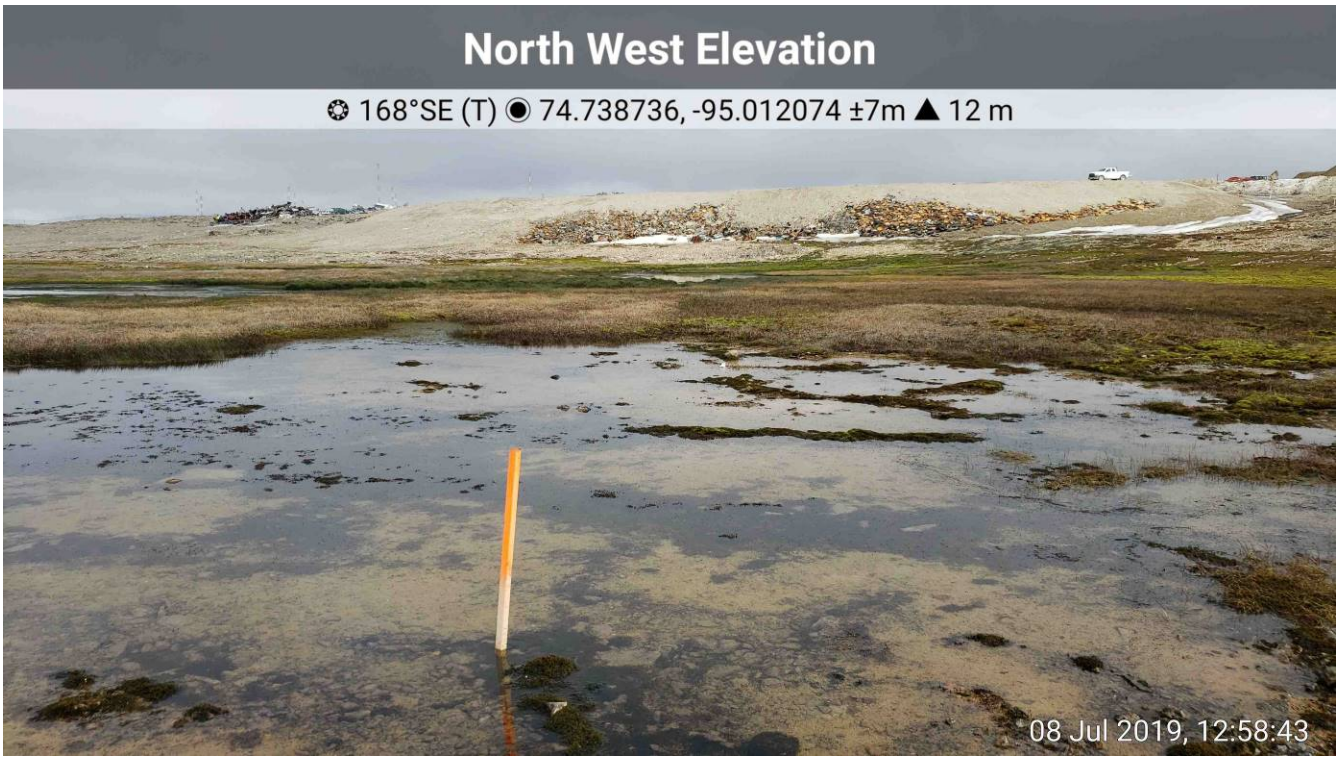

Photo 4: Surface Water and Sediment samples collected from AEC-2.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: July 9, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm	
Field Personnel on site	DR: Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan Kudlik Crew (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor) Inuit Personnel 4x	
Daily Progress	Kudlik activities: - Stockpiled materials in the East borrow area, hauling to feed pile. - Shaping of AEC-2 top of landfill - Screening material and material management - Survey of AEC-2 DR Activities - Observed Kudlik activities - Cross-over from J.Markiewicz to J.Mauchan	
Planned Activities (next day)	Kudlik activities: - Hauling East borrow material to Screener feed pile - Screening material - Stockpile materials in the East borrow areas - Surface debris pickup in AEC-2 with Excavator and Truck - Surface regrading at AEC-2 - Pick-up truck mechanical maintenance (red truck) DR Activities - Type 1 & 2 aggregate sieve test	
Schedule update	n/a	
Health /Safety	Toolbox Meeting Topics: - Slips and Trips - 1st Aid Kit Locations	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 8-hrs of operations	
Key Communications		
Weather & ground cover conditions	2°C low Sunny, Clear Well exposed ground conditions	8°C high Partially cloudy, moderate wind Well exposed ground conditions
Lab summary	DR completed a Sieve test for Type 2 (Fine); within spec. DR finished Surface Water sampling at AEC-3	

Photo 1: East borrow material loaded for hauling to the Feed pile.

Photo 2: Loading haul truck at East Borrow Area with material to be processed.

Photo 3: Screener operations.

Photo 4: Feeding the screener.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: July 10, 2019 Consultant Name: DOJV
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 12 (site super, 4x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor, 2 x labourer) Inuit Personnel = 5/12
Daily Progress	Kudlik activities: - Stockpiled materials in the East borrow area - Hauling materials from East borrow area to feed pile using 3 x haul trucks. - Mechanics added vibration plates to screener - Surface regrading at AEC-2 with dozer - Mechanics serviced the excavator and attached magnet to excavator in advance of surface debris pickup in AEC-2 with excavator, truck, and labourers. DR Activities - Observed Kudlik activities - GPS co-ordinates of the contractor's laydown area near AEC-1 at location of Quatrex bags = UTM 15X, 0441143, 8295663 This location was covered in snow over winter. Due to accumulated snow around the Kudlik seacans in the area of consolidated waste within Quatrex bags, some oil was pushed up out of the Quatrex bags. This spill was reported on June 29, 2019. Daily monitoring of this area is occurring.
Planned Activities (next day)	Kudlik activities: - Screening material - Surface debris pickup in AEC-2 with Excavator and Truck - Surface debris pickup in AEC-2 with labourers - Surface regrading at AEC-2 DR Activities - Type 1 & 2 aggregate sieve test
Schedule update	n/a
Health /Safety	Toolbox Meeting Topics: - Safety glasses. Always wear. There are safety glasses available in the Kudlik site office. - Speed. Reduce speed when driving along main road in area of hotel, Polar Shelf, and First Air cargo. No need to rush. - Water is available. Water is provided in water jugs in Kudlik break room next to site office. - Windy conditions

Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 0-hrs of operations. Screener was in operation for 0 hours due to Kudlik adding vibration plates. Additional vibration will increase production.	
Key Communications		
Weather & ground cover conditions	5°C low Partially cloudy, windy Well exposed ground conditions	7°C high Partially cloudy, moderate wind Well exposed ground conditions
Lab summary	None	

Photo 1: Re-grading at AEC-2.

Photo 2: Re-grading at AEC-2.

Photo 3: Loading trucks at Borrow Area East.

Photo 4: Off-loading material to stockpile near screener (feeder pile).

Photo 5: Contractor's laydown area near AEC-1. Arrow indicates spill location and GPS co-ordinates

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: July 11, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 14 (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 1x Screener Operator, 1x Wildlife Monitor, 2x labourer, 1x document control/HS) Inuit Personnel = 6/14	
Daily Progress	Kudlik activities: - Screening material - Surface regrading at AEC-2 with dozer - Surface debris pickup in AEC-2 with excavator, truck, and labourers. o 7 loads of debris transported from AEC-2 to AEC-1 o 16 drums contained liquids. These drums were at surface at toe of AEC-2 in section south of the old vehicle storage area. An estimated 2500L of liquids is contained within these 16 drums. Drums with liquid placed on liner at temporary hazardous material processing area (THMPA) in AEC-2 DR Activities - Observed Kudlik activities - Samples collected	
Planned Activities (next day)	Kudlik activities: - Screening material - Surface debris pickup in AEC-2 with Excavator and Truck along toe - Surface debris pickup in AEC-2 with labourers - Surface regrading at AEC-2 - Night shift planned to start Friday night (July 12) DR Activities - Type 1 & 2 aggregate sieve test	
Schedule update	n/a	
Health /Safety	Toolbox Meeting Topics: - First aid kit locations. Located in all Kudlik vehicles - Hi-vis clothing. Located in site office. Always wear - Hearing protection located in site office.	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 8-hrs of operations.	
Key Communications		
Weather & ground cover conditions	6^{o}C low Overcast, strong winds Well exposed ground conditions	9^{o}C high Partially cloudy, moderate wind Well exposed ground conditions
Lab summary	Material samples collected in afternoon by DR. Sieve test results forthcoming tomorrow.	

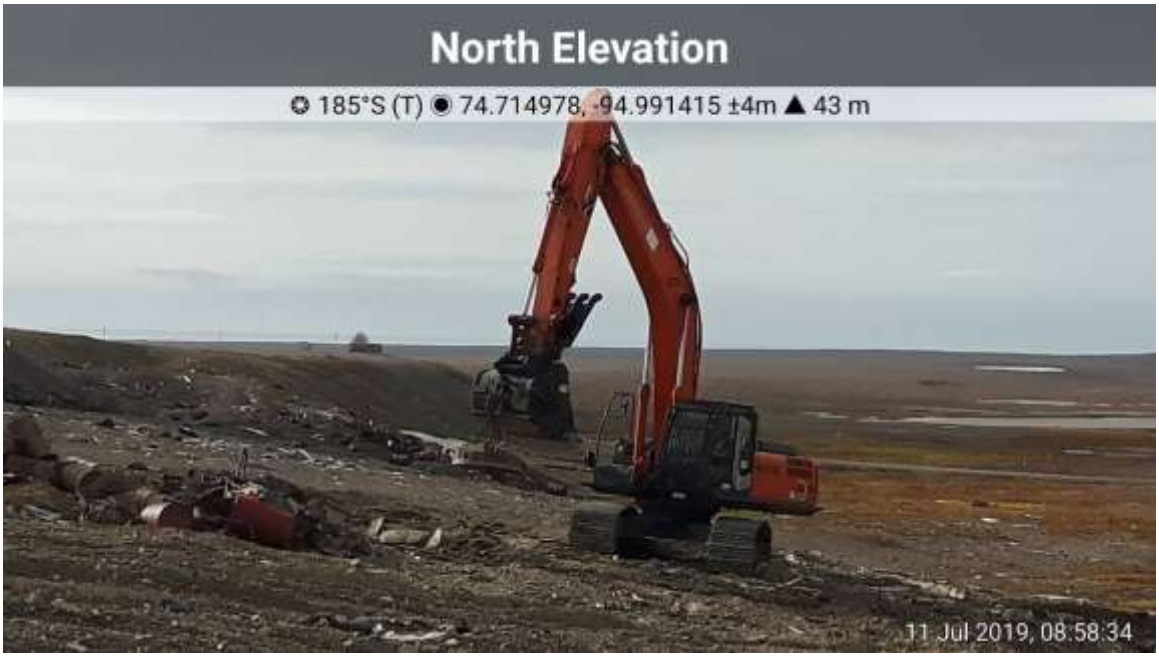

Photo 1: Collecting surface debris at toe of AEC-2

Photo 2: Surface debris from AEC-2 being placed at AEC-1

Photo 3: Empty drums from surface of AEC-2 toe.

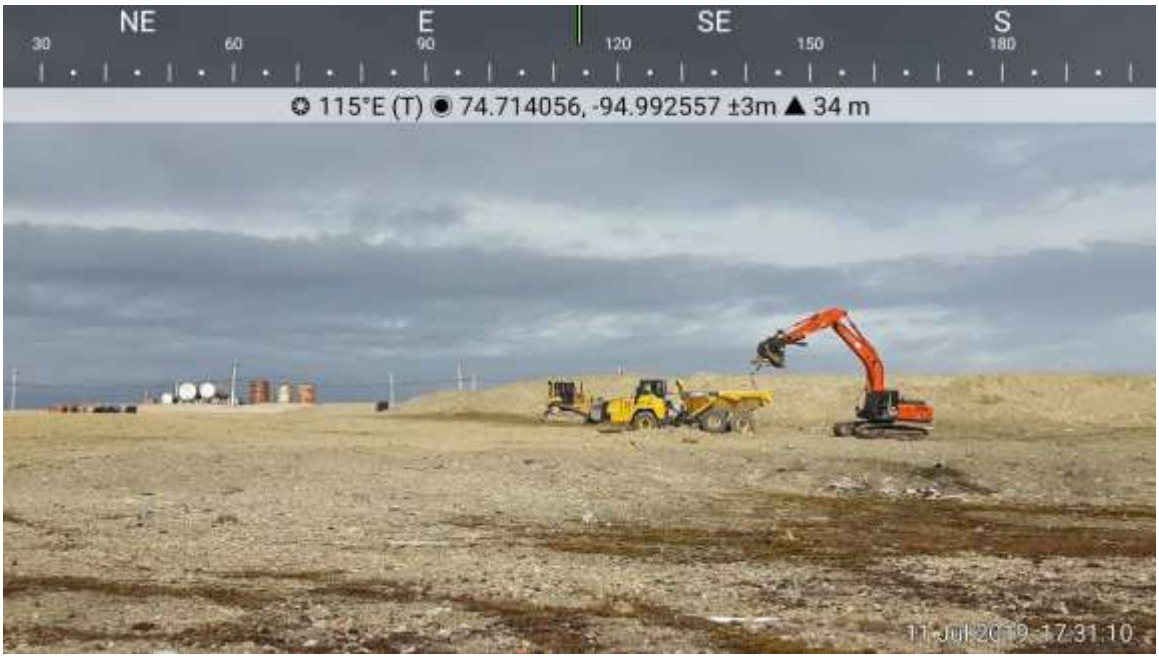

Photo 4: Surface debris collection from toe of AEC-2.

Photo 5: Drums containing liquids collected from surface of AEC-2 were consolidated on liner at AEC-2

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday July 12, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 6x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Surface regrading at AEC-2 with dozer on top of landfill - Reshaping - Cutting the crest of landfill along northern section for 3:1 slope to toe - First night shift of 2019. Screened material (3 crew). DR Activities - Observed Kudlik activities, Samples collected, DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Screening material - Surface regrading and crest reshaping at AEC-2 - Night shift screening - Haul material to screener feed pile DR Activities - Aggregate sieve test	
Schedule update	n/a	
Health /Safety	Toolbox Meeting Topics: - Do not go into screener area without communicating to screener crew by radio and by contact - Windy – park truck into the wind, be mindful of truck doors - Windy – wear glasses, dust is blowing	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10 hrs night shift.	
Key Communications	Spill at AEC-2 -Excavator hydraulic leak of 10 L due to broken hose -Kudlik implemented spill plan immediately. 0.4m^3 of impacted soil collected and placed into Quatrex bag. Quatrex bag labelled. DR sampled and GPS location taken. Coordinates: 15X, 0441467, 8292731.	
Weather & ground cover conditions	4^{o}C low Overcast, strong winds Well exposed ground conditions	7^{o}C high Partially cloudy, moderate wind Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Reshaping slope at AEC-2

Photo 2: Reshaping slope at AEC-2

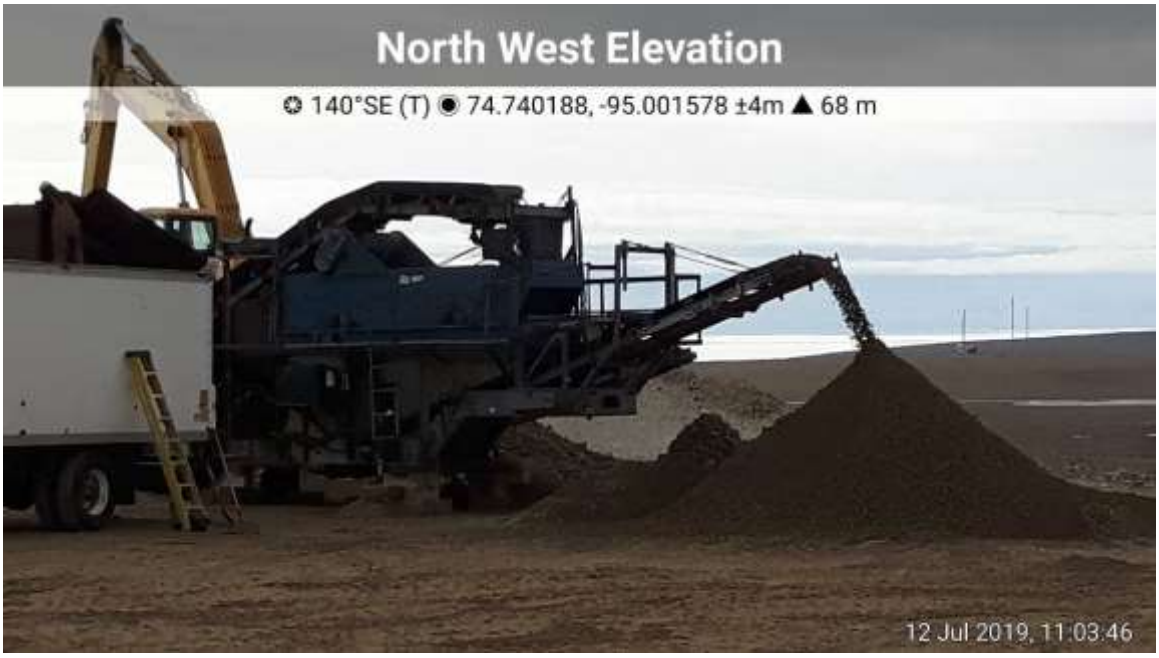

Photo 3: Screening operation.

Photo 4: Surface debris hauled from AEC-2 to AEC-1 on July 11. Drums in foreground are empty

Photo 5: Hydraulic fluid spill from excavator in AEC-2. Impacted soil was immediately placed into labelled Quatrex bag.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday July 13, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 6x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - AEC-2: Surface regrading with dozer on top of landfill - AEC-2: Reshaping - Cutting the crest of landfill along northern section for 3:1 slope to toe - AEC-3: Marking zones for soil excavations DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Screening - Hauling material to feed pile - Place and compact the surface debris which was collected from AEC-2 into slope of AEC-1. This debris has been consolidated at AEC-1 near crest. DR Activities - Aggregate sieve test	
Schedule update	n/a	
Health /Safety	Toolbox Meeting Topics: - Windy conditions. Park pickups into the wind - Screener area. The piles are bigger, therefore go slow in the area and use the radios to communicate	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10 hrs night shift.	
Key Communications	Weekly Health and Safety meeting is Sundays. Minutes of meeting will be distributed by DR to Project Team.	
Weather & ground cover conditions	2^{o}C low Overcast, strong winds Well exposed ground conditions	6^{o}C high Mostly cloudy, strong winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Re-shaping slope at AEC-2

Photo 2: Re-grading at AEC-2

Photo 3: Working along crest of AEC-2

Photo 4: AEC-3 excavation zones demarcated by surveyor using stakes

Photo 5: Stockpiled Type 2 (fine) material

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday July 14, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 6x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - AEC-2: Surface regrading with dozer on top of landfill - AEC-2: Reshaping - Cutting the crest of landfill along northern section for 3:1 slope to toe - Weekly safety meeting conducted - DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Complete survey of AEC-2 - Haul from Borrow Area Northeast to feeder pile - Screen material - Address the inter-season spill at seacan location DR Activities - Aggregate sieve test - Attended weekly safety meeting	
Schedule update	n/a	
Health /Safety	Toolbox Meeting Topics: - Communicate with Wildlife Monitor - Reduce speed near stockpiles - Drink water	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 6-hrs of operations day shift, 10 hrs night shift.	
Key Communications	.	
Weather & ground cover conditions	1^{o}C low Foggy, low winds Well exposed ground conditions	4^{o}C high Mostly cloudy, rain, low winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: AEC-2 slope

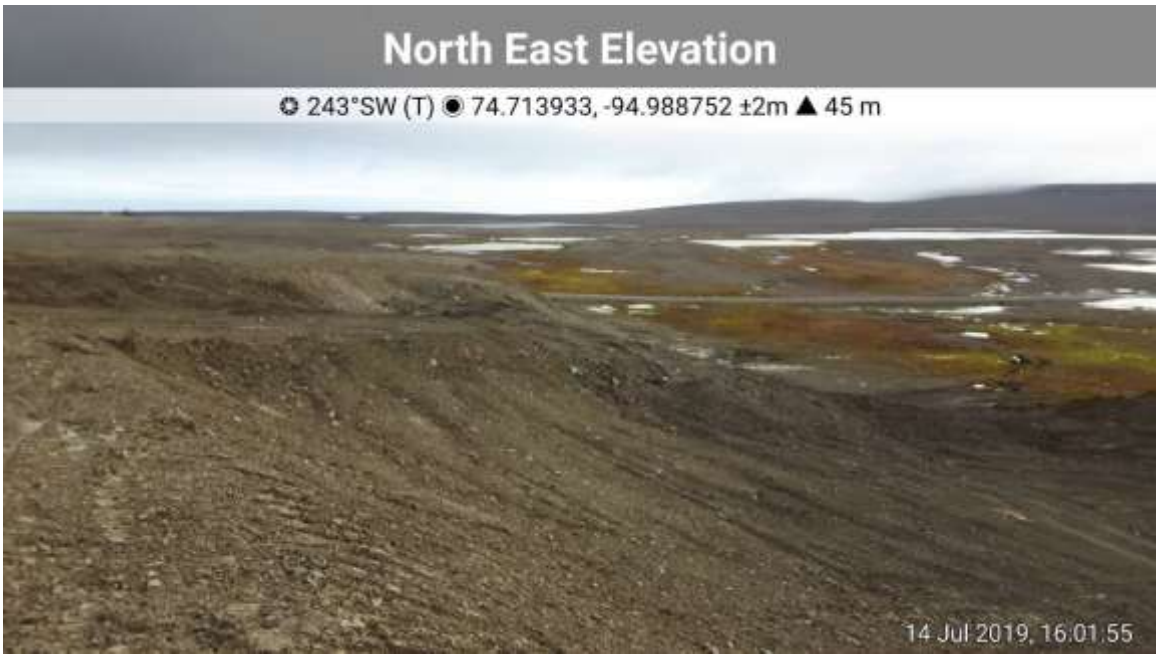

Photo 2: AEC-2 slope

Photo 3: AEC-2 slope in area of removed debris

Photo 4: AEC-2 slope in area of removed drums and surface debris

Photo 5: AEC-2 top

Photo 6: AEC-2 crest at north end

Photo 6: Example of corrective action taken to remove tripping hazard as part of weekly safety meeting and inspection conducted by Kudlik

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday July 15, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 6x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Francois sent survey data of AEC-2 to Jonathan - Track-packed slope at AEC-1 - Compacted debris at AEC-1. Compacted the debris that originated from AEC-2 and incorporated this debris into the AEC-1 slope, mixing the metal debris with fill material - Haul from Borrow Area Northeast to feeder pile - Began to address the inter-season spill at seacan location as the area is now free from ice DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area Northeast to feeder pile - Screen material - Continue the inter-season spill clean-up DR Activities - Aggregate sieve test - Attended weekly safety meeting - Monitor the inter season spill clean-up and collect samples	
Schedule update	n/a	
Health /Safety	6:00am-7:00am: Safety meeting held with day shift and night shift crew. 7:00am: Toolbox Meeting: - Corrective actions for slips/trips/falls (e.g. accessing the shelves in the seacans). Remove the hazard by putting items on the shelves - Three points of contact when climbing -	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 9-hrs of operations day shift, 10-hrs night shift.	
Key Communications	.Kudlik has shifted their efforts to AEC-1	
Weather & ground cover conditions	4^{o}C low Overcast, low winds Well exposed ground conditions	7^{o}C high Foggy then lifting to overcast, Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Track packing the crest at AEC-1, northeast area

Photo 2: Track packing the crest at AEC-1 continues

Photo 3: AEC-1 slope in area worked on in 2018

Photo 4: Section of AEC-1 slope which requires re-working and additional material to fill cavities

Photo 5: AEC-1 slope work

Photo 6: Inter-season spill area. Items removed to initiate clean-up

Photo 7: Quatrex bags for off-site disposal were moved to allow for clean-up of inter-season spill.

Photo 8: Precautionary measures taken prior to melt in area of inter-season spill. No sheen observed.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday July 16, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Track-packed slope at AEC-1 - Use pit-run material to fill cavities at AEC-1 - Haul from Borrow Area Northeast to feeder pile - Addressed the inter-season spill at seacan location as the area is now free from ice DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area Northeast to feeder pile - Screen material DR Activities - Aggregate sieve test - Attend weekly construction meeting (1pm local time)	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - PPE - Drip trays in use. Beware of windy conditions. Need a rock in the tray. - House keeping	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	Natalie Robinson arrived in Resolute at 5:30pm	
Weather & ground cover conditions	3^{o}C low Partly cloudy, moderate winds Well exposed ground conditions	8^{o}C high Partly cloudy, moderate winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: AEC-1 slope work.

Photo 2: AEC-1 top. View of depression with debris at surface.

Photo 3: AEC-3 subarea. Larger items were removed in 2018. This area requires smaller items to be transported to AEC-1

Photo 4: Interseason spill area. This area was scraped, 1m3 put into labelled Quatrex bag. This was the location of Spill-3. Sample collected and GPS co-ordinates collected by Dept Rep.

Photo 5: Kudlik storage area.

Photo 6: Loading material at Borrow Area North East (BANE)

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday July 17, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Haul from Borrow Area Northeast to feeder pile - Haul from Borrow Area West (the old road) - Weekly construction meeting DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift - Natalie Robinson on-site. Tour with Jason Mauchan and John Fraser	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area West to feeder pile - Screen material -	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - Traffic in screener area, slow speed. No ATVs in screener area - Be aware of your surroundings - The access road to the fenced area is a public road	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	Weekly construction meeting occurred today, and <u>AEC-1</u>: RFI-001 sent from Francois Bourassa to Jonathan Markiewicz <u>AEC-2</u>: Survey data clarifications sent from Francois Bourassa to Jonathan Markiewicz.	
Weather & ground cover conditions	3^{o}C low Partly cloudy, moderate winds Well exposed ground conditions	6^{o}C high, light rain Partly cloudy, moderate winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Hauling material from Borrow Area West to the feeder pile

Photo 2: Borrow Area West

Photo 3: 'AEC-3 sub-area'.
Scattered debris to be collected and transported to AEC-1 slope.

Photo 4: AEC-3. Scattered debris to be collected and transported to AEC-1 slope.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Thursday July 18, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Haul from Borrow Area West (the old road) DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area West to feeder pile - Screen material	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - First Aid kit locations - Muster point - Contacting the on-site medic - Check drip trays	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	n/a	
Weather & ground cover conditions	9^{o}C low Cloudy, moderate winds Well exposed ground conditions	14^{o}C high Scattered clouds, low winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

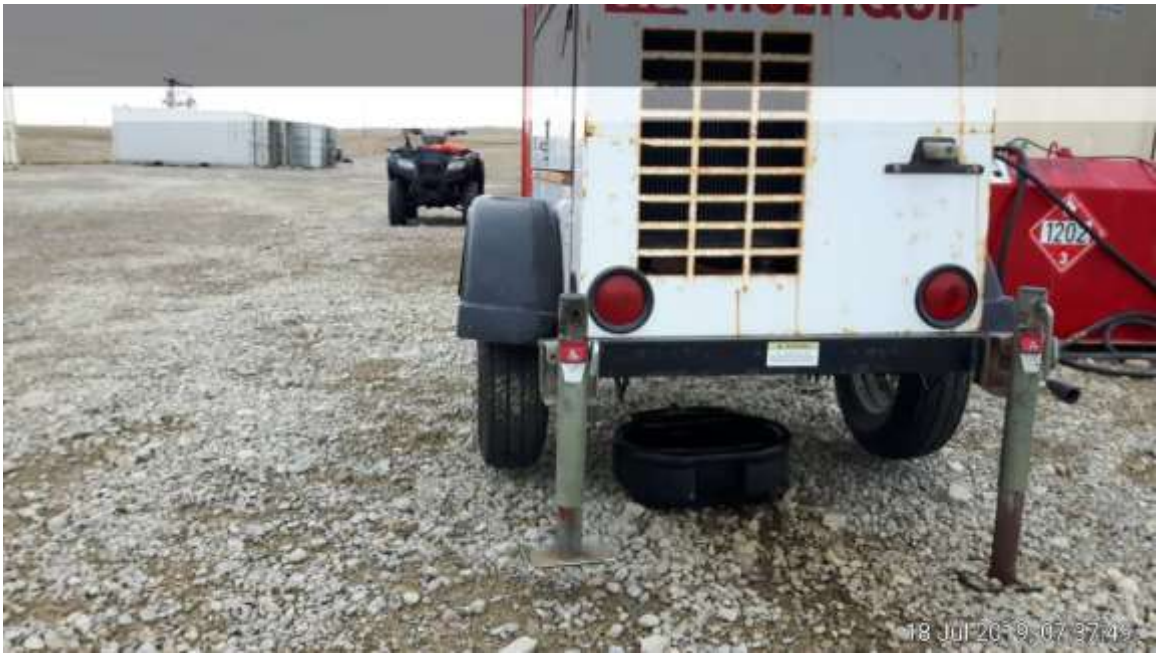

Photo 1: Adjacent to Kudlik site office. Drip tray under generator.

Photo 2: View toward stockpiles at screener area.
View across sewage lagoon.

Photo 3: Hauling material from Borrow Area West to feeder pile.

Photo 4: AEC-3. Borrow Area West

Photo 5: AEC-1. View along centre line of future swale at AEC-1

Photo 6: AEC-1. Entire top of landfill surveyed by Kudlik to determine current slope and current cut/fill requirements. +150 indicates at this location that 150mm of material is needed to bring base up to bottom of Type 2 layer.

Photo 7: AEC-1. . Entire top of landfill surveyed by Kudlik to determine current slope and current cut/fill requirements. ● indicates at this location that 0 mm of material is needed to bring base up to bottom of Type 2 layer.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday July 19, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 7/13.	
Daily Progress	Kudlik activities: - Screening material - Haul from Borrow Area West (the old road) DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area West to feeder pile - Screen material - Survey in AEC-2 - Debris collection at AEC-3	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - Slips/Trips/Falls - Light rain can cause slippery conditions - 3 points of contact when getting into machines	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	Sunday July 21, 2019 will be the weekly safety meeting with both day shift and night shift at 0630am	
Weather & ground cover conditions	4^{o}C low Cloudy, light rain, moderate winds Well exposed ground conditions	7^{o}C high Overcast, low winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Borrow Area West

Photo 2: Borrow Area West

Photo 3: Screening operation

Photo 4: Covered asbestos piles. These piles have not been disturbed by Kudlik activities

Photo 5: Borrow Area West

Photo 6: Impacted soil from Inter-season spill (Spill-2) consolidated in Quatrex bag.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday July 20, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Haul from Borrow Area West (the old road) and Borrow Area East to the feeder pile DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area North East to feeder pile - Screen material - Survey in AEC-2 - Debris collection at AEC-3 - Weekly Safety Meeting at 0630am for all (both day shift and night shift to attend)	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - Visibility (fog and stockpiles reduce visibility) - Radio use (let others know where you are) - Speed (slow speeds in stockpile area)	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	Drums containing liquid at AEC-2 = 2200L In 2018 there was 1950L consolidated 1950+2200 = 4150 L (contract volume was 3400L)	
Weather & ground cover conditions	4^{o}C low Foggy, low winds Well exposed ground conditions	2^{o}C high Overcast, , damp, low winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Excavating borrow material from northern portion of Borrow Area West (BAW)

Photo 2: Foggy conditions. View across AEC-1.

Photo 3: Excavating borrow material from northern portion of Borrow Area East (BAE).

Photo 4: Screening operations.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday July 21, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 13. Day shift = 10. Night Shift = 3. (1x site super, 5x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/13.	
Daily Progress	Kudlik activities: - Screening material - Haul material from Borrow Area East and Borrow Area Northeast - Weekly Safety Meeting at 0600-0645am for all (both day shift and night shift attended) - Surveying at AEC-2 DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift	
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area East to feeder pile - Screen material - Survey in AEC-2 - Debris collection at AEC-3 -	
Schedule update	n/a	
Health /Safety	Toolbox Meeting topics: - Visibility (fog, check headlights on vehicles) - Grease machines every day - Ear plugs	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.	
Key Communications	Stantec personnel (Luke Anderson) will be onsite July 23-26, 2019 at the LTUs. Luke will check in each day with Manuel Bellemare (Kudlik site super) and Outcome Dept Rep.	
Weather & ground cover conditions	1^{o}C low Fog, low winds. Damp. Well exposed ground conditions	5^{o}C high Overcast, Moderate winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

Photo 1: Screener area

Photo 2: Excavating material at the northern portion of Borrow Area East

Photo 3: View south from LTU area toward screening area and northern portion of Borrow Area Northeast (left side of road) and Borrow Area West (right side of road)

Photo 4: Excavating material at Borrow Area East.

Photo 5: Aerial view of Type 2 stockpile ↑

Photo 6: Aerial view of Type 1 stockpile ↑

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday July 22, 2019 Consultant Name: DOJV
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 12. Day shift = 9. Night Shift = 3. (1x site super, 4x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/12.
Daily Progress	Kudlik activities: - Screening material - Haul material from Borrow Area East to feeder pile - Surveying at AEC-2 DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift
Planned Activities (next day)	Kudlik activities: - Haul from Borrow Area East to feeder pile - Screen material - Prepare for excavations at AEC-3 (label stakes, bring Quatrex bags to AEC-3) - Weekly construction meeting
Schedule update	To be provided by Kudlik at end of July.
Health /Safety	Toolbox Meeting topics: - Park on flat areas - Check your reverse alarm - Visibility (fog, check headlights every day on vehicles)
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.
Key Communications	Material: Type 2 | Volume produced to date: 13,500 m^3 | Contract Volume: 22.185 m^3
Weather & ground cover conditions	1^oC low Fog, low winds. Damp. Well exposed ground conditions 3^oC high Overcast, Moderate winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.

Photo 1: Type 2 stockpile

Photo 2: Excavating material at the northern portion of Borrow Area East

Photo 3: Excavating material at the northern portion of Borrow Area East

Photo 4: Screening operations

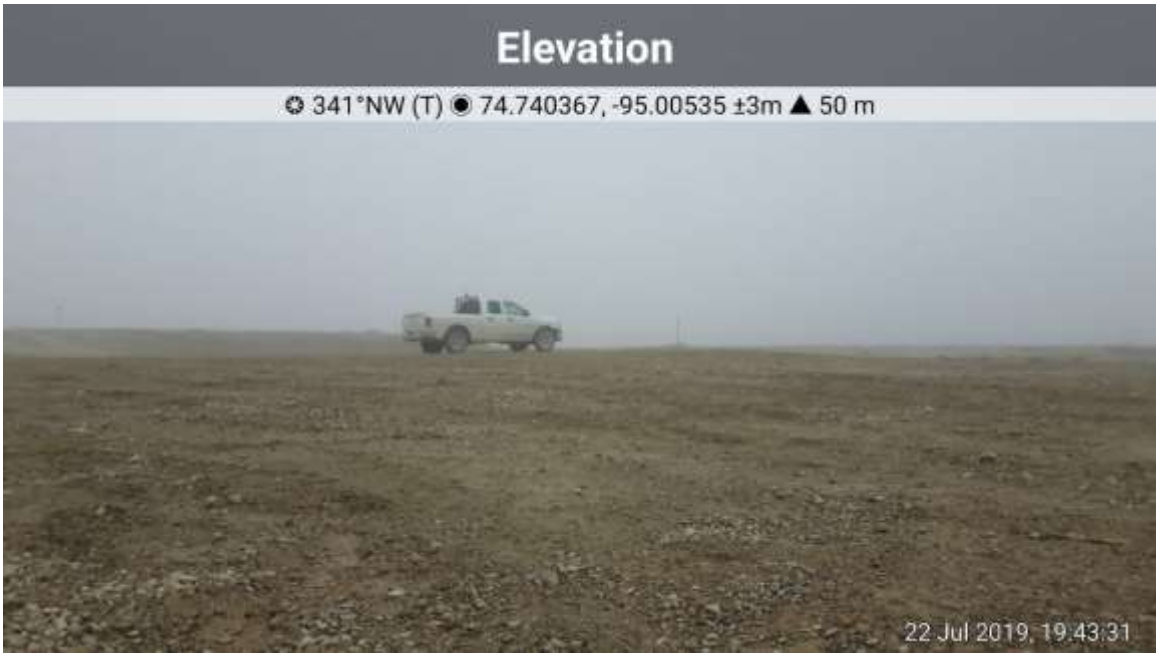

Photo 5: View southwest across AEC-1 ↑

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday July 23, 2019 Consultant Name: DOJV
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Andrew Henderson
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site	DR: Shaun Dagenais, Jason Mauchan Kudlik Crew = 12. Day shift = 9. Night Shift = 3. (1x site super, 4x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/12.
Daily Progress	Kudlik activities: - Screening material - Haul material from Borrow Area East to feeder pile - Surveying at AEC-2 - Prepare for excavations at AEC-3 - Weekly construction meeting DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift
Planned Activities (next day)	Kudlik activities: - Haul from to feeder pile - Screen material - Excavations at AEC-3 -
Schedule update	To be provided by Kudlik at end of July.
Health /Safety	Toolbox Meeting topics: - Wear layers. It is cold today - Snow last night, slippery surfaces, slips/trips/falls - 20/20/20. Every 20 minutes take a 20 second break and be aware of the 20 m surrounding your work area
Deviations from workplan	n/a
Notes Include visitors, Any equipment issues etc	Screener 10-hrs of operations day shift, 10-hrs night shift.
Key Communications	Material: Type 2 | Volume produced to date: 15,000 m^3 | Contract Volume: 22.185 m^3
Weather & ground cover conditions	-1^{o}C low Overcast, low winds. Damp. Snow overnight last night Well exposed ground conditions 4^{o}C high Overcast, Moderate winds Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.

Photo 1: Excavating material at Borrow Area East

Photo 2: Screener operations

Photo 3: Screener operations

Photo 4: Type 2 (fine) stockpile

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday July 24, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Shaun Dagenais, Andrew Henderson Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 4x operator, 1x mechanics, 1x Surveyor, 3x Screener Operator, 1x document control/HS) Inuit Personnel = 5/11.
Daily Progress		Kudlik activities: - Screening material (night) - Haul material from Borrow Area East to feeder pile - Excavation at AEC-3 DR Activities - Observed Kudlik activities, Samples collected. DR Shaun Dagenais covering night shift
Planned Activities (next day)		Kudlik activities: - Haul from Borrow Area East to feeder pile - Screen material - Excavations at AEC-3
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Toolbox Meeting topics: - Proper PPE for contaminated soils during excavation - Three trucks hauling – there's no rush, loaded truck has priority
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Volume update for Type 2 aggregate will be provided when pile is re-surveyed. Approximately 130 truckloads from Borrow Area East to feeder pile today.
Key Communications		DR agreed that Kudlik should dig to permafrost in AEC 3 Excavation Area #1, which was slightly deeper (~0.8 m) than specification (0.5 m) in some locations.
Weather & ground cover conditions	1^{o}C low Sun Low wind Well exposed ground conditions	7^{o}C high Partly cloudy, moderate wind Well exposed ground conditions
Lab summary		Sieve test results for aggregates within spec.

Southwest Elevation

74º44’44.97” N 95º1’42.12” W, viewing direction: Northeast

Photo 1: AEC 3 Areas staked out for excavation

Northwest Elevation

74º44’46” N 95º1’42.2” W, viewing direction: Southeast

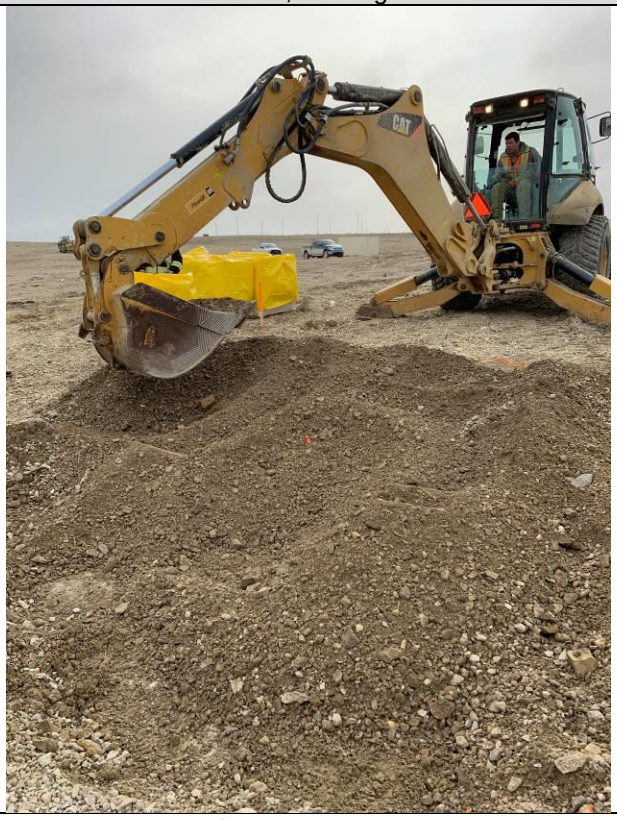

Photo 2: Excavation at AEC 3, Excavation #1

West Elevation

74º44’45” N 95º1’44.18” W, viewing direction: East

Photo 3: Quatrex Bags from AEC 3, Excavation 1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Thursday July 25, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Shaun Dagenais, Andrew Henderson Kudlik Crew = 12. Day shift = 9. Night Shift = 3. (1x site super, 4x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/12.
Daily Progress		Kudlik activities: - Screening material (night) - Haul material from Borrow Area East to feeder pile - Excavation at AEC-3 - Test pits at AEC-1 to assess debris below surface at proposed cut levels DR Activities - Observed Kudlik activitie. DR Shaun Dagenais covering night shift. SD off-site as of 2019/07/26 0600; A. Henderson to collect aggregate samples for future analysis. - Soil samples collected for PHCs, BTEX, metals (variously) analysis from AEC-3 excavations #1, #2 and #4. Soil samples will be collected from Excavations #3 and #5 and soil staining area south of #2 on 2019/7/26.
Planned Activities (next day)		Kudlik activities: - Haul from Borrow Area East to feeder pile - Screen material - Excavations at AEC-3
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Toolbox Meeting topics: - Pinch points - Lifting/moving superbag safety - Working around backhoe
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Kudlik advanced four test pits along transects from new cut/fill drawing in AEC-1. Only aggregate material was encountered in all test pits – i.e., no debris was observed at proposed cut levels.
Key Communications		
Weather & ground cover conditions	9^{o}C high Rain, moderate wind Well exposed ground conditions	4^{o}C low Partly cloudy Light wind Well exposed ground conditions
Lab summary	Sieve test results for aggregates within spec.	

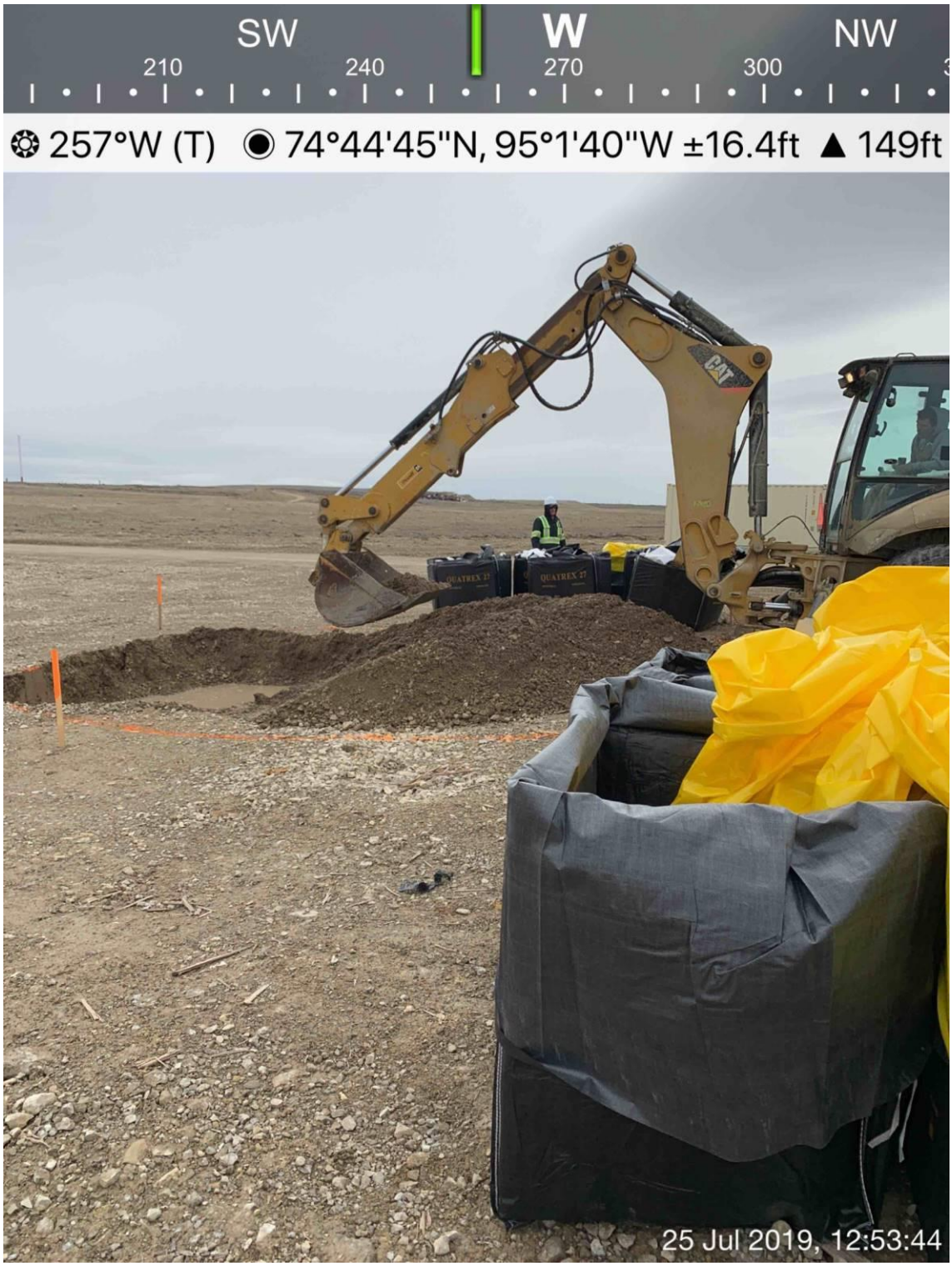

Photo 1: Excavation at AEC-3, Excavation Area #3

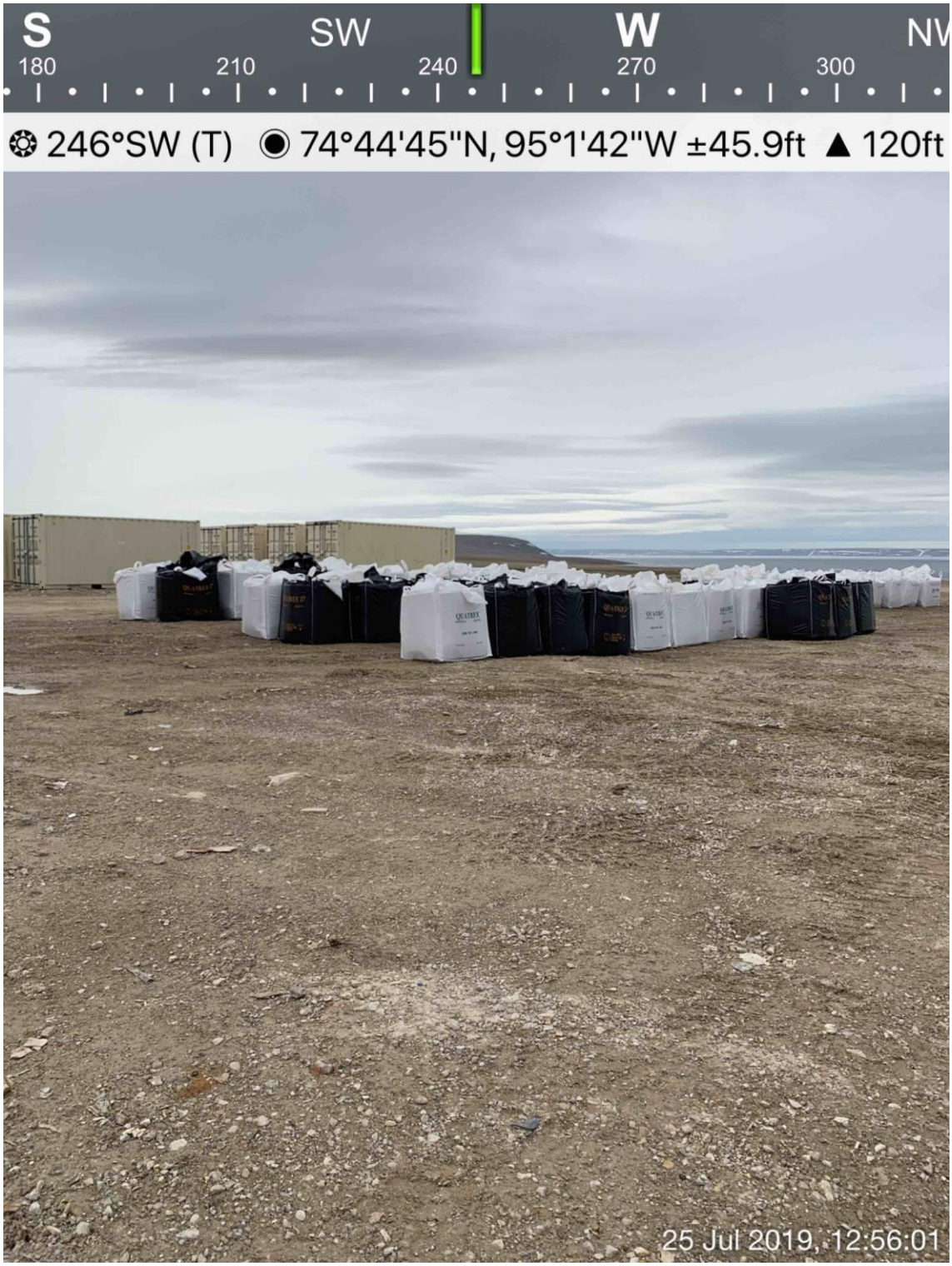

Photo 2: Soil bags from AEC-3, Excavation #1 (background) and Excavation #2 (foreground)

Photo #3: Excavation at AEC-3, Excavation #3.

