REMEDIATION PROGRAM

Date of Loss: October 28, 2022
Loss Location: Highway 391, approximately 12 km north of Nelson House, Manitoba

PREPARED FOR:

Manitoulin Group of Companies
2165 Brookside Blvd.
Winnipeg, Manitoba
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Attention: Lindsay Kerr
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Manitoulin Claim Number: #22-01636
Manitoba Environment Incident Number: ERT-22-0619

Pario Project Number: 45629-199

Date of Report: June 1, 2023

EXECUTIVE SUMMARY

Pario Engineering & Environmental Sciences LP (Pario) was retained on November 22, 2022, by Manitoulin Group of Companies (Manitoulin) to complete remediation actives as required to address environmental contamination resulting from a diesel fuel release which occurred on October 28, 2022. The release occurred within the north ditch of Highway 391, located approximately 12 km north of Nelson House, Manitoba. Manitoba Environment, Climate and Parks was notified of the release on October 28, 2022 and provided the incident number ERT-22-0619.

This report presents a summary of remedial operations, including background evaluation, excavation of impacted soil, soil field screening, characterization, soil sampling, backfill operations and reclamation completed under the supervision of Pario personnel on January 31, 2023.

The following summarized the results of this Remediation Program:

- The volume of released diesel fuel associated with this incident was reported as approximately 350 litres.
- Hydrocarbon contamination was identified on the site covering an area measuring approximately 17.5 square meters (m^2).
- Potential contaminations of environmental concern determined based on the reported diesel fuel released include benzene, toluene, ethylbenzene and xylenes and petroleum hydrocarbon (PHC) fractions 1 to 4.
- The applicable regulatory guidelines for this site are the Canadian Council of Ministers of the Environment – Canadian Environmental Quality Guidelines including updates up to January 2018. The residential / parkland guidelines for coarse-grained soils are considered applicable to the site.
- On January 31, 2023, Pario retained local contractors to provide the necessary manpower and equipment to excavate the contaminated material. The excavation was directed using physical evidence of contamination, including soil colour, indirectly noted PHC ambient odours, as well as soil field screening for organic vapour concentrations using an Eagle II photo-ionization detector. All PHC contamination in the soil was removed.
- The completed remedial excavation measured approximately 17.5 m^2 and extended to a maximum depth of 0.5 m below grade. A total of 27.75 Kg of contaminated soil was excavated and disposed of at the receiving landfill on January 31, 2023.
- Confirmatory analytical results reported parameters concentrations below the applicable guidelines at all locations.
- Final backfilling of the excavation was completed on January 31, 2023. No further remedial work is anticipated at the site as a result of the diesel fuel release that occurred on October 28, 2022.

The statements made in this Executive Summary are subject to the same limitations included in **Section 9** and are to be read in conjunction with the remainder of this report.

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APPENDICES

1. INTRODUCTION

Pario Engineering & Environmental Sciences L.P. (Pario) was retained on November 22, 2022, by Manitoulin Group of Companies (Manitoulin) to complete a remediation program within the north ditch of Highway 391, located approximately 12 km north of Nelson House, Manitoba (the "Site"). A photograph summary is provided within **Appendix A**.

This incident was reported to Manitoba Environment, Climate and Parks (MECP) and assigned incident number ERT-22-0619.

2. INCIDENT AND REMEDIATION

It was reported to Pario that on October 28, 2022, a tractor-trailer operated by Manitoulin was travelling eastbound on Highway 391, approximately 12 km north of Nelson House, Manitoba when it was involved in an incident causing damage to the saddle tanks of the tractor. As a result of the incident, it was noted that an estimated 350 litres (L) of diesel fuel was released onto the ground within the north ditch.

On January 31, 2023, Pario investigated the scene. At the time of the remediation, the tractor-trailer was removed from Site. Visible hydrocarbons and odour were noted in an area of the north ditch measuring approximately 5 metres (m) long by a maximum of 3.5 m wide. An unnamed watercourse (approximately 150 m east) that joins Kawaweyak Lake to an unnamed waterbody was observed during the remediation. No contamination was observed to have entered the waterbody.