Photo #4: Test pit in AEC-1 to assess debris. TP#1 was along transect D at a 450mm cut level.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday July 26, 2019 Consultant Name: DOJV	
Author Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site	DR: Andrew Henderson Kudlik Crew = 12. Day shift = 9. Night Shift = 3. (1x site super, 4x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x Wildlife Monitor, 1x document control/HS) Inuit Personnel = 6/12.	
Daily Progress	Kudlik activities: - Screening material (night) - Haul material from Borrow Area East to feeder pile - Excavation at AEC-3 - Begin cut at AEC-1 DR Activities - Observed Kudlik activities. - Soil samples collected for PHC F2-F4 analysis from AEC-3 excavation #3. DR also collected characterization soil sample from area previously identified as having heavy odour in AEC-3 for PHCs, BTEX, metals, PCB analysis (“Exc #6”).	
Planned Activities (next day)	Kudlik activities: - Screen material - Cut AEC-1	
Schedule update	To be provided by Kudlik at end of July.	
Health /Safety	Toolbox Meeting topics: - Wearing hearing protection - Backhoe safety while excavating - Watch out for open excavations	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	Based on previous notes and on field observations in 2019, DR requested Kudlik to scrape area of staining/odour south of AEC-3 excavations #2 and #3. Kudlik collected 1.5 Quatrex bags of material from the area (“Exc #6”), which is in a local low-lying area topographically. Water infiltration into the scraped area contained separate phase impacts and had hydrocarbon odour.	
Key Communications		
Weather & ground cover conditions	16^{o}C high Sun Light wind Well exposed ground conditions	8^{o}C low Sun Calm Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when ready. Samples to be shipped to lab 2019-7-27.	

Photo 1: Excavation at AEC-3, Excavation Area #3 complete

Photo 2: Excavation at AEC-3, Staining/Odour location (“Excavation #6”)

Photo 3: Excavation at AEC-3, Staining/Odour location (“Excavation #6”) after scraping by Kudlik

Photo 4: Excavation at AEC-3, Infiltration water in Excavation #6

Photo 5: Initial cut near Transect D at AEC-1

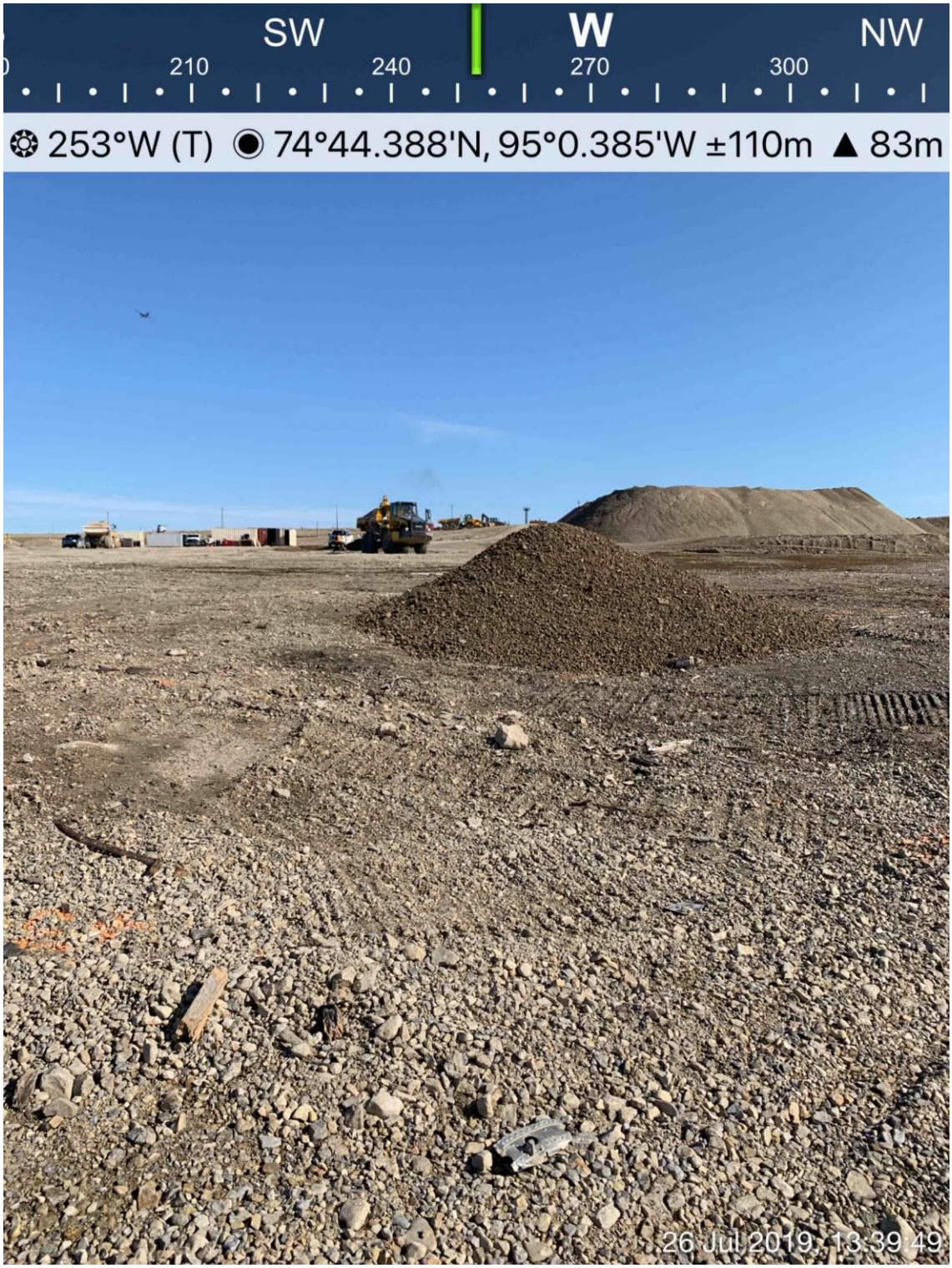

Photo 6: Transferring material from cut to fill areas along Transect D, AEC-1

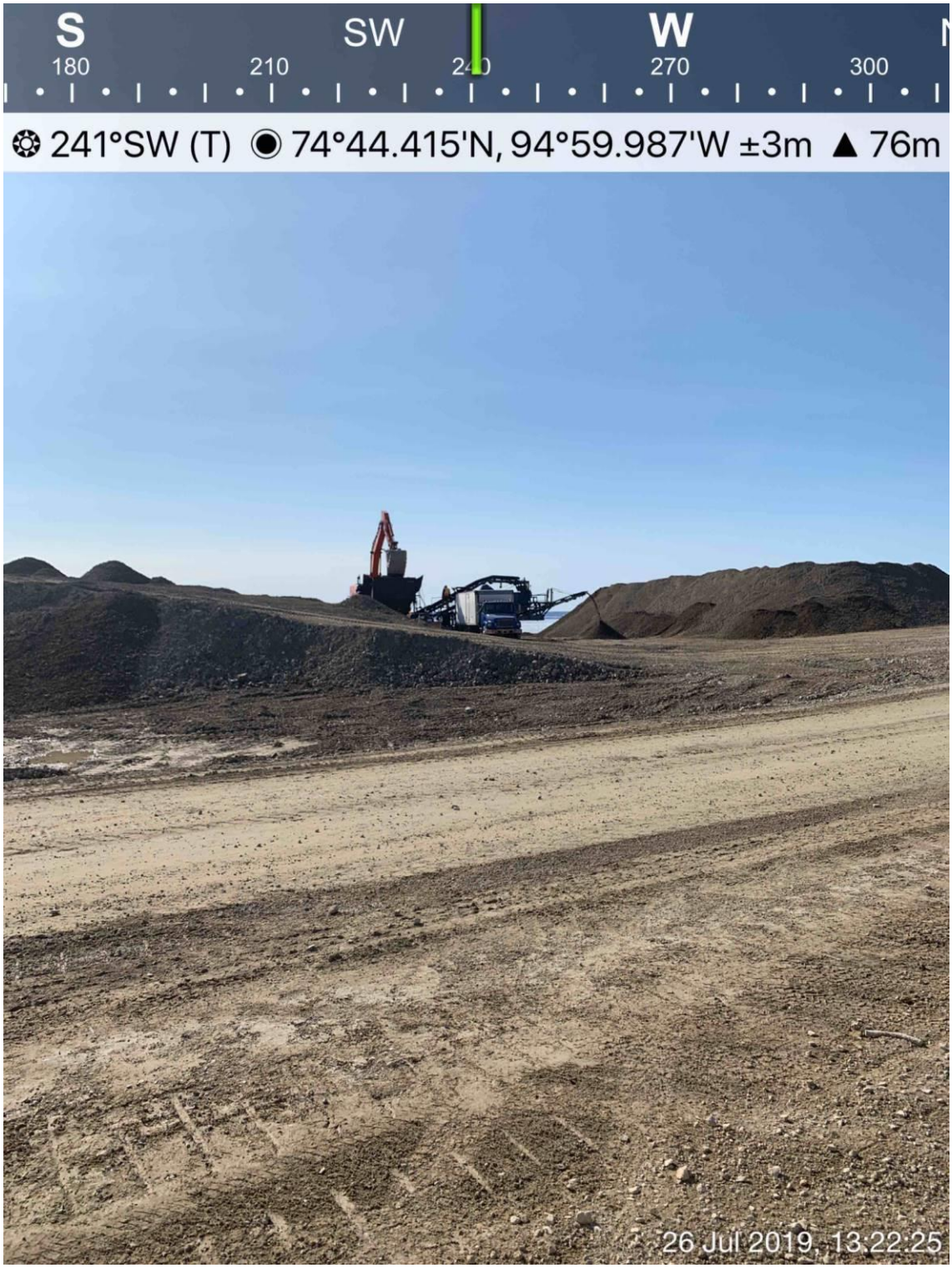

Photo 7: Screening material

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday July 27, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Andrew Henderson Kudlik Crew = 10. Day shift = 7. Night Shift = 3. (1x site super, 3x operator, 2x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 5/10.
Daily Progress		Kudlik activities: - Screening material - Cut/fill at AEC-1 DR Activities - Observed Kudlik activities. - Collect aggregate sample from Type 2 screening activities for future analysis.
Planned Activities (next day)		Kudlik activities: - Screen material - Cut AEC-1
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Toolbox Meeting topics: - Turn off equipment when not in use - Using proper PPE - Closing superbags
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Kudlik surveyed Type 2 pile at 0900. Volume calculated: 17,000 m^3. Very little debris observed during excavation/bulldozing of AEC-1. No hazardous materials generated and only small amounts of shredded metal were noted.
Key Communications		
Weather & ground cover conditions	10^{o}C high Sun and cloud Light wind Well exposed ground conditions	2^{o}C low Mist Light wind Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when ready.	

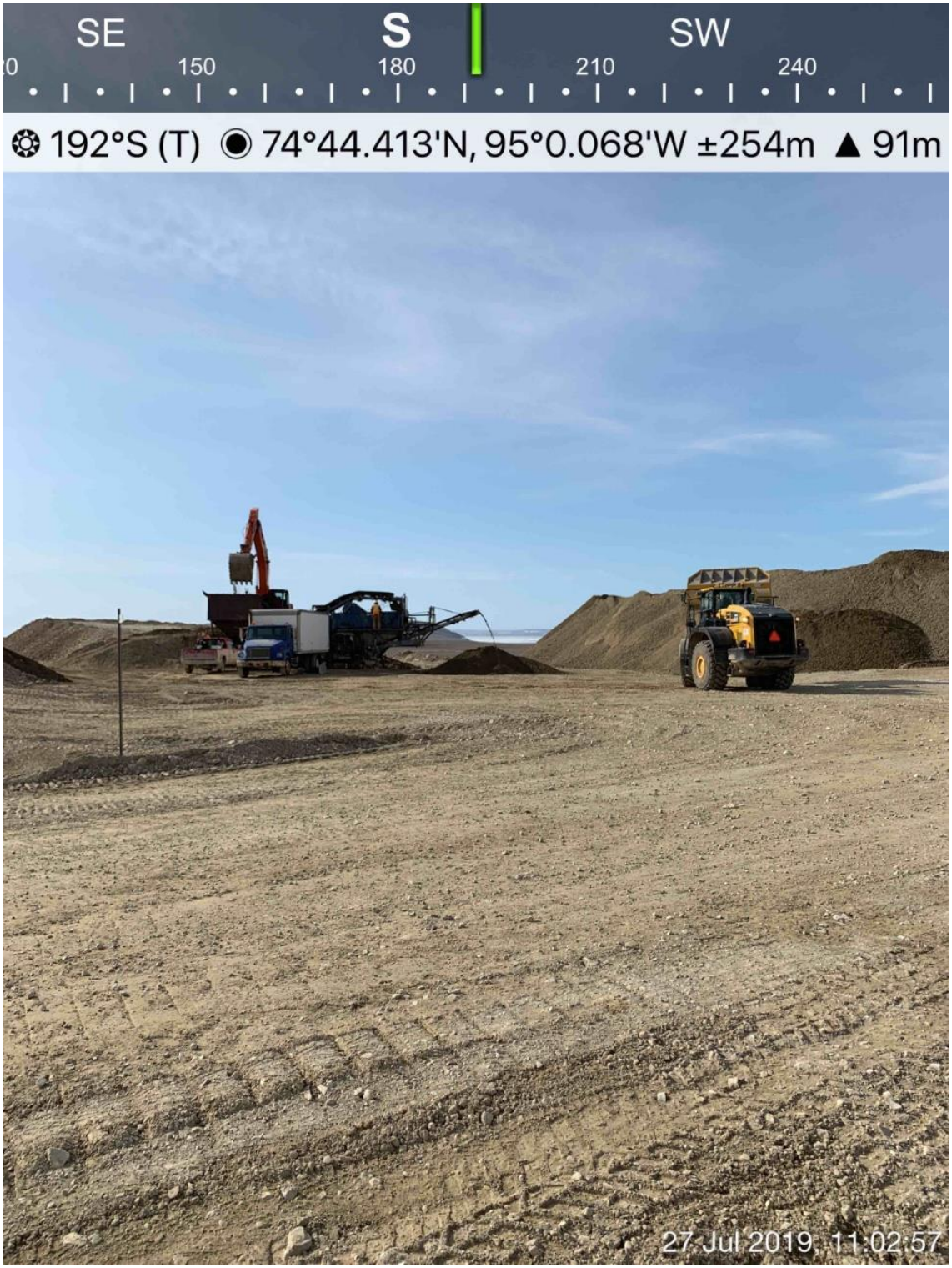

Photo 1: Excavation at AEC-3, Excavation Area #3 complete

Photo 2: AEC-1, along Line D after cut/fill

Photo 3: AEC-1, small amount of debris noted during excavation at top of shaping area

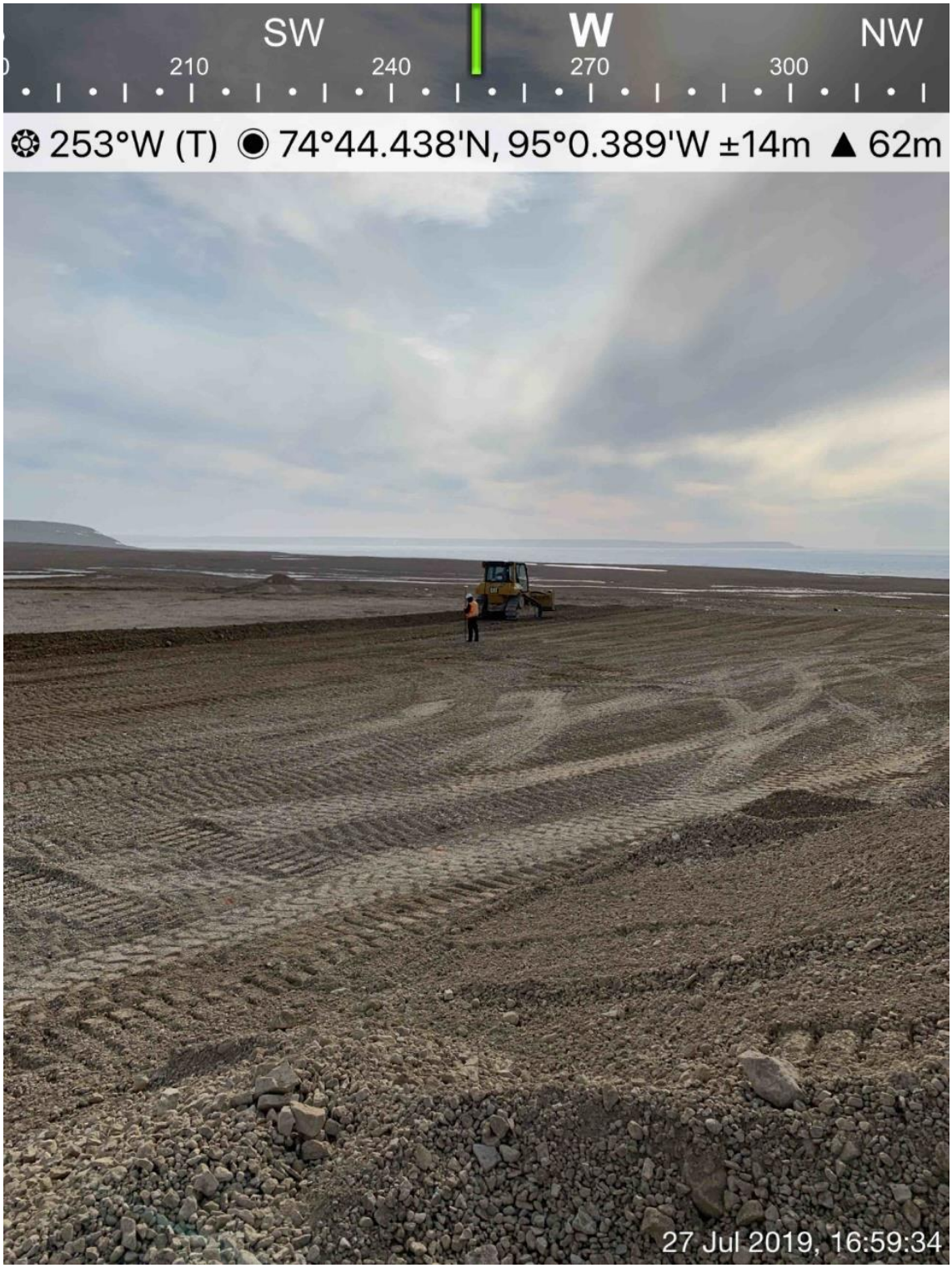

Photo 4: AEC-1 cut/fill in the area of Line A.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Sunday July 28, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Andrew Henderson Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 5x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 6/11.
Daily Progress		Kudlik activities: - Screening material - Cut/fill at AEC-1 - Survey excavations at AEC-3 DR Activities - Observed Kudlik activities. - Collect aggregate sample from Type 2 screening activities for future analysis.
Planned Activities (next day)		Kudlik activities: - Screen material - Place and grade pit run material in AEC-1
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Weekly health and safety meeting - Personal Protective Equipment - Heavy equipment safety, including reminder about eye contact - Housekeeping reminders: keeping site clean, proper maintenance of tools - Review of emergency response/incident reporting protocols
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		AEC-1 cut/fill complete without requirement for additional waste handling. No additional waste handling anticipated during placement of pit run material or other work on top of AEC-1. Placement of pit run material in AEC-1 is anticipated to take 2-3 days.
Key Communications		
Weather & ground cover conditions		8^{o}C high Partly cloudy Light wind Well exposed ground conditions 1^{o}C low Mostly Cloudy Windy Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready.

Photo 1: Screening

Photo 2: AEC-3, surveying excavations

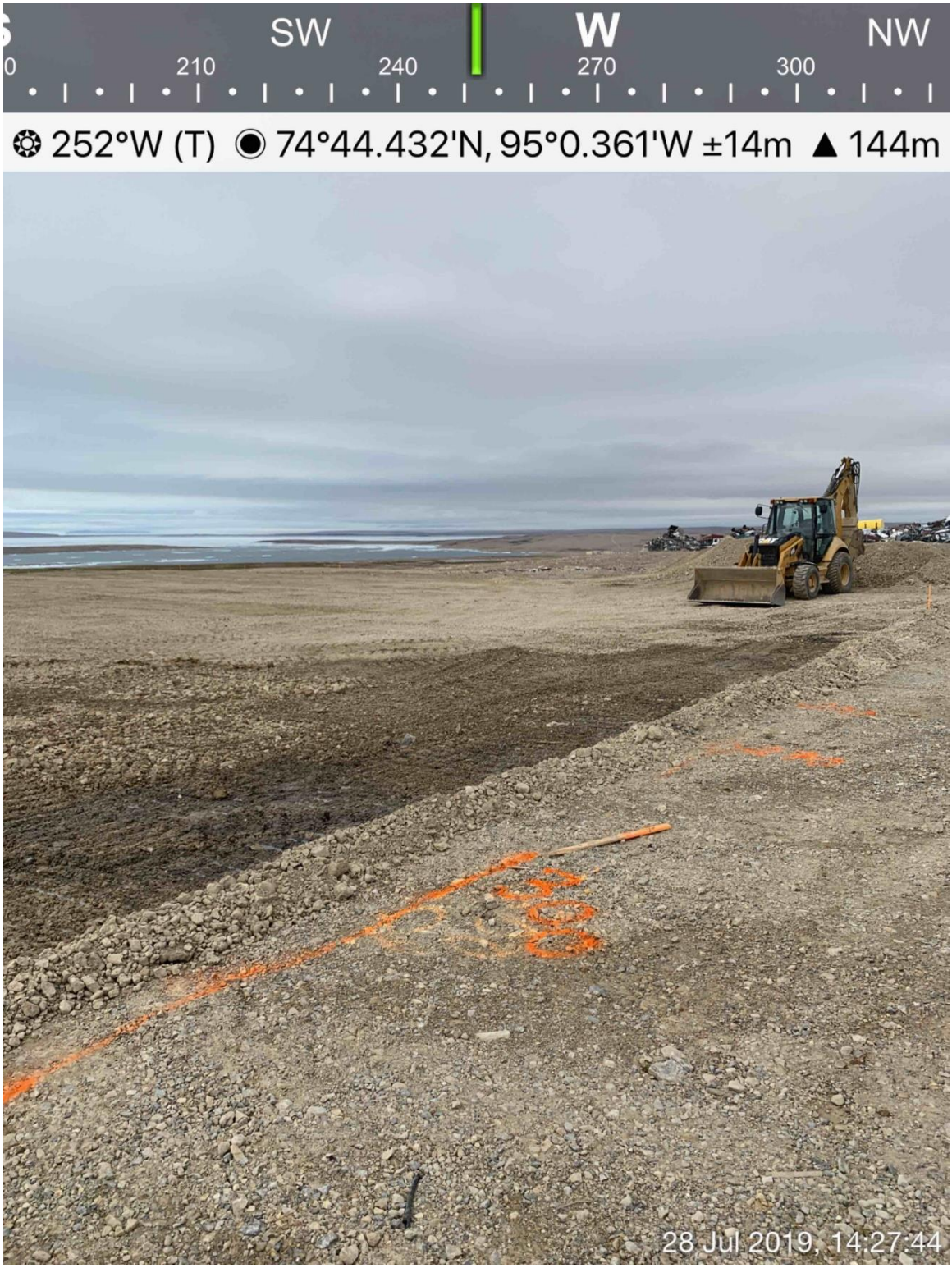

Photo 3: AEC-1, cut/fill

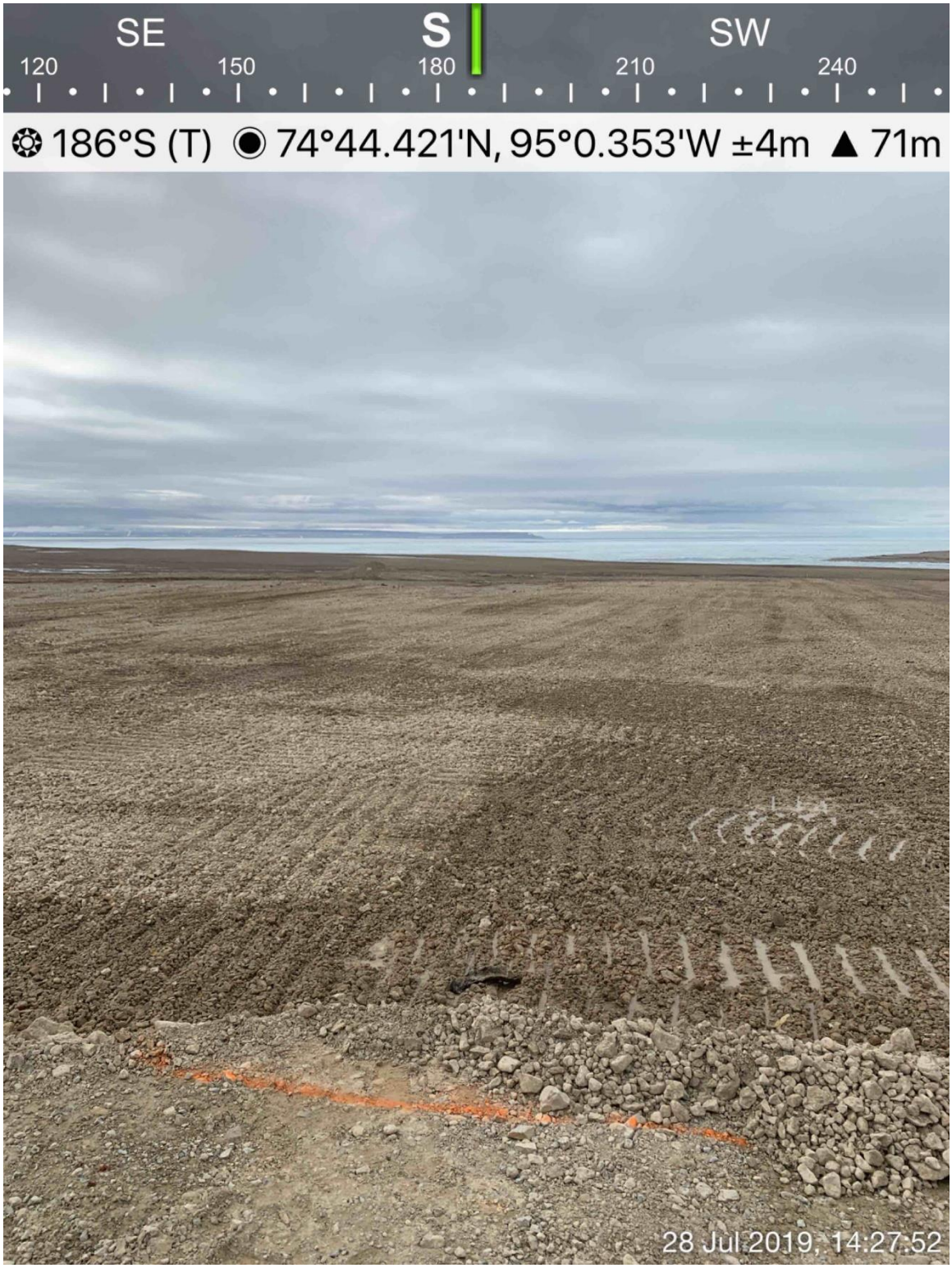

Photo 4: AEC-1, cut/fill approximately along Transect C

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Monday July 29, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Andrew Henderson Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 5x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 6/11.
Daily Progress		Kudlik activities: - Screening material (night only) - Excavation of material at Borrow Area East - Placement of pit run at AEC-1 DR Activities - Observed Kudlik activities. - Mark debris locations at AEC-2
Planned Activities (next day)		Kudlik activities: - Screen material - Place and grade pit run material in AEC-1 - Excavation at AEC-3 Exc #5 and Exc #6 (time permitting)
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - Working around screener - Eye protection during heavy winds - Welding safety
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Rough field volumes from surveyor for AEC-3 excavations (Exc #1 through Exc #4) are ~75 m^3. Total trucks from Borrow Area East to AEC-1 with pit run on 7/29 were 103 @ 14 m^3 each.
Key Communications		DR reminded Kudlik that placement of pit run was to be in 0.3 metre lifts
Weather & ground cover conditions	3^{o}C high Light rain High wind Well exposed ground conditions	3^{o}C low Cloudy, light rain Gale force winds Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready.

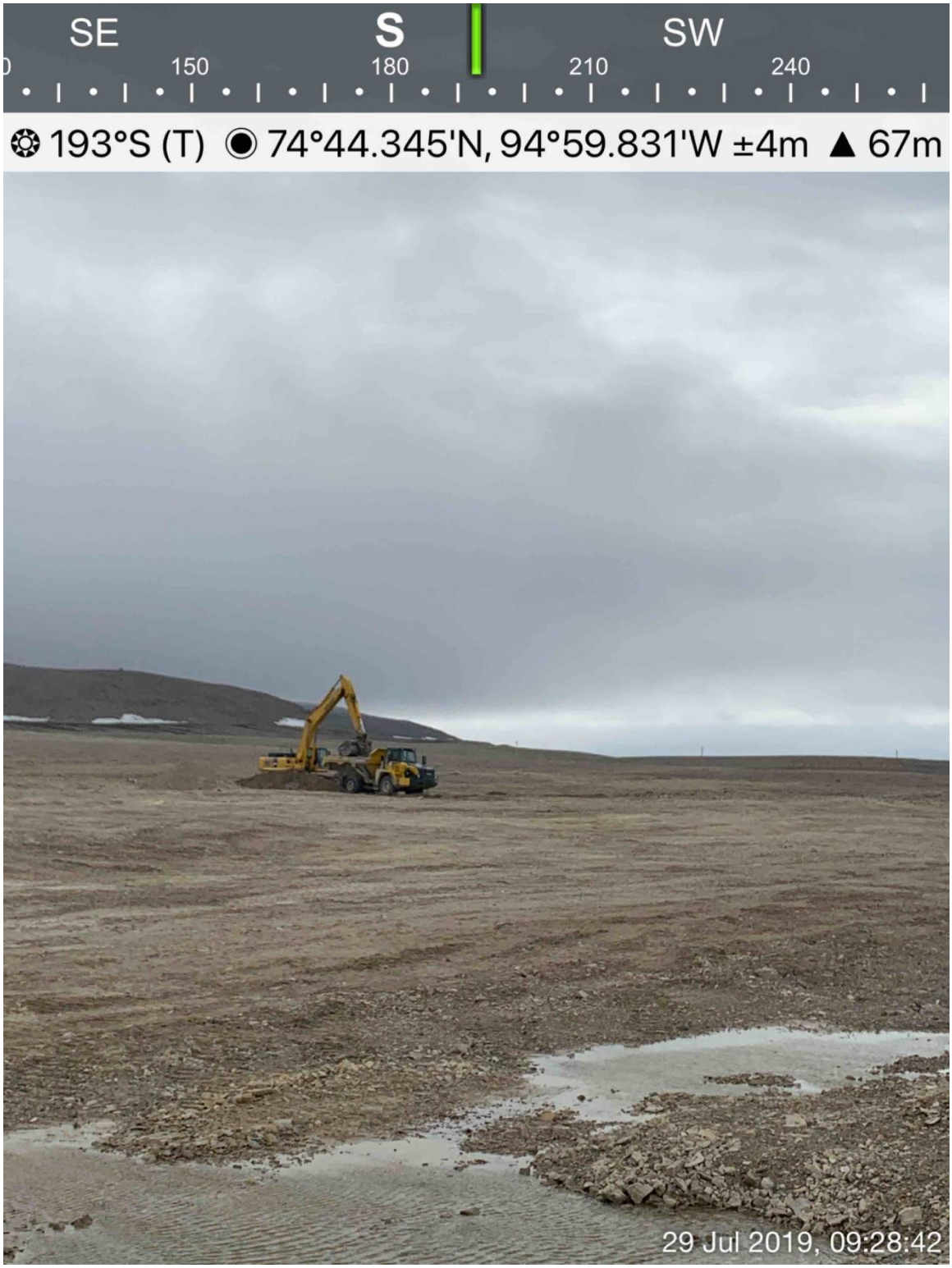

Photo 1: Loading rock truck in Borrow Area East

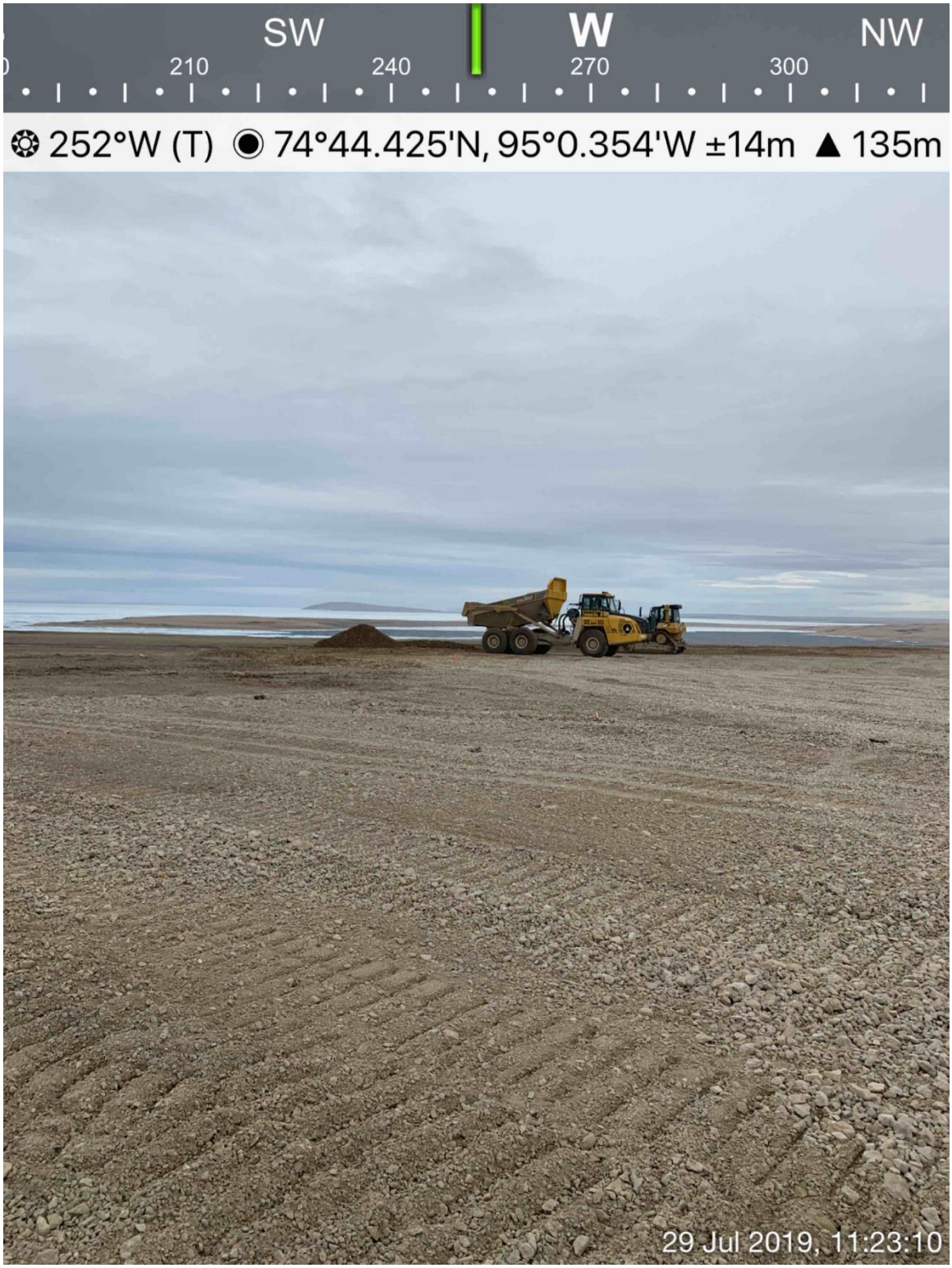

Photo 2: AEC-1, placing pit run material

Photo 3: AEC-1, edge of pit run material placement after grading

Photo 4: AEC-2, marking debris

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday July 30, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Andrew Henderson Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 5x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 6/11.
Daily Progress		Kudlik activities: - Screening material (night only) - Excavation of material at Borrow Area East - Placement of pit run at AEC-1 - Debris cleanup in AEC-3 DR Activities - Observed Kudlik activities.
Planned Activities (next day)		Kudlik activities: - Screen material (day and night) - Placement of pit run at AEC-1 - Hauling from Borrow Area East - Survey Type 1 and Type 2 for volumes
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - High winds, be careful with doors, dust, etc. During excavation in Borrow Area East, Kudlik encountered a buried cable at approximately 0.3 metres. Kudlik topped excavating in the area and changed locations. The Kudlik site supervisor made contact with Nav Canada and DND to see if the cable was theirs; neither reported any outages.
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Total trucks from Borrow Area East to AEC-1 with pit run on 7/30 were 29 @ 14 m^3 each.
Key Communications		
Weather & ground cover conditions	6°C high Mostly cloudy High winds Well exposed ground conditions	4°C low Cloudy, light rain High winds Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready. Per First Air samples will be in Ottawa 2019/08/01.

Photo 1: Collecting debris at AEC-3

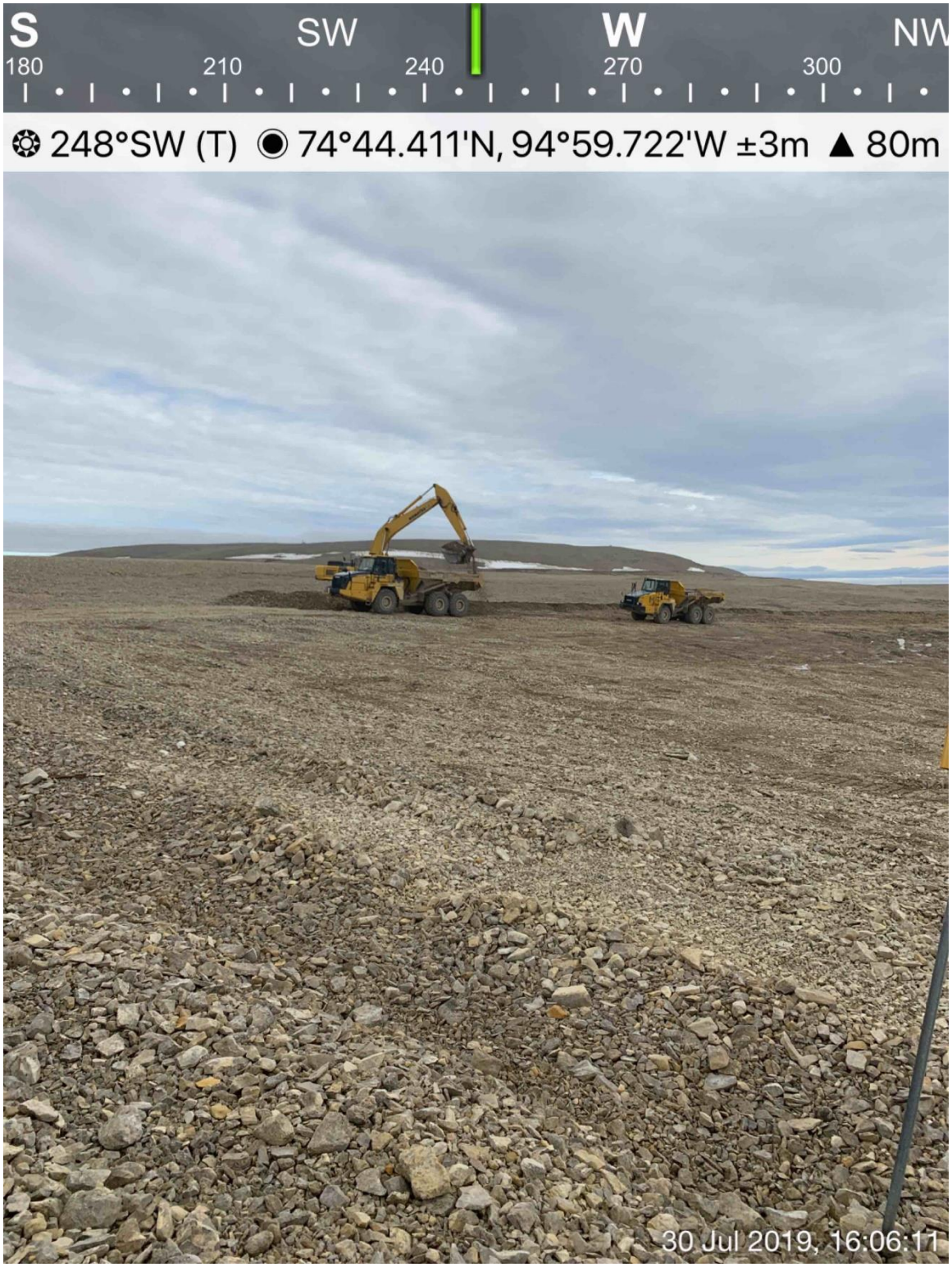

Photo 2: Loading material in Borrow Area East

Photo 3: Cable excavated in Borrow Area East

Photo 4: Excavated cable

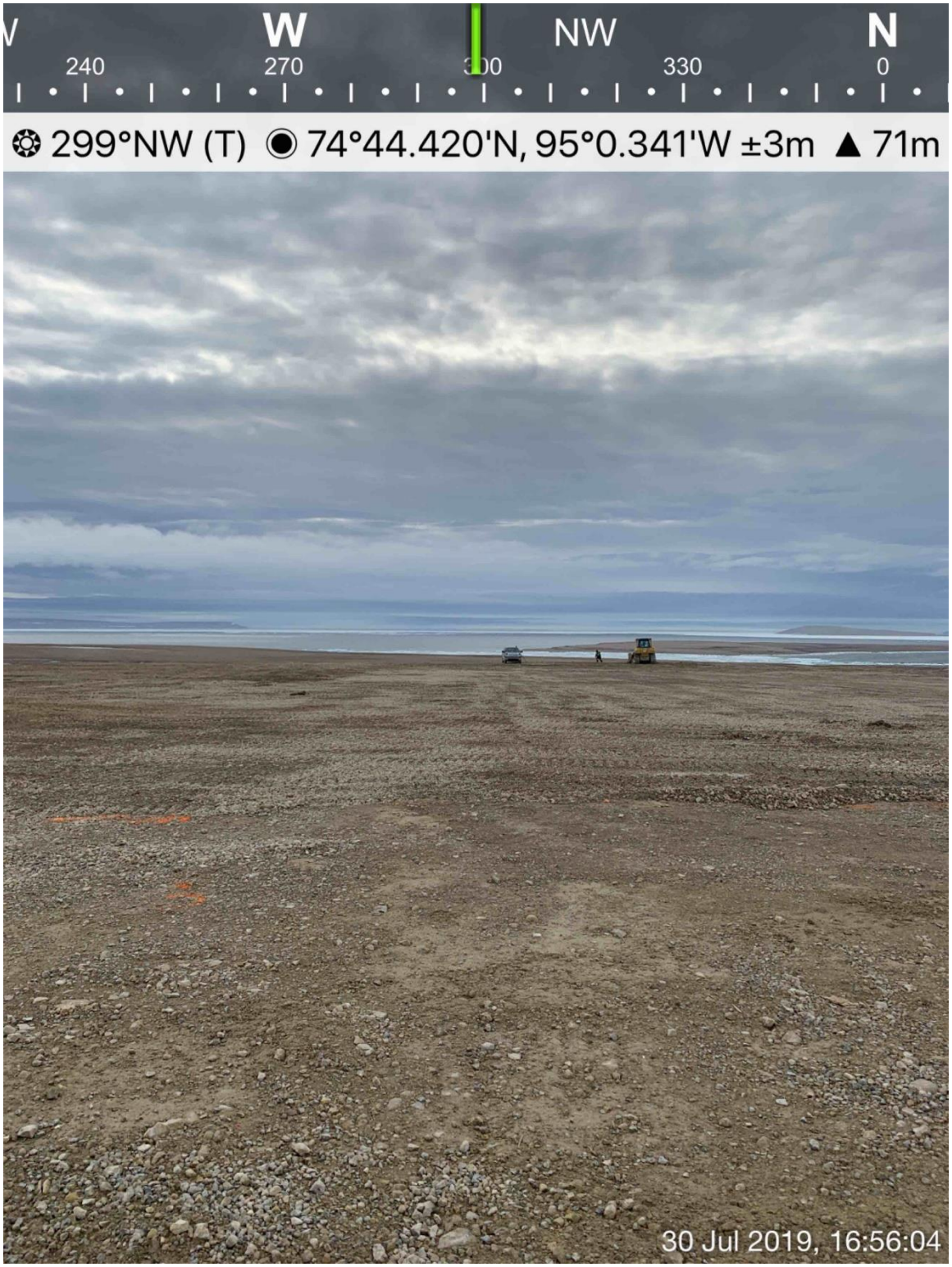

Photo 5: AEC-1, surveying and grading

Photo 6: Stockpiling material for screening

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday July 31, 2019 Consultant Name: DOJV
Author	Andrew Henderson	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift
Field Personnel on site		DR: Andrew Henderson Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 5x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 6/11.
Daily Progress		Kudlik activities: - Screening material - Excavation of material at Borrow Area East - Placement of pit run at AEC-1 top, finishing areas around crown DR Activities - Observed Kudlik activities - Collect Type 2 sample for future analysis
Planned Activities (next day)		Kudlik activities: - Screen material - Placement of pit run at AEC-1 slope - Hauling from Borrow Area East
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - Weather – rain - Very slippery - Safety in low visibility
Deviations from workplan		n/a
Notes Include visitors, Any equipment issues etc		Total trucks from Borrow Area East to AEC-1 with pit run on 7/30 were 30 @ 14 m^3 each. Kudlik survey of Type 1 material: 6,896 m^3 Type 2 material: 20,312 m^3
Key Communications		DR reminded Kudlik that water in AEC-3 excavations must be contained during rain events.
Weather & ground cover conditions	7°C high Light rain High wind Well exposed ground conditions	1°C low Mist Gentle breeze Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready. Per First Air samples will be in Ottawa 2019/08/01.

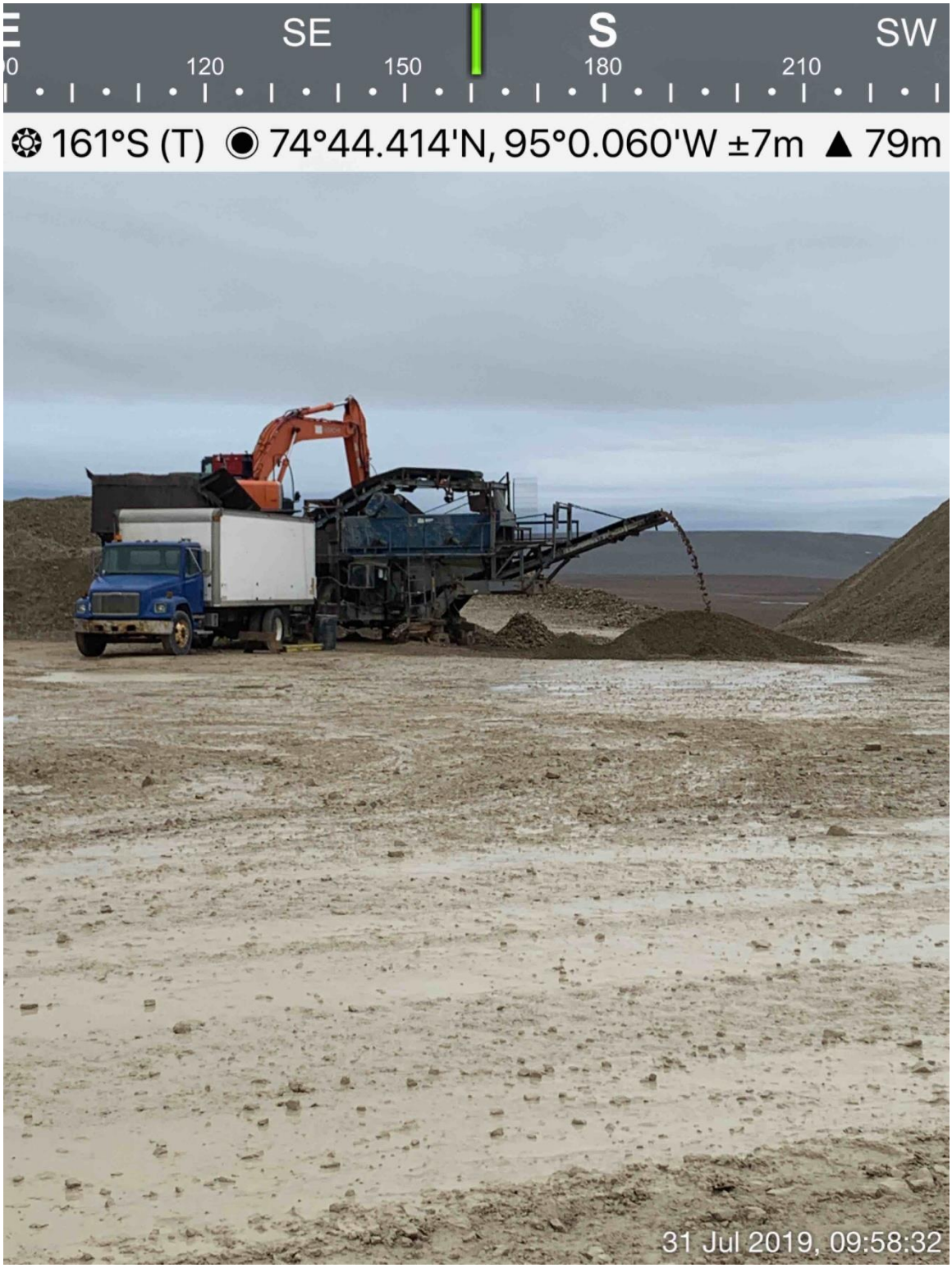

Photo 1: Screening

Photo 2: Loading material in Borrow Area East

Photo 3: Grading pit run material at AEC-1

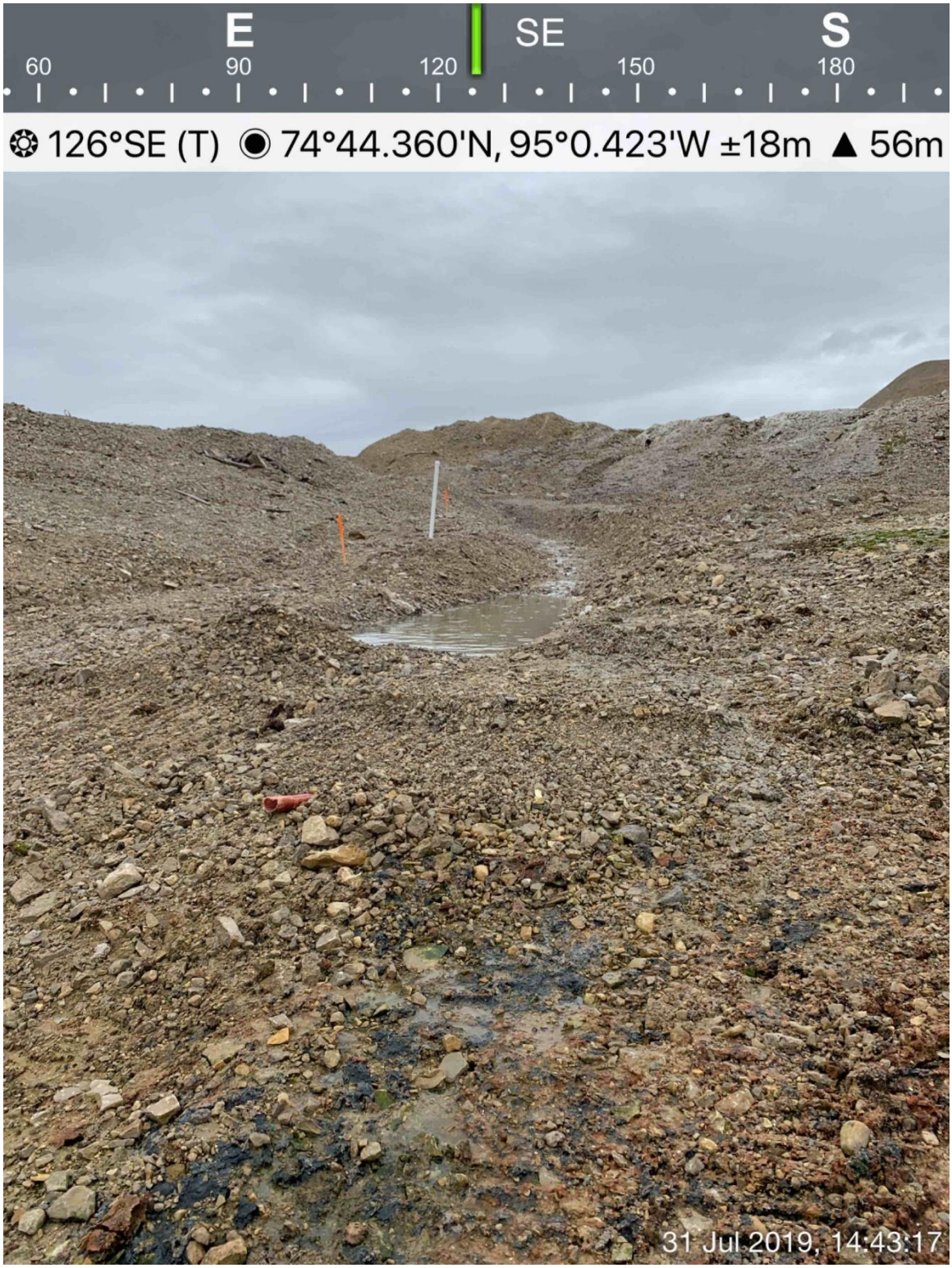

Photo 4: Lagoon (right) and AEC-1 (left) with lagoon outfall

Photo 5: AEC-1, after final placement of pit run on top

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 1, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm Day Shift. 6:00pm to 6:00am Night Shift	
Field Personnel on site		DR: Andrew Henderson and Jonathan Markiewicz Kudlik Crew = 11. Day shift = 8. Night Shift = 3. (1x site super, 5x operator, 1x mechanics, 1x Surveyor, 2x Screener Operator, 1x document control/HS) Inuit Personnel = 6/11.	
Daily Progress		Kudlik activities: - Screening material - Excavation of material at Borrow Area East - Grading of AEC-1 Side slope to - Placement of pit run at AEC-1 Slope DR Activities - Observed Kudlik activities - DR Cross Over	
Planned Activities (next day)		Kudlik activities: - Screen material - Placement of pit run at AEC-1 slope - Hauling from Borrow Area East	
Schedule update		To be provided by Kudlik at end of July.	
Health /Safety		Health and safety meeting - Hauling downslope – build safe access road - Safety in low visibility	
Deviations from workplan		n/a	
Notes Include visitors, Any equipment issues etc		Total trucks from Borrow Area East to AEC-1 with pit run on 08/01 were 48 @ 14 m^3 each.	
Key Communications		DR confirmed with Kudlik that AEC-1 side slopes must have a Max of 3:1, and that side slopes that are less steep are acceptable, no fill to be added in those areas.	
Weather & ground cover conditions		5^{o}C high Foggy High wind Well exposed ground conditions	3^{o}C low Mostly Cloudy Gentle breeze Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready. AEC-3 Soil samples received by the Lab on 08/01.	

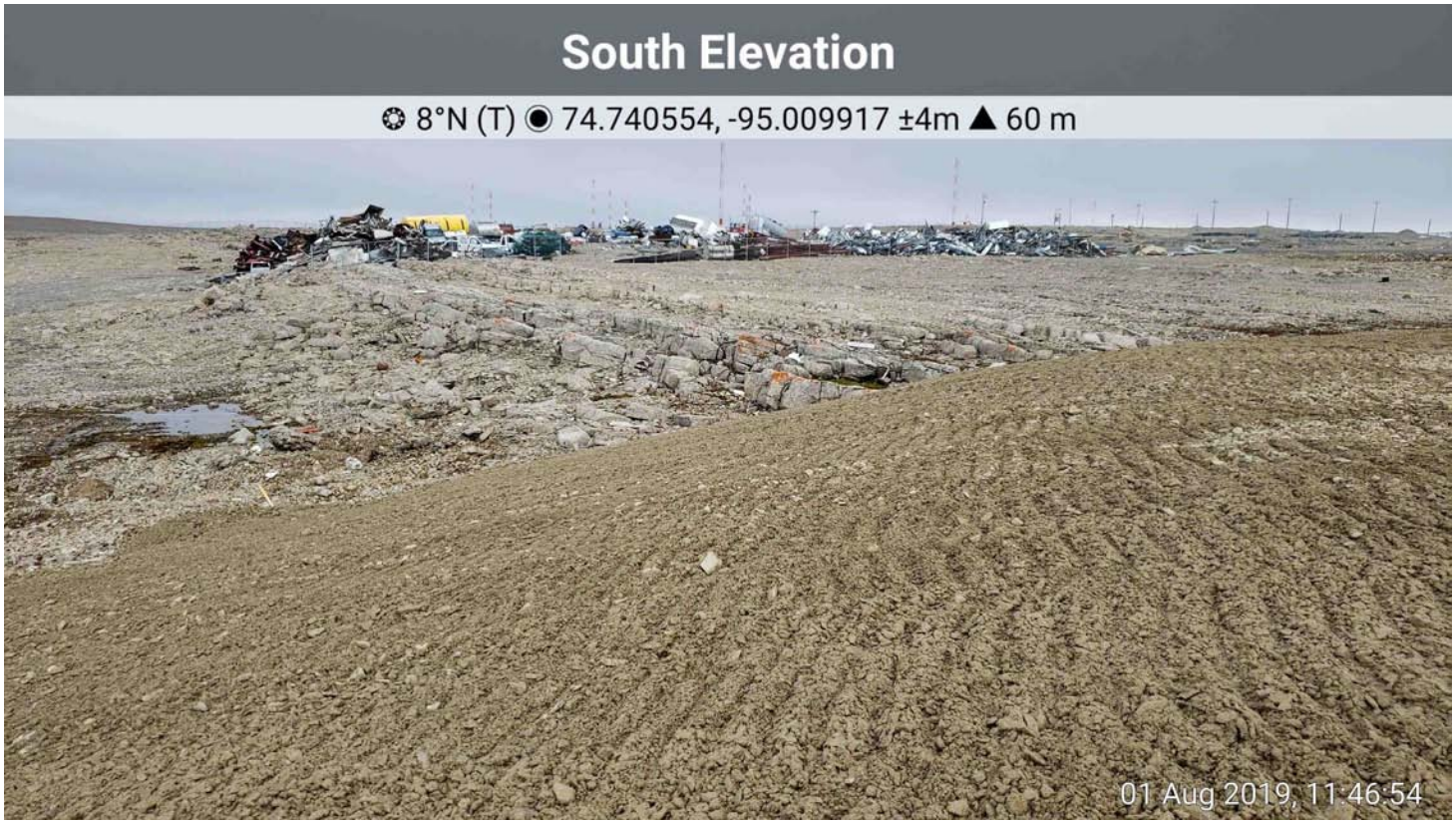

Photo 1: AEC-1 Side Slope on north face

Photo 2: AEC-1 Side Slope North-West Slope

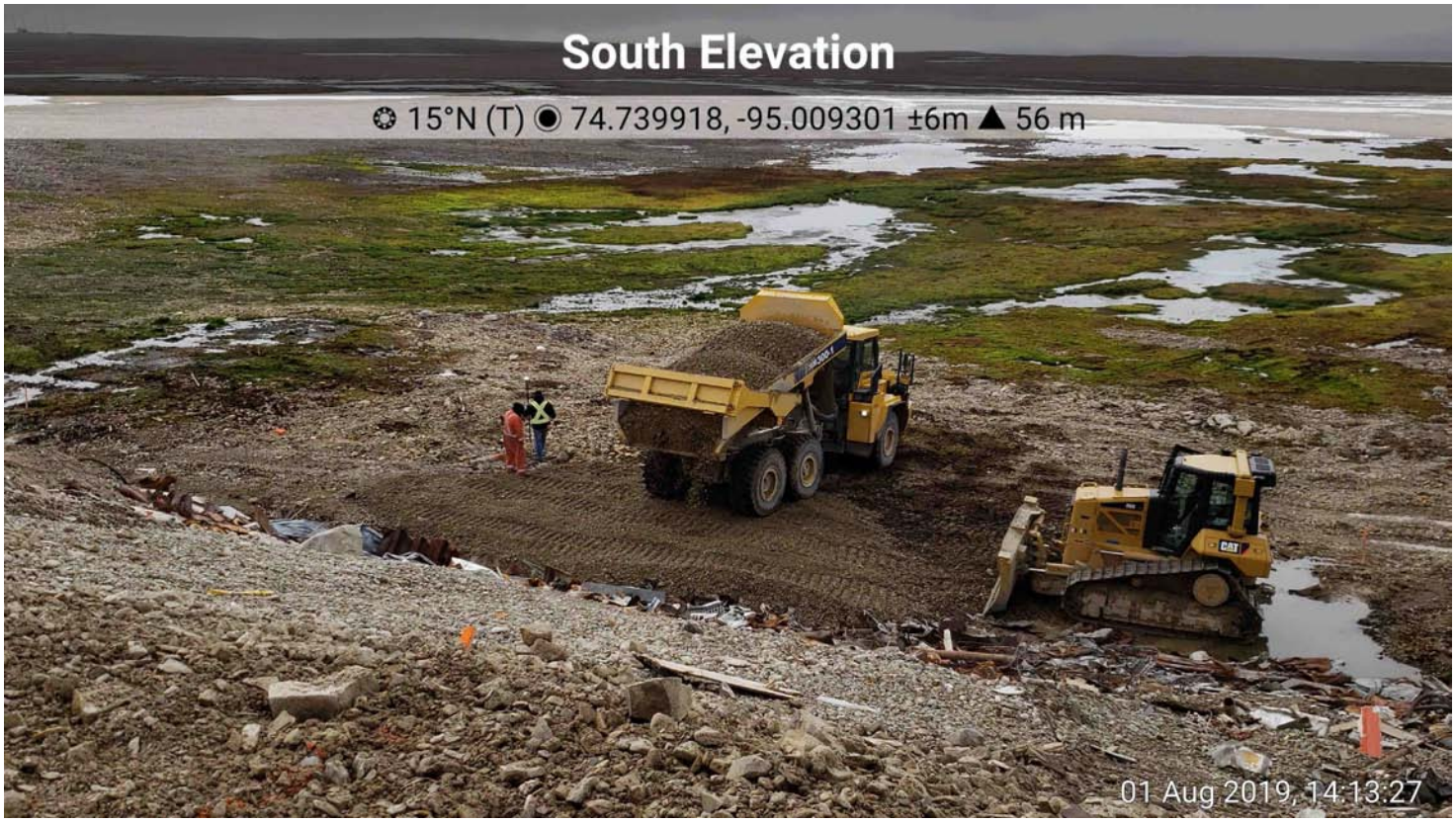

Photo 3: Place/Compact pit run material at AEC-1 Slope, South-West section as approved by RFI-001.

Photo 4: Place/Compact pit run material at AEC-1 Slope, South-West section as approved by RFI-001.

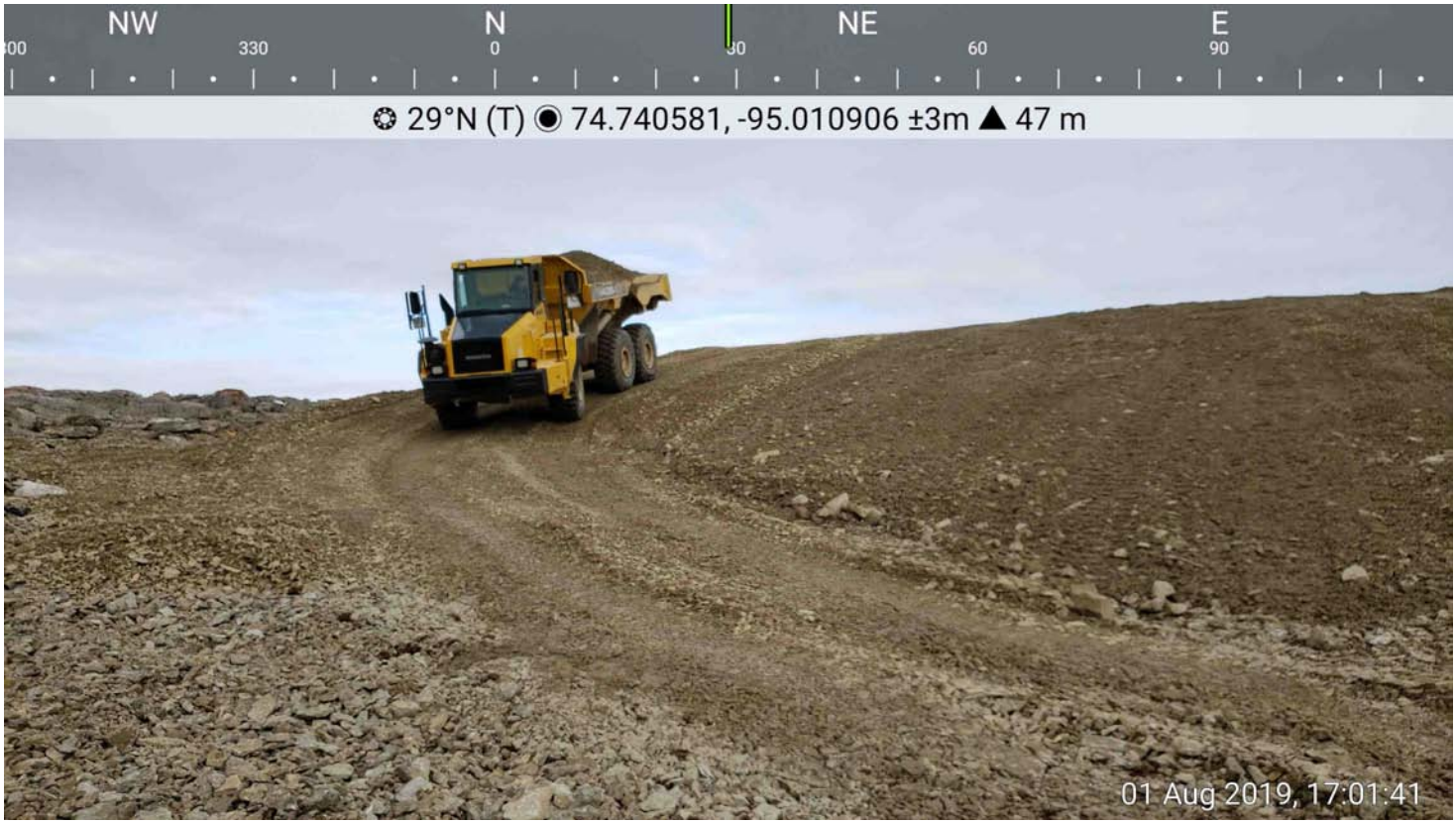

Photo 5: AEC-1, Temporary Haul road constructed at North-West slope to access AEC-1 Toe.

Photo 6: AEC-1, Survey of loose lift thickness and establishing 3:1 grade each lift

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 2, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift.
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 11. Day shift only CREW CHANGE – John Fraser back as Site Supervisor (1x site super, 5x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 1x Labourer Operator, 1x document control/HS) Inuit Personnel = 7/11.
Daily Progress		Kudlik activities: - Screening material - Reshaping of Borrow Area East - Grade Stakes installed on top of AEC-1 - Collection of surface debris from AEC-3 Subarea - Excavation and bagging of AEC-3 Excavation 5 (4 Bags) - 4 Test Pits at planned side walls of AEC-3 Excavation 6 DR Activities - Observed Kudlik activities - Collect Type 2 sample for future analysis - Collected soil confirmatory samples from AEC-3 Excavations 5 and 6
Planned Activities (next day)		Kudlik activities: - Placement of Type II at AEC-1 Top - Debris Pick (AEC-3 and AEC-1) and Place in AEC-1 Slope
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - Hauling downslope – build safe access road - Safety in low visibility
Deviations from workplan		New SS – focus on finishing all debris sources and prep for AEC-1 Top cover
Notes Include visitors, Any equipment issues etc		Total trucks from Borrow Area East to AEC-1 with pit run on 08/01 were 48 @ 14 m^3 each.
Key Communications		DR confirmed with Kudlik that AEC-1 side slopes must have a Max of 3:1, and that side slopes that are less steep are acceptable, no fill to be added in those areas.
Weather & ground cover conditions	8^{o}C high Partly Cloudy Moderate Winds Well exposed ground conditions	5^{o}C low Mostly Cloudy High Winds Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready. AEC-3 Soil samples collected from Excavations 5 and 6 and dropped off at First Air Cargo 01/08..

Photo 1: AEC-3 Subarea – Excavation 5 – 0.20m deep ~ 16m2: Four Bags filled.

Photo 2: AEC-3 Subarea – Excavation 5 – Three floor soil samples collected

Photo 3: AEC-3 – Excavation 6 – Test pits (green arrows) taken where planned walls (8m x 12m x 0.8m) and samples collected.

Photo 4: Reshaping Borrow Area East.

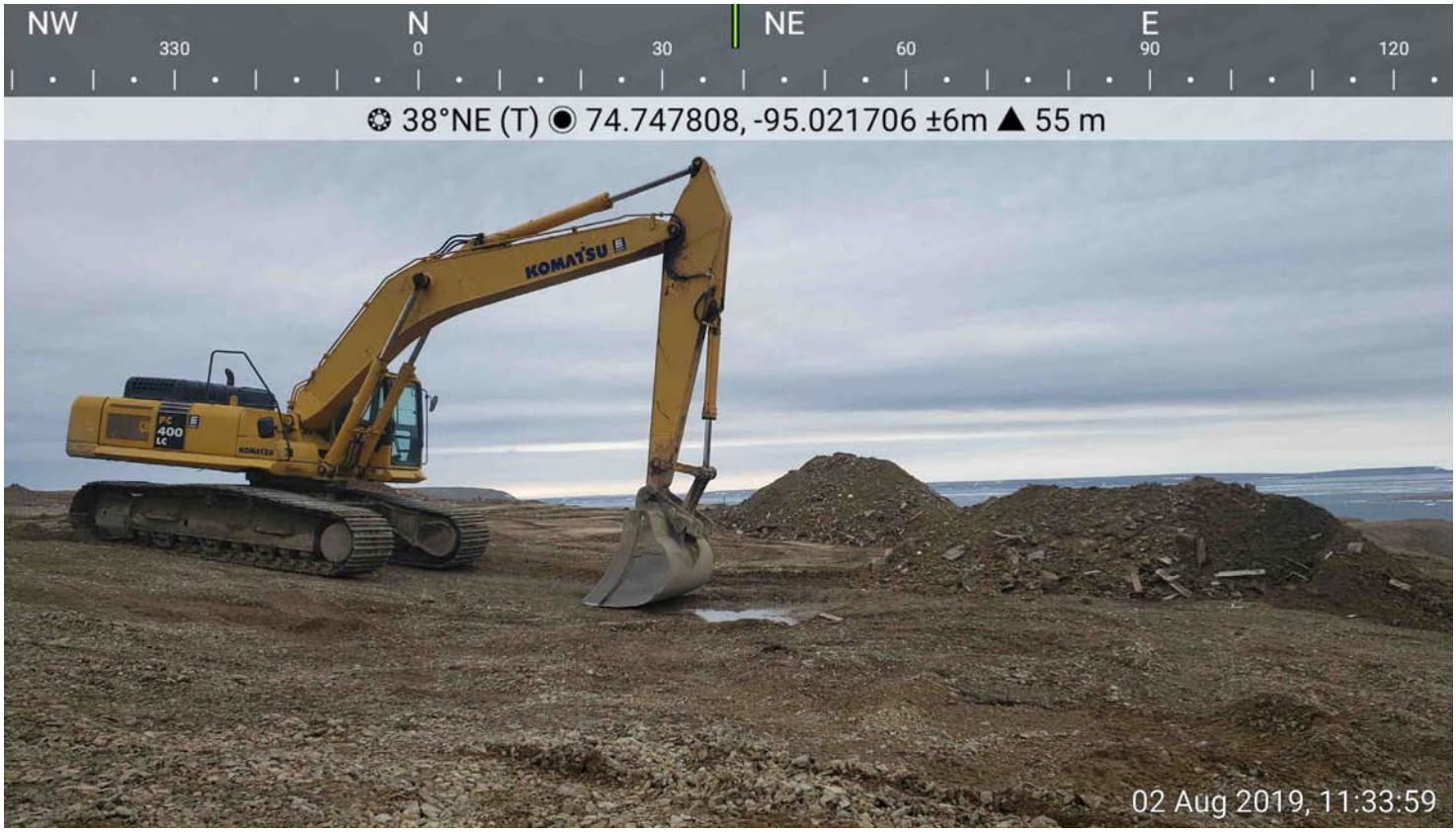

Photo 5: AEC-3 – Subarea, Surface debris scraped into pile and hauled to AEC-1 Slope

Photo 6: AEC-1, Screener and Type II processed pile

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 3, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm Day Shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 13. (1x site super, 6x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 2x Labourer Operator, 1x document control/HS) Inuit Personnel = 8/13.	
Daily Progress		Kudlik activities: - Hand collection of surface debris from AEC-1 Beyond the Toe and AEC-3 - Haul, place, compact Type II on AEC-1 Top – 195 Loads Track Pack Compaction using 350 Excavator (4 passes over 75% of surface) - Shaping of northern edge of AEC-1 Top DR Activities - Observed Kudlik activities	
Planned Activities (next day)		Kudlik activities: - Place & Compact Type II at AEC-1 Top - 3:1 Grading of side slope wastes - Debris Pick (AEC-3 and AEC-2) and Place in AEC-1 Slope - EXTRA non-haz waste excavate and haul from NE swale area	
Schedule update		To be provided by Kudlik at end of July.	
Health /Safety		Health and safety meeting - First Aid Kit Locations (New Staff) - Muster Point	
Deviations from workplan		N/A	
Notes Include visitors, Any equipment issues etc		2hrs of T&M non-haz waste effort from AEC1-Top (1x Excavator, 1x Rock Truck) 1hr and 75-L of Hazardous Water effort (1x Mechanic)	
Key Communications			
Weather & ground cover conditions		10^{o}C high Partly Cloudy Mild Winds Well exposed ground conditions	9^{o}C low Partly Cloudy Moderate Winds Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready.	

Photo 1: AEC-1 – Surface debris collection from beyond the toe.

Photo 2: AEC-3 – Surface debris collection

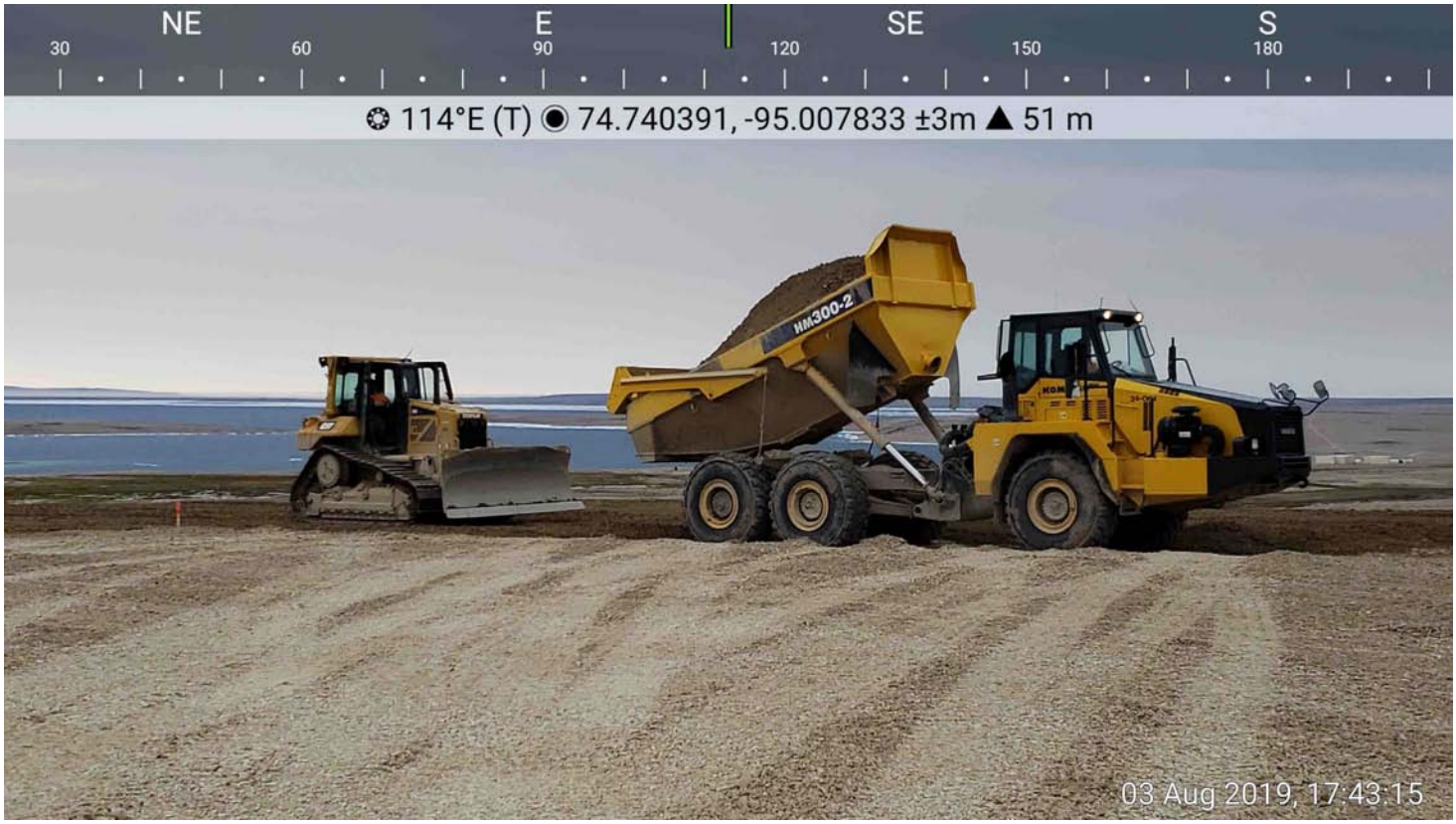

Photo 3: AEC-1 – Type II fill placement in 300-mm lift at AEC-1 Top.

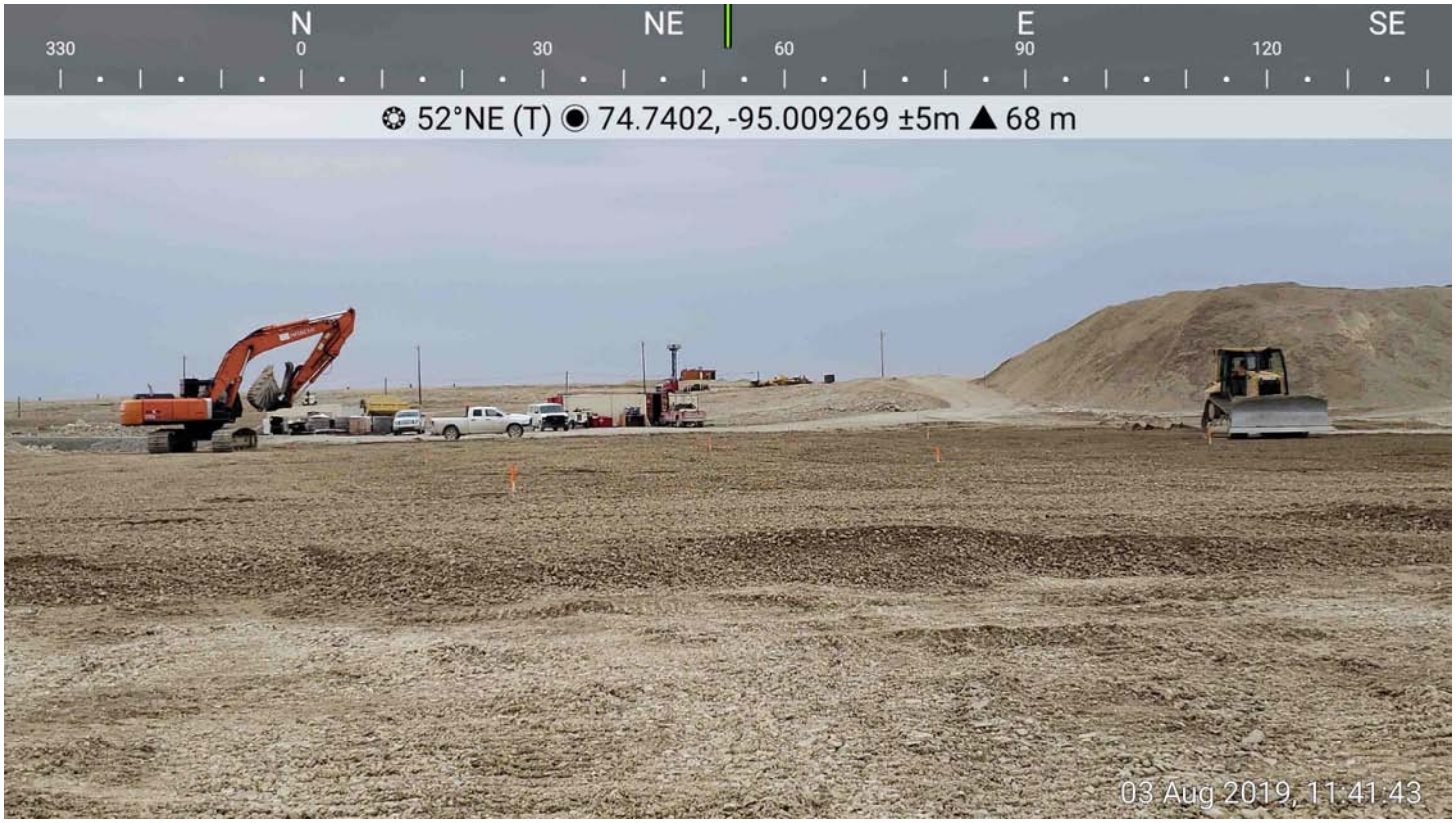

Photo 4: Track Pack compaction of placed Type II fill using 350 excavator (4 passes East – West, 2 passes North-South tomorrow).

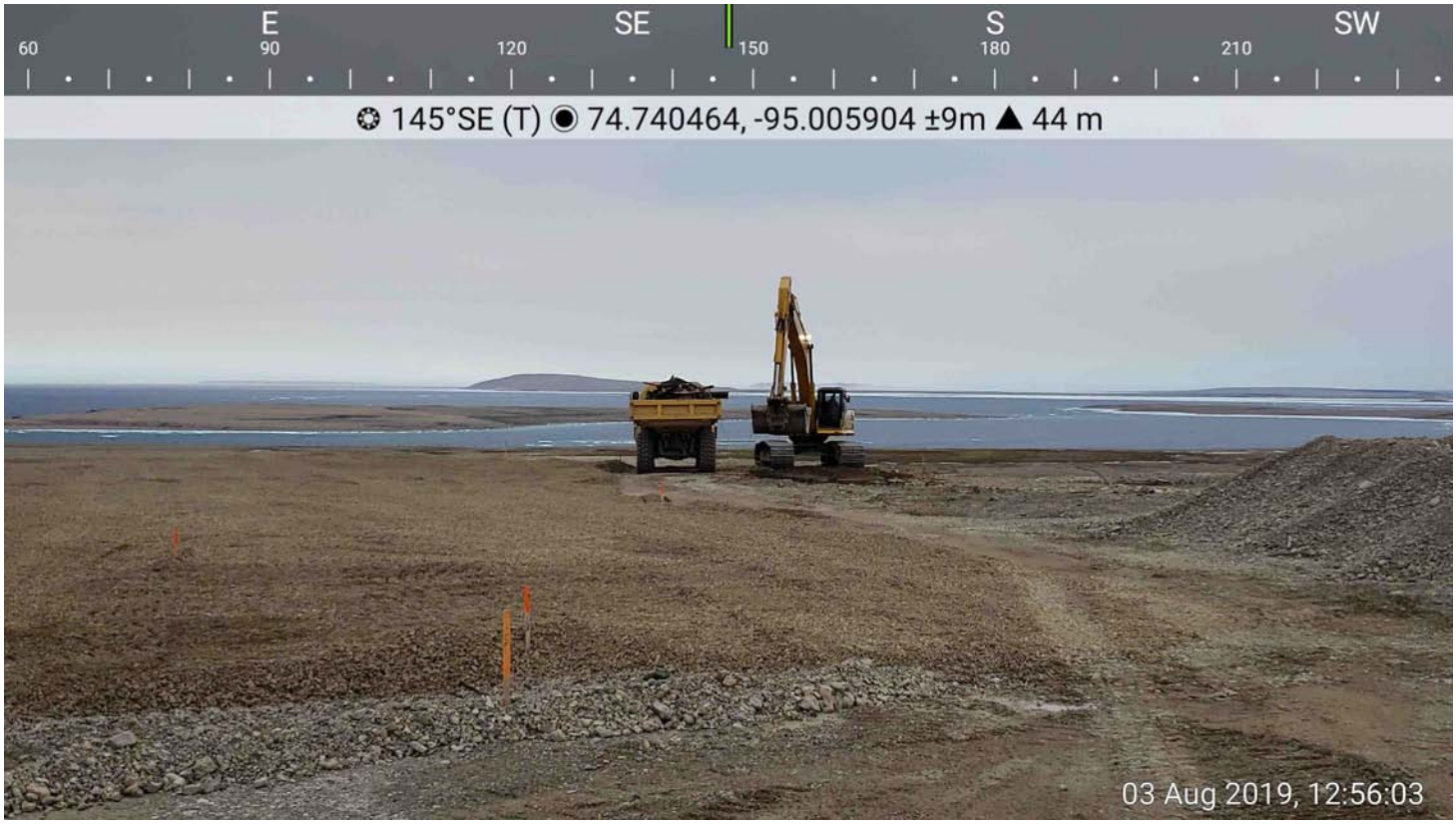

Photo 5: AEC-1 – Northern section of AEC-1 Top required minor wastes to be excavated and integrated into AEC-1 side slope. No HazMat observed.

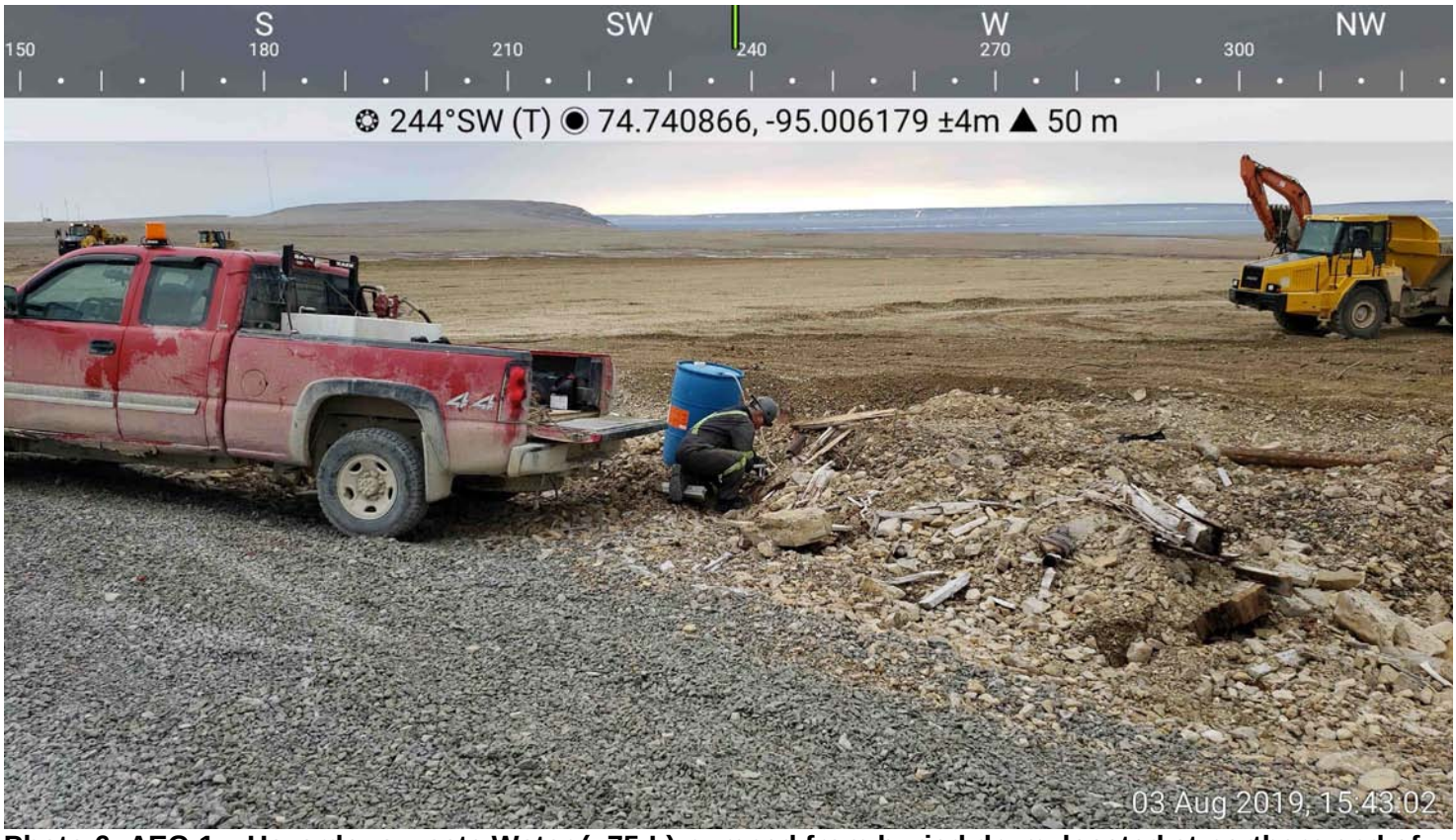

Photo 6: AEC-1 – Hazardous waste Water (~75-L) pumped from buried drum, located at northern end of swale and beside municipal access to to new meta dump, in preparation for waste removal tomorrow.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 4, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift.
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 13. (1x site super, 6x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 2x Labourer Operator, 1x document control/HS) Inuit Personnel = 8/13.
Daily Progress		Kudlik activities: - Hand collection of surface debris from AEC-2 Beyond the Toe and AEC-3 - Haul, place, compact Type II on AEC-1 Top – 180 Loads Track Pack Compaction using 350 Excavator (Finished Lift #1, Track packed northern AEC-1 side slope) - Shaping of southern edge of AEC-1 Top - Integrated existing municipal ditch to new swale system (T&M non-haz waste work) - Started to cut AEC-2 side slope near municipal road for Type-S swale DR Activities - Observed Kudlik activities
Planned Activities (next day)		Kudlik activities: - Place & Compact Type II at AEC-1 Top - 3:1 Grading of side slope wastes - Debris Pick (AEC-2) and Place in AEC-1 Slope
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - Weekly Safety Meeting o Operator responsibilities and eye contact o ATV wait for permission to enter work area o PPE, first aid, fire extinguishers o Manual and Team lifting o Hand power tools guards and cords o Housekeeping of workspace including equipment o Slips and Trips o Spill reporting o Harassment
Deviations from workplan		N/A
Notes Include visitors, Any equipment issues etc		3.5hrs of T&M non-haz waste effort from AEC1-Swale (1x Excavator) and 0.5hrs (1x Rock Truck) – Needs labourers to pick before as-built and Type II cover
Key Communications		AEC-2 slope near the road must be pulled back to accommodate a Type-S swale.
Weather & ground cover conditions	12ºC high Clear Mild Winds Well exposed ground conditions	9ºC low Partly Cloudy Moderate Winds Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when ready.	