As part of the remediation, a total of nine soil samples (Source, BG-01 to BG-03 and CS23-01 to CS23-05) were collected. Soil samples were submitted for laboratory analyses of benzene, toluene, ethylbenzene, xylenes (BTEX) and Petroleum Hydrocarbon (PHC) fractions (F) 1 through 4, salinity, metal parameters and/or sieve analysis. Field organic vapour analysis was conducted using an Eagle II photo-ionization detector (PID). Screened samples indicate source material up to 80 parts per million by volume (ppmv; Source) with remaining samples ranging from 5 ppmv (various) to 10 ppmv (various).

3. REMEDIATION PROGRAM OBJECTIVES AND SCOPE

3.1 Objectives

The objectives of the Remediation Program are outlined as follows:

- Remediation of PHC contamination associated with the October 28, 2022, diesel fuel release.
- Reclamation of the release area to pre-spill conditions.

3.2 Scope of Work

The scope work completed by Pario is outlined as follows:

- Review of available background information, including publicly available data on the on-Site setting, climate, soil, and water.
- Evaluation of background soil conditions.
- Determination of the appropriate soil quality criteria for the Site.
- Excavation of contaminated soil associated with the subject diesel fuel release.
- Completion of field soil screening for PHC.
- Identification of residual PHC at concentrations above the applicable guidelines and/or background soil conditions and excavate as required.
- Validation of the completion of the Site remediation through a confirmatory sampling program.
- Comparison of the laboratory analytical results to the referenced environmental guidelines.
- Backfilling of the remedial excavation, to reclaim the Site to pre-spill conditions.
- Preparation of this report.

3.3 Contaminants of Concern

The suspected contaminants of environmental concern determined based on the known released diesel fuel properties are as follows:

- BTEX.
- PHC F1 to F4.

4. BACKGROUND

4.1 Site Description

The Site is the north ditch of Highway 391, located approximately 12 km north of Nelson House, Manitoba. The Site is bordered by natural lands to the north, east, south and west, with Highway 391 located south of the release point.

The local topography in the area is relatively flat. Surface drainage at the Site is primarily overland flow toward the east. The location of the Site, with respect to the surrounding area, is presented on **Figure 1** and **Figure 2**. The Site layout including background sample location and confirmatory soil sample locations are presented on **Figure 3**.

4.2 Site Settings and Soils

This ecoregion is located along the southern edge of the Precambrian Shield in north-central Saskatchewan and Manitoba. This ecoregion is classified as having a subhumid high boreal ecoclimate. It forms part of the continuous coniferous boreal forest that extends from northwestern Ontario to Great Slave Lake in the southern Northwest Territories. The predominant vegetation consists of closed stands of black spruce and jack pine with a shrub layer of ericaceous shrubs and a ground cover of mosses and lichens. Permafrost is distributed throughout the ecoregion but is only widespread in organic deposits. Although local relief rarely exceeds 25 m, ridged to hummocky, massive Archean rocks form steeply sloping uplands and lowlands. Small to large lakes, comprising 30-40% of the ecoregion drain northeastward via the Churchill, Nelson and Seal River systems. In the western part of the ecoregion, uplands are covered with discontinuous sandy acidic tills, whereas extensive thin clayey lacustrine deposits, and locally prominent, sandy fluvioglacial uplands, are common in the eastern section. Exposed bedrock occurs throughout the ecoregion and is locally prominent. Dystric and Eutric Brunisols are associated with sandy uplands, whereas Gray Luvisols occur on clayey lacustrine uplands and loamy to silty fluvioglacial deposits. On level and in depressional areas, Gleysolic soils are associated with clayey sediments, whereas Mesisols and Organic Cryosols are associated with shallow to deep peatlands. (The Ecological Framework of Canada, 2014).

4.3 Soil Texture and Contaminant Migration

As evaluated during the Remediation Program and confirmed by the particle size analyses in the background soil samples collected at the Site, the Site consists of coarse-grained, silty sand material overlain by blast rock material. Hydrocarbon contamination was identified to a maximum depth of approximately 0.5 m below grade (mbg).