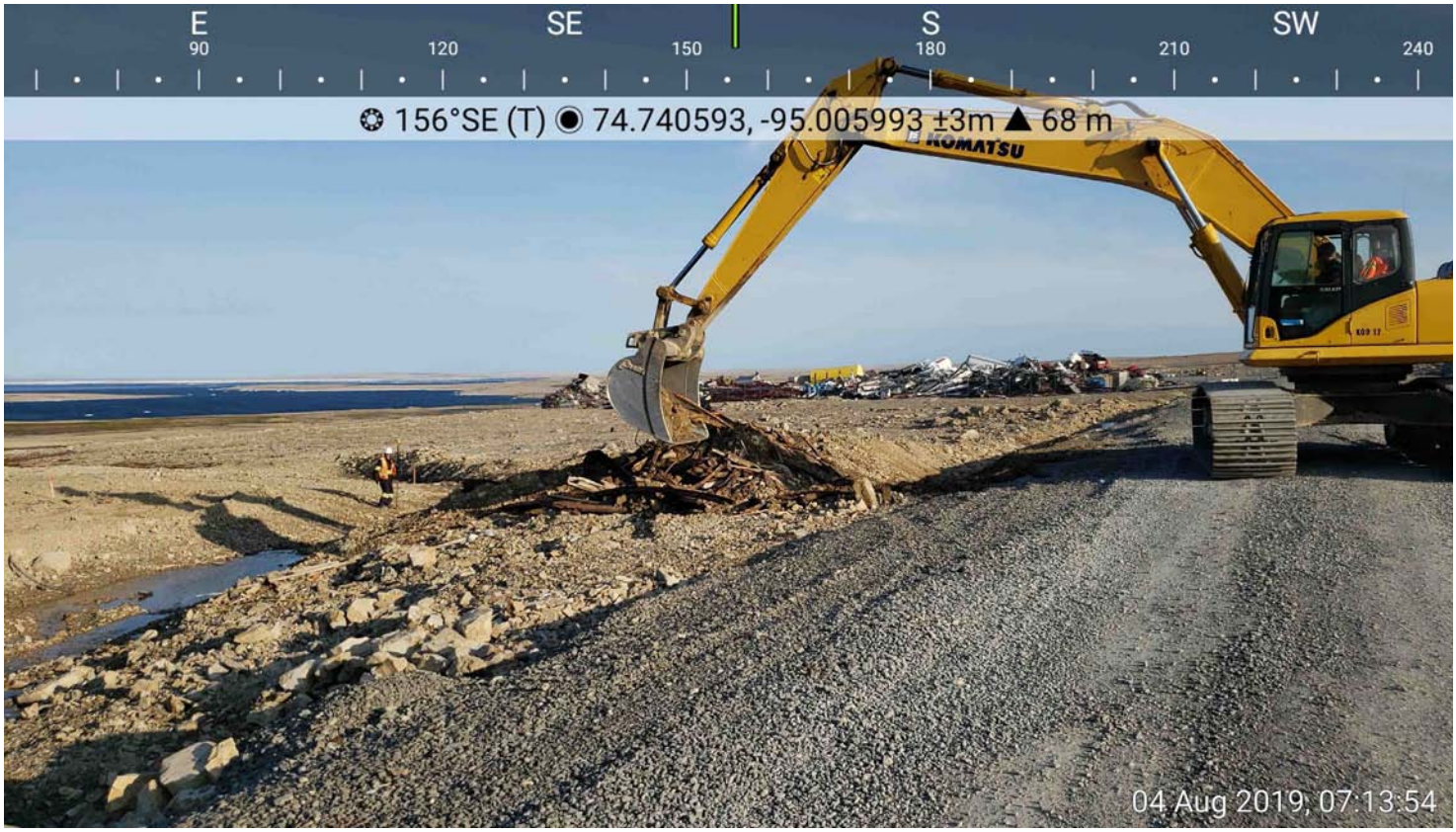

Photo 1: AEC-1 – Buried debris management from AEC-1 swale and municipal ditch convergence. Drum pumped dry yesterday, no other Hazardous Waste observed.

Photo 2: AEC-1 – Placement of 300-mm Lift # 2 of Type II fill at AEC-1 Top

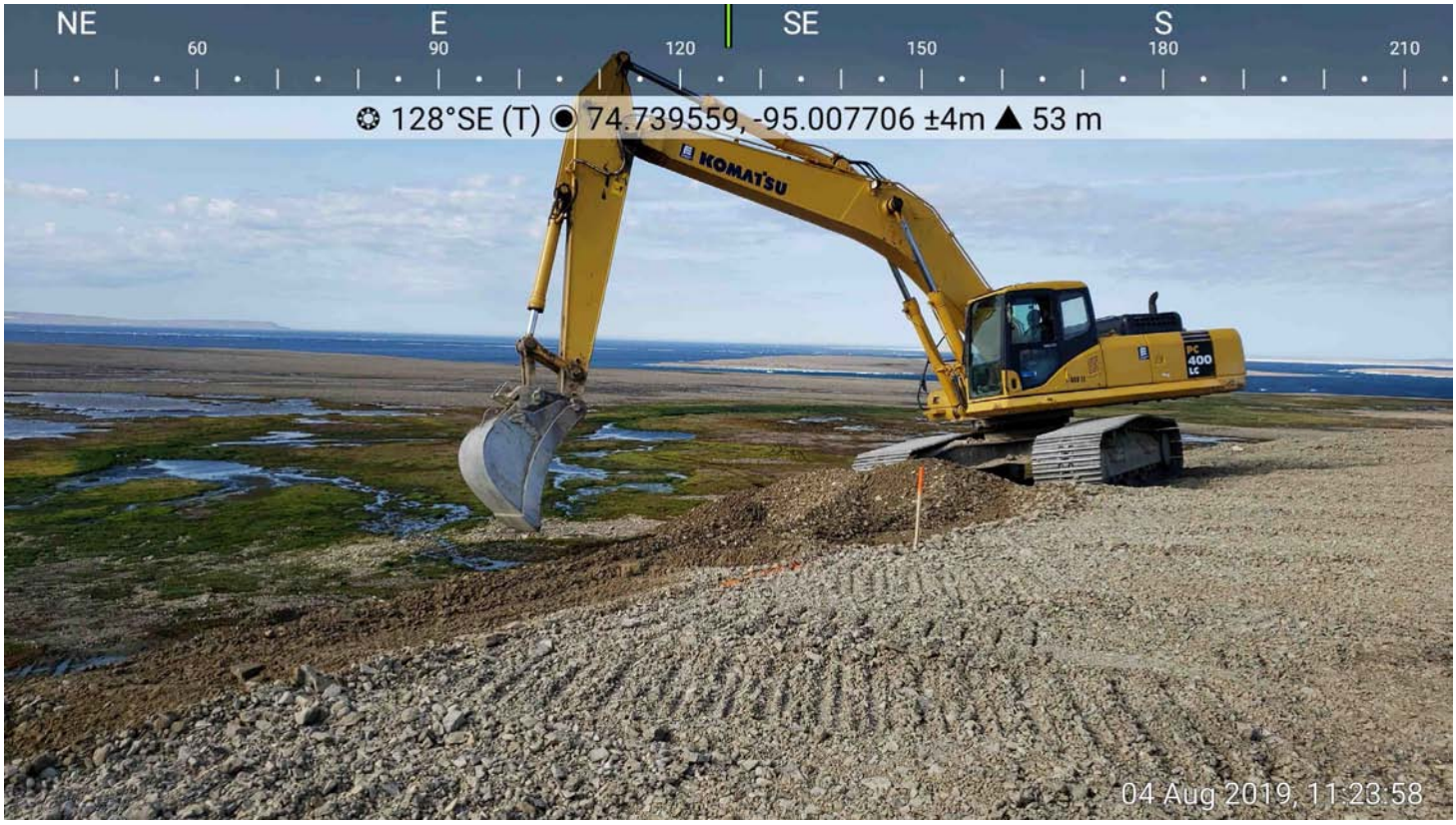

Photo 3: AEC-1 – Cutting 3:1 slope on south side of AEC-1 Slope.

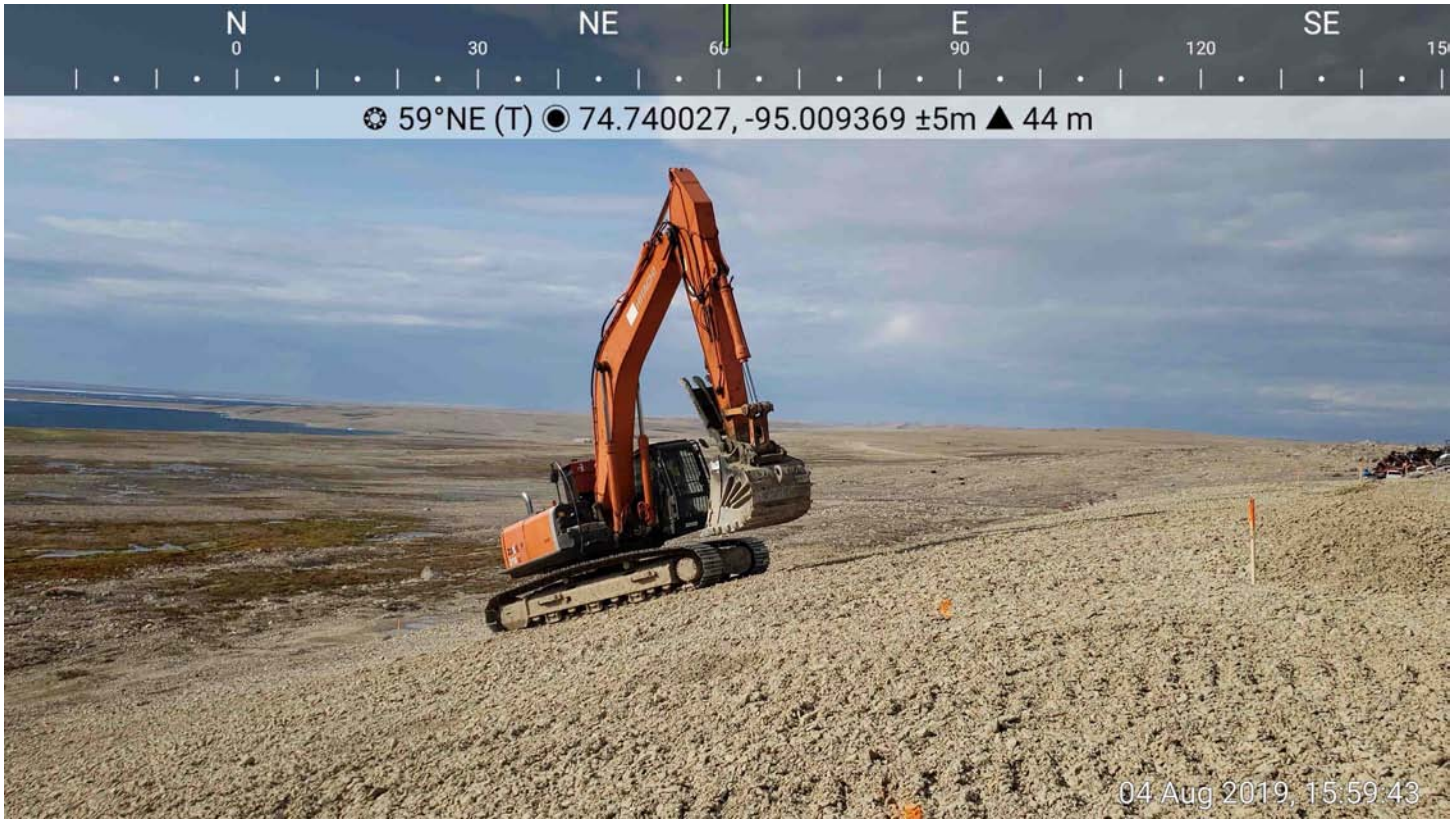

Photo 4: Track Pack compaction of foundation (waste and pit run) using 350 excavator (6 passes up and down slope).

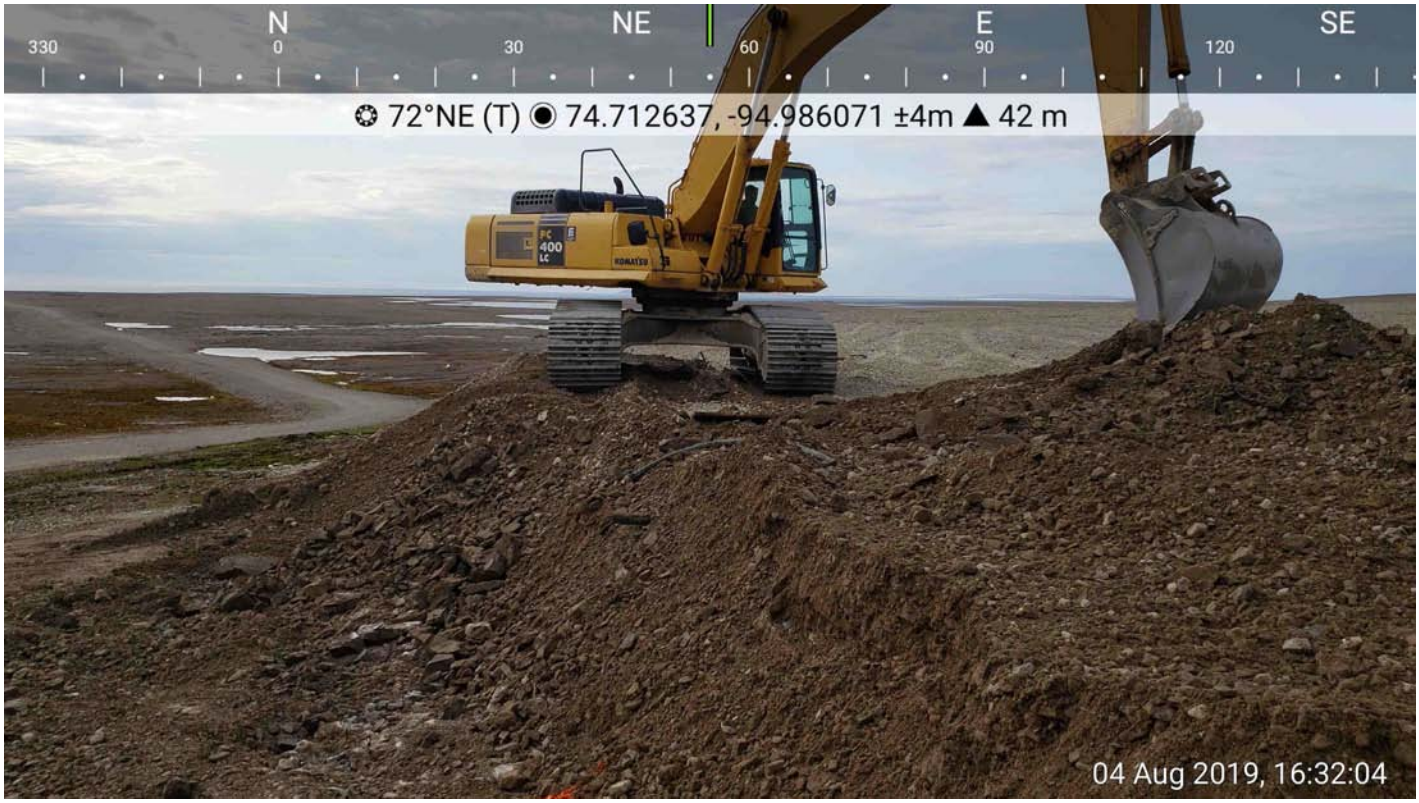

Photo 5: AEC-2 – Southern section of the main AEC-2 landfill, near the municipal road, being cut to accommodate the Type-S swale Top. Non-hazardous waste to be segregated and hauled to AEC-1, aggregate to be used to stabilize AEC-2 Slope. No HazMat observed.

Photo 6: AEC-2 – Hazardous waste Water (~2000-L) unearthed earlier in July 2019 consolidated into drums for shipment and disposal south.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 5, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm Day Shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 11. (1x site super, 6x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 1x document control/HS) Inuit Personnel = 6/11.	
Daily Progress		Kudlik activities: - Haul, place, compact Type II on AEC-1 Top – 144 Loads Track Pack Compaction using 350 Excavator (Finished Track packed Top Lift #1, northern AEC-1 side slope foundation) - Shaping of southern edge of AEC-1 Slope - Cut and Shape AEC-2 slope near Type-S swale, segregated aggregates and hauled wastes to AEC-1 (T&M non-haz waste work) DR Activities - Observed Kudlik activities	
Planned Activities (next day)		Kudlik activities: - Place & Compact Type II at AEC-1 Slope - 3:1 Grading of side slope wastes – AEC-2 - Start Type II field fit covers	
Schedule update		To be provided by Kudlik at end of July.	
Health /Safety		Health and safety meeting - Operators and Equipment Interactions with Public and Workers o Eye contact o Head Lights and 4-way flashers while driving on roads o Radio Contact o Watch and anticipate equipment movement before entering their work space	
Deviations from workplan		N/A	
Notes Include visitors, Any equipment issues etc		3.5hrs of T&M non-haz waste effort from AEC2-Slope and Type S Swale (1x Excavator, 1x Rock Truck)	
Key Communications			
Weather & ground cover conditions		8ºC high Cloudy, Rain High Winds Well exposed ground conditions	7ºC low Cloudy, Light Rain Moderate Winds Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready.	

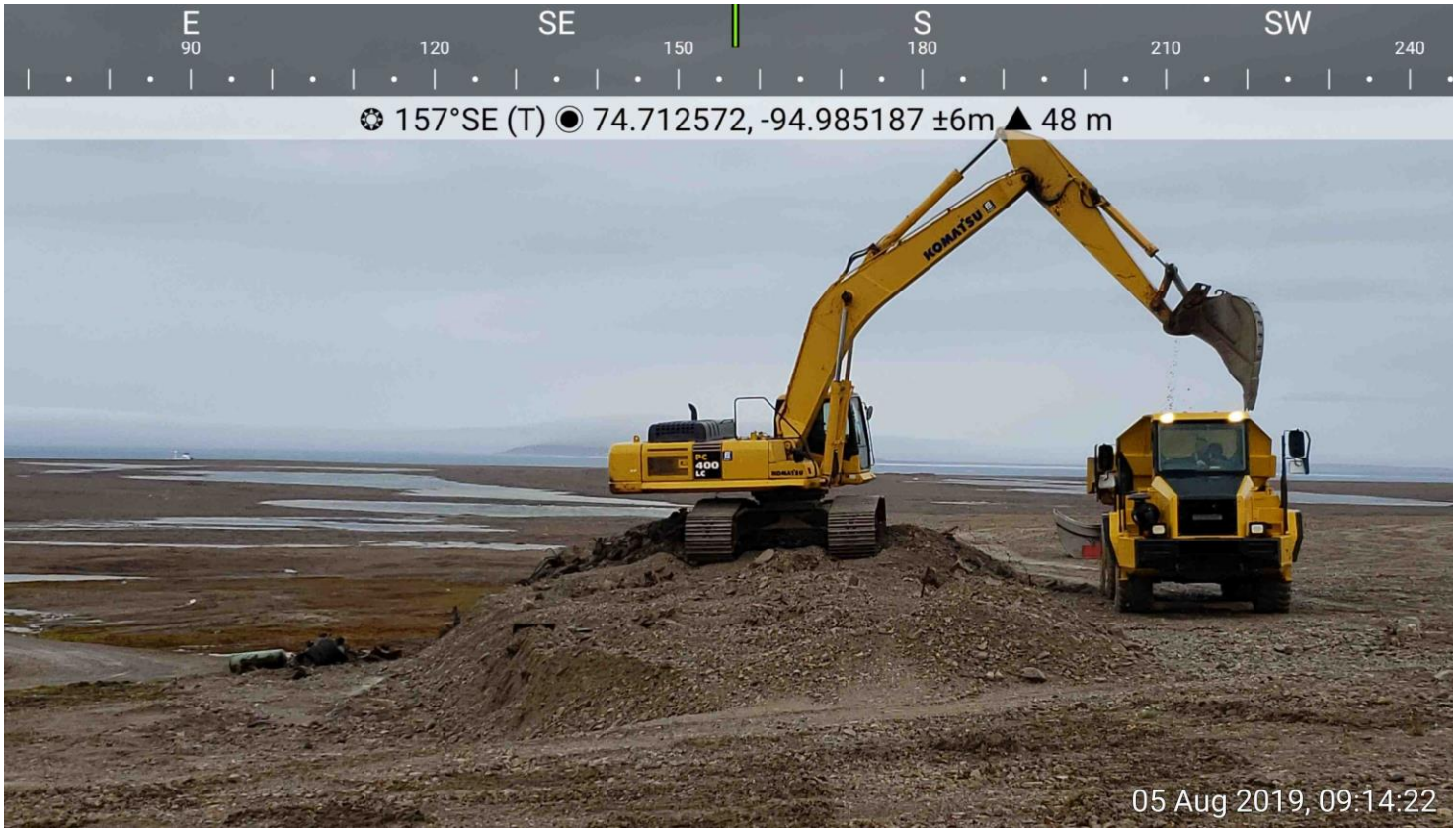

Photo 1: AEC-2 – Buried debris management from AEC-2 side slope and S-type swale. No Hazardous Waste observed.

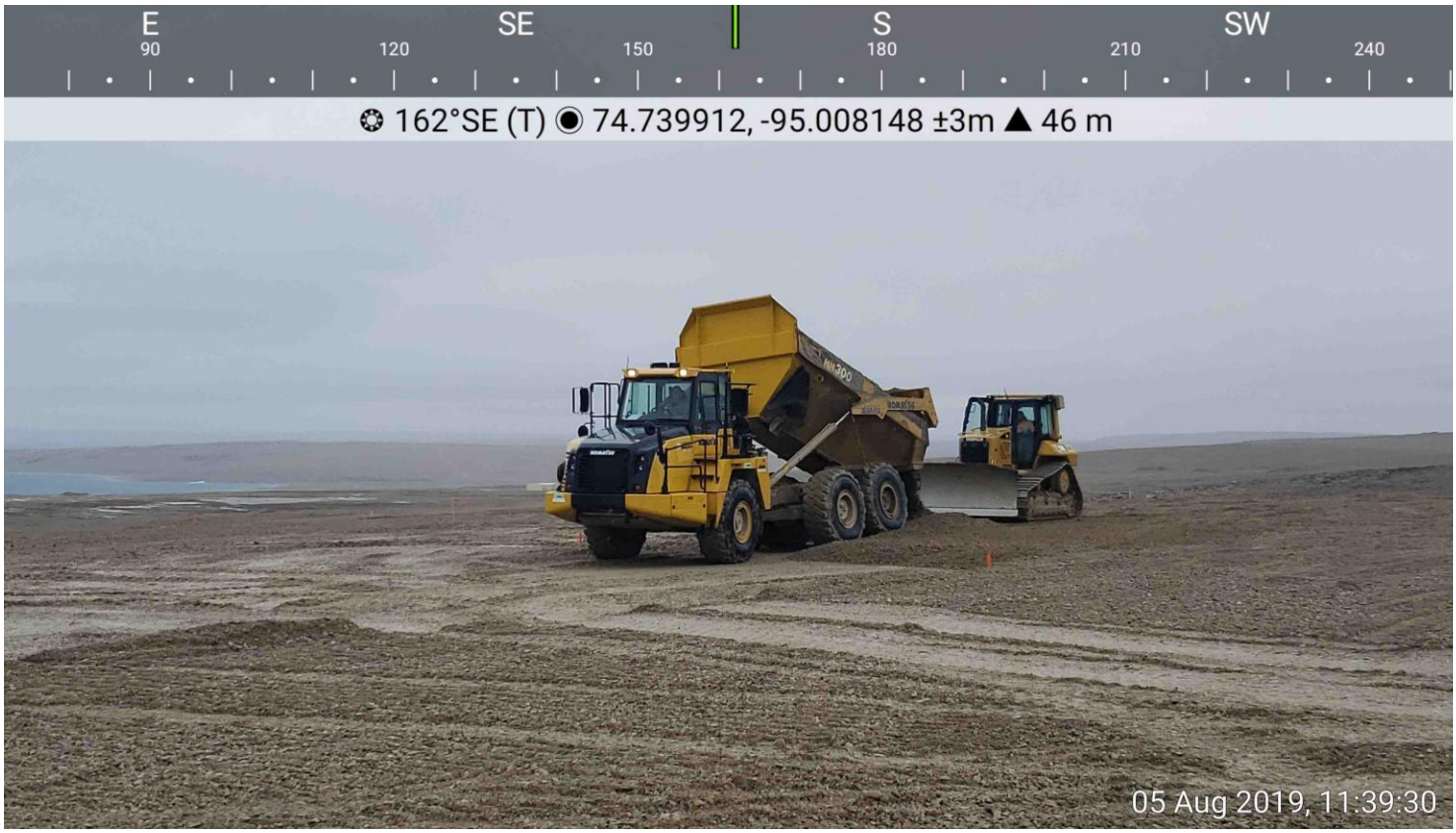

Photo 2: AEC-1 – Placement of 300-mm Lift # 2 of Type II fill at AEC-1 Top

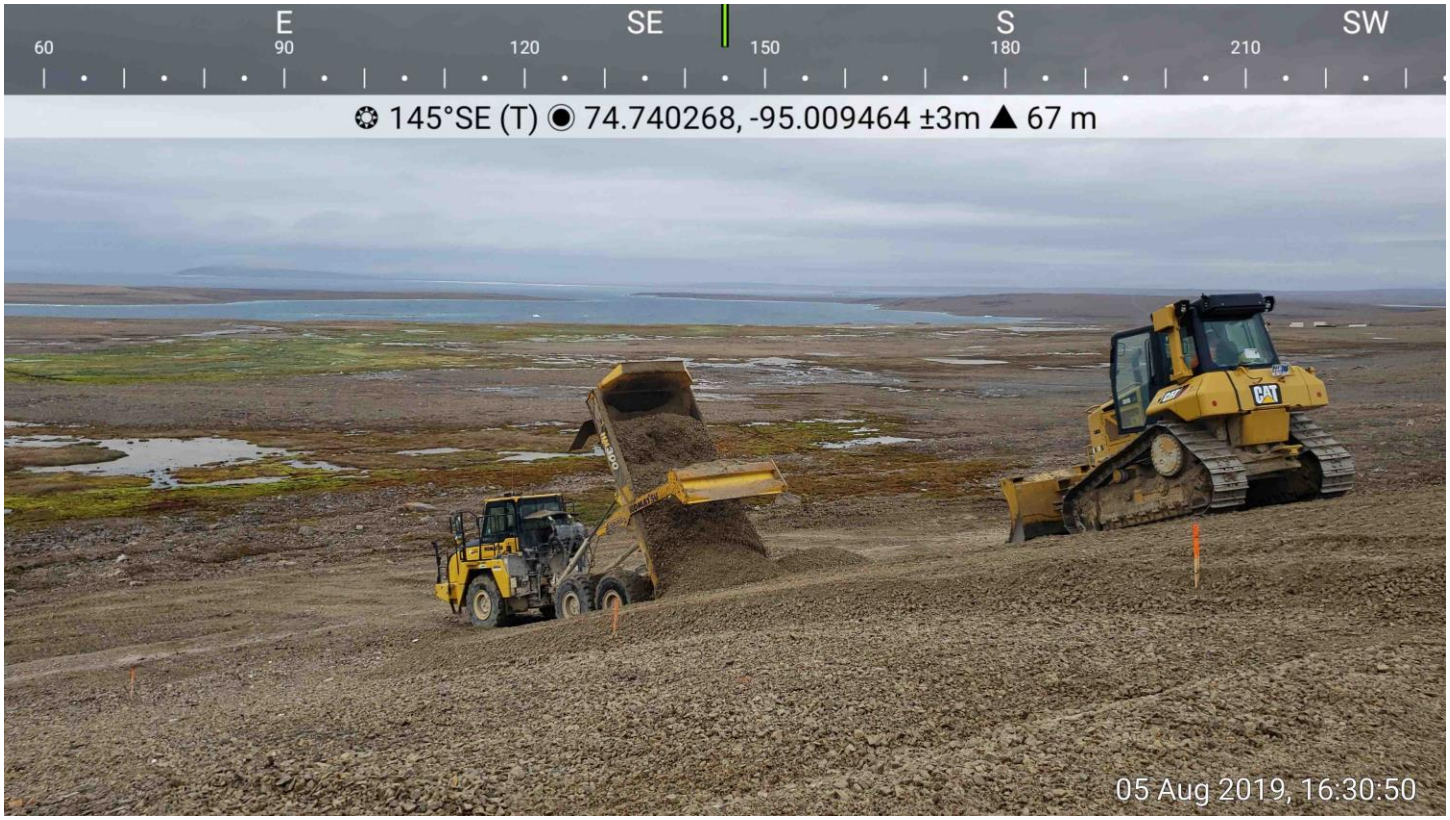

Photo 3: AEC-1 – Placing Type II fill, first 300-mm lift, on south side of AEC-1 Slope.

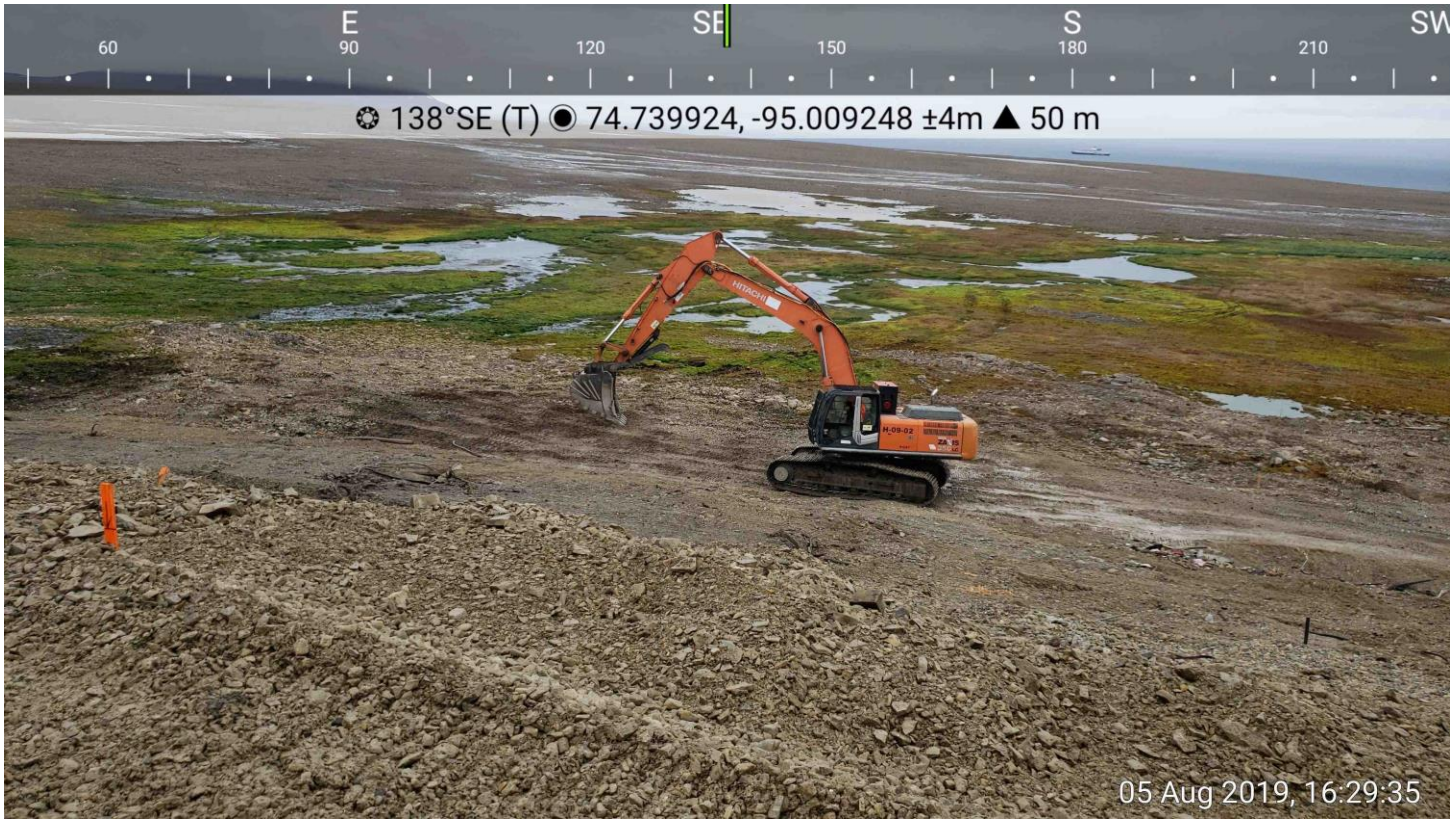

Photo 4: Track Pack compaction of foundation (waste and pit run) using 350 excavator (6 passes up and down slope).

Photo 5: AEC-2 – Western side slope of AEC-2 placement of aggregates excavated from AEC-2 side slope near municipal road and Type S swale.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 6, 2019 Consultant Name: DOJV
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift.
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 11. (1x site super, 6x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 1x document control/HS) Inuit Personnel = 6/11.
Daily Progress		Kudlik activities: - Haul, place, compact Type II on AEC-1 Slope – 34 Loads Track Pack Compaction using 350 Excavator (Finished Track packed northern AEC-1 side slope Type II Lift #1) - Cut and Shape AEC-2 south west slope - Surveyed 3 AEC-2 Cover Areas - Haul and place Type II to AEC-2 Top (Cover Area 1) – 77 Loads DR Activities - Observed Kudlik activities
Planned Activities (next day)		Kudlik activities: - Haul & Place Type II at AEC-2 covers 1 and 2 - 3:1 Grading of side slopes – AEC-2 - Layout AEC-2 Swales and possibly start cutting
Schedule update		To be provided by Kudlik at end of July.
Health /Safety		Health and safety meeting - Heavy on Public Roads o Slow down to 20-km at the Airport/Polar Shelf o Head Lights and 4-way flashers while driving on roads o No Cell Phones o ~400 people on and off the Cruise ship and in and around the airport and Polar Shelf. o Stop for buses to allow to pass - Special Tail Gate meet at 9h30 to confirm switch to AEC-2 and the hauling routes and safety measures.
Deviations from workplan		N/A
Notes Include visitors, Any equipment issues etc		
Key Communications		Field Fit AEC-2 covers with Surveyor and Mark-up on DWGs in Trailer to best use the contract volume based on actual site conditions after Cut/Fill on Top and the observation of side slope angles and near-surface or exposed buried debris.
Weather & ground cover conditions	8ºC high Cloudy, Rain High Winds Well exposed ground conditions	7ºC low Cloudy, Light Rain Moderate Winds Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when ready.	

Photo 1: AEC-2 –Side slope 3:1 cut/fill on south west slope (before). No Hazardous Waste observed.

Photo 2: AEC-2 –Side slope 3:1 cut/fill on south west slope (After). No Hazardous Waste observed.

Photo 3: AEC-2 – Grading of cut material from AEC-2 slope in a low area on AEC-2 Top.

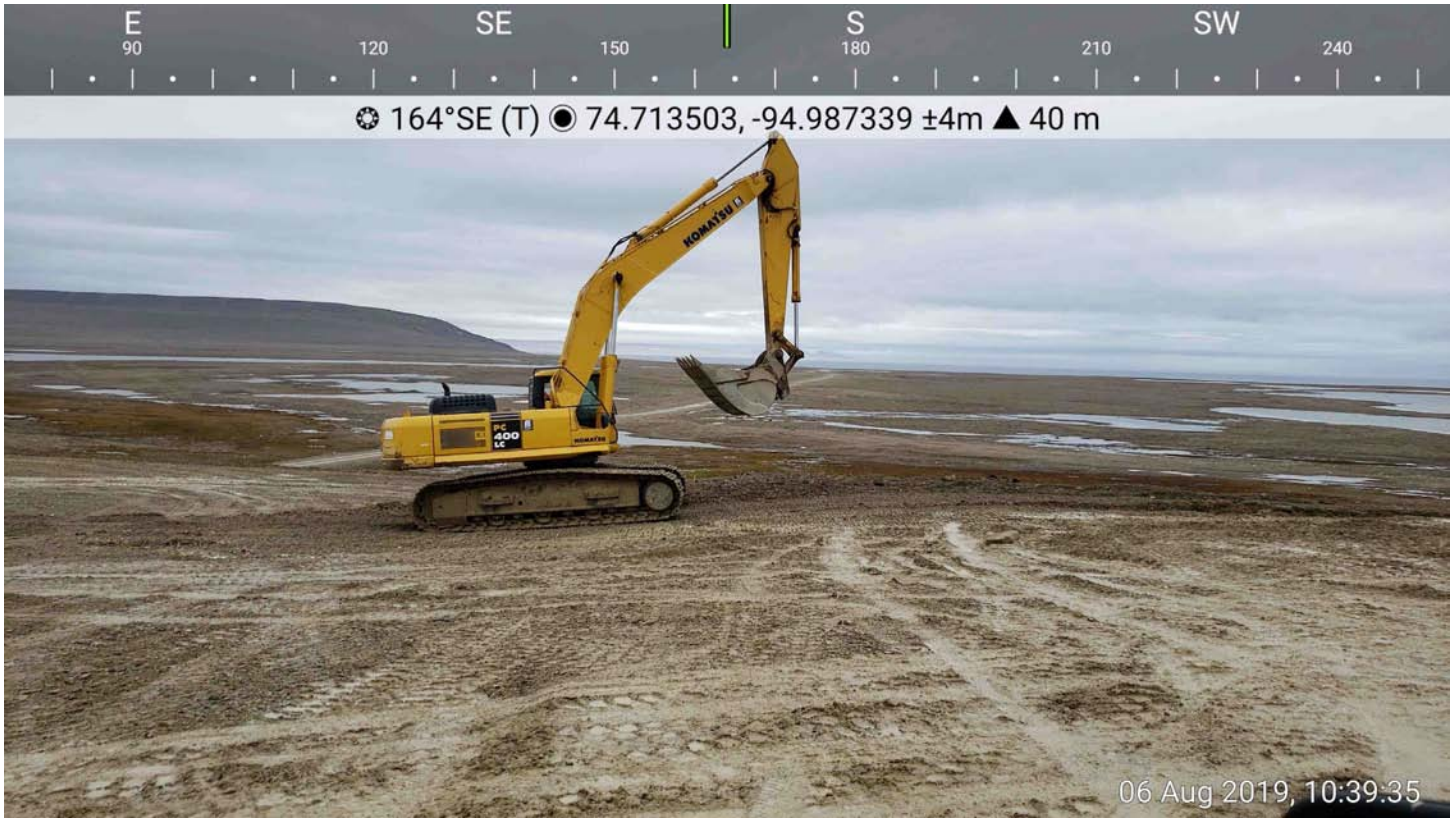

Photo 4: Track Pack compaction of AEC-2 Top foundation (cut materials) using 400 excavator (6 passes).

Photo 5: AEC-1 – Placing 300-mm Type II Lift #2 on to AEC-1 slope over track packed Lift #1.

Photo 6: AEC-2 – Placing Lift #1 300-mm on AEC-2 Top cover area #1 over near surface buried wastes observed during Cut/Fill efforts.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Wednesday August 7, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais, Jason Mauchan	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm Day Shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 13. (1x site super, 6x operator, 1x mechanic, 1x Surveyor, 1x Wildlife, 1x document control/HS, 2x labourers) Inuit Personnel = 8/13.	
Daily Progress		Kudlik activities: - Track Pack Compaction using 350 Excavator (Track packed northern AEC-1 side slope Type II Lift #2) - Cut and Shape AEC-2 west slope - Surveyed and started excavating AEC-2 Swale - Haul and place Type II to AEC-2 Top (Cover Area 1 & 2) – 77 Loads DR Activities - Observed Kudlik activities	
Planned Activities (next day)		Kudlik activities: - Haul & Place Type II at AEC-2 cover 2 - AEC-2 Swale excavation - Layout AEC-2 side slope stabilization and cover areas 3 and 4	
Schedule update		To be provided by Kudlik at end of July.	
Health /Safety		Health and safety meeting - Heavy on Public Roads o Slow down to <15-km at the Airport/Polar Shelf due to Fog o Head Lights and 4-way flashers while driving on roads o No Cell Phones o 3 point contact while getting in and out of the machines	
Deviations from workplan		N/A	
Notes Include visitors, Any equipment issues etc			
Key Communications			
Weather & ground cover conditions		6ºC high Heavy Fog Low Visibility Well exposed ground conditions	5ºC low Heavy Fog, Light Rain Low Visibility Well exposed ground conditions
Lab summary		Analytical results from chemical soil samples to be updated when ready.	

Photo 1: AEC-2 – Cut / Fill of north west slope of AEC-2.

Photo 2: AEC-1 – Placement of 300-mm Lift # 2 of Type II fill at AEC-1 Top

Photo 3: AEC-1 – Placing Type II 300-mm lift, on west side of AEC-2 Slope, over airplane fuselage.

Photo 4: Track Pack compaction of AEC-1 Slope, Lift #2 using 350 excavator (6 passes up and down slope).

Photo 5: AEC-2 – Excavating eastern Swale at AEC-2.

Photo 6: AEC-2 – Hauling Type II material to AEC-2. Heavy fog and low visibility.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday August 9, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jonathan Markiewicz Kudlik Crew = 12. Day shift = 13. Night Shift = 0. (1x site super, 5x operator, 1x mechanic, 2x labourers, 1x document control/HS, 1 x wildlife monitor) Inuit Personnel = 7/11.	
Daily Progress	Kudlik activities: - Track Pack Compaction using 350 Excavator, track packed AEC-2 - Haul and place Type II to AEC-2 (113 Loads) - Consolidated liquids from drums originating from AEC-2 in 2019 DR Activities - Observed Kudlik activities - Cross-over from J.Markiewicz to J.Mauchan	
Planned Activities (next day)	Kudlik activities: - Haul and place Type II to AEC-2 - Track Pack Compaction using 350 Excavator at AEC-2 -	
Schedule update	none	
Health /Safety	Health and safety meeting - Road speed along access road to be 20 km/h in polar shelf area - Watch your surroundings along access road along polar shelf and hotel area as there are multiple points of access for traffic - Communicate using radios	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	11^{o}C high Mostly cloudy Low winds Well exposed ground conditions	3^{o}C low Light mist, mostly cloudy Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when received	

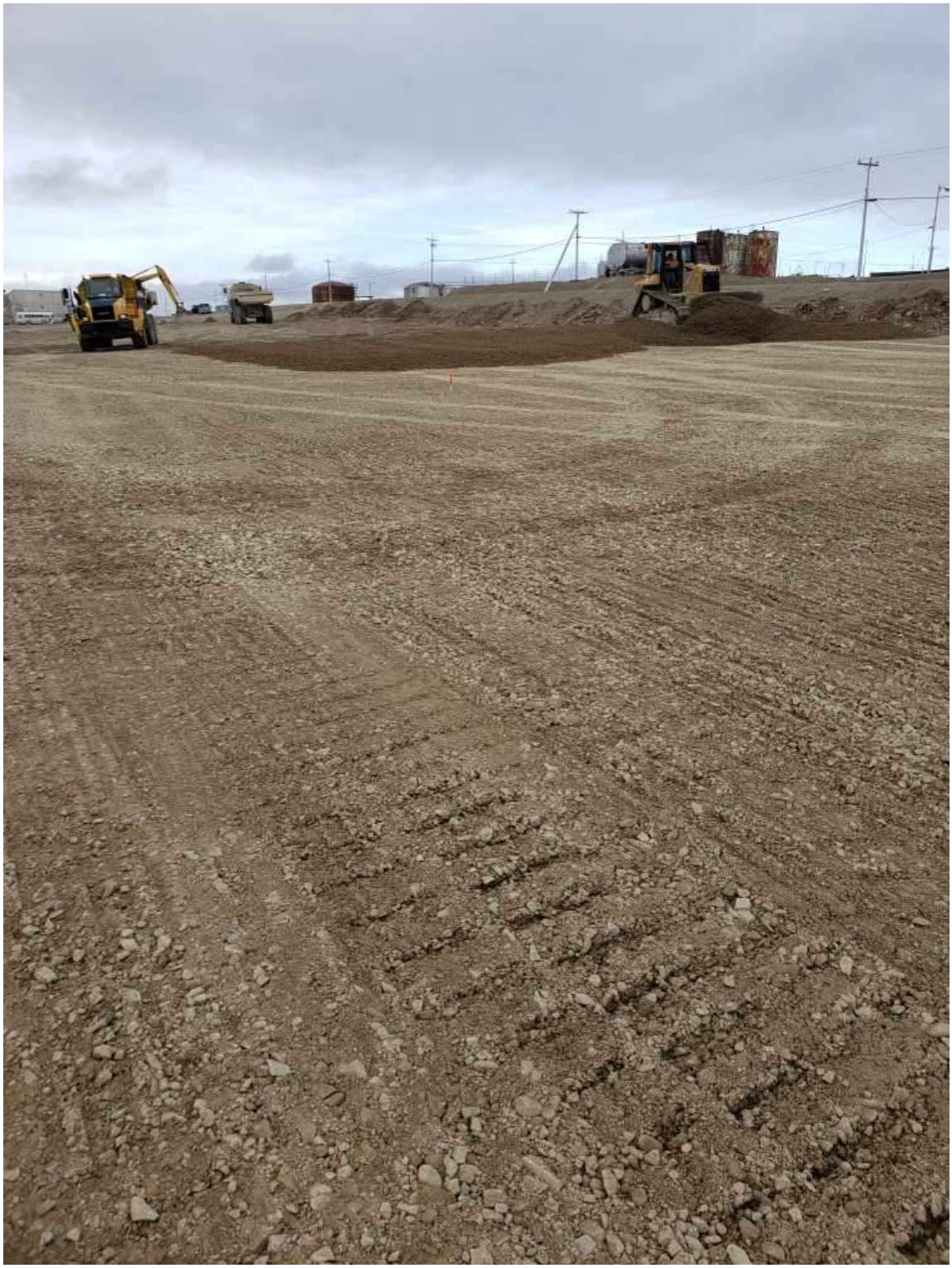

Photo 1: Placing Type II material at AEC-2

Photo 2: Placing Type II Material at AEC-2

Photo 3: Compacting lift of Type II material at AEC-2

Photo 4: Compacting Type II material at AEC-2

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday August 10, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 13. Day shift = 13. Night Shift = 0. (1x site super, 5x operator, 2x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 7/12.	
Daily Progress	Kudlik activities: - Set grade stakes at AEC-2 for placement of Type II - Haul and place Type II to AEC-2 (102 Loads) - Three rock trucks used to haul Type II - Dozer used to spread lifts of Type II - Track Pack Compaction using 350 Excavator, track packed AEC-2 - Collect surface debris from beyond toe of AEC-2 DR Activities - Observed Kudlik activities - Observe track packing of lifts (maximum lift 300 mm) - Gradation testing by Shaun Dagenais	
Planned Activities (next day)	Kudlik activities: - Haul and place Type II to AEC-2 - Track Pack Compaction using 350 Excavator at AEC-2 - Collect debris from beyond toe of AEC-2 -	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Speed reminder – watch speed along access road near hotel and polar shelf - Stop at junction of AEC-2 and access road - Communication yesterday using radios was excellent, drivers notifying other drivers of pedestrians. Let's keep it up with our excellent radio communication	
Deviations from workplan	n/a	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	8°C high Low cloud cover Low winds Well exposed ground conditions	4°C low Mostly cloudy Low winds Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when received	

Photo 1: Placing Type II material at AEC-2

Photo 2: Spreading lift of Type II material at AEC-2

Photo 3: Placing Type II material at AEC-2

Photo 4: Excavator used to track pack Type II material at AEC-2 with 6 passes

Photo 5: Consolidated debris from beyond toe of AEC-2. Note drums shown are empty

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday August 11, 2019 Consultant Name: DOJV	
Author | Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 13. Day shift = 13. Night Shift = 0. (1x site super, 5x operator, 1x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 7/11.	
Daily Progress	Kudlik activities: - Set grade stakes at AEC-2 for placement of Type II - Haul and place Type II to AEC-2 (74 Loads) - Two rock trucks used to haul Type II, third rock truck down due to mechanical issue but fixed at end of shift - Dozer used to spread lifts of Type II - Track Pack Compaction using 350 Excavator, track packed AEC-2 - Collect surface debris from beyond toe of AEC-2 - Weekly health and safety meeting DR Activities - Observed Kudlik activities - Observe track packing of lifts (maximum lift 300 mm) - Gradation data compilation by Shaun Dagenais	
Planned Activities (next day)	Kudlik activities: - Haul and place Type II to AEC-2 - Track Pack Compaction using 350 Excavator at AEC-2 - Collect debris from beyond toe of AEC-2	
Schedule update	No updates.	
Health /Safety	Health and safety meeting – weekly meeting topics - Fire extinguisher use review - Fire extinguisher checks - Review of protocol if fire is in the cab o Stay safe, exit cab o Communicate to site super. o Turn off master switch, a common cause of fires in trucks is electrical o Use fire extinguisher if safe - Review of road safety - Pre-trip inspections (check fluids, tires, grease, back-up alarm, etc.) - Communication review (radio protocol, access roads are radio controlled)	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	One rock truck down for part of the day, however, electrical issue was solved. Three rock truck will be in use tomorrow.	
Key Communications	none	
Weather & ground cover conditions	6°C morning Low cloud cover, fog Low winds Well exposed ground conditions	4°C low Partly cloudy Low winds Well exposed ground conditions
Lab summary	Analytical results from chemical soil samples to be updated when received	

Photo 1: Track compacting using excavator. 6 passes of loader being done for compaction.