4.4 Local Water Users and Surface Water Bodies

The closest watercourse to the Site is an unnamed watercourse located approximately 150 m east of the Site. No hydrocarbons were observed to have entered the watercourse. No local water well database was available at the time of the report, however, no structures were identified within 300 m of the Site.

5. METHODOLOGY

5.1 Health and Safety

Prior to executing the field program, a hazard assessment was completed at the Site. Identified hazards included working around heavy equipment and underground utilities. A Manitoba One-Call was placed (ticket number 20230300534) and a third-party line locate

was conducted prior to excavation activities. No underground facilities were identified at the Site.

5.2 Landfill Disposal

Approval to dispose of soils at the local landfill was obtained by a letter of acceptance from MECP. A copy of the MECP letter is provided within **Appendix B**. The landfill summary report is provided within **Appendix C**.

5.3 Remedial Excavation

On January 31, 2023, Pario retained local contractors to provide the necessary manpower and equipment to excavate the contaminated material. The excavation of contaminated soil was directed using physical evidence of contamination and field screening for organic vapour concentrations (OVCs) using an Eagle II photoionization detector (PID). Confirmatory sampling was conducted on January 31, 2023. The limits of the remedial excavation were measured to be 5 m by 3.5 m (at widest point) to a maximum depth of 0.5 mbgs. A total of 27.75onnes of contaminated soil was transported and disposed at the City of Thompson, Manitoba landfill facility on January 31, 2023.

5.4 Soil Sampling Program

Soil samples were collected within the excavation approximately every 2 m horizontally. Samples collected for OVC analysis were placed in laboratory-provided soil sample bags, allowed to reach a temperature of approximately 20°C. Once the field-screening, visual and olfactory evidence supported the completion of the remedial excavation, the excavation effort was complete. Soil samples scheduled for analysis of volatile hydrocarbon compounds, such as BTEX and PHC F1, were collected using laboratory-provided TerraCore sampling kits and were preserved in vials containing methanol. Samples selected for analytical testing of PHC F2 to F4 were collected in 125 mL glass jars with Teflon™ lined lids following no-headspace protocols. Samples collected to analyze organic compounds such as BTEX and PHC F1 to F4 were stored in ice-packed coolers until submission to Bureau Veritas. Samples selected for analysis of inorganic parameters were placed in plastic bags and submitted to Bureau Veritas in coolers at ambient temperature. Confirmatory sampling locations were chosen to represent assumed worst-case conditions based on soil visual characteristics and field screening results. Discrete soil sampling methodology was used for remedial excavation confirmatory and characterization samples.

All samples were transported within a completed chain of custody. Data tables are provided as **Table 1** to **Table 4**. Laboratory reports are provided in **Appendix D**.

5.5 Site Reclamation

The excavation was backfilled with blast rock to match pre-spill conditions. Given the limited depth of excavation, the soil was compacted using the equipment on Site. Final backfilling of the Site was conducted on January 31, 2023. Topsoil and seed are not required at Site.

5.6 Quality Control of Fieldwork, Analytical Testing, and Report Preparation

Quality control (QC) measures that were implemented while completing this Remediation Program, including excavation of contaminated soil, collection, management, and shipment of soil samples, data processing, and preparation of this report, encompassed the following:

- Field operations were directed and supervised by qualified, competent environmental professionals.
- The heavy equipment and trucking contractors were selected based on confirmed qualifications, experience, equipment suitability, and quality.
- Soil sampling personnel donned new nitrile gloves before the collection and handling of each confirmatory soil sample.
- All sampling equipment was thoroughly decontaminated between sampling locations.
- All soil or samples scheduled for analytical testing of PHC parameters were collected following zero-headspace protocols and were stored in ice-packed coolers until submitted to Bureau Veritas.
- A peer quality review process was implemented during data management, report preparation, and QC review of final report deliverables.

Quality control measures implemented as part of this Remediation Program also included reviewing Bureau Veritas QC and the Quality Assurance portion of analytical reports.

6. REMEDIAL OBJECTIVES AND REGULATORY CRITERIA

The remedial objective is to return the Site to pre-existing conditions, where possible. If restoration to pre-existing conditions is not considered reasonable or practical, then Canadian Council of Ministers of the Environment – Canadian Environmental Quality Guidelines (January 2018) for coarse-grained residential / parkland use soils are considered applicable.