Photo 2: Track compacting using excavator. 6 passes of loader being done for compaction.

Photo 3: Compacted Type II material at AEC-2 (Zone C-1).

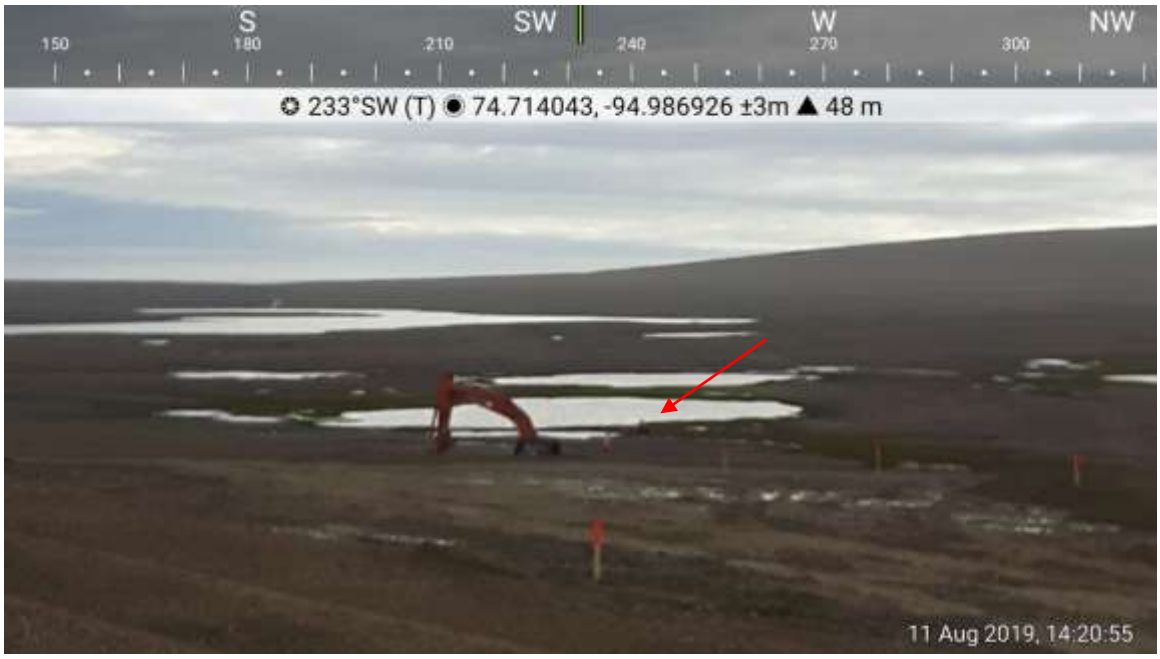

Photo 4: Debris collection from beyond toe of AEC-2

Photo 5: Minor amount of surface debris (metal) remaining at AEC-1, located between fenced area and swale.

Photo 6: AEC-2, zone references C-1 through C6.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Monday August 12, 2019 Consultant Name: DOJV
Author	Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. No night shift
Field Personnel on site		DR: Jason Mauchan Kudlik Crew = 11. Day shift = 11. Night Shift = 0. (1x site super, 5x operator, 1x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 7/11.
Daily Progress		Kudlik activities: - Haul and place Type II to AEC-2 (104 Loads) - Dig centre line of swales at AEC-2 - Dozer used to spread lifts of Type II - Track Pack Compaction using 350 Excavator, track packed AEC-2 - Collect surface debris from beyond toe of AEC-2 - Weekly construction meeting held DR Activities - Observed Kudlik activities - Observe track packing of lifts (maximum lift 300 mm) - Attend weekly construction meeting and take minutes
Planned Activities (next day)		Kudlik activities: - Haul and place Type II to AEC-2 - Track Pack Compaction using 350 Excavator at AEC-2 - Collect debris from beyond toe of AEC-2
Schedule update		No updates.
Health /Safety		Health and safety meeting - Three points of contact when entering/exiting equipment - Slow speed when travelling on main road through Polar Shelf area and at two areas where road is soft near Borrow Areas
Deviations from workplan		none
Notes Include visitors, Any equipment issues etc		none
Key Communications		none
Weather & ground cover conditions	4^{o}C morning Partly cloudy Cold moderate winds Well exposed ground conditions	6^{o}C afternoon Partly cloudy Moderate winds Well exposed ground conditions
Lab summary	Chemical soil sample results from Spill-2 (inter-season spill near site office at laydown area) received. Analytical data indicate that the impacted soil has been removed (Kudlik bagged impacted soil in Quatrex bags).	

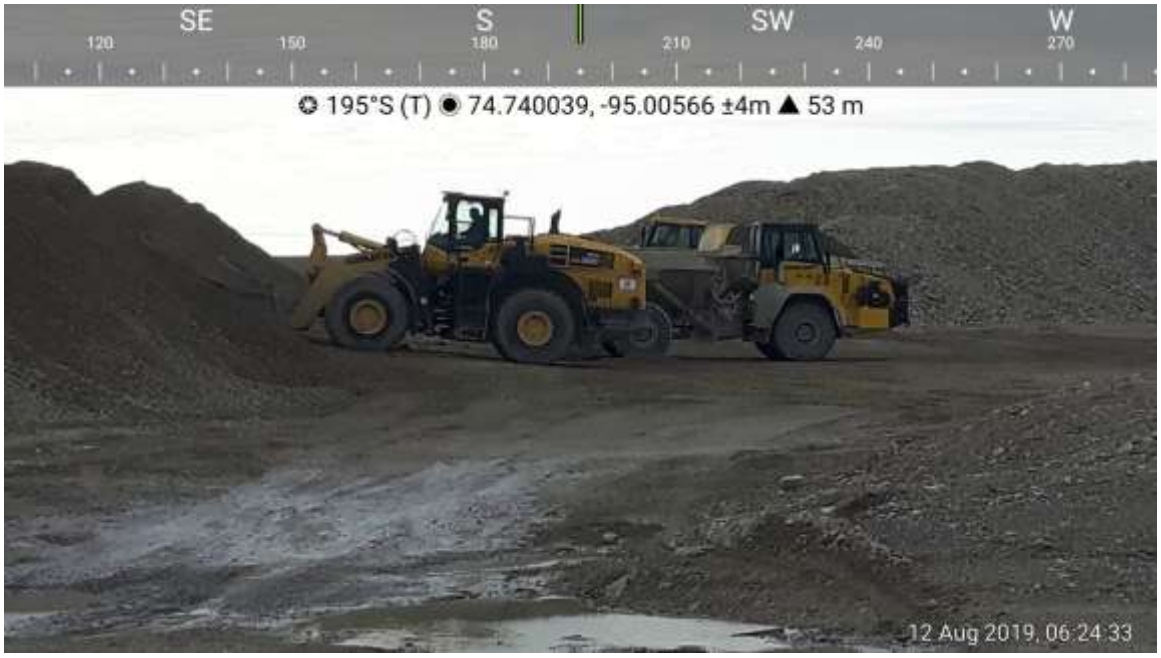

Photo 1: Loading Type II material

Photo 2: Placing Type II material at AEC-2

Photo 3: Placing Type II material at AEC-2

Photo 4: Swale centre line dug at AEC-2

Photo 5: Swale centre line at AEC-2

Photo 6: Collecting debris from beyond toe of AEC-2

Photo 7: Loading material from swale excavation which contained metal debris

Photo 8: Spreading the loads of swale excavation material containing metal debris into slope at AEC-2

Photo 9: Swale material containing metal debris

Photo 10: Surface debris from AEC-2 placed on slope of AEC-1

Photo 11: Metal debris from portion of swale excavation

Photo 12: One of two road sections which require ongoing maintenance by Kudlik and will require end-of-season maintenance by Kudlik

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday August 13, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 11. Day shift = 11. Night Shift = 0. (1x site super, 5x operator, 1x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 6/11.	
Daily Progress	Kudlik activities: - Haul and place Type II to AEC-2 (98 Loads) - Dozer used to spread lifts of Type II at AEC-2 - Track Pack Compaction using 2 x Excavators at AEC-2 - Collect surface debris from beyond toe of AEC-2 DR Activities - Observed Kudlik activities - Observe track packing of lifts (maximum lift 300 mm)	
Planned Activities (next day)	Kudlik activities: - Haul and place Type II to AEC-2 - Track Pack Compaction using 350 Excavator at AEC-2 - Collect debris from beyond toe of AEC-2	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Circle checks on machines (pre-trip inspections) - Slow speeds along road and in AEC-2 - Communication	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	4^{o}C morning Partly cloudy Cold winds Well exposed ground conditions	8^{o}C afternoon Overcast Moderate winds, cold wind Well exposed ground conditions
Lab summary	none	

Photo 1: View of portion beyond toe of AEC-2 cleared of surface debris

Photo 2: Spreading Type II at AEC-2

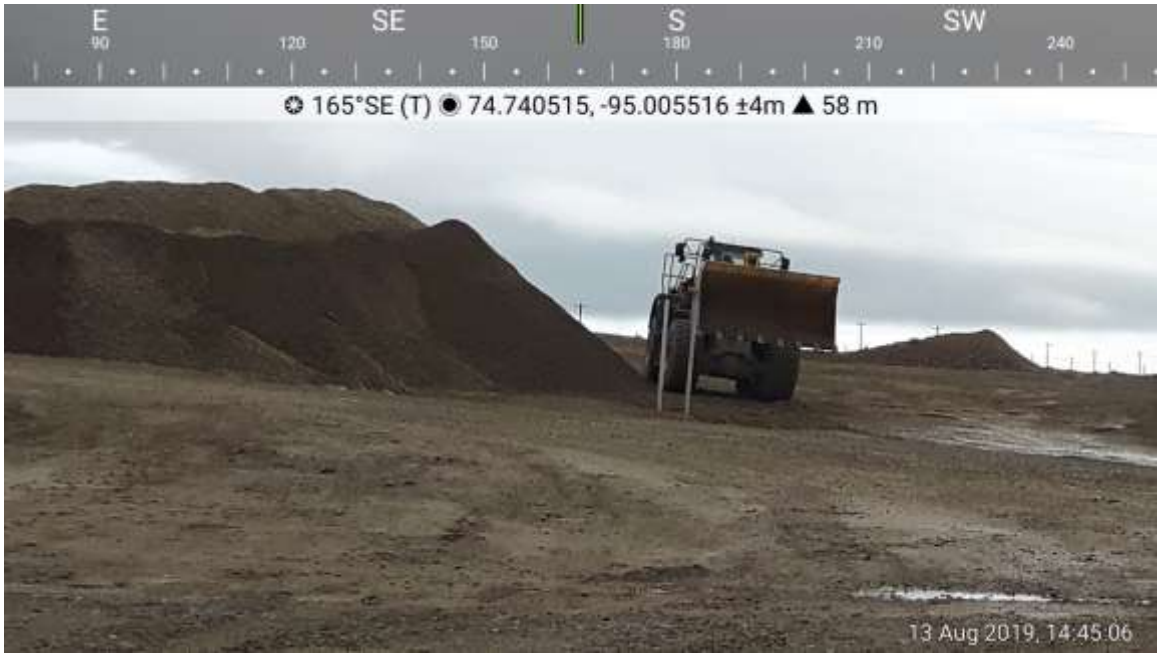

Photo 3: Type II stockpile adjacent to screener

Photo 4: Track packing at AEC-2

Photo 5: Example of ATV trailer load of surface debris from beyond toe of AEC-2

Photo 6: AEC-2. Track-packed area in foreground, spreading material in background

Photo 7: Two excavators track packing at AEC-2

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday August 14, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Shaun Dagenais	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 11. Day shift = 11. Night Shift = 0. (1x site super, 5x operator, 1x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 6/11.	
Daily Progress	Kudlik activities: - Dozer used to spread lifts of Type II at AEC-2 - Track Pack Compaction using 1 x Excavator at AEC-2 - Collect surface debris from beyond toe of AEC-2 - Moved excavator to AEC-1 to start construction of swales at AEC-1 DR Activities - Observed Kudlik activities - Observe track packing of lifts (maximum lift 300 mm)	
Planned Activities (next day)	Kudlik activities: - Track Pack Compaction using 350 Excavator at AEC-2 - Complete the debris collection from beyond toe of AEC-2 - Set out the swales and begin swale slopes at AEC-1	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Be aware of speed along road, in AEC-2, at stockpile - Eye contact with operators - Housekeeping, keep cabs clean	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	6^{o}C morning Overcast Moderate winds Well exposed ground conditions	8^{o}C afternoon Overcast Minimal wind Well exposed ground conditions
Lab summary	All samples sent have been received by the lab. Lab data expected Aug 16 and Aug 19, 2019.	

Photo 1: AEC-2 after track-packing Type II material

Photo 2: AEC-2 after track-packing Type II material in C1

Photo 3: AEC-2 after track-packing Type II material at C6

Photo 4: Debris collection from AEC-2

Photo 5: View of access road after ongoing maintenance

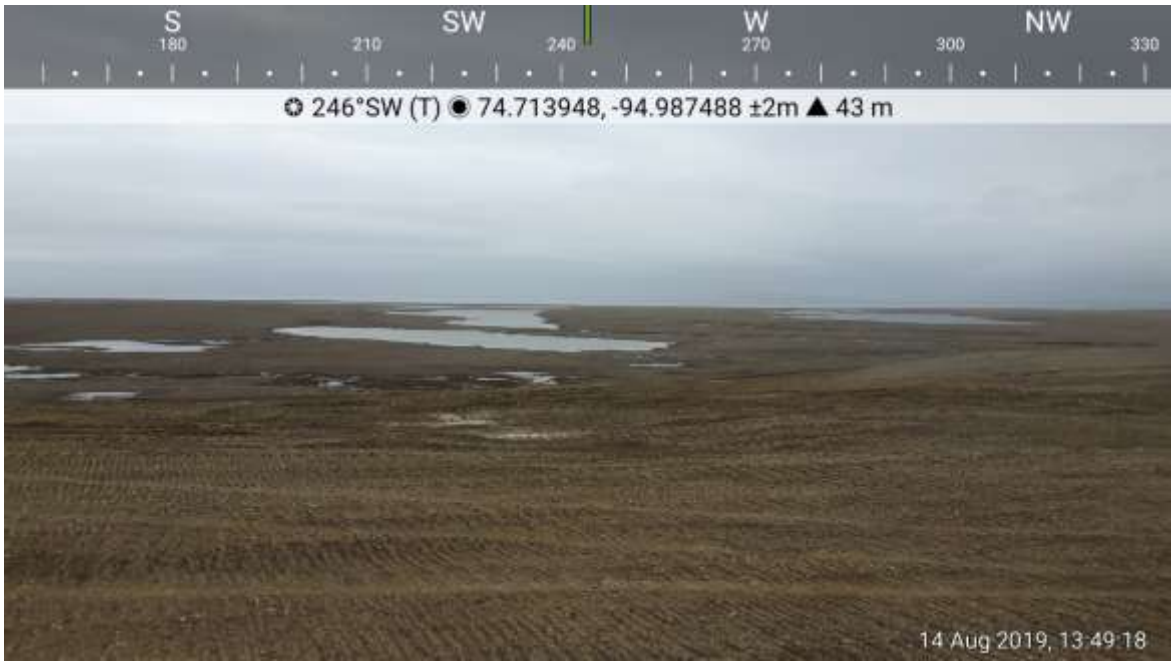

Photo 6: View toward crest of AEC-2 at C5

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Thursday August 15, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, John Cowan	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 11. Day shift = 11. Night Shift = 0. (1x site super, 5x operator, 1x labourers, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 6/11.	
Daily Progress	Kudlik activities: - Reshape the northern section of borrow area west - Collect surface debris from beyond toe of AEC-2 - Construction of swales at AEC-1 - Spread debris from AEC-2 into slope of AEC-1 DR Activities - Observed Kudlik activities - Field fit the swale locations	
Planned Activities (next day)	Kudlik activities: - Swale construction at AEC-1 - AEC-3 excavations pending lab data - Haul pit run to AEC-1 slope in area of consolidated debris - Consolidate the debris from AEC-2 into the AEC-1 slope using pit run	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Check your surroundings - Use parking brake on truck if parking on a slope - Watch your speed in the laydown area	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	Swale question from Kudlik. DR to respond on August 16, 2019.	
Weather & ground cover conditions	7°C morning Mostly cloudy Moderate winds Well exposed ground conditions	13°C afternoon Partly cloudy Minimal wind Well exposed ground conditions
Lab summary	Lab data pending - expected Aug 16 and Aug 19, 2019.	

Photo 1: AEC-1 at Swale Type S location

Photo 2: AEC-1, Swale Type G being constructed along eastern portion of landfill extents

Photo 3: Geotextile roll label.

Photo 4: AEC-1. View northwest at culvert under access road to fenced metal debris area. View toward AEC-1 Swale Type G.

Photo 5: AEC-1 Swale Type G. The water in the swale is slowly flowing north, toward bedrock adjacent to fenced metal storage area.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Friday August 16, 2019 Consultant Name: DOJV
Author	Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, John Cowan
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. No night shift
Field Personnel on site		DR: Jason Mauchan Kudlik Crew = 10. Day shift = 10. Night Shift = 0. (1x site super, 5x operator, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 5/10
Daily Progress		Kudlik activities: - Haul Type1 to AEC-1 for placement on slope and crest - Swale construction at AEC-1 - Hauled pit run to one section of AEC-1 to mix with debris originating from AEC-2 for stabilizing slope - Placed Type 1 material on north western portion of AEC-1 DR Activities - Observed Kudlik activities - Received lab data from 4 x excavations at AEC-3
Planned Activities (next day)		Kudlik activities: - Compacting last of debris from AEC-2 into slope of AEC-1 - Placement of Type 1 material at AEC-1 - Screening operations to produce Type 2
Schedule update		No updates.
Health /Safety		Health and safety meeting - Wear appropriate PPE - Wear the right gloves for the job - All drivers are doing an excellent job maintaining slow speeds
Deviations from workplan		none
Notes Include visitors, Any equipment issues etc		none
Key Communications		Alternate design for swales for the section of swales that will not have geotextile were communicated to Natalie Robinson. Feedback from Francois Bourassa was requested by DR via phone message
Weather & ground cover conditions	9^{o}C morning Mostly cloudy Moderate winds Well exposed ground conditions	14^{o}C afternoon Partly cloudy Minimal wind Well exposed ground conditions
Lab summary (Data received from samples collected from extents of excavations at AEC-3, excavations (EX) 1 through 4.		EX-1: no further excavation required EX-2: further excavation required at southern extent of excavation toward previous sample A3-TP13-1. Remaining impact is PHC F3. EX-3: no further excavation required EX-4: further excavation required at base. Remaining impact is PHC F3. Excavation between previous samples A3-HA13-9, A3-HA13-10, A3-HA-13-8. Comparison criteria: CCME residential/parkland. EX-5 and EX-6: data pending

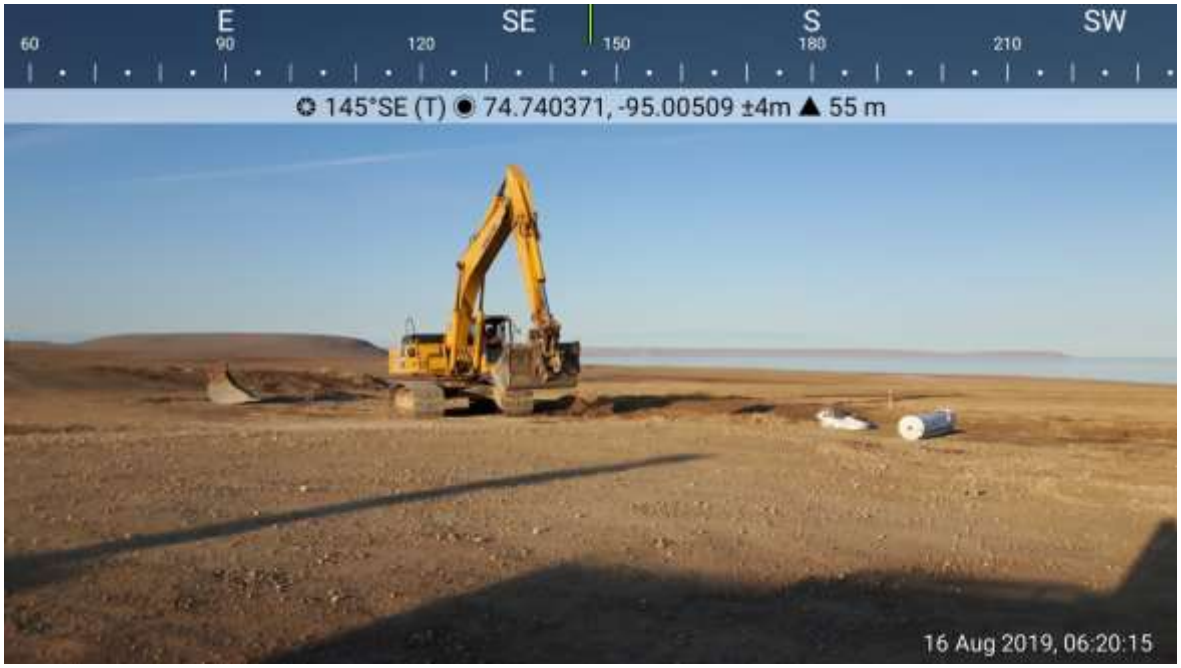

Photo 1: Swale construction at AEC-1. Excavator at Type G swale on eastern extents of AEC-1

Photo 2: Type G swale construction at AEC-1

Photo 3: View toward stockpiles. Today, Type-1 material hauled to AEC-1 for placement on AEC-1 slope.

Photo 4: Placement of Type 1 material at AEC-1

Photo 5: Placement of Type 1 material at AEC-1 slope. Wet area will be future area of diffuser at end of Type G swale.

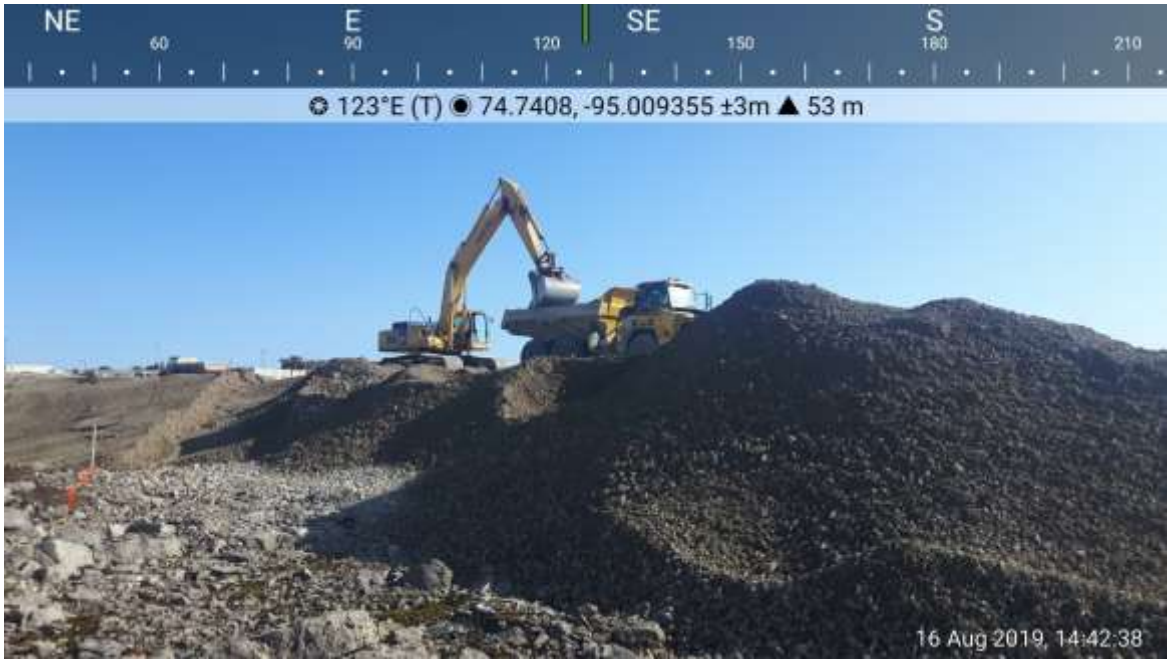

Photo 5: Type 1 material at AEC-1 for placement on slope and crest.

Photo 5: Preparing the crest at AEC-1 for placement of Type 1

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday August 17, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Edward Domijan	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 10. Day shift = 10. Night Shift = 0. (1x site super, 5x operator, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 4/10	
Daily Progress	Kudlik activities: - AEC-1, prepare crest for Type 1 - AEC-1, prepare slope for Type 1 - Transport to feeder pile (118 loads) DR Activities - Observed Kudlik activities - Marked out further excavations at AEC-3 at EX2 and EX4	
Planned Activities (next day)	Kudlik activities: - AEC-1, prepare crest and slope for Type 1 - Complete the debris integration into the slope of AEC-1 using pit run	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Use correct PPE for the job, available in site office shelves - Eye contact with operators - Surveyor is on crest of AEC-1 and slope of AEC-1. Don't walk in blind spots	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	5^{o}C morning Partly cloudy Moderate winds Well exposed ground conditions	8^{o}C afternoon Clear Moderate wind Well exposed ground conditions
Lab summary	Data expected Aug 19th, 2019	

Photo 1: AEC-1, crest preparation at northern end (fenced metal debris area on right hand side of photo)

Photo 2: AEC-1 crest preparation

Photo 3: AEC-1 crest preparation

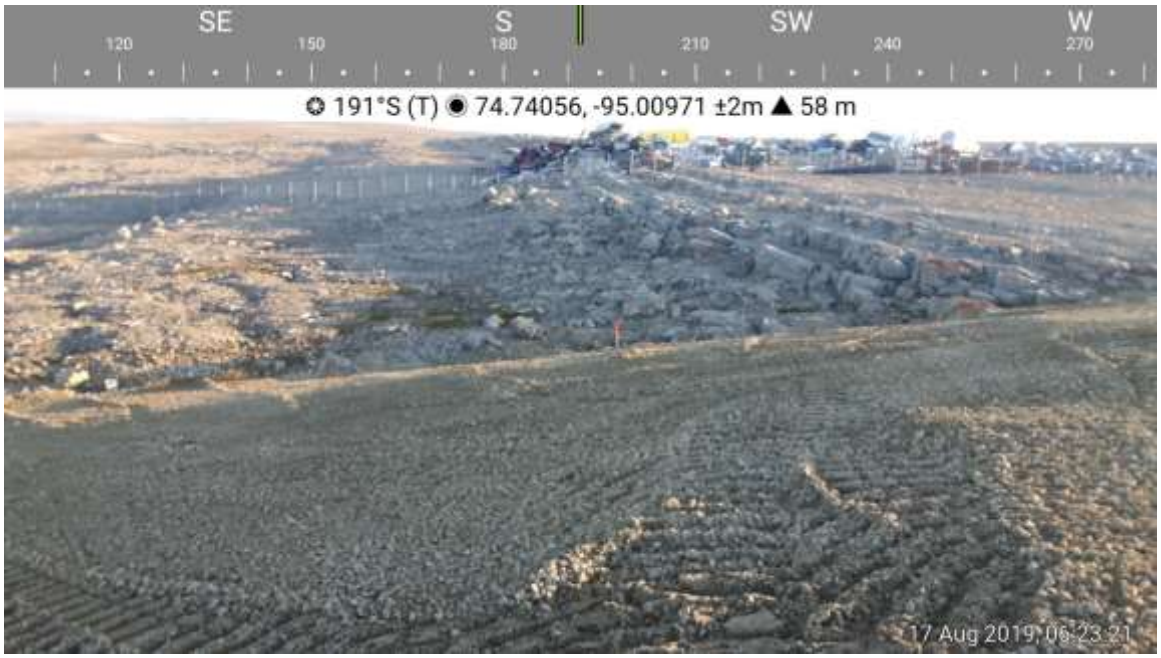

Photo 4: AEC-1 slope preparation

Photo 5: AEC-1 slope preparation

Photo 6: AEC-1. Compacting debris which originated from AEC-2. View of AEC-1 slope, southwestern portion.

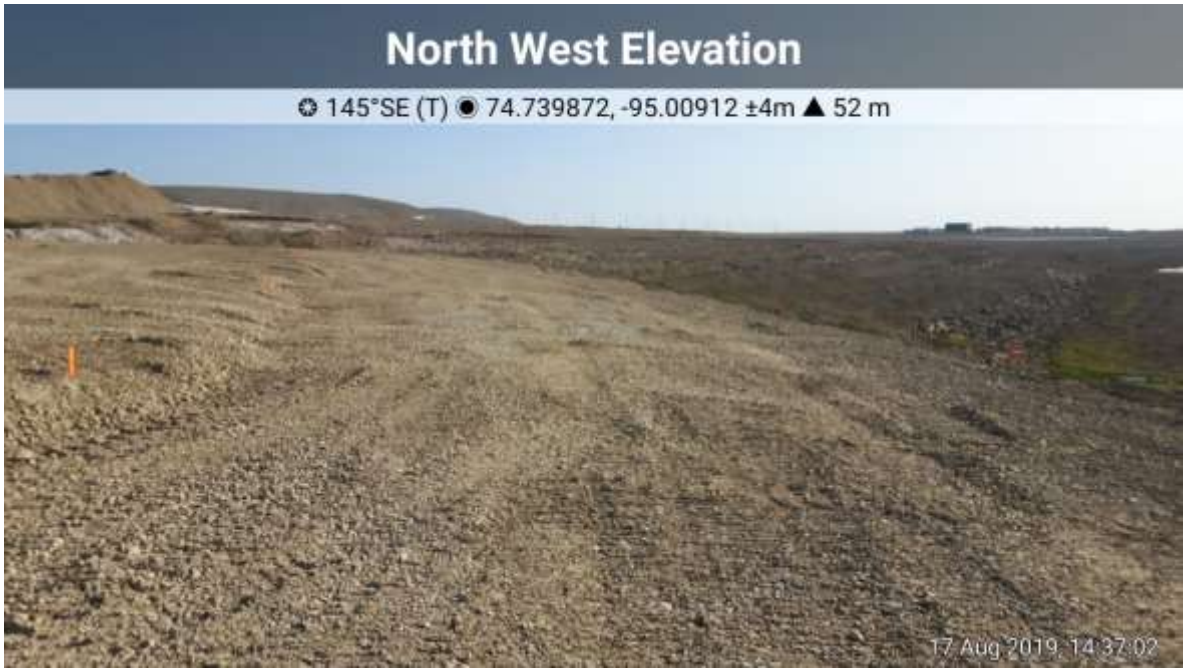

Photo 7: AEC-1 crest portion ready for Type I material

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Sunday August 18, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Edward Domijan	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 10. Day shift = 10. Night Shift = 0. (1x site super, 5x operator, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 4/10	
Daily Progress	Kudlik activities: - AEC-1, prepare crest and slope for Type 1 - Complete the debris integration into the slope of AEC-1 using pit run (22 loads) - Haul Type 2 to AEC-1 slope for preparing 3:1 slope (88 loads) DR Activities - Observed Kudlik activities - Type S swale planning oversight	
Planned Activities (next day)	Kudlik activities: - Haul Type 2 to AEC-1 slope for preparing 3:1 slope - Type S swale at AEC-1	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Use radios - Beware of surroundings - Traffic at Type II stockpile, loaded trucks have right of way, pick-up trucks to use the detour through the laydown area	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	4^{o}C morning Partly cloudy Cold, moderate winds Well exposed ground conditions	8^{o}C afternoon Clear Moderate wind Well exposed ground conditions
Lab summary	none	

Photo 1: Stockpiles adjacent to screener

Photo 2: Hauling material to AEC-1

Photo 3: Loading pit run from 'feeder' pile to haul to AEC-1 to mix with compacted debris in slope

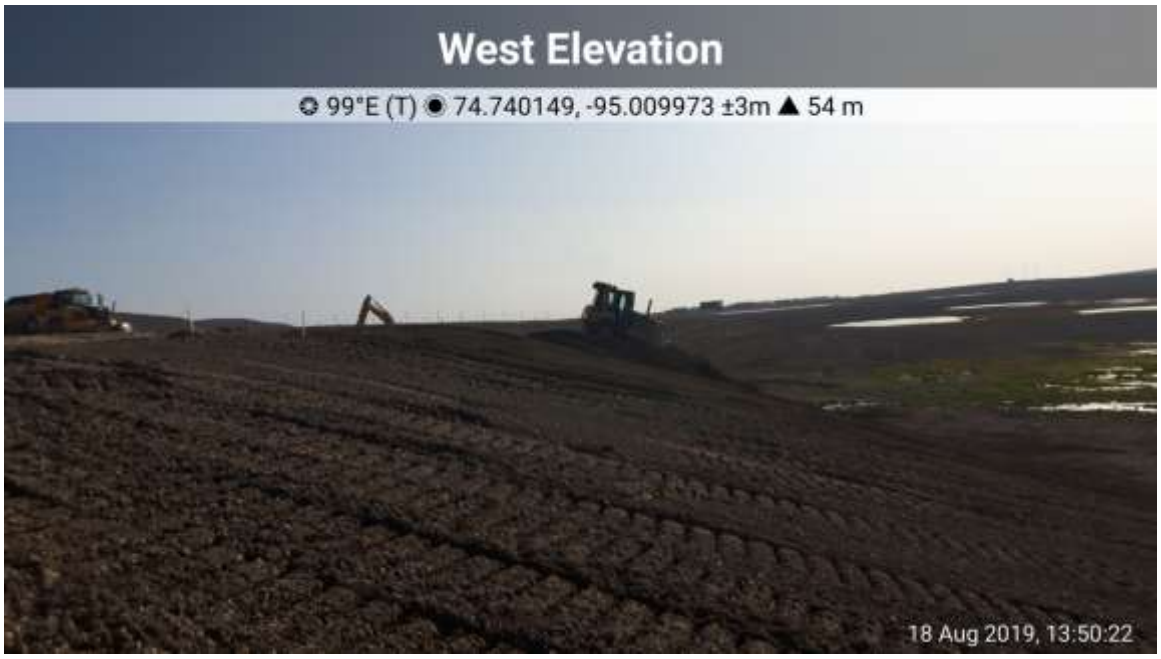

Photo 4: Preparing slope at AEC-1

Photo 5: Preparing slope at AEC-1

Photo 6: Slope preparation along western extents of AEC-1

Photo 7: Mixing pit run with compacted debris

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Monday August 19, 2019 Consultant Name: DOJV	
Author Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Edward Domijan	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Jason Mauchan Kudlik Crew = 10. Day shift = 10. Night Shift = 0. (1x site super, 5x operator, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 4/10	
Daily Progress	Kudlik activities: - Type S swale construction at AEC-1 (excavation and 3:1 slope) - AEC-1, prepare crest and slope for Type 1 - Insert grade stakes for Type 1 at AEC-1 - Haul Type 2 to AEC-1 slope (63 loads) - Compact Type 2 on AEC-1 slope - Haul (58 loads), place, and compact Type 1 on AEC-1 crest and slope - Weekly Health and Safety Meeting DR Activities - Observed Kudlik activities - Attended weekly Health and Safety Meeting	
Planned Activities (next day)	Kudlik activities: - Haul, place and compact Type 2 material at AEC-1 - Haul, place and compact Type 1 material at AEC-1 - Screen material to produce Type 2	
Schedule update	No updates.	
Health /Safety	Health and safety meeting - Check fire extinguishers, there is a fire extinguisher in each machine - Walk-arounds in the mornings and check fluids, use three points of contact when getting on/off machines - Use hazard lights when driving today due to fog and check the lights	
Deviations from workplan	none	
Notes Include visitors, Any equipment issues etc	none	
Key Communications	none	
Weather & ground cover conditions	1°C morning fog Cold, moderate winds Well exposed ground conditions	4°C afternoon Cloudy Moderate wind Well exposed ground conditions
Lab summary	none	

Photo 1: AEC-1 crest preparation

Photo 2: Loading Type 2 material for use on AEC-1 slope

Photo 3: Checking lift of Type 1 material at AEC-1 crest

Photo 4: Slope preparation in area adjacent to Type S swale at AEC-1

Photo 5: Type S swale. Photo looking downgradient from downgradient of lagoons

Photo 6: Type 2 material placement at AEC-1 crest

Photo 7: Type S swale preparation at AEC-1. Photo looking upgradient toward lagoons

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Tuesday August 20, 2019 Consultant Name: DOJV
Author	Jason Mauchan	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Henry Wong
Objective		Daily Field Report
Reporting Items		
TOPIC		**WORK ACTIVITY AND PROGRESS**
Start and End Time		6:00am to 6:00pm Day Shift. No night shift
Field Personnel on site		DR: Jason Mauchan Kudlik Crew = 10. Day shift = 10. Night Shift = 0. (1x site super, 5x operator, 1x document control/HS, 1 x surveyor, 1 x wildlife monitor, 1 x surveyor) Inuit Personnel = 5/10
Daily Progress		Kudlik activities: - Start laying out geotextile at Type G swale, AEC-1 - Haul Type 2 to AEC-1 slope (16 loads) - Compact Type 2 on AEC-1 slope - Haul Type 1 to AEC-1 crest and slope (66 loads) - Place, and compact Type 1 on AEC-1 crest and slope - Place Type 1 (3 loads) on geotextile at Type G swale, AEC-1 DR Activities - Observed Kudlik activities - Demarcated further excavation zones at AEC-3 - Cross-over transition day from J.Mauchan to H.Wong
Planned Activities (next day)		Kudlik activities: - Type G swale, AEC-1 - Haul, place and compact Type 1 at AEC-1 crest and slope
Schedule update		No updates.
Health /Safety		Health and safety meeting - Polar bear spotted in Resolute last night, make sure wildlife monitor knows where you are and is with you if you are walking - Review of using bear bangers - Use radios for communicating location and if bear is seen - Fog this morning, use hazard lights
Deviations from workplan		none
Notes Include visitors, Any equipment issues etc.		none
Key Communications		Weekly construction meeting scheduled for Thursday Aug 22, 2019. Henry Wong taking over as Dept Rep commencing Aug 21, 2019.
Weather & ground cover conditions	1°C morning Fog Cold, moderate winds Well exposed ground conditions	3°C afternoon Cloudy Moderate wind Well exposed ground conditions
Lab summary		Data expected Friday Aug 23, 2019 for the following at AEC-3: - EX2 (lateral extents to the south of PHC F3) - EX-4 (vertical extents at base of PHC F3) - EX-5 (vertical extents at base of PHC F3 and CrVI)

Photo 1: Type 1 cover at crest of AEC-1.

Photo 2: Type G swale, AEC-1. Laying out geotextile along centre line of swale to account for a 30 cm overlap requirement (see Photo 4).

Photo 3: Type 1 material ready to be placed on geotextile at Type G swale, AEC-1.

Photo 4: Type G swale construction at AEC-1. Note that geotextile running along centre line is to account for the 30 cm overlap requirement.

Photo 5: AEC-1 slope. Dozer spreading Type 2 material. In the foreground, Type 1 material placed.

Photo 6: In the foreground - Type G swale construction at AEC-1. In the background – Type 2 material be hauled to slope.

Photo 7: AEC-1 activities.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Tuesday August 21, 2019 Consultant Name: DOJV	
Author | Henry Wong	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Henry Wong	
Objective	Daily Field Report	
Reporting Items		
TOPIC	**WORK ACTIVITY AND PROGRESS**	
Start and End Time	6:00am to 6:00pm Day Shift. No night shift	
Field Personnel on site	DR: Henry Wong Kudlik Crew = 10. Day shift = 9. Night Shift = 0. (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x document control/HS) Inuit Personnel = 5/10	
Daily Progress	Kudlik activities: AEC-1 slope; - Haul Type 2 aggregate to complete AEC-1 slope (49 loads), - Place and compact material, AEC-1 crest and slope; - Haul Type 1 to AEC-1 crest and slope (79 loads), - Place, and compact material, AEC-1 south S-Swale and swale diffusion; - Installed geotextile for swale and swale diffusion area, - Place Type 1/ Type 3 over geotextile (9 loads). **Loads were as tracked by Kudlik load sheets.* Screening on-site stockpile, no new borrow hauled to stockpile. DR Activities: - Observed Kudlik activities	
Planned Activities (next day)	Kudlik activities: - Construct AEC-1 Type G swale; - Construct AEC-2 Type G swale;	
Schedule update	No updates.	
Health /Safety	Health and safety meeting: - Additional reminder for Polar Bear awareness; one spotted in Resolute 2 nights ago.	
Deviations from workplan	None.	
Notes Include visitors, Any equipment issues etc.	Mechanic work was done on the backhoe during the morning.	
Key Communications	Weekly construction meeting scheduled for Thursday Aug 22, 2019.	
Weather & ground cover conditions	1°C morning Fog Cold, moderate winds Well exposed ground conditions	3°C afternoon Light showers 10h00 to 12h00 Overcast Gusting winds Well exposed ground conditions

Lab summary	Data expected Friday Aug 23, 2019 for the following at AEC-3: - EX-2 (lateral extents to the south of PHC F3) - EX-4 (vertical extents at base of PHC F3) - EX-5 (vertical extents at base of PHC F3 and CrVI)	

Photo 1: Screening Operation – Screening of Remaining On-site Pile, current size of Type 1 and Type 2 stockpiles shown.

Photo 2: Construction of AEC-1 SW Side Slope Cover – Spreading Type 2 (fine) Aggregate for 800 mm Lower Cover Layer.