7. RESULTS

7.1 Soil Field-Screening Results

In total, nine soil samples (Source, BG-01 to BG-03 and CS23-01 to CS23-05) were collected as a part of the January 31, 2023 Site remediation. All samples were field

screened for OVCs via Eagle II PID, which reported OVCs that ranged in concentration from 5 ppmv (various) to 80 ppmv (Source).

Field-screening results are presented with **Table 1**.

7.2 Background Soil Assessment

Three background soil samples (BG-01 to BG-03) were collected at upgradient locations to the spill. Select samples were analyzed for BTEX, PHC F1-F4, salinity and metals parameters and are summarized in **Table 2 to Table 4** and discussed below:

- PHC – Background soil samples BG-01 and BG-02 reported PHC F2 concentrations (10 mg/kg and 69 mg/kg, respectively) and PHC F3 concentrations in soil sample BG-01 (55 mg/kg) below the applicable guidelines. All remaining parameters were below the laboratory method detection limits (MDL's) and applicable guidelines.
- Salinity – Background soil samples BG-01 and BG-03 reported sodium adsorption ratio (SAR) of 6.5 and 5.1, respectively, above the applicable guidelines. Electrical Conductivity (EC) values within BG-01 to BG-03 were reported as 1.4 dS/m, 1.1 dS/m and 1.3 dS/m, respectively and pH values of 7.39, 7.37 and 7.4, respectively. All values (excluding SAR) were within the applicable guidelines.
- Metals – Results from soil samples BG-01 to BG-03 reported chromium (88 mg/kg, 160 mg/kg and 95 mg/kg, respectively) above the applicable guidelines. Results from BG-01 to BG-03 reported nickel (46 mg/kg, 79 mg/kg and 47 mg/kg, respectively) All remaining parameters were below the laboratory MDL's and/or applicable guidelines.

The background assessment locations are presented within **Figure 3**.

7.3 Remedial Excavation

A total of six soil samples (Source and CS23-01 to CS23-05) were collected within the spill area. Analytical results for BTEX, PHC F1-F4, salinity and metals parameters are summarized in **Table 2 to Table 4**, and discussed below:

- PHC – Soil sample Source reported ethylbenzene (1.0 mg/kg), PHC F1 (420 mg/kg), PHC F2 (3,800 mg/kg) and PHC F3 (680 mg/kg) above the applicable guidelines. All remaining confirmation soil samples were reported below the laboratory MDL's and/or applicable guidelines. Soil sample Source was subsequently excavated from the Site.
- Salinity – Soil sample Source was submitted for salinity parameters and were below applicable guidelines and/or laboratory MDLs. Salinity was eliminated as a contaminate of concern.
- Metals – Results from soil sample Source reported chromium (160 mg/kg) and nickel (110 mg/kg) above the applicable guidelines but comparable to the established background conditions at Site. Soil sample Source reported copper (150 mg/kg) above the applicable guidelines and above the established background conditions of the Site. Given the location of the release (highway ditch) there is a possibility of outside

influences resulting in a copper exceedance. Metal parameters were removed as a contamination of concern.

Confirmatory soil sample locations and analytical results are presented within **Figure 3** and Tables **2** to **Table 4**, respectively.

8. CONCLUSIONS

Based on the information collected to date, all areas of the Site have been returned to pre-spill conditions with respect to the diesel fuel release of October 28, 2022. No further remedial work is recommended at this time.

9. LIMITATIONS

The conclusions in this report are based on the field observations and on analytical results obtained during, and at the time of the remediation detailed in this report and are specific to PHCs as indicators of contamination resulting from the diesel fuel release. Conditions at the Site may change in the future.

This report has been prepared for the sole use of the original recipients. No third parties may rely on this report without the expressed and written consent of Pario. Any use of, reliance on, and/or decisions made, based on this report, by a third party(s) is strictly the sole responsibility of such third party(s). Pario accepts no responsibility for damages, if any, suffered by any third party(s) as a result of any decisions, actions made, or reliance based upon this report.