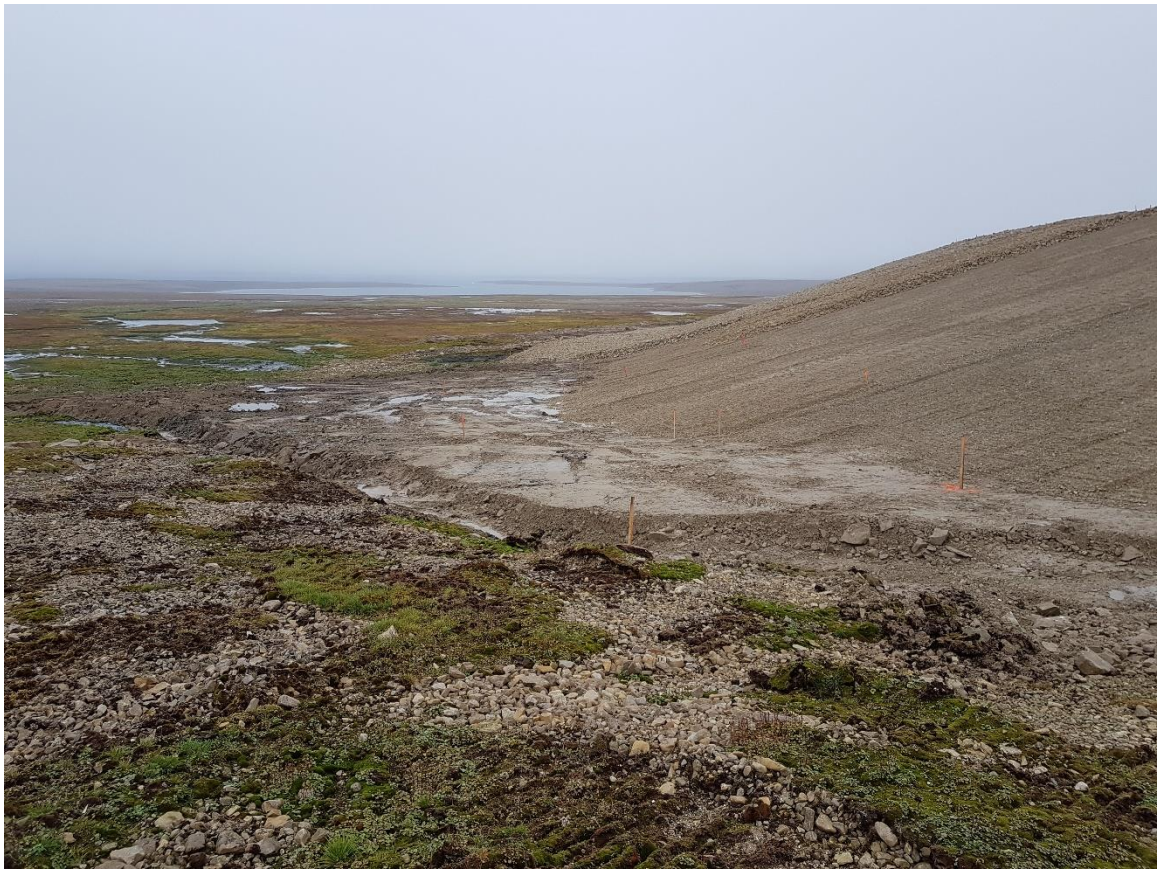

Photo 3: Construction of AEC-1 SW Side Slope Cover (+Toe of Landfill) – Placed Type 1 (coarse) Aggregate for 300 mm Upper Cover Layer (farther section of photo).

Photo 4: Work on Type S swale AEC-1 south.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Wednesday August 22, 2019 Consultant Name: DOJV
Author | Henry Wong	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Henry Wong
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm Day Shift. No night shift
Field Personnel on site	DR: Henry Wong Kudlik Crew = 11. Day shift = 10. Night Shift = 0. (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x document control/HS, 1x wildlife monitor) Inuit Personnel = 5/11
Daily Progress	Kudlik activities: AEC-1 cover (top and slope) was *completed* yesterday; - As-built survey pending to confirm grades, AEC-1 north swale and outwash excavated today; - Completed mid-morning, - AEC-1 swale excavations *finished,* Excavation of AEC-2 north swale (G-type); - 400 excavator, 1x RT and surveyor -crew worked at excavation mid-morning through rest of day, - 17x truckloads hauled to and spread at AEC-2 sub-area G1, D6N on reshaping Borrow Area East all day; Screener crew; - Loader, 350 excavator + worker, - Screened remaining in-place pile during the morning, then worked on re-screening oversize rejects to create 150 mm + material, - no new borrow hauled to stockpile, AEC-3 contaminated soil excavations; - additional south sidewall ex-2 dig = two (2) soil bags filled, - additional base ex-4 dig = two (2) soil bags filled, - start of ex-6 = ~forty (50) bags filled end of day – half excavation remaining, - additional base ex-5 dig planned for tomorrow. DR Activities: - Observed Kudlik activities
Planned Activities (next day)	Kudlik activities: - Continue AEC-2 swale excavation; - Work on AEC-1 south swale outwash; - Work on AEC-1 north swale construction; - Complete AEC-3 contaminated soil digs;
Schedule update	No updates.

Health /Safety	Health and safety meeting: - Heavy fog out – be mindful of low visibility; - Reminder for near-miss reporting.	
Deviations from workplan	None.	
Notes Include visitors, Any equipment issues etc.	No specific issues.	
Key Communications	Weekly construction meeting held today, included review of schedule and change orders.	
Weather & ground cover conditions	3°C morning Heavy Fog (fog advisory) Light winds	6- 7°C afternoon Light showers near noon Overcast Gusting winds
Lab summary	AEC-3 confirmation data received as requiring additional excavation for the following: - EX-2 (lateral extents to the south for PHC F3) - EX-4 (vertical extents at base for PHC F3) - EX-5 (vertical extents at base for PHC F3 and CrVI)	

Photo 1: Completed AEC-1 Cover – Slope + Toe and Crest in Southwest Section.

Photo 2: Completed AEC-1 North Swale Excavation.

Photo 3: Excavation of AEC-2 North Swale (G-type).

Photo 4: D6N Dozer Reshaping Borrow Area East.

Photo 5: Stockpile of Rescreened Oversized

Photo 6: AEC-3 excavation of EX-6.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Friday August 23, 2019 Consultant Name: DOJV
Author | Henry Wong	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Henry Wong
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm day shift. No night shift. Due to extreme winds and heavy rain conditions, Kudlik held off the start of site work until after lunch. Resolute was under an Environment Canada wind advisory in the morning.
Field Personnel on site	DR: Henry Wong Kudlik Crew = 11 (1x site super, 7x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 5/11 (Maurice, Liederik, Kenny, Edward and Paddy)
Daily Progress	Kudlik activities: Kudlik continued the AEC-2 swale work today and due to the delayed start, shifted the remainder of the crew to transporting shipping containers and soil bags to the beach area (for sealift). Excavation of AEC-2 north swale (G-type); - 400 excavator (Glen), 1x RT (Maurice) and surveyor (Louis)-crew continued excavation of the north side swale, - 13x truckloads hauled to and spread at AEC-2 sub-area G1, D6N (Edward) on reshaping Borrow Area East all day; - work activity mostly complete, AEC-3 demobilization; - Loader (Kenny) and lead van (Liederik) hauling shipping containers of debris and hazardous materials to beach for sealift, - Backhoe (Terry), 2 workers (Severino and Paddy), low boy trailer (Maurice) and lead truck -crew hauled contaminated soil bags from AEC-3 down to the beach, o 3 loads were completed o 12 bags were hauled down each trip - 4x shipping containers and 36x bags have been hauled down to the beach, DR Activities: - Observed Kudlik activities
Planned Activities (next day)	Kudlik activities: - Continue AEC-2 swale excavation; - Work on AEC-1 south swale + outwash; - Complete AEC-3 contaminated soil digs;
Schedule update	No updates.

Health /Safety	The door of the D-R truck got caught by a heavy gust of wind and was forcibly thrown opened, a section of body panel was slightly damaged.	
Deviations from workplan	None.	
Notes Include visitors, Any equipment issues etc.	No specific issues.	
Key Communications	No specific team communications.	
Weather & ground cover conditions	3ºC morning Heavy wind (wind advisory) 20 mm of steady rain	6- 7ºC afternoon Gusting winds Overcast Sunny in evening
Lab summary	Lab results were received today for AEC-3 confirmation samples: - EX-2 confirmed clean; - EX-4 confirmed clean; and - EX-5 confirmed clean.	

Photo 1: AEC-2 North Swale – Slope Cut for Swale.

Photo 2: AEC-3 Cleanup and Demob – Hauling Shipping Container to Beach Area.

Photo 3: AEC-3 Cleanup and Demob – Hauling Contaminated Soil Bags to Beach Area.

Photo 4: Borrow Area East – Reshaping Work.

Photo 5: Some Initial Blending of Type 3 rock from Yesterday (from Screened Overs).

Resolute Bay Landfill Remediation Daily Report

Daily Update Report	Date: Saturday August 24, 2019 Consultant Name: DOJV
Author | Henry Wong	Project Site/ Name: Resolute Bay Landfill Remediation
Distribution	Natalie Robinson, Holly Poklitar, Jonathan Markiewicz, Henry Wong
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	6:00am to 6:00pm day shift. No night shift.
Field Personnel on site	DR: Henry Wong Kudlik Crew = 11 (1x site super, 7x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 5/11 (Maurice, Liederik, Kenny, Edward and Paddy)
Daily Progress	Kudlik activities: Construction of AEC-1 swale; - 350 excavator (John), 2x RT (Liederik & Severino) and Loader (Kenny) - crew constructed south S-type swale and outwash and 75% of north G-type swale, - Blended Type 3 material was used for the S-type swale section, - Geotextile + Type 1 aggregate were used for G-type swale, approximately 125 m of 175 m swale complete (20 m/ hour), Excavation of AEC-2 north swale (G-type); - 400 excavator (Glen), 1x RT (Maurice) and surveyor (Louis)-crew continued excavation of the north side swale, - North-half of north swale cut, crew working on inside south-half slope of north swale, - 19x truckloads hauled to AEC-2 far south section, D6N (Edward) re-shaping borrow areas; - Borrow Area – East completed at 16h00, - Dozer moved to Borrow Area – Northeast, AEC-3 demobilization; - Backhoe (Terry), 1 workers (Paddy), and low boy trailer (Maurice) -crew hauled contaminated soil bags from AEC-3 down to the beach, o 7.5 loads were completed today (1 load still on trailer at end of day) (1 hr+/ load), o 12 bags were hauled down each trip, o 55 bags remain at AEC-3, - 5x shipping containers and 122x bags have been hauled down to the beach. DR Activities: - Observed Kudlik activities
Planned Activities (next day)	Kudlik activities: - Complete AEC-1 north swale and outwash - Continue AEC-2 swale excavation; - Complete AEC-3 contaminated soil digs;

Schedule update	No updates.	
Health /Safety	No specific health and safety note.	
Deviations from workplan	None.	
Notes Include visitors, Any equipment issues etc.	No specific issues.	
Key Communications	No specific team communications.	
Weather & ground cover conditions	0°C in the morning Light snow Moderate gusting winds	4°C afternoon Moderate winds Clear evening
Lab summary	AEC-3 excavation areas clean except EX6.	

Photo 1: Sealift Beach – Hauled Shipping Containers (4) and Soil Bags (36) from yesterday (beginning of day).

Photo 2: AEC-1 South Swale – Constructed S-Type Swale and Outwash.

Photo 3: AEC-1 South Swale – Photo of Type 3 Aggregate Blend (250 mm Tape).

Photo 4: AEC 1 North Swale – Construction of G-Type Swale, Type 1 Aggregate.

Photo 5: AEC 2 North Swale, looking North – Excavation of Inside South Half of North Swale.

Photo 6: AEC 2 G1 Area – Placed Cuttings from AEC 2 Swale Excavation.

Photo 7: Borrow Area East – Re-Shaping Work.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday August 27, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm day shift. Sampling from 8:00pm to 9:30pm	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 11 (1x site super, 7x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 5/11 (Maurice, Liederik, Kenny, Edward and Paddy)	
Daily Progress		Kudlik activities: Construction of AEC-2 swales; - 350 excavator (Terry), 3x RT and Loader (Kenny) – crew lined ~ 50% of the main G-swale with Type 1 Rip Rap, northern section, - 48 loads of Type 1 Excavation of AEC-2 north swale (G-type); - 400 excavator, and surveyor -crew continued excavation of the north side swale, AEC-1 Laydown demobilization; - Backhoe and low boy trailer (Maurice) -crew hauled unused supplies, RT Tires and equipment to the beach. 2 Loads DR Activities: - Observed Kudlik activities - Collected surface water samples	
Planned Activities (next day)		Kudlik activities: - Finish AEC-2 swale excavation; - Finish placing Type 1 on the main G-Type Swale at AEC2 - Complete AEC-3 contaminated soil excavation at EXC6;	
Schedule update		Crew planning to leave September 2, 2019.	
Health /Safety		No specific health and safety note.	
Deviations from workplan		None.	
Notes Include visitors, Any equipment issues etc.		Monitoring well supplies arrived in Iqaluit and to be shipped to Resolute tomorrow.	
Key Communications		No specific team communications.	
Weather & ground cover conditions		2°C in the morning Heavy Fog Moderate gusting winds	0°C afternoon Moderate winds Clear evening
Lab summary		Collected AEC-1 Post Construction Surface Water Samples from AEC-1	

Photo 1: Sealift Beach – Hauled Shipping Containers (12) and Soil Bags (177) from yesterday (beginning of day).

Photo 2: AEC-2 North Swale – Start of Construction of the G-Type Swale at the Northern Outwash.

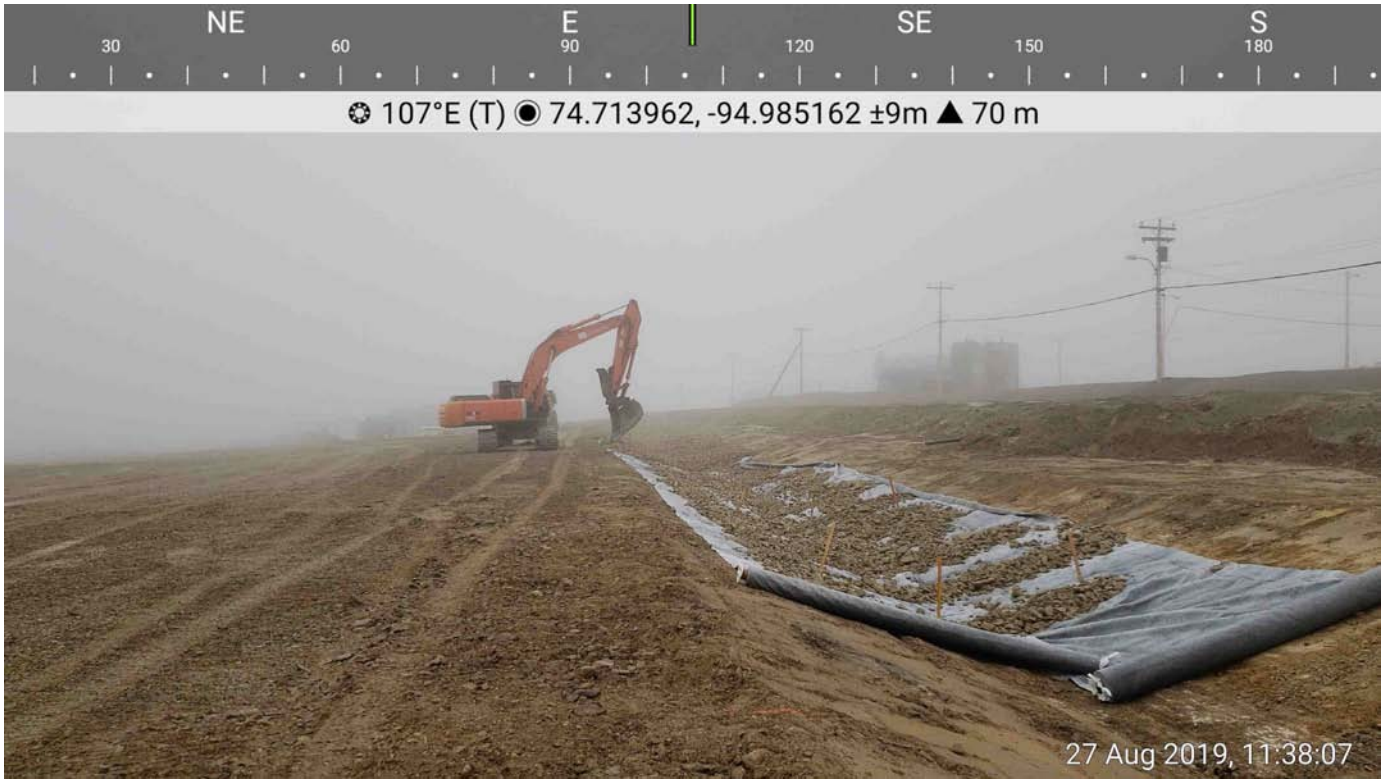

Photo 3: AEC-2 North Swale – Photo of geotextile and Type 1 placement.

Photo 4: AEC 2 North Swale – 500mm Overlap of Geotextile.

Photo 5: AEC 2 South Swale – Excavation partially completed in foreground and fully completed in the background.

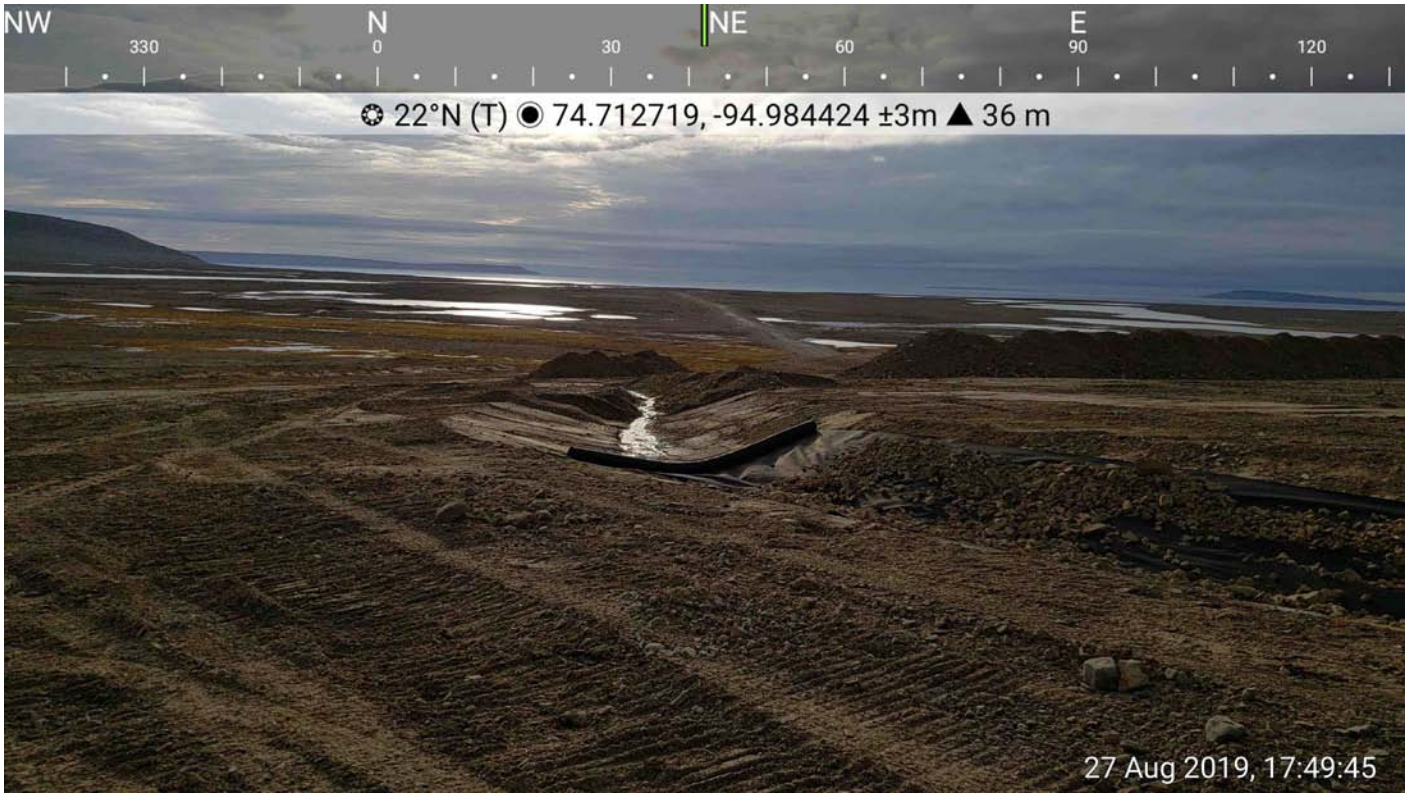

Photo 6: AEC 2 North Swale – Geotextile placed to the corner at the road, shows positive drainage of swale across the main surface to the south..

Photo 7: Borrow Area East – Re-Shaping Work.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday August 28, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		6:00am to 6:00pm day shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 10 (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 4/10 (Silvarino, Liederik, Edward and Paddy)	
Daily Progress		Kudlik activities: Construction of AEC-2 swales; - 350 excavator, 3x RT and Loader – crew lined ~ 80% of the main G-swale with Type 1 Rip Rap, northern section, started southern section - 40 loads of Type 1 Excavation of AEC-2 north swale (G-type); - 400 excavator, and surveyor -crew continued excavation of the north side swale, AEC-3 – skimmed 900-L of water from the top of the water in the excavation before backfilling with Type-1 (~75% of void) DR Activities: - Observed Kudlik activities - Collected surface water samples - Michael Billowits (MEB), Engineer of Record inspection	
Planned Activities (next day)		Kudlik activities: - Finish AEC-2 swale excavation; - Finish placing Type 1 on the south G-Type Swale at AEC2 - Complete AEC-3 contaminated soil excavation at EXC6	
Schedule update		Crew planning to leave September 2, 2019. Some waste and equipment to leave on first Sealift (arriving Friday)	
Health /Safety		No specific health and safety note.	
Deviations from workplan		None.	
Notes Include visitors, Any equipment issues etc.		- Monitoring well supplies arrived in Resolute. - Michael Billowits, Andrew Henderson on-site for ~3hrs for EoR inspection, MEB was generally happy with the work completed to date	
Key Communications		Both AEC-1 swales to be extended further down slope per MEB's recommendations.	
Weather & ground cover conditions		2^{o}C in the morning Heavy Fog Moderate gusting winds	3^{o}C afternoon Moderate winds Partially Cloudy

Lab summary	Collected Post Construction Surface Water Samples from AEC-2 & 3

Photo 1: Heavy Fog in morning. Loading Type 1 for AEC-2 Swales.

Photo 2: AEC-2 North Swale – north side right before the bend to the west along the road.

Photo 3: AEC-2 North Swale – Photo of Type 1 placement.

Photo 4: AEC-1 Laydown – Equipment and Supplies being demobilized to the Beach.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday August 29, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		5:45am to 6:00pm day shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 11 (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 6/10 (Silvarino, Liederik, Kenny, Edward and Paddy)	
Daily Progress		Kudlik activities: Construction of AEC-2 swales; - 350 excavator, 3x RT and Loader – crew finished the south G-swale and diffusion fans with Type 1 Rip Rap, northern section, - 42 loads of Type 1 Excavation of AEC-2 north swale (G-type); - 400 excavator, and surveyor -crew continued excavation of the north side swale AEC-1 Laydown demobilization; - Backhoe and low boy trailer -crew hauled unused supplies, shear and equipment to the beach. 4 Loads AEC-3 Excavation 6 - Backhoe and labourer excavated as much as possible at EXC6, 41 bags DR Activities: - Observed Kudlik activities - Collected confirmatory soil samples	
Planned Activities (next day)		Kudlik activities: - Finish AEC-2 swales, excavation and Type-1 placement; - Haul, place and compact Type-2 at Cover C6 at AEC2 - Backfill AEC-3 EXC6; - Install Monitoring wells at AEC2 and AEC3	
Schedule update		Crew planning to leave September 2, 2019. Jonathan planning on leaving September 1, 2019	
Health /Safety		No specific health and safety note.	
Deviations from workplan		None.	
Notes Include visitors, Any equipment issues etc.		350 Excavator leaving on first Sealift tomorrow	
Key Communications		No specific team communications.	
Weather & ground cover conditions		-1°C in the morning Partially Cloudy Moderate gusting winds	1°C afternoon Mostly Cloudy Moderate winds
Lab summary		Collected AEC-3 Excavation-6 confirmatory soil samples (MAX 15ppm PID reading; which MAY indicate clean PHC boundaries, Metal impacts unknown)	

Photo 1: Sealift Beach – Hauled Shipping Containers (12) and Soil Bags (179) ready for retrograde shipping south.

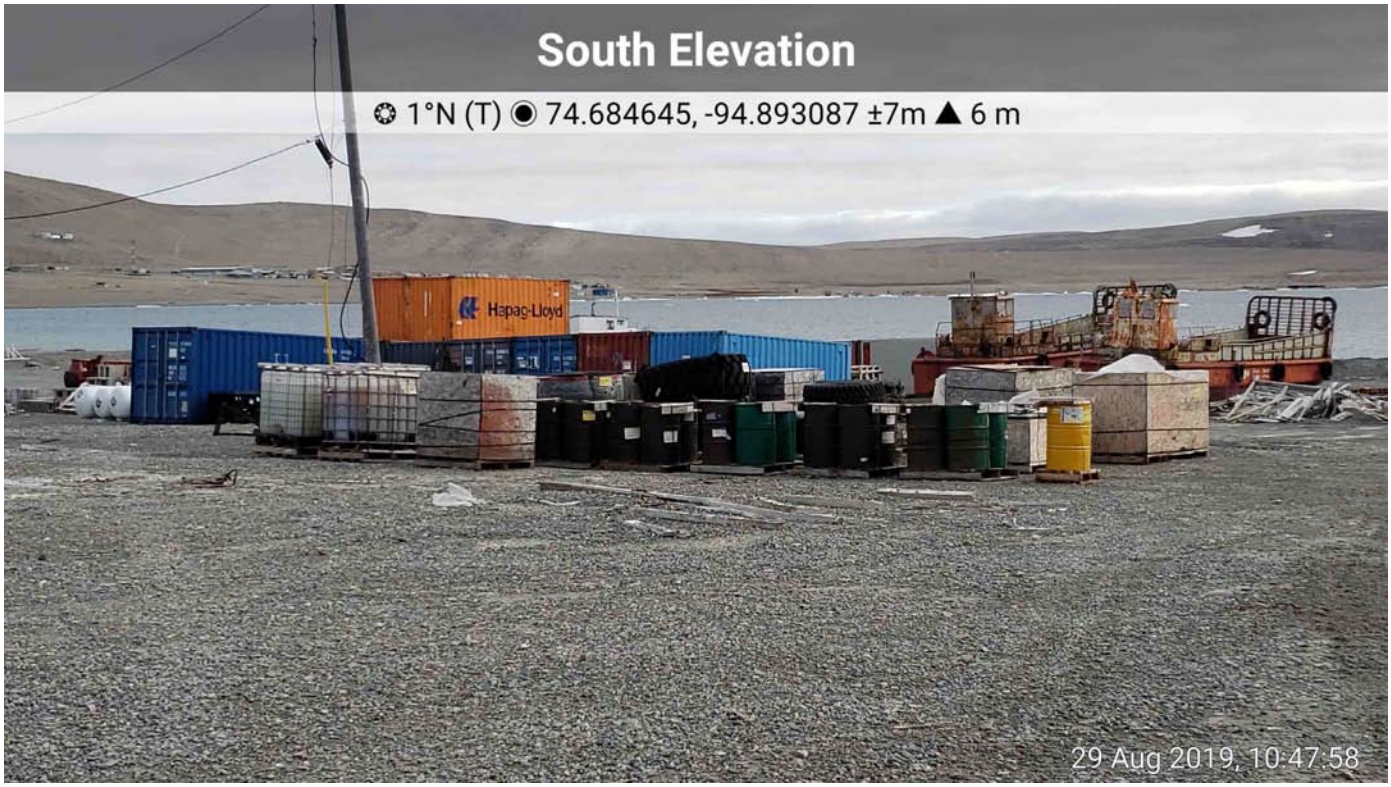

Photo 2: Sealift Beach – Hauled Supplies and Equipment ready for retrograde shipping south on second Sealift in Mid-September.

Photo 3: AEC-2 South Swale – Photo of geotextile and Type 1 placement.

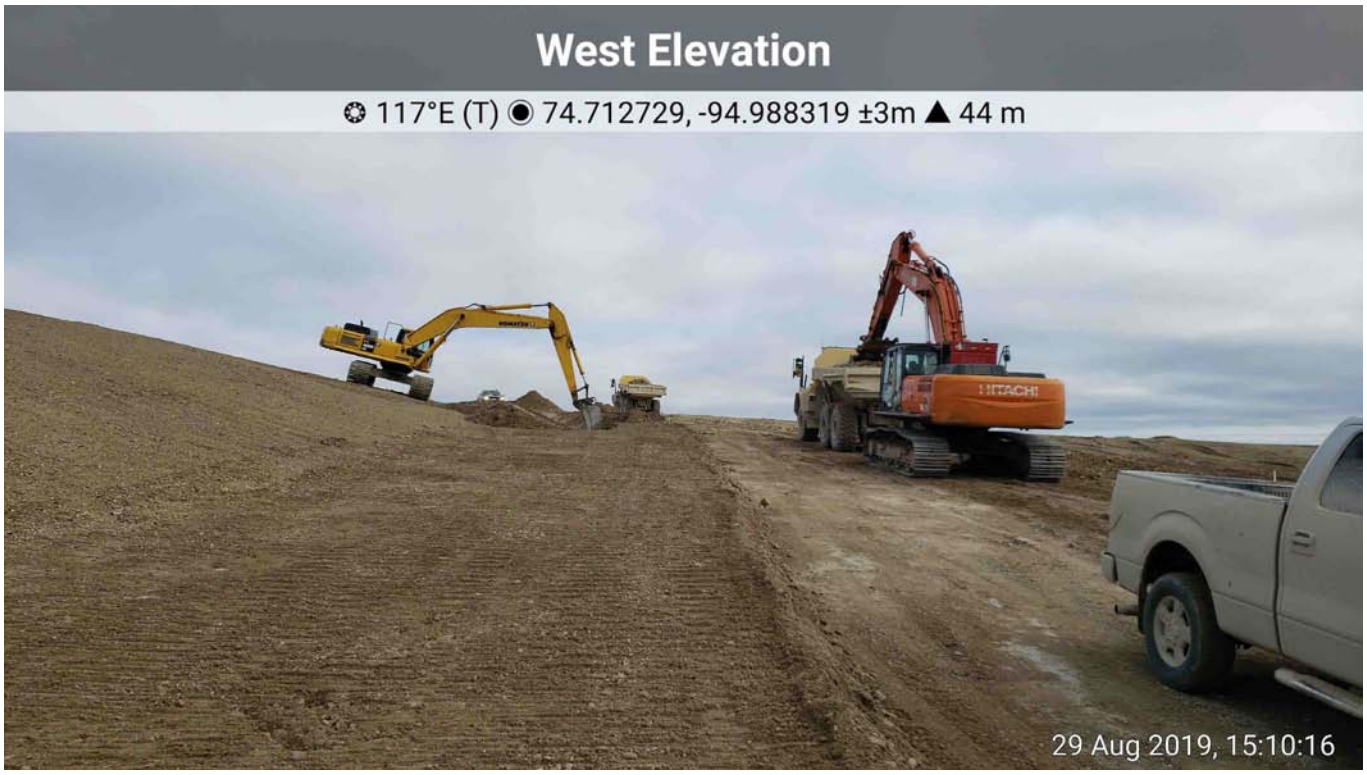

Photo 4: AEC 2 North and South Swale – PC400 (Yellow) cutting the north swale by the road and 350 (Orange) placing Type-1 in the south swale next o the road.

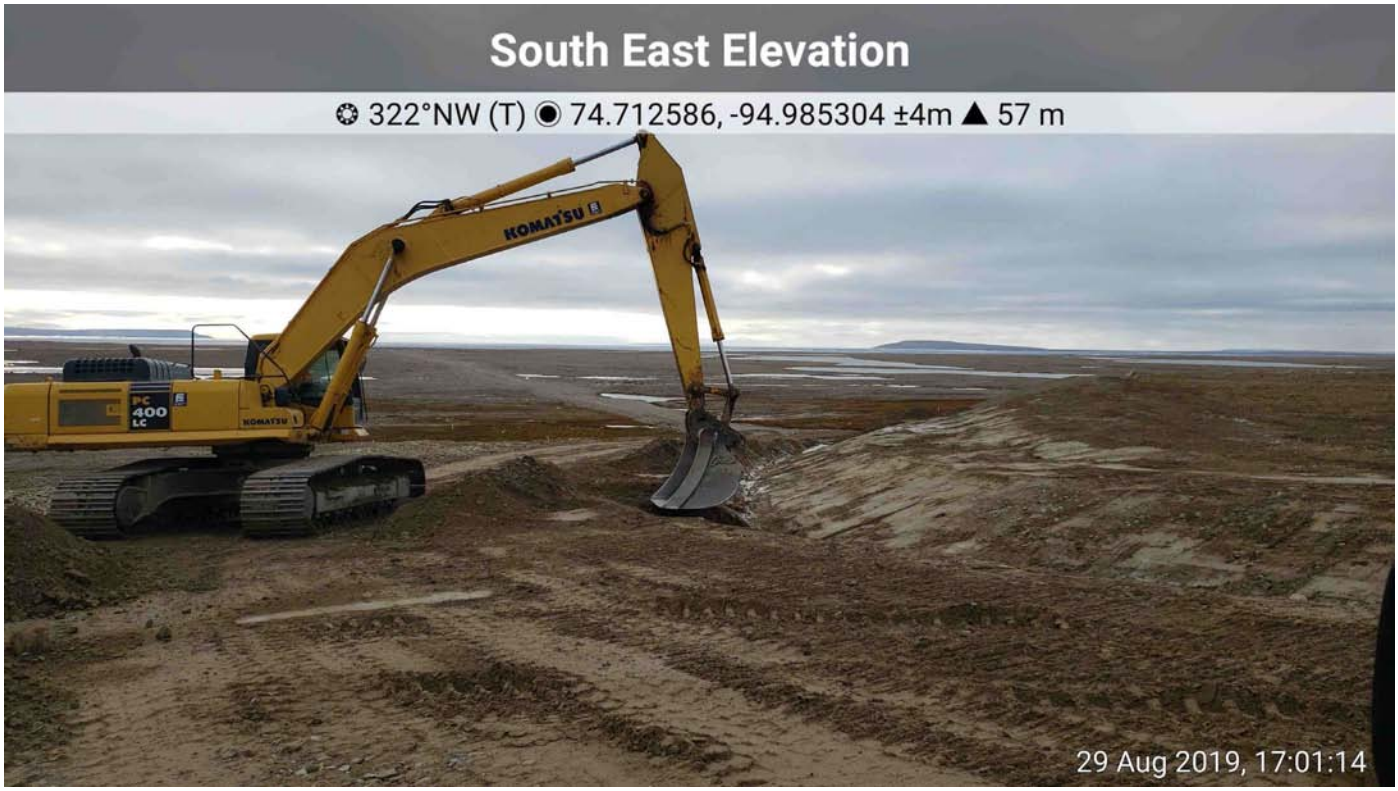

Photo 5: AEC 2 North Swale – Excavation partially completed in background and fully completed in the foreground.

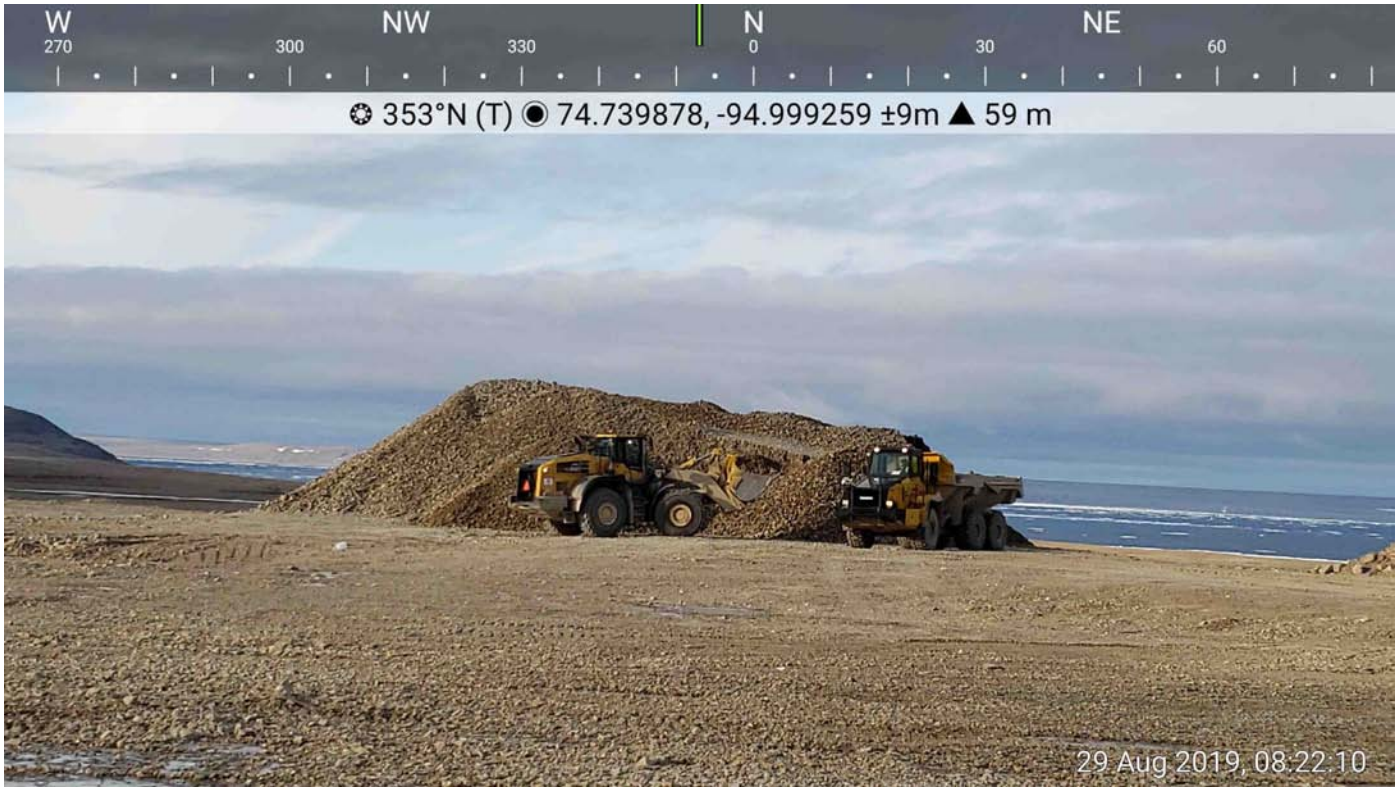

Photo 6: AEC 1 Screening Pad – Remaining Stockpile of Type-1 will be sufficient to complete the works.

Photo 7: AEC-3 – Excavation and bagging of impacted soils from EXC-6, west side. Type-1 on right shows limits of initial excavation.

Photo 8: AEC-3 – Excavation and bagging of impacted soils from east side EXC-6. Type-1 on left shows limits of initial excavation.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday August 30, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		5:45am to 6:00pm day shift.	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 10 (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 6/10 (Silvarino, Maurice, Liederik, Kenny, Edward and Paddy)	
Daily Progress		Kudlik activities: Construction of AEC-2 Cover; - D6 Dozer, 3x RT and Loader – crew hauled, placed and compacted Type 2 cover C6, - 44 loads of Type 1 Excavation of AEC-2 north swale (G-type); - 400 excavator, and surveyor -crew finished excavation of the north side swale AEC-1 Laydown demobilization –Disassembled the Screener AEC-3 Excavation 6 – Backfilled first 300mm with Type 1 due to water Monitoring Wells Installation – AEC-1 x1, AEC-2 x2 plus one replacement of a damaged well; AEC-3 x5 DR Activities: - Observed Kudlik activities - Installed 9 Monitoring Wells and collected soil samples	
Planned Activities (next day)		Kudlik activities: - Finish AEC-2 swales Type-1 placement; - Finish Backfill AEC-3 EXC6 with Type 2; - Install Monitoring wells at AEC1 - Extend Swales at AEC-1 per MEB recommendations	
Schedule update		Crew planning to leave September 2, 2019. Jonathan planning on leaving September 1, 2019 Second Sealift scheduled for 21 September 2019, as of 30 August 2019	
Health /Safety		No specific health and safety note.	
Deviations from workplan		None.	
Notes Include visitors, Any equipment issues etc.		350 Excavator, 179 Soil Bags and 7 Seacans were loaded to the first Sealift.	
Key Communications		No specific team communications.	
Weather & ground cover conditions		-1^{o}C in the morning Mostly Cloudy Light Snow in Morning	1^{o}C afternoon Mostly Cloudy High Gusting winds
Lab summary		Collected soil samples from the 8 new LTM MWs installed	

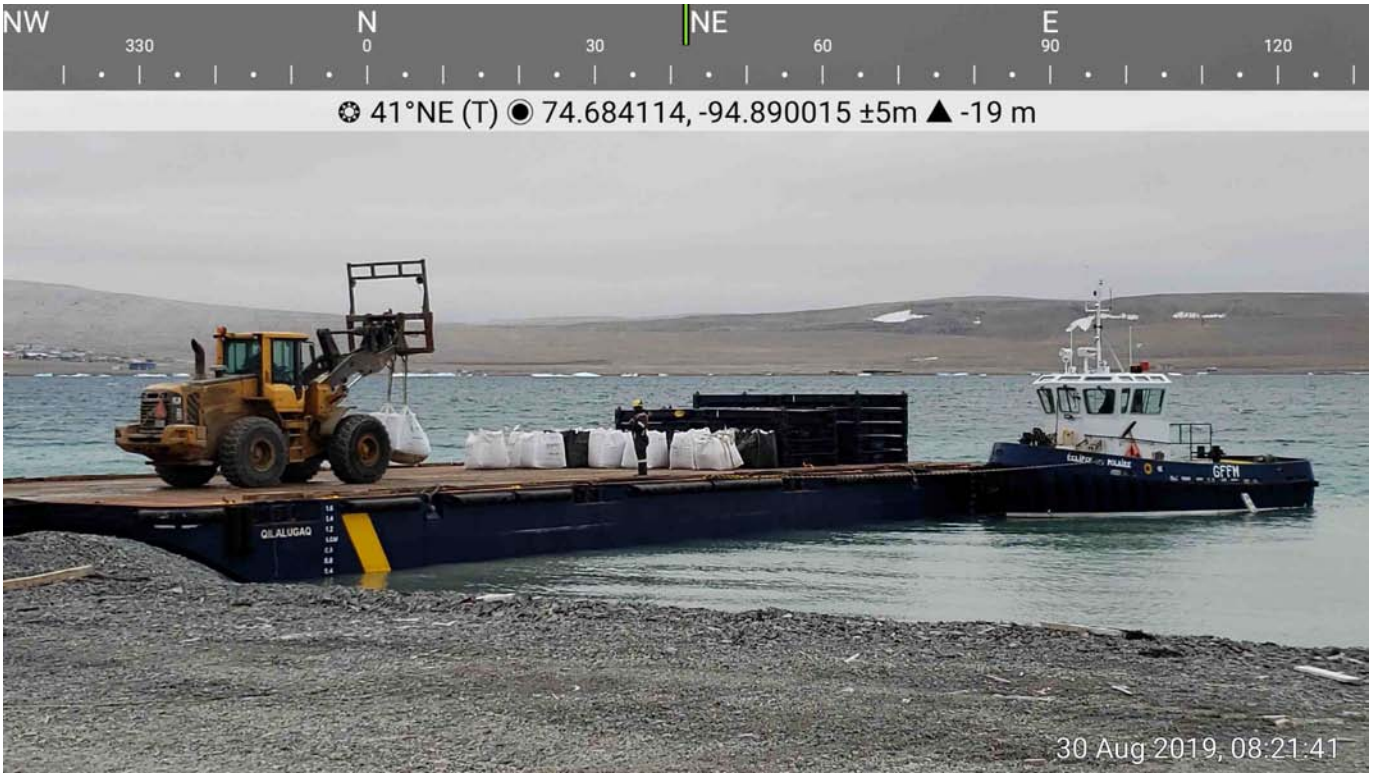

Photo 1: Sealift Beach – Shipping Containers (7) and Soil Bags (179) loaded onto the first Sea Lift for retrograde shipping south.

Photo 2: Sealift Beach – 5 Seacans were unbalanced loads and could not be safely loaded on to the ship. Kudlik to readjust the loads within the seacans prior to the second Sea Lift..

Photo 3: AEC-2 North Swale – Excavation of the AEC-2 north swale adjacent to the road.

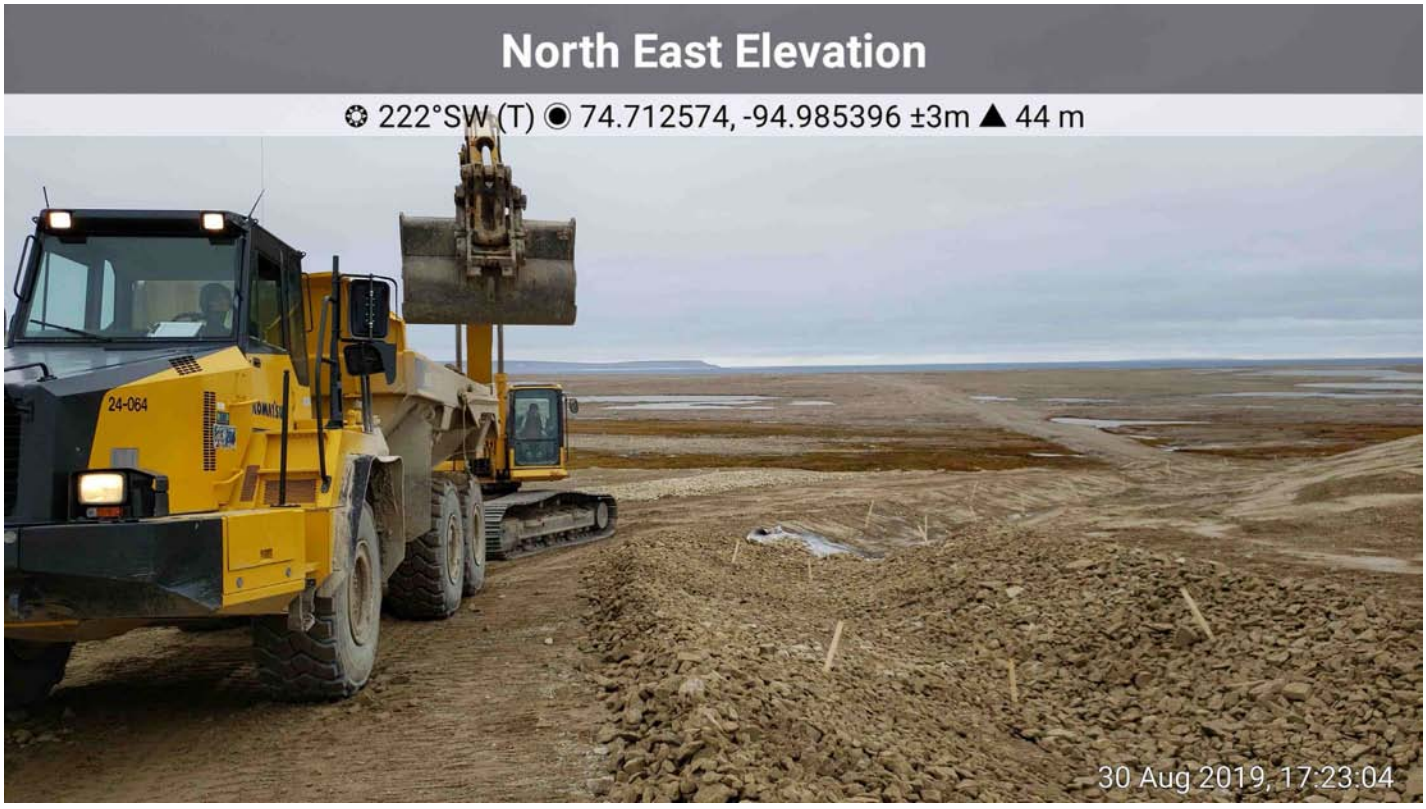

Photo 4: AEC 2 North Swale – placing Type-1 in the north swale next o the road.