10. CLOSURE

Should you have any questions, please contact Robert Anstey by telephone at 587-343-6719, or by email at [robert.anstey@pario.ca].

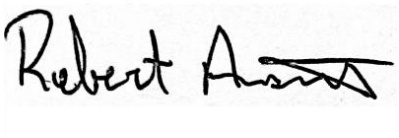
11. REFERENCES

- Canadian Council of Ministers of the Environment. 2008. Updated 2018: Canadian Environmental Quality Guidelines, Winnipeg, MB.
- The Ecological Framework of Canada (2014). Ecological Framework of Canada - Home (ecozones.ca).

We trust you will find everything in order with our Remediation Program report. If you have any questions or concerns, do not hesitate to contact the undersigned.

Yours truly,

PARIO ENGINEERING
& ENVIRONMENTAL SCIENCES LP
APEGA PERMIT TO PRACTICE No. P13525



Robert Anstey
Project Manager - Environmental

Dennis Reade, P.Geo
Technical Lead – Western Canada

/RA/dr/or

Encl.

Report Distribution:
c.: Manitoulin Group of Companies [Lindsay Kerr: lkerr@manitoulintransport.com]

FIGURES

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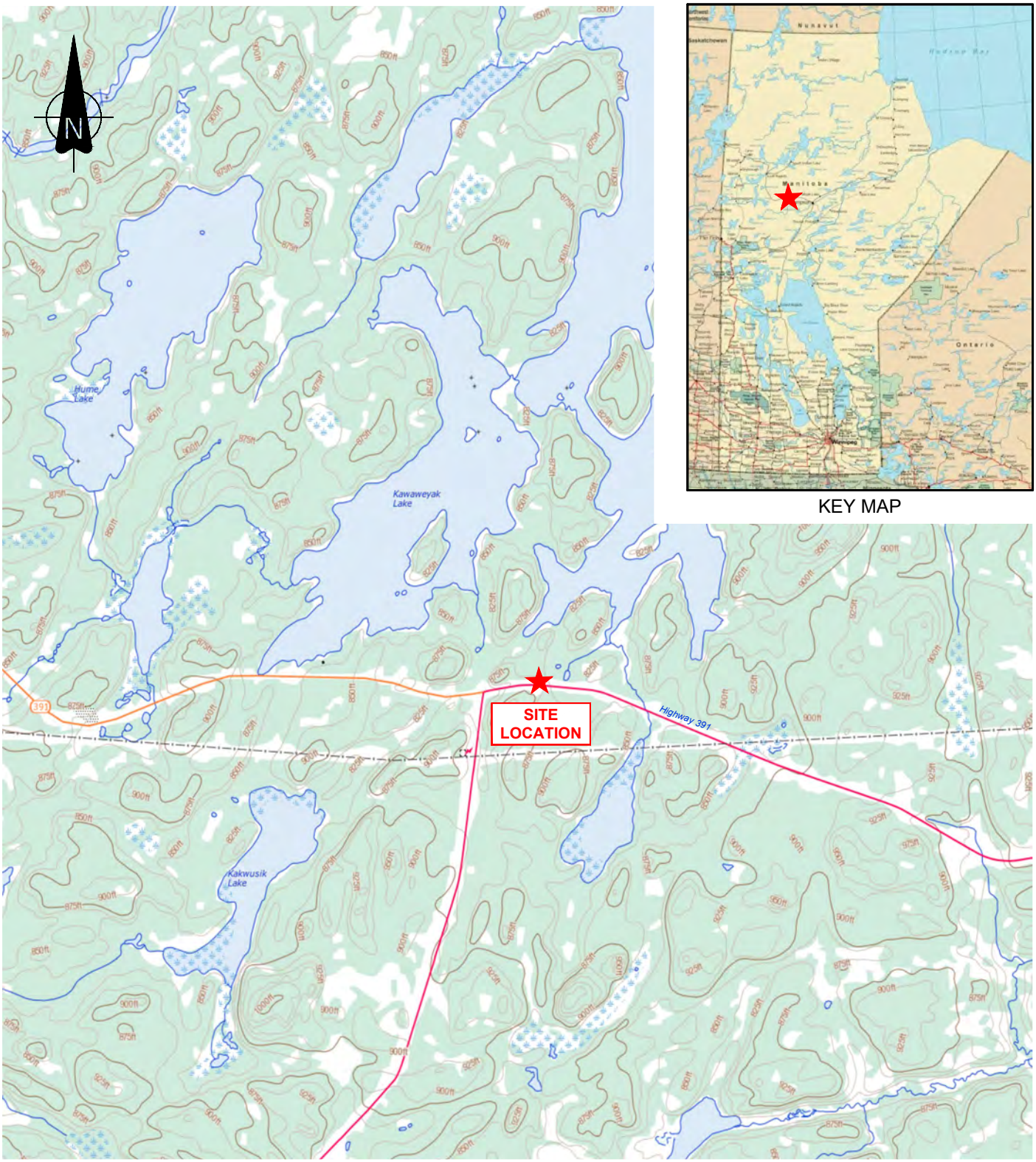

KEY MAP

MAP SOURCE: TOPORAMA 63015
KEY MAP SOURCE: CANADA MAPS

0 500 1000 2000m

Scale 1 : 50 000

SITE LOCATION MAP

Date:	Drawn by:	Requested by:
02-MAR-2023	CD	RA
File name:	Pario file:	Approved by:
45629-199_SLM-A.dwg	45629-199	RA

MANITOULIN GROUP OF COMPANIES
HIGHWAY 391, 63 km WEST OF THOMPSON, MB

Figure: 1

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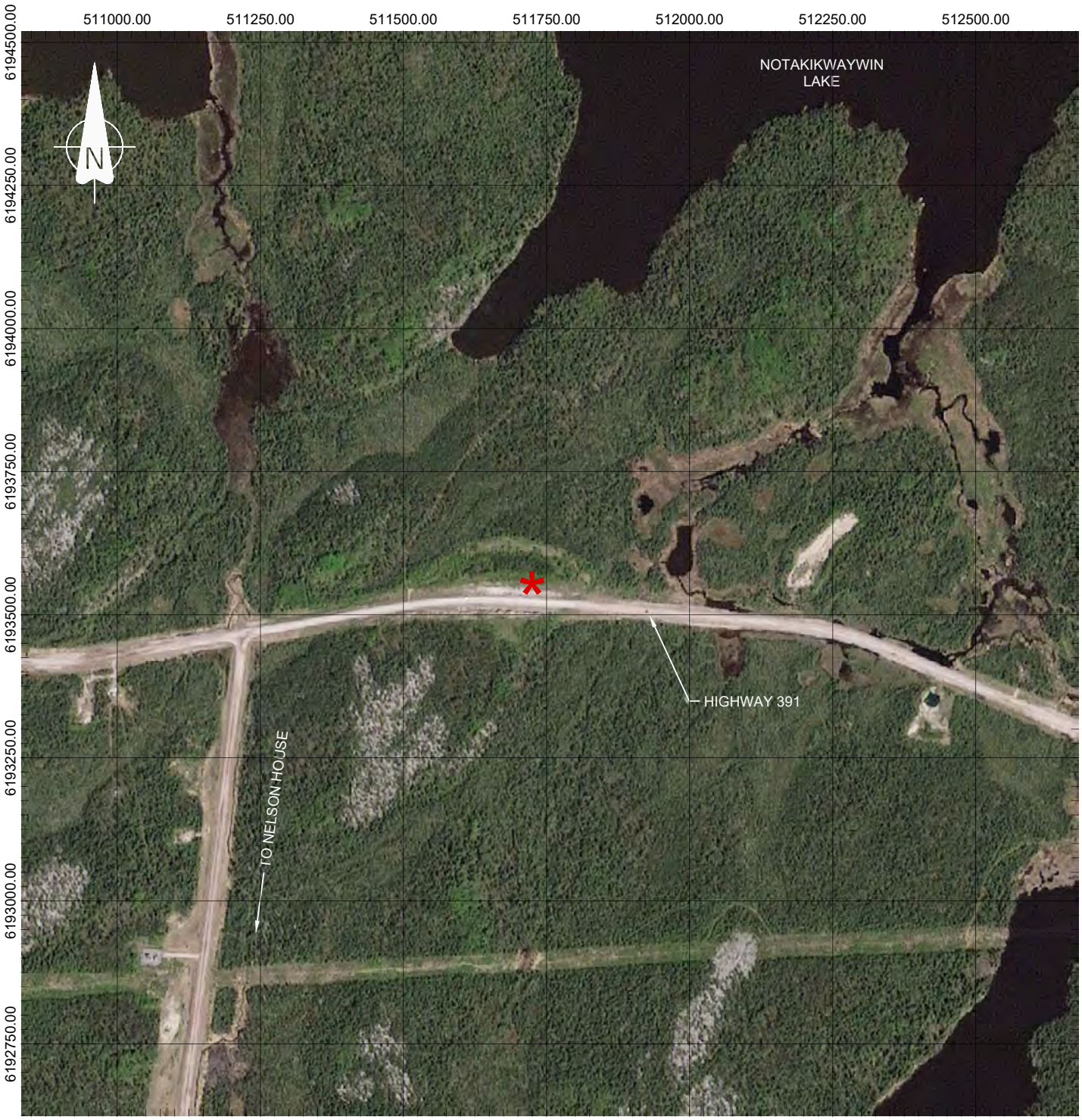