Photo 5: AEC 2 Cover C6 – Placement of Type 2 at Cover C6 location at the base of the slope.

Photo 6: AEC 3 Excavation 6 – Backfilling the excavation.

Photo 7: AEC-3 – Installation of Monitoring Well RBL-10, upgradient well.

Photo 8: AEC-3 – Installation of monitoring well RBL-11, downgradient well.

Resolute Bay Landfill Remediation Daily Report

Daily Update Report		Date: Saturday August 31, 2019 Consultant Name: DOJV	
Author	Jonathan Markiewicz	Project Site/ Name: Resolute Bay Landfill Remediation	
Distribution		Natalie Robinson, Holly Poklitar, Jonathan Markiewicz	
Objective		Daily Field Report	
Reporting Items			
TOPIC		**WORK ACTIVITY AND PROGRESS**	
Start and End Time		5:45am to 6:00pm day shift. 7:30pm to 10:00pm DR evening shift	
Field Personnel on site		DR: Jonathan Markiewicz Kudlik Crew = 10 (1x site super, 6x operators, 1x mechanic, 1x surveyor, 1x wildlife monitor) Inuit Personnel = 5/10 (Silvarino, Maurice, Liederik, Edward and Paddy)	
Daily Progress		Kudlik activities: Construction of AEC-2 north swale; - 400 excavator, 3x RTs and Loader with surveyor -crew finished the north side swale, with the exception of the convergence of the main road culvert AEC-3 Excavation 6 – Backfilled first to original surface with Type 2, 45 soil bags demobilized from AEC-3 to the Beach Monitoring Wells Installation – AEC-1 x2 DR Activities: - Observed Kudlik activities - Installed 2 Monitoring Wells and collected soil samples - Collected post construction sediment samples from AEC-1 and AEC-2 - Complete final inspection and phot/video log.	
Planned Activities (next day)		Kudlik activities: - Finish AEC-2 swales Type-1 placement; - Repair/regrade Dynamite road at AEC-2 - Extend Swales at AEC-1 per MEB recommendations	
Schedule update		Crew planning to leave September 3, 2019. Jonathan planning on leaving September 1, 2019 Second Sealift scheduled for 21 September 2019, as of 30 August 2019	
Health /Safety		Two Polar bear sightings. - 12:40 pm at Airport Hotel - 9:40pm at AEC-2	
Deviations from workplan		None.	
Notes Include visitors, Any equipment issues etc.			
Key Communications		Reviewed and signed the Final Inspection report and conveyed the outstanding items of added scope.	
Weather & ground cover conditions		0°C in the morning Mostly Cloudy Light Snow in Morning	1°C afternoon Mostly Cloudy Extreme winds and rain
Lab summary		Collected soil samples from the 2 new LTM MWs installed and sediments from AEC-1 and AEC-2.	

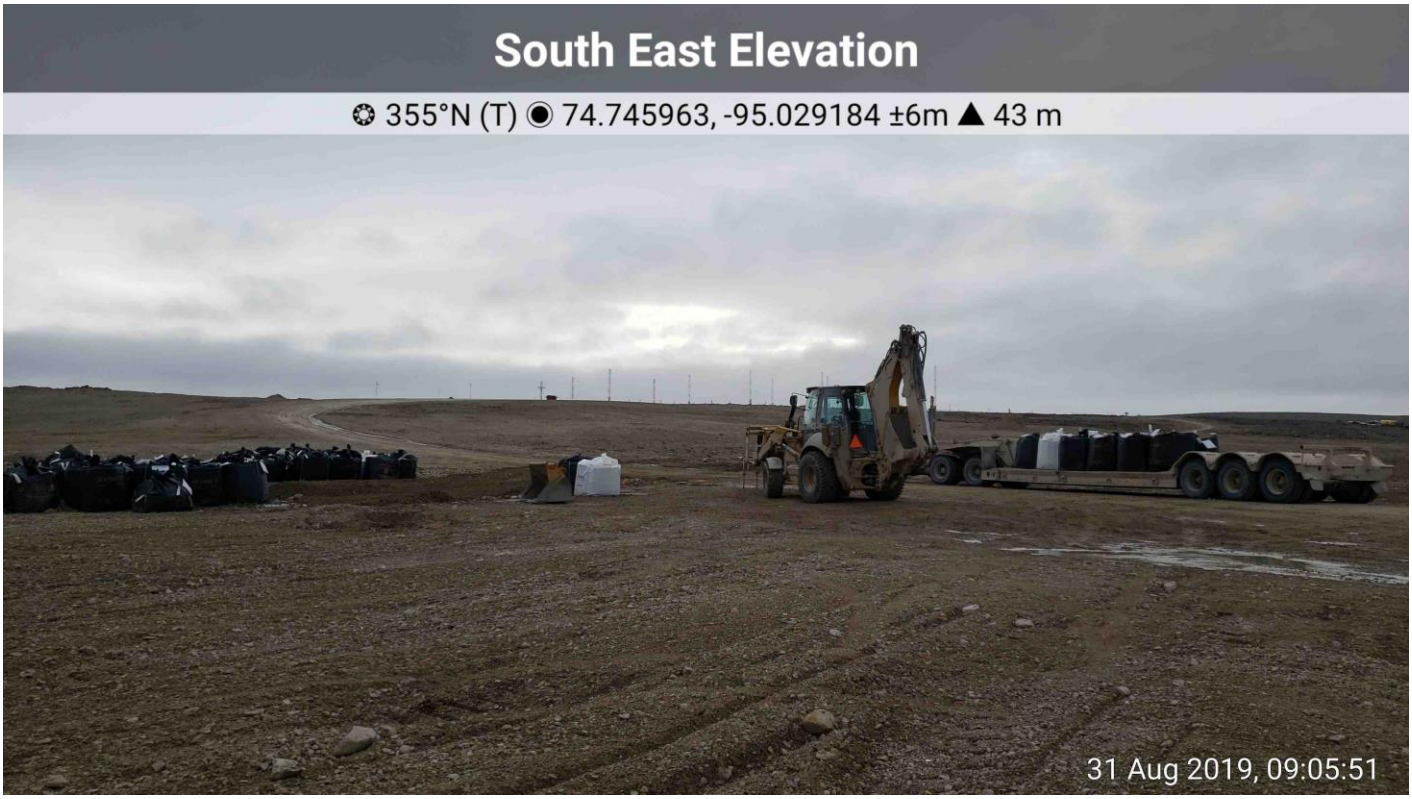

Photo 1: AEC-3 – Loading the soil bags onto a float to move to the Beach..

Photo 2: AEC-3 – Final photo of AEC-3, looking east. RBL-12 visible.

Photo 3: AEC-2 North Swale – Placement of Type 1 on the bench between AEC-2 side slope and the north swale.

Photo 4: AEC 1 – Final slope.

Photo 5: AEC 1 – Final landfill crest.

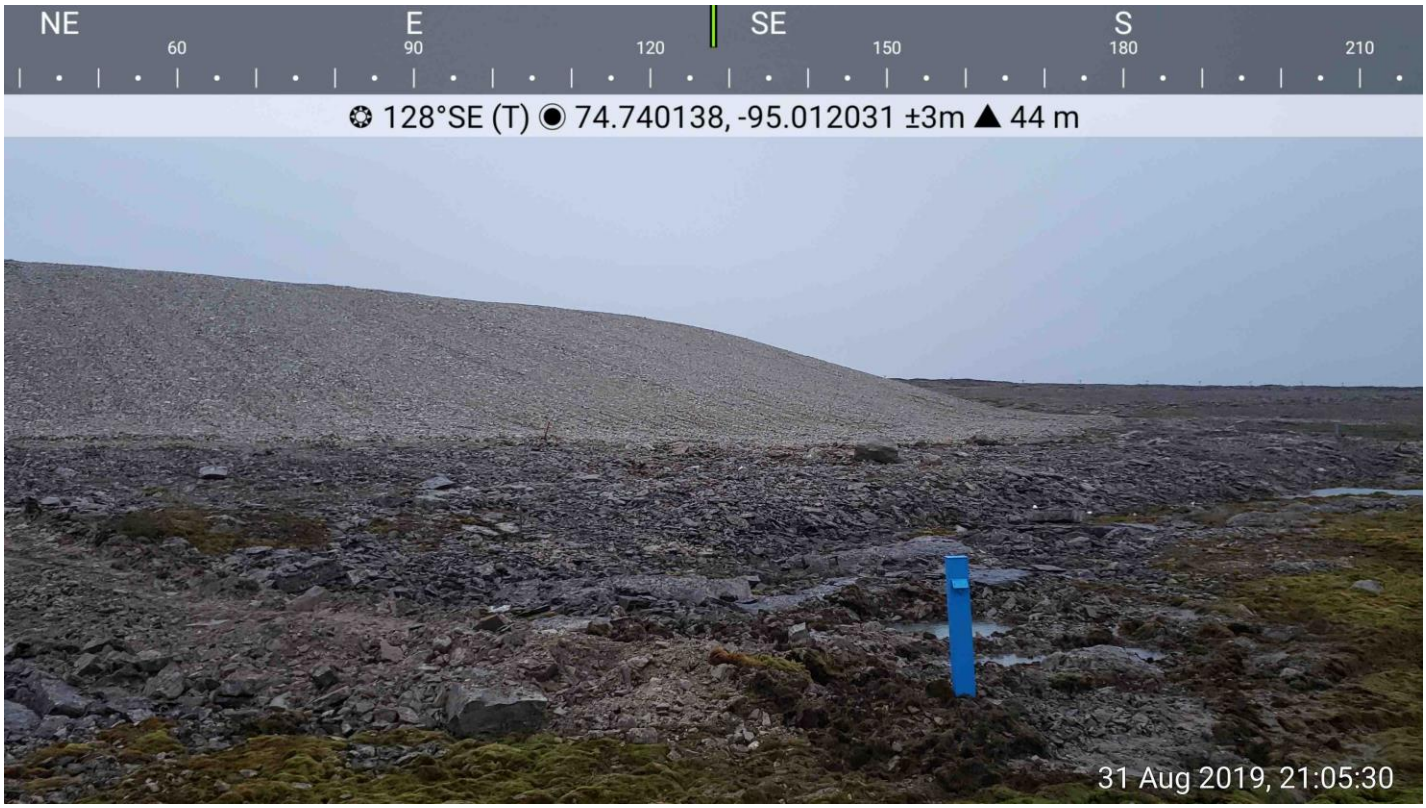

Photo 6: AEC 1 Final slope and RBL-2.

Photo 7: AEC-2 – Final Slope.

Photo 8: AEC-2 – Final Slope.

Appendix H

Weekly Construction Meeting Minutes

MINUTES OF MEETING
Construction Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09558.001
Kudlik Project No.	_____
Outcome Project No.	P2017-06
Date:	Tuesday August 21, 2018
Location:	Conference Call in Number: 1-647-749-7500 (ID: 202 410 51)

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
Marcel Deziel	MD	Kudlik	marcel.deziel@outlook.com	√	√
Francois Bourassa	FB	Kudlik	fbourassa@gely.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan (DR)	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Donny Li (DR)	DL	Outcome	donnyli@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**

    a. Worker Orientation Seminars have been completed with all on-site personnel
    b. MD conducting daily tailgate meetings with Kudlik crew, copies provided daily to Dept Reps (DRs)
    c. Weekly on-site H&S meeting to be conducted by MD, scheduled for Fridays
    d. DRs and MD to confirm potential polar bear sightings with townspeople and wildlife monitor

2. **Review, approval of minutes of previous meeting**

    a. Today is the first on-site construction meeting
    b. Last meeting was the pre-mob meeting, JSM to finalize the pre-mob meeting minutes for distribution

3. **Environmental Protection Update**

    a. Kudlik has submitted Environmental Protection Plan (EPP), Hazmat Plan, and Spill Contingency Plan (SCP)

b. Small spill from dozer (<3 litres) occurred on August 19, 2018 at north end of west borrow area, Kudlik enacted the SCP immediately. DRs to document spills and include GPS locations. All spills are recordable. PHC spills of >100 Litres require reporting to the Nunavut Spill Line
c. Kudlik using various items to containerize hazmat such as Quatrex bags, drums, and poly liner. HP requested that the DRs take photos to document the stages of hazmat removal
d. HP noted that the blue car at AEC-2 is for the landfill at AEC-1

4. **Review of field work during previous week**
   a. Kudlik has containerized all the ACM identified from AEC-1 and AEC-3 apart from brake pads on vehicles
   b. Kudlik has containerized all batteries identified apart from vehicle batteries
   c. The dozer started flattening the ground at the north end of the west borrow source at the planned location of the screener
   d. All identified transformers have been collected and drained
   e. Other identified hazmat such as liquids, fridges and fire extinguishers (see Table B-23 and B-24 Data Gap Report) have been identified
   f. Moving non-haz material within AEC-1 was started. A few items have been moved to the AEC-1 landfill crest
   g. Baseline survey work complete. MD provided survey data to JDM

5. **Field observations, problems, conflicts**
   a. The weather the past week has hovered between -2°C to +3°C. Generally, snow overnight has melted in the day

6. **Confirmation of Quantities**

   a. ACM weight to date is 1721 kg.
      i. The spec weight was 500 kg
      ii. Unit rate for ACM disposal to be revised
      iii. JSM to send FB a CCN regarding ACM, note the CCN will include other hazmat items (fridges, fire extinguishers). CCN will be sent to FB asap in order to avoid contractor at risk.
   b. Batteries weight to date is 1166 kg

7. **Project Schedule Review**
   a. Problems which impede construction schedule
      i. Sealifts scheduled for arriving Sept 03 & 09, 2018. Original sealift schedule was end of August
      ii. Weather
   b. Revisions
      i. Earthworks depends on temperature and ground conditions
      ii. Hazmat can be dealt with regardless of weather (putting lead paint items into sea containers can progress)
   c. Following week
      i. Kudlik mechanic scheduled to arrive Thursday August 23, 2018
      ii. Mechanic to drain liquids from vehicles
      iii. Kudlik plans to start to cut and move lead-paint items on Friday August 24, 2018 to sea containers

iv. Kudlik to start regrading AEC-1 before ground freezes
v. Regarding hazmat items, Kudlik plans to send south as much as possible on the 2018 sealift
vi. If time, Kudlik to start crushing debris on AEC-1 slope
vii. After sealift, if weather permits Kudlik originally planned to do 4-5 days of screening
viii. After sealift, Kudlik still able to cut/shred/crush equipment, frozen ground would not impede this activity

d. Site visit planned for 2nd week of September, 2018
e. Work shutdown planned for Sept 25, 2018

8. **Submittals**
   a. NR asked FB if Kudlik had any concerns regarding the EPP being in compliance with the Plan of Construction Operation (PCO). FB stated no concerns. The revised EPP (dated Aug 2018) includes required information.
   b. MD submitted survey data to JDM
   c. JSM requested Safety Data Sheets from Kudlik
   d. JSM requested hazmat transportation information from Kudlik
      i. In Resolute, Kudlik will transport hazmat
      ii. Desgagnés will ship hazmat south
      iii. FB to submit to JSM the transport company planned for Quebec ground transportation
   e. JSM requested Kudlik employee safety training information for additional crew that is handling hazmat. FB to send to JSM as applicable.

9. **Maintenance of Quality Standards**
   a. JDM to send NR the seacan inspection checklist for sign-off

10. **AHJs**
    a. DRs & Marcel met with Steve Piercy (Airport Manager) on Friday August 17, 2018. Steve identified Airport equipment and materials for the airport to keep. DRs to check in with Steve prior to Kudlik moving debris from AEC-2
    b. MD showed Steve Piercy his Airside Vehicle Operator Permit (AVOP), this allows MD to collect cargo from Kudlik charters on the apron
    c. There is no indication of a site inspection by AHJs, however, an inspection may occur

11. **Project Claims, Change Orders**
    a. JSM to submit to FB a CCN for hazmat items
       i. The CCN will include Labour, transformers, ACM, fridges, extinguishers

12. **Any Other Business**
    a. DRs to document with photos the Success story of dealing with the hazmat
    b. DRs to establish Photo Hubs at AEC areas in order to track progress and track any potential illegal dumping. This will include photo documentation at shutdown this year

ACTION ITEMS

- JSM to finalize the pre-mob meeting minutes for distribution
- DL to start tracking sheet of spills with information from MD
- JSM to send FB a CCN regarding hazmat (ACM disposal, fire extinguishers, and fridges)

- FB to submit to JSM the transport company planned for Quebec ground transportation
- FB to send to JSM employee safety training documents
- JDM to send NR the seacan inspection checklist for sign-off

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Donny Li, and
Jason Mauchan
Outcome Consultants Inc.

DATE:
August 21, 2018

DRAFT MINUTES OF MEETING
Construction Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09558.001
Kudlik Project No.	_____
Outcome Project No.	P2017-06
Date:	Tuesday August 28, 2018
Location:	Conference Call in Number: 1-647-749-7500 (ID: 202 410 51)

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
Marcel Deziel	MD	Kudlik	marcel.deziel@outlook.com	√	√
Francois Bourassa	FB	Kudlik	fbourassa@gely.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan (DR)	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Donny Li (DR)	DL	Outcome	donnyli@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**
    a. Weekly safety meeting on Fridays
    b. Daily tailgates conducted by MD

2. **Review, approval of minutes of previous meeting**
    a. Approved, JDM to distribute finalized Aug.21.2018 weekly meeting minutes

3. **Environmental Protection Update**

    a. Kudlik has set up a temporary hazmat processing area in AEC-3 for lead amended paint materials

4. **Review of field work during previous week**
    a. Kudlik processed and containerized all known hazmat materials in AEC-1
    b. Kudlik started moving non-hazmat materials from AEC-3 to AEC-1
    c. Kudlik moved most of the large debris objects from the gully of AEC-3
    d. Kudlik started draining equipment in AEC-3
    e. Stockpile in west burrow area has been prepped for screening
    f. Stockpile in northeast burrow area started
    g. Kudlik started grading of AEC-1 cap
    h. DRs collected soil, sediment and surface water samples

5. **Field observations, problems, conflicts**
    a. The weather the past week has hovered between -1˚C to 2˚C. Occasional snow overnight, which has generally melted before noon

6. **Confirmation of Quantities**
    a. Transformers
        i. Original 19/22 at AEC-3 (drained, packaged and readied for transport this year)
        ii. Original 3/22 at AEC-1 (drained, liquids readied for transport this year)
        iii. Extra 11 at AEC-2 (drained, packaged and readied for transport this year)
        iv. Extra 4 at AEC-1, found when digging ditch at northern extents of AEC-1 landfill (to be send south next year)
    b. Lead-amended Paint Materials
        i. 515 m^3 of lead amended paint material identified in AEC-3 has been tallied, this total does not include an estimated ~30m^3 (pipes, scattered objects from equipment)
        ii. Final pre-collapsed total volume of lead amended paint material TBD
        iii. JDM: Table B-24 being used as a guide with previous drawings and data. Note that Table B-24 contains an error, with the ATCO trailer listed as 252 m^3.
        iv. FB: Raised the question of lead-amended paint volumes in the pre-mob mtg
        v. JSM: Table B-24 was the best information we had at the time. JSM quoted the specs – "Lead Painted Waste in cubic meters (m3) unit cost for Item 02 81 01-2, as measured by in existing conditions including measurements of length, width, height and estimated void space, as agreed upon with the Departmental Representative. the field measurements as agreed to on-site
        vi. On-site, DL/JDM/MD will continue to agree on volumes

7. **Project Schedule Review**
    a. Problems which impede construction schedule
        i. Sealift arrival date
            1. First one currently scheduled to arrive on September.02.2018
        ii. Weather (ground freezing)
    b. Revisions
        i. Kudlik plans to send 5-6 seacans containing hazmat south this year
    c. Following week
        i. DRs to continue reporting and sampling
        ii. Kudlik to pack and prepare for sealift
        iii. Kudlik to collect remaining debris in gully. Tow rope with sled will be used, labourer will collect smaller debris. Items will be towed up the hill
        iv. Assuming sealift arrival - Kudlik will start to screen material. This activity is also weather dependent
        v. Assuming sealift arrival – Kudlik will use the shear to cut materials

8. **Submittals**
    a. Seacans
        i. HP to follow-up on additional documents to transfer ownership of sea containers to FB
        ii. FB noted that once the ownership has been transferred to Kudlik, Kudlik will not register the seacans with the 3rd party registration body

9. **AHJs**
    a. No interactions with AHJs during the previous week

10. **Project Claims, Change Orders**
    a. Kudlik to submit end of month project claims to DRs for review before submission to PSPC
    b. NR will send FB the CCN regarding extra hazmat

11. **Any Other Business**
    a. Site visit scheduled for September 10/11, 2018
        i. Departure from Quebec City on Kudlik charter on the morning of September 10
        ii. One night in Resolute
        iii. Departure on September 11, 2018 back to Quebec City
        iv. On the charter: FB, NR, HP
        v. On-site: JSM, MD

ACTION ITEMS

- HP to follow-up with regard to sea container ownership changeover documents
- Kudlik to submit end of month project claims to DRs for review before submission to PSPC
- NR to send FB the CCN regarding extra hazmat

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Donny Li, and
Jason Mauchan
Outcome Consultants Inc.

DATE:
August 30, 2018

MINUTES OF MEETING
Construction Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday September 4, 2018
Location:	Conference Call in Number: 1-647-749-7500 (ID: 202 410 51)

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
Marcel Deziel	MD	Kudlik	marcel.deziel@outlook.com	√	√
Francois Bourassa	FB	Kudlik	fbourassa@gely.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan (DR)	JDM	Outcome	jmauchan@outcomeinc.ca		√
Donny Li (DR)	DL	Outcome	donnyli@outcomeinc.ca		√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**
    a. Weekly safety meeting on Fridays
    b. Daily tailgates conducted by MD

2. **Review, approval of minutes of previous meeting**
    a. Approved, JDM to distribute finalized Aug.28.2018 weekly meeting minutes

3. **Environmental Protection Update**
    a. Kudlik has set up a temporary hazmat processing area in AEC-3 for lead amended paint materials

4. **Review of field work during previous week**
    a. Kudlik processed and containerized all known hazmat materials in AEC-1
    b. Graded the centre section of the AEC-1 Top
    c. 3500 aggregates stockpiles ready for Processing
    d. Containers moved to AEC-3 in preparation for containerizing the Pb Wastes
    e. Miscellaneous Pb paint HazMat waste containerized in a Seacan
    f. Kudlik moving non-hazmat materials from AEC-3 to AEC-1
    g. Kudlik moved most of the small debris objects from the ravine of AEC-3
    h. DRs collected soil and groundwater samples

5. **Field observations, problems, conflicts**
    a. The weather the past week has hovered between -1˚C to 2˚C. Occasional snow overnight, which has generally melted before noon

6. **Confirmation of Quantities**
    a. Transformers
        i. Oil Results received and the 1 sample collected was <MDL
        ii. Original 19/22 at AEC-3 (drained, packaged and readied for transport this year)
        iii. Original 3/22 at AEC-1 (drained, liquids readied for transport this year)
        iv. Extra 11 at AEC-2 (drained, packaged and readied for transport this year)
        v. Extra 4 at AEC-1, found when digging ditch at northern extents of AEC-1 landfill (to be send south next year)
    b. Lead-amended Paint Materials
        i. None
        ii. 181m3 of Pb amended Paint Materials containerized in 6 seacans and staged for southern disposal.
        iii. Final pre-collapsed total volume of lead amended paint material TBD
        iv. On-site, DL/JDM/MD will continue to agree on volumes

7. **Project Schedule Review**
    a. Problems which impede construction schedule
        i. Sealift arrival date
            1. First one currently scheduled to arrive on September.02.2018
        ii. Weather (ground freezing)
    b. Revisions
        i. Kudlik plans to send 5-6 seacans containing hazmat south this year
    c. Following week
        i. DRs to continue reporting and sampling
        ii. Kudlik to pack and prepare for sealift
        iii. Kudlik to continue moving AEC-3 Non-Hazardous wastes from AEC-3 and AEC-2 to AEC-1.
        iv. Assuming sealift arrival - Kudlik will start to screen material. This activity is also weather dependent
        v. Assuming sealift arrival – Kudlik will use the shear to cut materials

8. **Submittals**
    a. Seacans
        i. HP to follow-up on additional documents to transfer ownership of sea containers to FB
        ii. FB noted that once the ownership has been transferred to Kudlik, Kudlik will not register the seacans with the 3rd party registration body

9. **AHJs**
    a. No interactions with AHJs during the previous week
    b. Borrow area off-site, need to find owner.

10. **Project Claims, Change Orders**
    a. Kudlik to submit end of month project claims to DRs for review before submission to PSPC

b. NR approved the CO2 regarding extra hazmat

11. **Any Other Business**
    a. Nil

ACTION ITEMS

- HP to follow-up with regard to sea container ownership changeover documents
- Kudlik/DOJV to research off-site borrow
- JSM to sign CO2 regarding extra hazmat
- Site visit scheduled for September 10/11, 2018
    - Departure from Quebec City on Kudlik charter on the morning of September 10
    - One night in Resolute
    - Departure on September 11, 2018 back to Quebec City
    - On the charter: FB, NR, HP
    - On-site: JSM, MD

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jonathan Markiewicz
Outcome Consultants Inc.

DATE:
September 10, 2018

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday July 9, 2019
Location:	On-Site, ATCO North Camp Hotel – Resolute, Nunavut

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Jonathan Markiewicz DR	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan DR	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**
    a. Daily tailgates conducted by JF, each day at 600am.
    b. No incidents or accidents to report.
    c. 2019 SSHASPs
        i. FB updated the Kudlik SSHASP, FB will distribute. JF will forward on-site telephone numbers
        ii. JSM updated DOJV SSHASP. An update will be revised prior to Groundwater sampling
        iii. Note: Steve Piercey (Airport Mgr in 2018) no longer works at airport. On-site, we do not know the local contact. HP/NR will search for a TC/NavCan contact.
    d. Polar Bears – at site, no polar bears observed in 2019

2. **Review, approval of minutes of previous meeting**
    a. No meeting minutes to review. This is the first weekly meeting.

3. **Environmental Protection Update**
    a. JSM – during the winter, snow had accumulated around the Kudlik seacans in the area of consolidated waste Quatrex bags. Due to the accumulated snow and freshet, some oil was pushed up out of the Quatrex bags. Booms have been placed by Kudlik. JSM included a photo in a daily this past week. Kudlik will continue to action the clean-up when the area is thawed. Outcome will sample when the area is cleaned up. Size of impacted area is

unknown. Future excavation at this area is required by Kudlik. The location is referred to as the AEC-1 staging area. Location co-ordinates by GPS will be included in a forthcoming daily report by JDM.

4. **Review of field work during previous week**

Kudlik

a. De-winterizing equipment and site office
b. Mechanic on-site servicing vehicles prior to start-up
c. Stockpiling at Borrow Area East (BAE)
d. Set up screening plant
e. Modified screener to increase production
f. AEC-2 surface debris clean-up
g. Re-shaping at AEC-2 was started July 8, 2019
h. Surveyor is on site
i. Site conditions at start of 2019 field season were the same as conditions observed at end of 2018 field season

Outcome

j. DRs collected surface/sediment/gw samples
k. Borrow material sampled to assess borrow material relative to gradation curves

5. **Field observations, problems, conflicts**

a. NR: is there enough borrow material/area? JF: Borrow Area East (BAE) is yielding good so far. Second cut started. JF is not concerned about volumes shortages at this point. Overall, less than 20% of BAE has been looked at. To date, 5000 m3 hauled from BAE. JSM: to date, about one third of material has been accessed for projected overall total volume required.
Borrow Area West (BAW): JF – road is not a lot of material.
b. No problems. No conflicts.

6. **Confirmation of Quantities**

a. Small volume of AEC-2 debris collected (approx. 2 m3) and moved to AEC-1
b. To date, 5000 m3 hauled from BAE. Confirmation of borrow quantities to be confirmed by survey data for progress claims

7. **Project Schedule Review**

a. Problems which impede construction schedule
    i. Currently: none.
    ii. Future: Weather is always a consideration
b. Revisions
    i. Kudlik mobilized earlier than scheduled in 2019. FB: Kudlik will maintain the current schedule. No revisions.
c. Personnel
    i. JSM will send NR the DR schedule rotations. JSM will put rotation schedule in SSHASP.
    ii. FYI: JF outbound July 19 for 10 days. Manuel will be his cross-shift. Note that Marcel is currently not scheduled to be on the project. NR will be away for 1

week in August 14-20, 2019. Ed Domijin will be NR's backup during this week. HP will be away for 1 week in August 2019.

d. Following week
Kudlik:
   i. Screening
   ii. Processing material
   iii. AEC-2 reshaping and debris pick-up (top portion is mostly complete, it is the slope that requires debris collection). Approximately 3 days of debris clean-up in AEC-2 will be required

8. **QAQC**
   a. SD is collecting 1-2 samples per day for sieve testing
   b. To date, samples collected have been within the gradation curve are:
      i. 5 x Type 2 fines
      ii. 2 x Type 1 coarse
      iii. The plan: Kudlik will go deeper to increase the fines content. At top portion of material there are less fines due to wind/weathering/run-off
   c. Pre-construction samples have been collected for sediment/SurfaceWater by JSM

9. **Submittals**
   a. SSHASP
      i. Kudlik and Outcome to submit updated SSHASP
   b. Survey
      i. Surveyed volumes required for progress claims
   c. Submittal Register
   d. JDM drafted a 2019 submittal register on July 9, 2019.

10. **AHJs**
   a. CIRNAC is planning on doing an inspection this summer. HP to confirm date.
   b. Note that a hard copy of the water licence is posted in the Kudlik site office
   c. No interactions with AHJs during the previous week

11. **Project Claims, Change Orders**
   a. Progress Claims
      i. FB: First PC for 2019 will be submitted at end of July
      ii. Second end of August
      iii. Third end of September
      iv. End of November will likely be last PC
   b. xxxxKudlik to submit first project claim draft submitted to DRs for review before submission to PSPC
   c. xxxSecond claim after HazMat waste disposal
   d. xxxAdditional hazmat under new CO next year

12. **Any Other Business**
   a.

ACTION ITEMS

- xxxKudlik will paint the TCQU south this year, north next year

- xxxCanada/DOJV to formalize off-site borrow usage, pending the map
- xxxxSubmittals

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan / Jonathan Markiewicz
Outcome Consultants Inc.

DATE:
July 9, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday September 11, 2018
Location:	On-Site, ATCO North Campus Hotel – Resolute, Nunavut

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
Marcel Deziel	MD	Kudlik	marcel.deziel@outlook.com	√	√
Francois Bourassa	FB	Kudlik	fbourassa@gely.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan (DR)	JDM	Outcome	jmauchan@outcomeinc.ca		√
Donny Li (DR)	DL	Outcome	donnyli@outcomeinc.ca		√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**
    a. Weekly safety meeting on Fridays
    b. Daily tailgates conducted by MD

2. **Review, approval of minutes of previous meeting**
    a. Pending, JSM to distribute Sept 11 .2018 weekly meeting minutes

3. **Environmental Protection Update**
    a. Hydraulic Oil spill in AEC-3 Subarea – Internal Report prepared
    b. Discharge Diesel into AEC3 HMPA – No release to surface

4. **Review of field work during previous week**
    a. Pb Painted HazMat waste shearing in AEC3
    b. Sealift Unloading
    c. Non-Hazardous Waste (AEC-1 and AEC-2) Shearing at AEC-1 crest of slope
    d. Off-site Transport of Hazardous Wastes
    e. Setup Office and Staging Area
    f. DRs collected ground water samples

5. **Field observations, problems, conflicts**
    a. Weather cleared sealift

b. 3 Polar Bears noticed west of AEC-3 along the shoreline.

6. **Confirmation of Quantities**
    a. 2 Fire extinguishers found in AEC-3 – Kudlik noted that one was much larger than the others
    b. HazMat collected this year, dealt with as a Change Order next year
    c. Kudlik asked if wood should be burned or buried
    d. Lead-amended Paint Materials
        i. Light Towers results out standing
        ii. AEC-2 pick up materials from beyond the slope, half buried fuselage, cover the rest

7. **Project Schedule Review**
    a. Problems which impede construction schedule
        i. Weather
    b. Revisions
        i. Demobilized earlier due to weather
    c. Following week
        i. No Work
        ii. Sea can arrival this week, but no access until first week of October, 2018

8. **Submittals**
    a. Seacans
        i. Kudlik MUST remove or cover the TCQU labels. Paint over them would be fine. Send photos of the 6 that were sent south.
        ii. Waste Transportation details in QC.
    b. Survey
        i. Transfer of data
        ii. Borrow Source

9. **AHJs**
    a. Borrow area off-site, confirmed to be on Airport lands. TC to formalize approval from the GNU Airport – Pending map
    b. No other interactions with AHJs during the previous week

10. **Project Claims, Change Orders**
    a. Kudlik to submit first project claim draft submitted to DRs for review before submission to PSPC
    b. Second claim after HazMat waste disposal
    c. Additional hazmat under new CO next year

11. **Any Other Business**
    a.

ACTION ITEMS

- Kudlik will paint the TCQU south this year, north next year
- Canada/DOJV to formalize off-site borrow usage, pending the map
- Submittals

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jonathan Markiewicz
Outcome Consultants Inc.

DATE:
September 18, 2018

DRAFT MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday July 9, 2019
Location:	On-Site, ATCO North Camp Hotel – Resolute, Nunavut

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Jonathan Markiewicz DR	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan DR	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√

1. **Health, Safety and Security**
   - Daily tailgates conducted by JF, each day at 600am.
   - No incidents or accidents to report.
   - 2019 SSHASPs
     i. FB updated the Kudlik SSHASP, FB will distribute. JF will forward on-site telephone numbers
     ii. JSM updated the DOJV SSHASP. An update will be revised prior to Groundwater sampling
     iii. Note: Steve Piercey (Airport Mgr in 2018) no longer works at airport. On-site, we do not know the local contact. HP/NR will search for the current TC/NavCan contact.
   - Polar Bears – at site, no polar bears observed in 2019

2. **Review, approval of minutes of previous meeting**
   - No meeting minutes to review. This is the first weekly meeting of the 2019 construction season.

3. **Environmental Protection Update**
   - JSM – during the winter, snow had accumulated around the Kudlik seacans in the area of consolidated waste Quatrex bags. Due to the accumulated snow and freshet, some oil was

pushed up out of the Quatrex bags. Booms have been placed by Kudlik. JSM included a photo in a daily report this past week. Kudlik enacted their spill plan and will continue to action the clean-up when the area is thawed. Outcome will sample when the area is cleaned up. Spill report completed by Kudlik. Footprint size of impacted area is unknown. Future excavation at this area is required by Kudlik. Volume of spill less than 100L. Spill report by Kudlik estimated by 20 L. The location is referred to as the AEC-1 staging area. Location co-ordinates by GPS will be included in a forthcoming daily report by JDM. Reference is Spill-2.

4. **Review of field work during previous week**
   Kudlik
   - De-winterizing equipment and site office occurred
   - Mechanic on-site serviced vehicles prior to start-up
   - Stockpiling at Borrow Area East (BAE)
   - Set up screening plant
   - Modified screener to increase production
   - AEC-2 surface debris clean-up started
   - Re-shaping at AEC-2 was started July 8, 2019
   - Surveyor is on site
   - Site conditions at start of 2019 field season were the same as conditions observed at end of 2018 field season

   Outcome
   - DRs collected surface/sediment/gw samples
   - Borrow material sampled by SD to assess borrow material relative to gradation curves

5. **Field observations, problems, conflicts**
   - NR: is there enough borrow material/area? JF: Borrow Area East (BAE) is yielding good so far. Second cut started. JF is not concerned about volumes shortages at this point. Overall, less than 20% of BAE has been looked at. To date, 5000 m3 hauled from BAE to screener for processing. JSM: to date, about one third of material has been accessed for projected overall total volume required.
     Borrow Area West (BAW): JF – road is not a lot of material.
   - No problems. No conflicts.

6. **Confirmation of Quantities**
   - To date, in 2019, a small volume of AEC-2 debris collected (2 m3) and moved to AEC-1
   - To date, 5000 m3 hauled from BAE. Confirmation of borrow quantities to be confirmed by survey data for progress claims

7. **Project Schedule Review**
   - Problems which impede construction schedule
     i. Currently: none.
     ii. Future: Weather is always a consideration
     iii. Sea lift: the sea lift date is currently unknown, however, sea lift expected late August
   - Revisions

i. Kudlik mobilized earlier than scheduled in 2019 in order to de-winterize, check equipment, and start screening material. FB: Kudlik will maintain the current schedule. No revisions.

- Personnel
  i. Outcome - JSM will send NR the DR schedule rotations. JSM will put rotation schedule in DOJV SSHASP.
  ii. Kudlik - FYI: The site super, JF outbound July 19 for 10 days. Manuel will be his cross-shift. Note that Marcel Deziel (site super in 2018) is currently not scheduled to be on the project in 2019.
  iii. PSPC - FYI: NR will be in Resolute July 16-17 for site inspection.
  iv. PSPC - NR will be away for 1 week in August 14-20, 2019. Ed Domijin will be NR's backup during this week.
  v. TC - HP will be away for the first 2 weeks in August 2019 (Aug 3-9 and Aug 12-16, 2019). HP will let NR know who is covering the project for TC while HP is away.
- Following week
  Kudlik:
  i. Screening
  ii. Processing material
  iii. AEC-2 reshaping and debris pick-up (top portion is mostly complete, it is the slope that requires the majority of the debris collection). Approximately 3 days of debris clean-up in AEC-2 will be required

8. **QAQC**
   - SD is collecting 1-2 samples per day for sieve testing
   - To date, samples collected have been within the gradation curve. Number of samples collected to date are:
     i. 5 x Type 2 (fines)
     ii. 2 x Type 1 (coarse)
     iii. The plan: Kudlik will go deeper to increase the fines content (samples collected to date have been close to the lower end of the % of fines). At the top portion of the borrow areas, it has been observed that there are less fines due to wind/weathering/run-off at surface
   - Pre-construction samples have been collected for sediment/SurfaceWater by JSM

9. **Submittals**
   - SSHASP
     i. Kudlik and Outcome to submit updated SSHASPs to NR
   - Survey
     i. Surveyed volumes required for progress claims
   - Submittal Register
     i. JDM drafted a 2019 submittal register on July 9, 2019.
     ii. JDM will update the 2019 submittal register prior to July 12, 2019

10. **AHJs**
    - CIRNAC is planning on doing an inspection this summer. HP to confirm date.
    - Note that a hard copy of the water licence is posted in the Kudlik site office
    - No interactions with AHJs during the previous week

11. **Project Claims, Change Orders**
    - Progress Claims - FB
        i. First PC for 2019 will be submitted at end of July.
        ii. Second - end of August
        iii. Third - end of September
        iv. End of November will likely be last PC submitted by Kudlik

12. **Any Other Business**
    - FB raised a question regarding pay items for AEC-2.
        i. FB asked for clarification of:
        Unit Price Item 31 05 16-A1 (13,460 m3 Type 2) vs the lump sum item AEC-2 Grading Work Package. FB will submit written question to NR/JSM.
    - NR will be in Resolute July 16-17, 2019 for site inspection
    - NR will conduct an inspection during her site visit on August 26, 2019.

ACTION ITEMS
- FB and JSM will update respective SSHASPs
- HP/NR will confirm the current TC/NavCan contact
- GPS co-ordinates will be taken by JDM of AEC-1 staging area
- Kudlik to excavate impacted material at AEC-1 staging area when thawed (Spill-2)
- JDM to update submittal register
- FB will submit written clarification question to NR/JSM.

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
July 9, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Wednesday July 17, 2019
Location:	On-Site, ATCO North Camp Hotel – Resolute, Nunavut

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√
Andrew Henderson	AH	Outcome	ahenderson@outcomeinc.ca		√
Michael Billowits	MB	Outcome	mbillowits@outcomeinc.ca	√	

1. **Health, Safety and Security**
   - Daily tailgates conducted by JF, each day at 600am.
   - No incidents or accidents to report.
   - Polar Bears – at site, no polar bears observed in 2019

2. **Review, approval of minutes of previous meeting**
   - Approval of minutes. JDM to distribute Final Mtg Minutes from last week's mtg (July 9, 2019).

3. **Environmental Protection Update**
   - Summary of spills to date:
   - Spill-1 occurred in 2018. No further action.
   - Spill-2 (inter-season spill). Lab data pending.
   - Spill-3 (AEC-2, 2019). Lab data pending.
   - Each location has GPS co-ordinates recorded by the Departmental Representative (DR). Each spill was recordable. Each spill was not reportable (<100L). At each location, DR sampled the underlying soil after Kudlik put impacted material into Quatrex bag. Lab data is pending for Spill-2 and Spill-3.
   - All spills tracked by DRs

- NR requested that a figure be produced for the Final Report showing the location of each of the spills

4. **Review of field work during previous week**

Kudlik

- Stockpiling of material at screener (feeder pile) from borrow area east (BAE) and borrow area west (BAW)
- AEC-2
    i. surface debris clean-up completed. Surface debris transported to AEC-1
    ii. Re-shaped completed by Kudlik
    iii. Kudlik waiting for re-design
- AEC-1
    i. Surface debris from AEC-2 transported to AEC-1 and put into slope (9 loads)
    ii. Slope debris originating from AEC-1 was compacted
    iii. Track packed along north slope (slope facing the fenced metal storage area)
- AEC-3
    i. Excavation zones staked out by surveyor

Outcome

- DRs completed the July surface/sediment/gw sampling program
- Borrow material sampled by SD. SD assessed borrow material relative to gradation curves. To date, all samples within gradation curves.
- Survey data received by Outcome sent by FB. Outcome AutoCAD department has the survey data.

5. **Field observations, problems, conflicts**

AEC-1

- Question from FB: Does Kudlik use pit run to achieve 2% slope on landfill surfaces?
- Response from MB: Follow the procedures stated in General Conditions (GC) 6.4.1 and submit an RFI. Action item for FB: send and RFI to JSM. JSM: AEC-1 is an engineered cover.

AEC-2

- There is 13,460 m^3 of Type 2 for AEC-2. TJSM: his material is available for use across the top and on the slope. AEC-2 is a field fit with the intent to have positive drainage and have water run off the surface

Work Area Figures in Kudlik SSHASP

- NR wanted confirmation that the figures in the SSHASP include the borrow areas as work areas. JSM confirmed that the figures do include borrow areas as work areas.

Screening

- No issues

6. **Confirmation of Quantities**

- To date, in 2019, volume of AEC-2 debris collected and moved to AEC-1 = 9 loads
- To date, 2500 m^3 of Type 1 produced
- To date, 8000 m3 of Type 1 produced

- There were drums containing liquid at AEC-2 surface collected in 2019.
    i. The contract volume is 3400 L
    ii. In 2018, 1950 L were consolidated
    iii. In 2019, to date, 16 drums containing liquid. JDM and JF to confirm volume of these 2019 drums

7. **Project Schedule Review**
    - Problems which impede construction schedule
        i. Currently: none.
        ii. Future: Weather is always a consideration
    - Revisions
        i. . No revisions.
    - Following week
      Kudlik:
        i. Screening
        ii. Processing material
        iii. Work at AEC-1 with direction from Outcome

8. **QAQC**
    - SD is collecting 1-2 samples per day for sieve testing
    - To date, samples collected have been within the gradation curve. All the lab data will be compiled by Outcome and put into one curve to calculate the averages

9. **Submittals**
    - JSM requested that FB include a schedule update with the July Progress Claim

10. **AHJs**
    - No interactions with AHJs during the previous week
    - HP will inquire with Rankin Inlet. The airport manager of Rankin may not be responsible for Resolute. HP will inquire and update the team.

11. **Project Claims, Change Orders**
    - Progress Claims - FB
        i. First PC for 2019 will be submitted at end of July/early August.

12. **Any Other Business**
    - HP requested that a weekly update of the overall % complete be included with the weekly meeting agenda.
    - JDM stated that there is still debris in the ravine down the slope from AEC-3
    - NR will send HP an update with regard to the LTUs
    - JSM to send NR the costs and proposal for installing monitoring wells once supplier prices have been received

ACTION ITEMS

- FB to send RFI for AEC-1 to JSM
- JSM to send responses to FB based on survey data received
- HP will confirm the current airport contact
- NR will send HP an update with regard to the LTUs

- JSM to send NR the costs and proposal for installing monitoring wells once supplier prices have been received
- JDM and JF to confirm volume of these 2019 drums
- JSM to send NR the costs and proposal for installing monitoring wells once supplier prices have been received

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
July 19, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday July 23, 2019
Location:	On-Site, ATCO North Camp Hotel – Resolute, Nunavut

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com		
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca	√	√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com	√	√
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		

1. **Health, Safety and Security**
   - Daily tailgates conducted by MBe, each day at 600am.
   - No incidents or accidents to report.
   - Polar Bears – at site, no polar bears observed in 2019

2. **Review, approval of minutes of previous meeting**
   - Approval of minutes. JDM distributed Draft Minutes from July 17th meeting. All to send comments to JDM. JDM will distribute Final Mtg Minutes.

3. **Environmental Protection Update**
   - No spills this past week
   - Outcome waiting on soil data from Spill-2 and Spill-3

4. **Review of field work during previous week**
   Kudlik
   - Stockpiling of material at screener (feeder pile) from borrow area east (BAE), borrow area northeast (BANE), and borrow area west (BAW)
   - Type 2: 15,000 m^3 in total has been produced

- AEC-1
    i. Surveyed
    ii. RFI-001 sent by FB to JSM
- AEC-2
    i. Surveyed by Kudlik
    ii. Kudlik waiting for re-design
- AEC-3
    i. No activities during past week at AEC-3

5. **Field observations, problems, conflicts**
    - No problems. No conflicts.