2017 AERIAL PHOTO SOURCE: BING MAPS

LEGEND

* IMPACT SITE

NOTES:

LOCATIONS ARE APPROXIMATE.

PROJECTION: UTM NAD83 Z14.

0 100 200 400m

Scale 1 : 10 000

AERIAL OVERVIEW

Date: 02-MAR-2023	Drawn by: RS/CD	Requested by: RA
File name: 45629-199_23REM-A.dwg	Pario file: 45629-199	Approved by: RA

MANITOULIN GROUP OF COMPANIES
HIGHWAY 391, 63 km WEST OF THOMPSON, MB

Figure: 2

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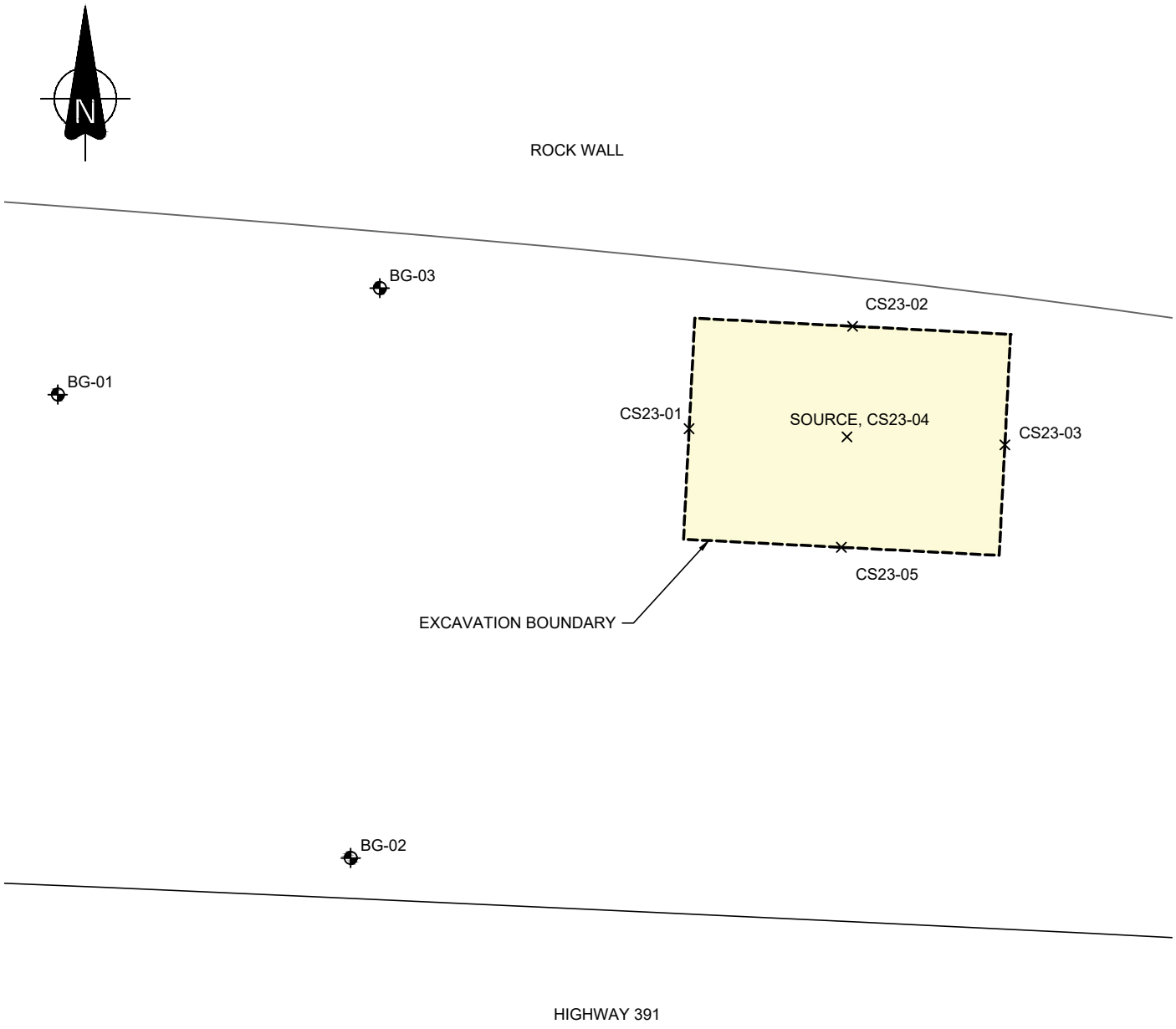