6. **Confirmation of Quantities**
    - To date, in 2019, volume of AEC-2 debris collected and moved to AEC-1 = 9 loads
    - To date, 15,000 m3 of Type 2 produced
    - There were drums containing liquid at AEC-2 surface collected in 2019.
        i. The contract volume is 3400 L
        ii. In 2018, 1950 L were consolidated
        iii. In 2019, to date, 16 drums containing liquid (2200 L)

7. **Project Schedule Review**
    - Problems which impede construction schedule
        i. Currently: none.
    - Revisions
        i. . No revisions.
    - Following week
      Kudlik:
        i. Screening – approximately 1 more week of screening to produce contract volume of Type 2
        ii. Work at AEC-1 using response to RFI-001 (Cut and fill)
        iii. Excavations at AEC-3
    - General Plan for AEC-1
        i. Cut/fill based on response to RFI-001
        ii. Achieve a 2% slope
        iii. Excess material goes into slope
        iv. More pit run in slope may be required
        v. Non-haz debris in cut on top will be dealt with and put into slope
        vi. Once the 2% slope is achieved based on RFI-001 response, the area will be surveyed
        vii. Once surveyed, the aggregate materials Type 1 and Type 2 will be placed

8. **QAQC**
    - SD is collecting 1-2 samples per day for sieve testing
    - To date, samples collected have been within the gradation curve. All the lab data will be compiled by Outcome and put into one curve to calculate the averages

9. **Submittals**
    - None

10. **AHJs**
    - No interactions on-site with AHJs during the previous week
    - NR met on the plane last week Joseph Monty, CIRNAC Land Use Inspector (LUI)
        i. Waste manifests are needed on site
        ii. No notification from LUI is required for an inspection
    - HP will inquire with Bhabesh Roy, Municipal Planning Engineer
    - HP will inquire with Pierre Lamothe, Transportation Mgr

11. **Project Claims, Change Orders**
    - Progress Claims - FB
        i. First PC for 2019 will be submitted at end of July/early August.
    - Change Order to be discussed between JSM and NR

12. **Any Other Business**
    - Site Tour week of August 25, 2019
        i. Sunday August 25th – get to Quebec City
        ii. Monday August 26th – fly Quebec City to Resolute
        iii. Tuesday August 27th – site tour in Resolute, fly to Quebec City
        iv. Wednesday August 28th – Quebec City to home
    - Excavation of AEC-3 subarea is a 5th excavation zone, measuring 5m x 6m

ACTION ITEMS
- JSM to send RFI-001 response to FB
- HP will contact AHJs
- JDM to send Final Meeting Minutes from July 17th meeting

ACTION ITEMS FROM PREVIOUS WEEK
- NR will send HP an update with regard to the LTUs
- JSM to send NR the costs and proposal for installing monitoring wells once supplier prices have been received

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
July 31, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday July 30, 2019
Location:	Conference Call

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com		√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz	√	√
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca		√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca		√
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com	√	√
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		

1. **Health, Safety and Security**
   - Daily tailgates conducted by MBe, each day at 600am.
   - Polar Bears – at site, no polar bears observed in 2019
   - During excavation at Borrow Area East, Kudlik encountered a buried wire approximately 0.30 metres below ground. The orientation and purpose of the wire were unclear, but it appeared to be a communication wire. MBe discussed the finding with Nav Canada and National Defence personnel, neither of whom had experienced any outages. Kudlik will continue to let people know about the line break and report on communications outages. Kudlik excavation moved to a different area of Borrow Area East.

2. **Review, approval of minutes of previous meeting**
   - No comments on minutes of July 23 meeting. The draft minutes will be issued as final without changes.

3. **Environmental Protection Update**
   - No spills this past week
   - Outcome waiting on soil data from Spill-2 and Spill-3

4. **Review of field work during previous week**
   Kudlik
   - Stockpiling of material at screener (feeder pile) from borrow area east (BAE)
   - Type 2: 18,500 m^3 in total has been produced (estimate) with re-survey July 31 to support progress claim.
   - AEC-1
     i. Cut/fill AEC-1 with existing top-of-landfill material
     ii. Bringing pit run to AEC-1 for the top of landfill
   - AEC-2
     i. Kudlik waiting for re-design
     ii. Outcome has marked areas of surface debris and will update design accordingly
   - AEC-3
     i. Excavation of Exc #1-#4. Excavation has been approximately 75 m^3 of contracted 125 m^3.
     ii. Four excavations at AEC-3 are complete and awaiting analytical results. Two more areas (#5 and #6) will be excavated in the future. Kudlik has ~30 soil bags on site and will use 5 bags for #5 and 25 bags for #6. After the 25 bags are used for #6, Outcome will assess the likelihood that more bags are required using the combustible gas meter, field observations and petroflags.

5. **Field observations, problems, conflicts**
   - NR requested an update on waste generated by cut/fill activities at AEC-1. MBe confirmed that no additional waste was generated during cut/fill activities at AEC-1 in the previous week.

6. **Confirmation of Quantities**
   - In 2019 so far, 9 loads of AEC-2 debris collected and moved to AEC-1
   - To date, 18,500 m^3 of Type 2 produced
   - There were drums containing liquid at AEC-2 surface collected in 2019.
     i. The contract volume is 3400 L
     ii. In 2018, 1950 L were consolidated
     iii. In 2019, to date, 16 drums containing liquid (2200 L)
     iv. A change order will be required to deal with liquid waste over contract volume

7. **Project Schedule Review**
   - Problems which impede construction schedule
     i. None. Per FB, the earlier Outcome can provide the AEC-2 design, the more alternatives Kudlik will have if they get stopped on other activities. We will have to follow the analytical results closely for the contaminated soil.
   - Revisions
     i. No revisions. The barge is scheduled for September 12 or 13. All material is planned to go out on the same boat.
   - Following week
     Kudlik:
     i. Screening
     ii. Excavation of Exc #5 and Exc #6 at AEC-3
     iii. Picking Debris AEC-3, to be able to close
     iv. Filling slope at AEC-1. Manuel: let's say should be like three days or something.

8. **QAQC**
    - Outcome is collecting approximately 1 sample per day for future sieve testing
    - To date, samples collected have been within the gradation curve. All the lab data will be compiled by Outcome and put into one curve to calculate the averages
    - Soil samples for chemical analysis from AEC-3 Excavations #1 through #4 have been submitted. Samples are in transit but should arrive in Ottawa on Wednesday evening. This is longer than normal due to First Air system problems, but the samples are refrigerated.

9. **Submittals**
    - None

10. **AHJs**
    - No interactions on-site with AHJs during the previous week
    - HP will talk with Bhabesh Roy, Municipal Planning Engineer about GN plans for lagoons near AEC-1. **Update after meeting**: HP discussed the project with Bhabesh. He confirmed that the GN is not doing any construction related to the sewage lagoon this year. The lagoon cannot be decommissioned until a new treatment plant is built, which will not happen this summer.
    - HP has discussed the project with Pierre Lamothe, GN Transportation Mgr. He has a copy of licenses and relevant project documents and does not have concerns. Ben Fredland will be the new person and either Ben or Pierre or both may attend the August site visit.

11. **Project Claims, Change Orders**
    - Progress Claims: Kudlik has started to work on a draft version and will update it based on the Type 1/2 survey to be conducted on 7/31. Kudlik also has a survey and calculated excavation volumes for AEC-3 Excavations #1 through #4. Kudlik will send a draft claim shortly and then a final claim and schedule based on comments.
    - Change Order status: NR issued pre-approval for pit run and debris. Based on discussions with Kudlik and Outcome, the actual Change Order may also include additional fluids from AEC-2 (waste identified in 2019) and AEC-3 (water management) and reduce or remove the value of debris based on the AEC-1 cut/fill. PSPC may also add monitoring well installation to the CO.

12. **Any Other Business**
    - Site Tour week of August 25, 2019
        i. Sunday August 25 – get to Quebec City
        ii. Monday August 26 – fly Quebec City to Resolute
        iii. Tuesday August 27 – site tour in Resolute, fly to Quebec City
        iv. Wednesday August 28 – Quebec City to home
    - NR will be on vacation from August 13 (afternoon) to August 20, so paperwork issues should be addressed in advance of August 13 if possible.
    - Weekly construction meeting will be changed to August 12 at noon.

ACTION ITEMS
- HP will contact AHJ (see post-meeting update under AHJ)
- Outcome will send Final Meeting Minutes from July 23 meeting

ACTION ITEMS FROM PREVIOUS WEEKS

- NR will discuss LTUs with HP
- JSM to send NR the costs and proposal for installing monitoring wells once supplier prices have been received

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Andrew Henderson
Outcome Consultants Inc.

DATE:
July 30, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday August 6, 2019
Location:	Conference Call

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz		
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca		
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca		√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com		
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		
Kelly Hunnie	KH	TC	Kelly.Hunnie@tc.gc.ca	√	√
John Cowan	JC	TC	John.Cowan@tc.gc.ca		

1. **Health, Safety and Security**
   - Daily tailgates conducted by Kudlik, each day at 600am. Currently, JF on site.
   - Polar Bears – at site, no polar bears observed in 2019
   - During excavation at Borrow Area East prior to July 30th, Kudlik encountered a buried wire approximately 0.30 metres below ground. The orientation and purpose of the wire were unclear, but it appeared to be a communication wire. No follow-up by the airport or TC regarding the uncovered wire has been received by JSM or JF.

2. **Review, approval of minutes of previous meeting**
   - Review of July 30 meeting minutes occurred. The minutes will be issued as final.
   - Final Minutes: JSM to distribute July 30th and JDM to distribute July 23rd, 2019.

3. **Environmental Protection Update**
   - No spills this past week
   - Outcome waiting on soil data from Spill-2 and Spill-3.

4. **Review of field work during previous week**
   Kudlik
   - Stockpiling of material at screener (feeder pile)
   - Type 1: 10,000 m^3 in total has been produced (estimate)
   - Type 2: 23,000 m^3 in total has been produced (estimate)
   - AEC-1
     i. Reshape on southwest slope
     ii. ~6000 m3 Type 2 placed on top
     iii. Placed collected debris into slope
     iv. Half of the surface debris from beyond the toe has been collected and put into slope
     v. Debris on top unearthed was moved to slope. To date this amount equals to 10 hours excavator and 7 hours rock truck
     vi. Swale location was moved to match surrounding contours and tie it in with the ditch
   - AEC-2
     i. Top of landfill receiving Type 2 material starting August 6, 2019 based on Kudlik receiving re-design and JF/JSM on site
   - AEC-3
     i. All surface debris from the gully has been collected
     ii. Test pits were advanced to delineate excavation zones EX5 and EX6
     iii. Four excavations at AEC-3 are complete and awaiting analytical results.

5. **Field observations, problems, conflicts**
   - No problems. Waste handling went well.
   - Outcome waiting for lab data for Spills and AEC-3 excavations 1 through 4.

6. **Confirmation of Quantities**
   - In 2019 so far, 9 loads of AEC-2 debris collected and moved to AEC-1
   - To date, ~10,000 m^3 of Type 1 produced
   - To date, ~23,000 m^3 of Type 2 produced
   - Pit Run Qty to date placed: 248 loads x 14 m^3/load
     i. 248 = 200 + 48
     ii. 200 = loads on top of AEC-1
     iii. 48 = loads on slope of AEC-1
   - There were drums containing liquid at AEC-2 surface collected in 2019.
     i. The contract volume is 3400 L
     ii. In 2018, 1950 L were consolidated
     iii. In 2019, to date, 16 drums containing liquid (2200 L)
     iv. A change order will be required to deal with liquid waste over contract volume.
     v. 2200 L + 1950 L = 4150 L

7. **Project Schedule Review**
   - Problems which impede construction schedule
     i. None.
   - Revisions
     i. No revisions. The barge is scheduled for September 12 or 13. All material is planned to go out on the same boat.

- Following week
  Kudlik:
  i. AEC-1: Debris pick up from beyond toe and slope work
  ii. AEC-2: Debris pickup, swale, and placement of material on top. Containerized liquid from the 2019 drums will be moved closer to the barge, closer to the time of the barge arrival

8. **QAQC**
   - Outcome is collecting approximately 1 sample per day for future sieve testing
   - To date, samples collected have been within the gradation curve. All the lab data will be compiled by Outcome and put into one curve to calculate the averages
   - Soil samples for chemical analysis from AEC-3 Excavations #1 through #4 have been submitted. Samples have arrived at lab. Test pit samples from Excavation #5 and #6 are in transit to lab.
   - Outcome observing the 6 passes for compaction requirements. Kudlik currently using 350 excavator as opposed to the dozer

9. **Submittals**
   - None

10. **AHJs**
    - No interactions on-site with AHJs during the previous week
    - NR recommended that HP and TC be included in future lagoon design plans as lagoon decommissioning needs to include TC

11. **Project Claims, Change Orders**
    - Progress Claims: FB submitted PC to NR
    - Change Order status: NR issued pre-approval for pit run and debris. To date, these volumes are within pre-approval amount
    - Contemplative Change Notice: NR will submit to FB. Will include pit run material, installation of 11 x monitoring wells, debris waste handling at AEC-1 and AEC-2, the liquids from drums in AEC-2.
    - Note that work at the LTU is cancelled.

12. **Any Other Business**
    - Site Tour week of August 25, 2019
      i. FB, JSM, HP, NR will attend and fly from Quebec City
      ii. Sunday August 25 – get to Quebec City
      iii. Monday August 26 – fly Quebec City to Resolute
      iv. Tuesday August 27 – site tour in Resolute, fly to Quebec City
      v. Wednesday August 28 – Quebec City to home
      vi. NR will distribute inspection report template prior to the inspection
    - NR will be on vacation from August 13 (afternoon) to August 20, so paperwork issues should be addressed in advance of August 13 if possible.
    - Weekly construction meeting will be changed to August 12 at noon.
    - KP will ask HP about signs

- KP recommended that the airport manager covering Resolute be invited to the inspection and although it is unlikely for them to attend, the inspection report will be shared with them

ACTION ITEMS

ACTION ITEMS FROM PREVIOUS WEEKS

- Outcome will send Final Meeting Minutes from July 23 meeting

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
August 6, 2019

DRAFT MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Monday August 12, 2019
Location:	Conference Call

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.com	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz		
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca		
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca		√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com		
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		
Kelly Hunnie	KH	TC	Kelly.Hunnie@tc.gc.ca		
John Cowan	JC	TC	John.Cowan@tc.gc.ca		√

1. **Health, Safety and Security**
   - Daily tailgates conducted by Kudlik, each day at 600am. Currently, JF on site.
   - Polar Bears – at site, no polar bears observed in 2019

2. **Review, approval of minutes of previous meeting**
   - Review of Aug 6 meeting minutes occurred. The minutes will be issued as final. Final Minutes: JDM to distribute.

3. **Environmental Protection Update**
   - No spills this past week
   - Outcome waiting on soil data.

4. **Review of field work during previous week**
   Kudlik
   - AEC-1
     i. Surface debris from beyond toe collected and placed on slope of AEC-1
     ii. Surface debris from beyond toe of AEC-2 transported to slope of AEC-1

iii. A section of swale excavation contained metal debris, this material transported to AEC-1 (2 loads)
iv. One area of AEC-1 left open to receive surface debris

- AEC-2
  i. To date, 556 loads of Type II has been transported to AEC-2
  ii. AEC-2 fill and compaction efforts are approximately 50% complete
  iii. Drums containing liquid were transported from AEC-2 to the laydown area for packaging and shipping south
  iv. Debris from beyond toe is approximately 90% complete
- AEC-3
  i. No activities this past week

5. **Field observations, problems, conflicts**
   - Two portions of the haul road (main road between Polar Shelf and AEC-1) are soft
   - JF update regarding road: Kudlik maintenance efforts are required each day here. Kudlik will fix the road at the end of the season. Kudlik has discussed the road with Airport staff. The Hamlet is not involved with this section of road, this section of road is the Airport's road.
   - Outcome waiting for lab data for Spills and AEC-3 excavations. The lab has received all the samples (Spills and EX1 through EX4) except EX5 and EX6. EX5 and EX6 samples are expected to be in Ottawa in the near future

6. **Confirmation of Quantities**
   - To date, no Type I has been hauled, nor additional produced. Production of Type I will only occur if needed further into schedule.
   - To date, approximately 7800 m^3 of Type II has been hauled to AEC-2 equalling approximately 65%. JSM stated there is flexibility for the Type II cover field fit at AEC-2.
   - Pit Run – no pit run hauled this week

7. **Project Schedule Review**
   - Problems which impede construction schedule
     i. None.
   - Revisions
     i. No revisions. The barge is scheduled for September 12 or 13. All material is planned to go out on the same boat.
   - Following week
     Kudlik:
     i. AEC-1: Pit run may be required at toe of AEC-1 to integrate the collected debris from AEC 2 into the 3:1 slope

     ii. AEC-2: finish collecting surface debris from beyond toe, finish hauling Type II, finish compacting Type II, and continue with swales. Aiming to finish work by Wednesday or Thursday

     iii. AEC-3: awaiting lab data from Outcome.

JSM: Excavation-6 (EX-6) is estimated to be at most 78 m^3 (however, waiting for lab data), therefore an estimated 30 m^3 extra, therefore more bags needed, but waiting for lab data

8. **QAQC**
   - Outcome completed sieve testing
   - To date, samples collected have been within the gradation curve. All the lab data will be compiled by Outcome and put into one curve to calculate the averages
   - Soil samples for chemical analysis from AEC-3 Excavations #1 through #4 have been submitted. Samples have arrived at lab. Test pit samples from Excavation #5 and #6 are in transit to lab. Airline issue delays getting samples south to Lab. Once samples reach Iqaluit, they cannot be put on passenger flights. Cargo flights only fly 2 x week.
   - Outcome observing the 6 passes for compaction requirements. Kudlik currently using 350 excavators as opposed to the dozer
   - AEC-2: there are two soft spots in low areas that were previously saturated and contain fines. These areas will be monitored and long-term are not considered a concern due to being capped and ultimately being frozen when the permafrost rises into AEC-2 after completion

9. **Submittals**
   - None

10. **AHJs**
    - No interactions on-site with AHJs during the previous week

11. **Project Claims, Change Orders**
    - Progress Claims: FB submitted July claim. FB will submit August claim at end of August
    - Change Order status: FB has submitted requested information to NR
    - Contemplative Change Notice: A CCN 4 will be sent to FB addressing the following
      i. AEC-1 - Type 1 increase for swale/ditch convergence and draining pipe.
      ii. AEC-2 - Type 1 (new item) – for use on slope near the steep swale and at the 2 pipe discharges.
      iii. AEC-3 Excavations: increase 35m3 excavation, 35m3 Type 2 backfill, 80 tonnes disposal
      iv. JDM to identify new bid items and CO 4 items, send CCN 4 wording to NR. NR would like to get this out before going on holidays and Back up Project manager can get approval.
      v. FB to send unit rate to JSM/JDM for Type 1 at AEC-2 (new line item)

    Based on discussion on call NR has requested estimated quantities be provided although acknowledges because it is a field fit, could be difficult for consultant to estimate quantities. NR has asked for best guess estimates so it's in place to mitigate delays in field. Quantities can always be amended up.

12. **Any Other Business**
    - Site Tour week of August 25, 2019
      i. FB, JSM, HP, NR will attend and fly from Quebec City
      ii. Sunday August 25 – get to Quebec City
      iii. Monday August 26 – fly Quebec City to Resolute
      iv. Tuesday August 27 – site tour in Resolute, fly to Quebec City

v. Wednesday August 28 – Quebec City to home
vi. NR will distribute inspection report template prior to the inspection

- NR will be on vacation from August 15 to August 20, so paperwork issues should be addressed in advance of August 15. Ed Domijan will be NR's backup
- JF: Lagoon area will be the last area worked on at AEC-1

ACTION ITEMS

- JDM to send CCN wording to NR
- FB to send unit rate to JSM/JDM for Type 1 at AEC-2 (new line item)
- JDM to provide laboratory data update as soon as data is received

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
August 13, 2019

MINUTES OF MEETING
On-Site Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Thursday August 22, 2019
Location:	Conference Call

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.ca	√	√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz		
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca		√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca		
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com		
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		
Kelly Hunnie	KH	TC	Kelly.Hunnie@tc.gc.ca		
John Cowan	JC	TC	John.Cowan@tc.gc.ca		√

1. **Health, Safety and Security**
   - Daily tailgates conducted by Kudlik, each day at 600am. Currently, John Fraser on site.
   - Polar Bears –a polar was observed near the bridge and sealift beach area of Resolute this past week (eating cast away seal carcasses)– additional awareness was given for polar bear safety.

2. **Review, approval of minutes of previous meeting**
   - No changes requested to Aug 12 meeting minutes. The minutes will be issued as final – DOJV to distribute.

3. **Environmental Protection Update**
   - No spills this past week.
   - Soil data in:
     i. Ex 1 and 3 complete;
     ii. Ex 2 and 4 small additional digs completed this morning;
     iii. Ex 5 with additional F3 and Cr VI soil to be removed, approx. 2 cu.m;
     iv. Ex 6 PHC and Cr VI soil to be moved – approx., 60 cu.m;
     v. The total excavation will be near the 160 cu.m allotted in CCN-003.

- Kudlik was asked if they had clear poly to delineate the end of EX6 excavation?
    i. Since there is no screening for Cr VI, and lab analysis a schedule risk due to impending snow, it was recommended that once the initial EX6 excavation was completed, to place a delineation zone in place and backfill the excavation;
    ii. Kudlik has a thin polyethylene liner on-site and will use it to line the end of excavation prior to backfill.

4. **Review of field work during previous week**

Kudlik

- AEC-2:
    i. Placement of Type 2 material was finished for AEC-2 when the allotted tracked quantity was reached;
    ii. The G1 area finished with approximately 400 mm cover;
    iii. There was not enough Type 2 material for the optional C6 area.

- AEC-1:
    i. The placement of Type 2 and Type 1 material for the top cover and side cover was completed for AEC-1;

- Survey data was requested from Kudlik to assess the project quantities.

    i. Francois received the data this morning and to send to DOJV.

- Reshaping of the Borrow Area East is approximately 90% complete.

5. **Field observations, problems, conflicts**
- Geotextile quantity shortage:
    i. A 5 m x 100 m roll of geotextile was sourced in Resolute, belonging to ATCO;
    ii. It appears to be same thickness as the contract specified geotextile (no label on the roll);
    iii. Quoted price from ATCO @ $1200 for the roll;

    iv. The 1 roll is not expected to make up the quantity shortfall; however, will help expedite the work;

    v. The proposed ‘Type 2 Filter’ method would still be used for remaining quantity shortfall.

- AEC-2 cover and slope stability – additional Type 2 material?
    i. Material production (screening) has stopped;
    ii. A load-count tracked 750 cu.m of Type 2 was used for the C5 area – approx. 800 mm cover;
    iii. A load-count tracked 1000 cu.m (maximum allotted) of Type 2 was used for G1 area – approximately 400 mm cover;
    iv. Pit run was placed at the toe of slope;

    v. Waiting on survey data to confirm quantities.

- Type 3 material:
    i. The total aggregate production to date (screening) did not generate significant quantities of 150mm+ material (< 50 cu.m), creating a shortage of required Type 3 aggregate (specified for S-type swales and swale outwash);
    ii. Jonathan to issue a revised plan for Type 3 aggregate and to send to Kudlik.

6. **Confirmation of Quantities**

- Kudlik will send survey data to DOJV for quantities review.

7. **Project Schedule Review**
    - Revisions:
        i. The last progress schedule is on track, no progress schedule change. The barge is scheduled for September 12 or 13 and all materials are planned to go out on the same boat.

    - Following week:

    Kudlik
        i. Complete AEC-1 and AEC 2 swales;
        ii. Complete contaminated soil excavation and backfill;
        iii. Complete borrow reshaping;
        iv. Demobilization.

8. **QAQC**
    - No specific QAQC discussion.

9. **Submittals**
    - None.

10. **AHJs**
    - No interactions on-site with AHJs during the previous week

11. **Project Claims, Change Orders**
    - Pre-approval request for CO3:
        i. Notes re: mark-ups and BOPC to be resolved.

    - Pre-approval request for CO4:
        i. 100 cu.m pit run;
        ii. NR to review off-site disposal costs with Francois.

12. **Any Other Business**
    - Holly – Schedule
        i. request for progress schedule showing percentage complete of activities:
        ii. NR to send to Holly

        iii. Any additional plans for night shift to accelerate schedule?

Francois

1. the excavation is being done now to mitigate against freezing temperatures;
2. Otherwise, remaining tasks are tracking to be completed before the sealift and can done in cold conditions.

- Holly – Flight times for Monday and Tuesday?

Francois

i. Departure @ 8h30 Quebec City Time;
ii. Arrival at 18h00 local time;
    1. Francois to send Kudlik information form for the flights.

- Holly – Signage?
    i. Project team to help evaluate suitability and implementation process to having signs put in for the project.

ACTION ITEMS

- FB to send survey data to JSM
- JSM to send instructions re: Type 3 materials
- NR to send progress schedule from Progress Claim 3 to Holly
- FB to send flight forms to NR

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

Minutes prepared by:

Henry Wong
Outcome Consultants Inc.

DATE:
August 24, 2019

Health, Safety and Security

- weekly Construction meeting on Sunday

- Slips and trips due to ice and frozen conditions due to change in temperatures

Review, approval of minutes of previous meeting

- defer

Environmental Protection Update

- WRT spills, clean results, and bags are in a seacan at beach
- No new spills to report
- Wildlife – no new sightings of polar Bears

Review of field work during previous week

- AEC-1 is fully finished to design, including swales
- AEC-2 Caps C1-C4 were fully completed, C5 to 0.4m thick, C6 0. Confirm volumes before any instructions
- Started Swale construction at main and subarea to south, placed 3-4 rolls of geotextile in northern section of the swales
- AEC-3 Finished excavations 1-5, with backfill. 38 bags from Exc-6 (50%), reshaped surface in main area to promote natural drainage and prevent ponding. MINOR debris surfaced, needs final walk through. Sub-area to be reshaped.
- All Pb waste seacans and soil bags (~177 bags) moved to beach for Sealift
- Transformers from last year are in a seacan by the beach

Field observations, problems, conflicts

- Geotextiles will be short, will need to use the extra roll from ATCO which is in the preapproval. DOJV to reflect on sandfilter vs geotextile bas of channel.

Confirmation of Quantities

- AEC-1 – Type 2 10,903 – 2,303 = $138,180
- AEC- Type 1 – near zero to contract volume
- AEC-2 ~11,000 m3 hauled and placed
- Swales, potential increase of Type ones when compared to actual Geotextile placement

Project Schedule Review
a. Problems which impede construction schedule

- EXC6 – Excavate worst case soils in remaining bags mobilized as part of C04 preapproval
-

b. Revisions
c. Following week

- Finish

Submittals

- DOJV has received some of the as-built surveys,

Maintenance of Quality Standards

- none

AHJs

- Site tour with Mona Manic from NU/airport, was happy with the progress.

Project Claims, Change Orders

- CO3 submitted for signing, CO4 pre-approved but needs paperwork to be signed
- CO5 reconciliation of quantities, needs surveyed quantities
- CO6 – reconciliation f southern wastes, and any outstanding items
- PC4 August
- PC5 September
- PC6 October waste disposals

Any Other Business

None.

MINUTES OF MEETING
Project Meeting

Project Name:	Resolute Bay Landfill Remediation (RBLR)
PSPC Project No.:	R09508.001
Kudlik Project No.	2018-060
Outcome Project No.	P2017-06
Date:	Tuesday September 3, 2019
Location:	Conference Call

Attendance and Distribution

Person	Initials	Company	Email	Attended	Distributed
John Fraser	JF	Kudlik	johnfraser@hotmail.ca		√
Francois Bourassa	FB	Kudlik	FBourassa@kudlik.biz	√	√
Manuel Bellemare	MBe	Kudlik	MBellemare@kudlik.biz		
Jonathan Markiewicz	JSM	Outcome	jmarkiewicz@outcomeinc.ca	√	√
Jason Mauchan	JDM	Outcome	jmauchan@outcomeinc.ca	√	√
Shaun Dagenais	SG	Outcome	sdagenais@outcomeinc.ca		
Natalie Robinson	NR	PSPC	Natalie.Robinson@pwgsc-tpsgc.gc.ca	√	√
Holly Poklitar	HP	TC	Holly.Poklitar@tc.gc.ca	√	√
Andrew Henderson	AH	Outcome	ahenderson@yedoma.com		
Michael Billowits	MBi	Outcome	mbillowits@outcomeinc.ca		

1. **Health, Safety and Security**
   - Daily tailgates conducted by Kudlik, each day at 600am. Currently, John Fraser on site.
   - Polar Bears –a polar was observed twice on Saturday Aug 31, 2019. First sighting at 1245pm at the airport. Second sighting at 945pm on Dynamite Road. Additional awareness was given for polar bear safety.
   - No incidents during previous week

2. **Review, approval of minutes of previous meeting**
   - JSM will distribute Final Minutes for the Aug 22 and Aug 27 meetings. The minutes will be issued as final – DOJV to distribute.

3. **Environmental Protection Update**
   - No spills this past week.
   - Soil data in:
     - Inter-season soil data confirms no further action at inter-season locations
     - Soil data from spills (1-3) confirm no further action at these locations
     - JSM collected samples at EX6. These samples are expected at the lab on September 5, 2019.

- DOJV to collect end-of-season samples when all equipment and materials have been moved off-site. These samples will be collected during the sealift.

4. **Review of field work during previous week**

Kudlik

- AEC-1:
  - Completed
  - Extra Type 1 was placed at the Type S swale
- AEC-2:
  - Completed
- AEC-3
  - Excavations and backfills completed.
  - Soil bags moved to beach landing area for off-site transport south on sealift
- Borrow
  - Borrow Areas Re-shaped
  - Type 1 stockpile reshaped
- Survey data was collected by Kudlik
  - FB to send survey data to JSM
- Personnel
  - On September 2, 2019: 1 x surveyor left site, 3 x HEOs left site
- First Sealift
  - The first sealift occurred. Two are scheduled.
  - The first sealift included the demob of 7/12 seacans, 179 bags of soil (EX1-5), 38 bags of soil (EX6), and the excavator with attachment

DOJV

- Sampling:
  - The 'post-construction' sampling of surface water and sediment was completed at AEC-1, AEC-2, and AEC-3
  - Monitoring wells installed
- Documentation
  - Photos and videos were taken at AEC-1, AEC-2, and AEC-3
- Inspection
  - A walk-over inspection was completed (JSM and JF)
  - JSM noted minor deficiencies such as seacans remaining on-site. JSM noted that the minor deficiencies were in regard to completing the demobilization from site which is expected to be completed this coming week

5. **Field observations, problems, conflicts**
   - None

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6. **Confirmation of Quantities**
   - Kudlik will send survey data to DOJV for quantities review.

- AEC-3 EX6 had 45 bags of soil excavated this past week. FB to provide JSM with survey data for the m3 quantity. The quantity is expected to be close to the quantity stated in CO-4, however, the survey data is required to confirm this.

7. **Project Schedule Review**
    - Following week:

      Kudlik
        - Prep for sealift which includes moving equipment to the beach landing area, packaging and re-organizing the seacans
        - Demobilization.
        - On-site is John Fraser (site super), Terry (HEO), and Savarino (mechanic)
        - John Fraser to send photos each day to JSM
        - John Fraser and small crew scheduled to leave September 6th or September 9th, 2019.
    - Sealift
        - Sealift expected in the range of Sept 18-21, 2019.
        - The sealift company will load the Kudlik items onto the barge, however, FB noted that Kudlik site super Louis will be in Resolute on another Kudlik job and available to assign resources to any remaining RBLR items
    - DOJV
        - The Dept Rep will be present in Resolute for sealift
        - The Dept Rep will take samples at the laydown area and screener location
        - JSM and NR to discuss the collection of groundwater samples occurring this year or next year

8. **QAQC**
    - No specific QAQC discussion.

9. **Submittals**
    - FB to send survey data to JSM
    - Waybills and waste disposal certificates to be sent from FB to JSM when received from the waste disposal facility, the expected timeline is:
        - First sealift items: mid-October
        - Second sealift items: mid-November
    - FB to notify WSCC that the Project is Closed with regard to ACM. FB to cc JSM on notification of closure to WSCC

10. **AHJs**
    - A walk over was conducted by Nunavut Transport. Mona conducted the walk over and was verbally satisfied. HP will send Mona and the Airport Authority the final reports
    - Water Board
        - There are Water Board reporting requirements. HP will send the summary list to the team of Water Board reporting requirements
        - HP recommended to use the language contained within the Water Licence for the Water Licence submittals (keep the wording consistent)
        - HP recommended to keep the Water Licence submittals as ‘plain language’ reports

- HP noted that references within the Water Licence submittals must align with the Water Licence. For example, the wording of Remediation Plan vs Closure Report

11. **Project Claims, Change Orders**
    - FB will send draft August PC to JSM
        - FB noted that the m3 will not be final and the m2 will not be final. The m3 and the m2 will be within the approved quantity. The September PC will be used to adjust the final numbers.
    - CO-3 has been issued
    - NR to issue CCN-04

12. **Any Other Business**
    - NR will be away at the end of November, dates to be confirmed
    - NR requested that a Lessons Learned (LL) Meeting occur. The LL meeting is tentatively scheduled for the end of November
    - This is the last weekly construction meeting for this project

ACTION ITEMS

- JSM to distribute Final versions of weekly meeting minutes
- FB to send survey data to JSM
- FB to send Aug PC draft to JSM
- FB and JF to send photos daily to JSM
- HP will send Water Licence submittal requirements to JSM/JDM/FB/NR
- NR to issue CCN-04
- JSM and NR to discuss the collection of groundwater samples
- An action item from August 22, 2019 – Signage. Project team to help evaluate suitability and implementation process to having signs put in for the project

Please advise the writer, in writing prior to the subsequent meeting, if these minutes contain any errors or omissions, otherwise they will become part of the project documentation as presented.

END OF MINUTES

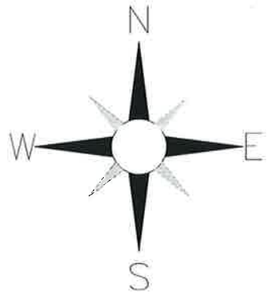
Minutes prepared by:

Jason Mauchan
Outcome Consultants Inc.

DATE:
September 4, 2019

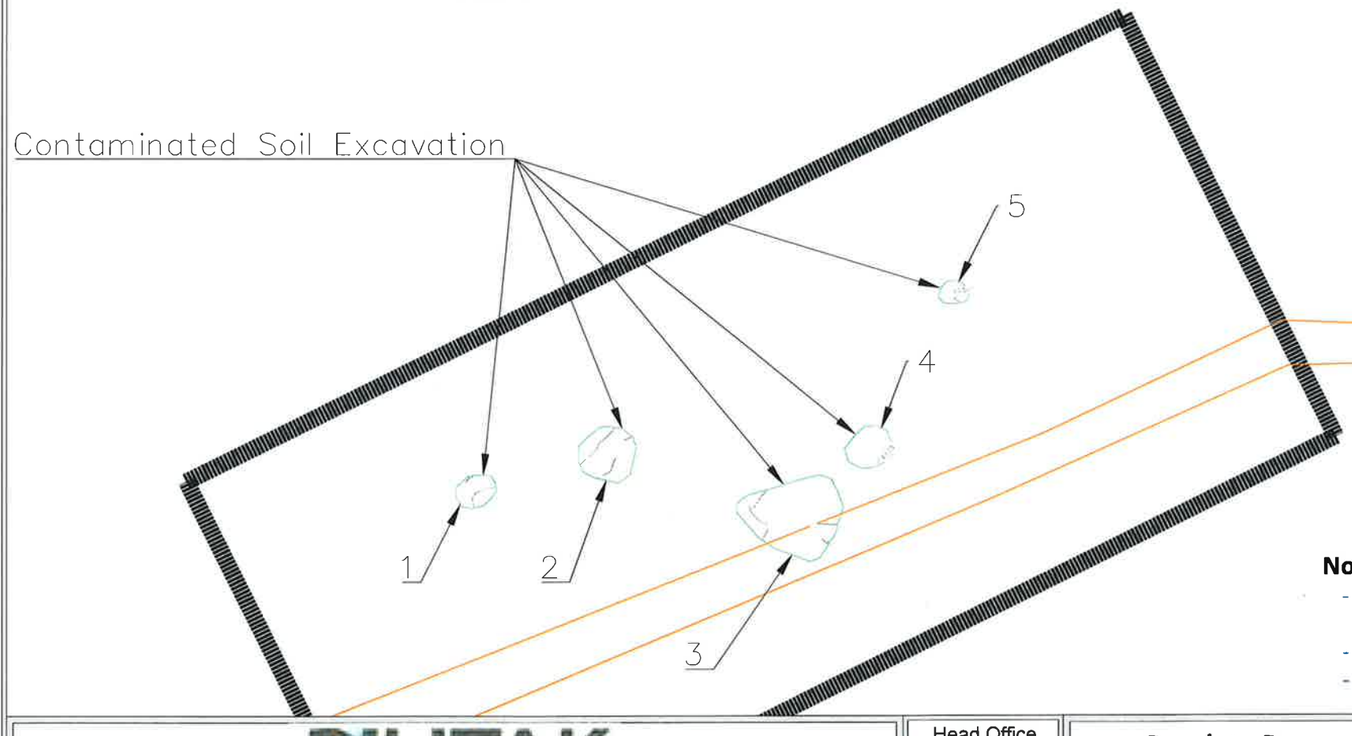
Appendix I

As-built Drawings



Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
contaminated soil excavation1	1.000	1.000	32.38sq.m	16.69 Cu. M.	0.00 Cu. M.	16.69 Cu. M.<Cut>
contaminated soil excavation2	1.000	1.000	74.47sq.m	32.55 Cu. M.	0.01 Cu. M.	32.54 Cu. M.<Cut>
contaminated soil excavation6	1.000	1.000	8.66sq.m	3.27 Cu. M.	0.00 Cu. M.	3.27 Cu. M.<Cut>
contaminated soil excavation3	1.000	1.000	129.91sq.m	62.26 Cu. M.	0.00 Cu. M.	62.26 Cu. M.<Cut>
contaminated soil excavation4	1.000	1.000	43.56sq.m	21.63 Cu. M.	0.06 Cu. M.	21.57 Cu. M.<Cut>
contaminated soil excavation5	1.000	1.000	16.42sq.m	6.36 Cu. M.	0.01 Cu. M.	6.35 Cu. M.<Cut>
Totals			305.39sq.m	142.77 Cu. M.	0.08 Cu. M.	142.68 Cu. M.<Cut



Notes:

- All excavated contaminated soil was containerized and shipped off-site for disposal to a licenced facility
- All excavations were backfilled with type 2 granular material
- Areas where debris were removed were reshaped

PILITAK ENTERPRISES

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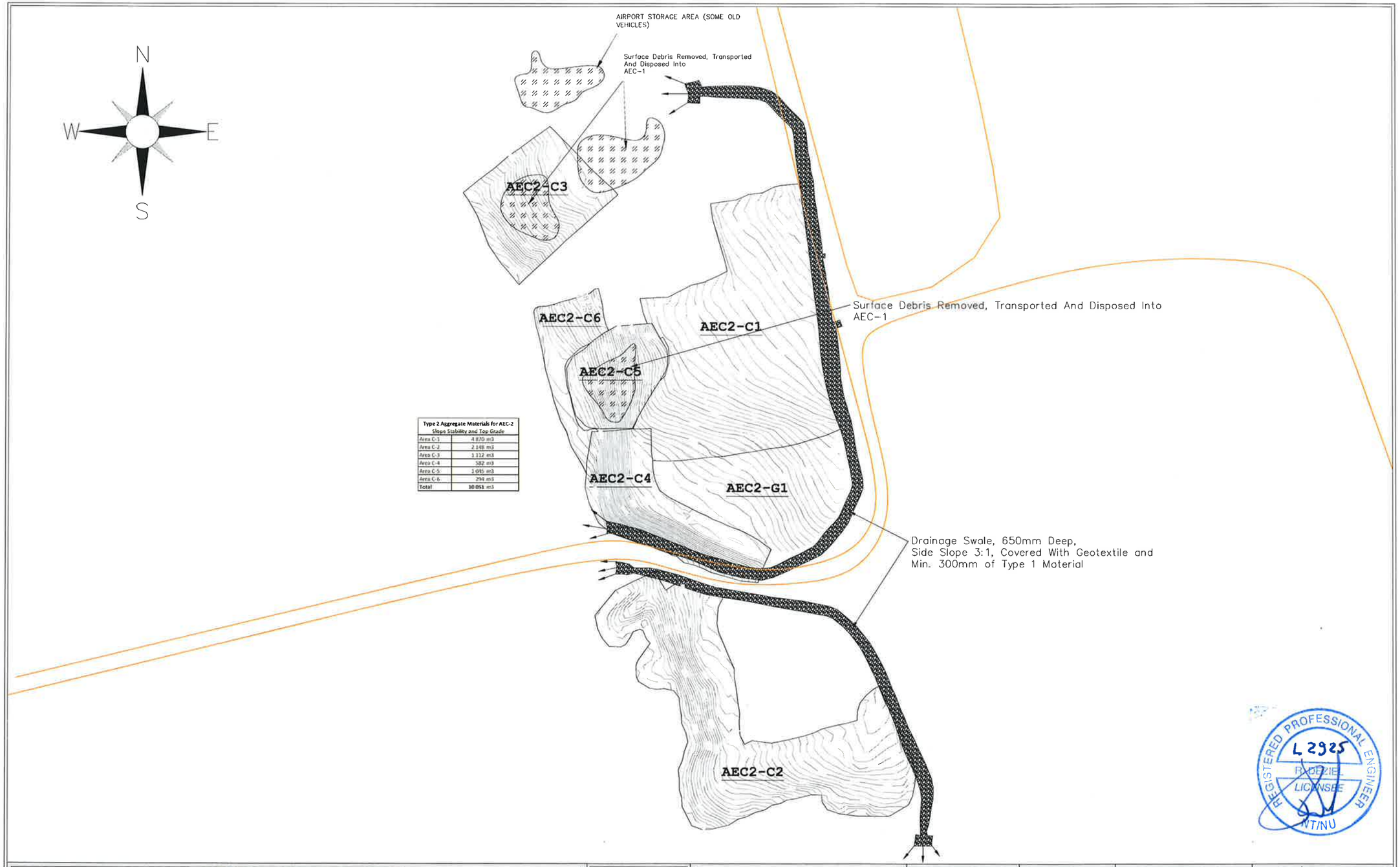
Resolute Bay Airport Landfill Remediation As-Built

DATE	SCALE	DESIGNER	VÉRIFIED BY
2019-12-12	1:500	Jeff Deziel	Francois Bourassa

PROJECT #	DRAWING #	SHEET	REV.	FOR.
2018-060	AEC-3	03	02	A1



Type 2 Aggregate Materials for AEC-2 Slope Stability and Top Grade	
Area C-1	4 870 m3
Area C-2	2 148 m3
Area C-3	1 112 m3
Area C-4	582 m3
Area C-5	1 045 m3
Area C-6	294 m3
Total	10 051 m3

REGISTERED PROFESSIONAL ENGINEER L 2925 R DEZIEL LICENSEE NT/NU

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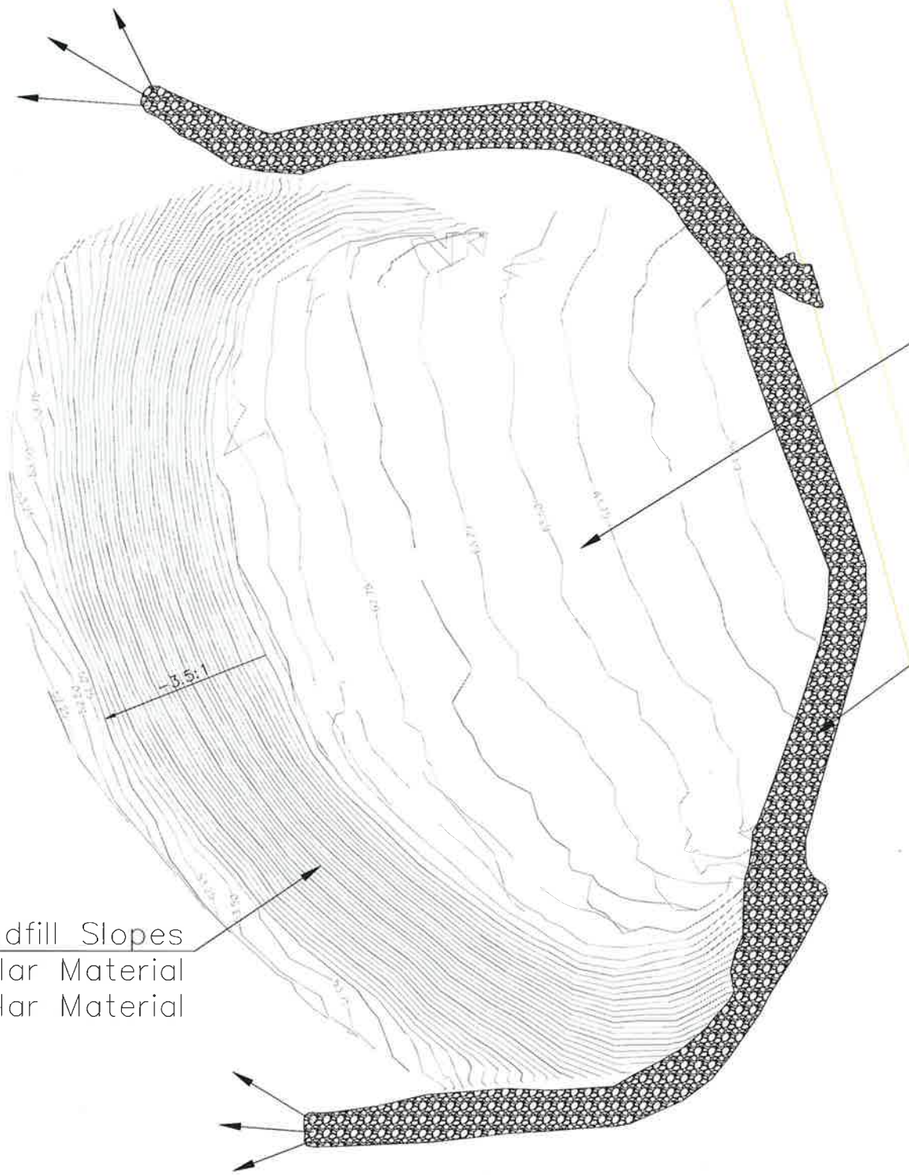
DATE	SCALE	DESIGNER	VÉRIFIED BY
2019-12-12	1:1000	Jeff Deziel	Francois Bourassa

PROJECT #	DRAWING #	SHEET	REV.	FOR.
2018-060	AEC-2	02	02	A1



N
W
E
S

Top of Landfill Cover
600mm of Type 2 Granular Material

Drainage Swale, 650mm Deep,
Side Slope 3:1, Covered With Geotextile and
Min. 300mm of Type 1 Material

New Landfill Slopes
800mm of Type 2 Granular Material
300mm of type 1 Granular Material

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (sq.m)	Cut (Cu. M.)	Fill (Cu. M.)	Net (Cu. M.)
Type 2 Aggregate Material including top cover	full	1.000	1.000	11399.04	0.00	5841.54	5841.54<Fill>
Type 2 Lower Aggregate Cover Layer including Side Slope and toe cover	full	1.000	1.000	8699.09	75.63	5558.34	5482.71<Fill>
Type 1 Upper Agregate Cover including Top Cover	full	1.000	1.000	10406.23	107.59	2279.23	2171.63<Fill>

REGISTERED PROFESSIONAL ENGINEER
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DATE	SCALE	DESIGNER	VÉRIFIED BY
2019-12-12	1:500	Jeff Deziel	Francois Bourassa

PROJECT #	DRAWING #	SHEET	REV.	FOR.
2018-060	AEC-1	01	02	A1