LEGEND

× CONFIRMATORY SOIL SAMPLE

BACKGROUND SAMPLE

NOTES:

LOCATIONS ARE APPROXIMATE.

0 1 2 4m

Scale 1 : 100

SITE DIAGRAM

Date:	Drawn by:	Requested by:
31-MAY-2023	RS/CD	RA
File name:	Pario file:	Approved by:
45629-199_23REM-C.dwg	45629-199	RA

MANITOULIN GROUP OF COMPANIES
HIGHWAY 391, 63 km WEST OF THOMPSON, MB

Figure: 3

TABLES

Pario Engineering & Environmental Sciences

TABLE: **1**
TITLE: **Field Vapour Screening Results**

PROJECT: 45629-199
CLIENT: Manitoulin Group of Companies
SITE: Thompson, MB
LOCATION: Highway 391, 12 km north of Nelson House

Sample Description	Date Collected	Depth (mbgs)	Wall/Floor/Surface (W/F/S)	Vapours (ppmv)	Sample Description
Source	Jan. 31, 2023	---	S	80	Source Soils - Excavated
Backfill		---	---	5	Backfill Material
BG-01		0.30	S	10	Background Location
BG-02		0.30	S	10	Background Locaiton
BG-03		0.30	S	5	Background Location
CS23-01		0.30	S	5	Confirmation Soil Sample
CS23-02		0.30	S	10	Confirmation Soil Sample
CS23-03		0.30	S	10	Confirmation Soil Sample
CS23-04		0.50	F	10	Confirmation Soil Sample
CS23-05		0.30	S	15	Confirmation Soil Sample

All concentrations presented in parts per million by volume (ppmv)
--- = No value
mbgs = Metres below ground surface

Pario Engineering & Environmental Sciences

TABLE: 2
TITLE: **Analytical Results - Soil Petroleum Hydrocarbons**

PROJECT: 45629-199
CLIENT: Manitoulin Group of Companies
SITE: Thompson, MB
LOCATION: Highway 391, 12 km north of Nelson House

	Coarse Grained	Benzene	Toluene	Ethylbenzene	Xylenes	Fraction 1	Fraction 2	Fraction 3	Fraction 4	---
CCME*	Agricultural	0.03	0.37	0.082	11	30	150	300	2,800	---
	Residential/Parkland	0.03	0.37	0.082	11	30	150	300	2,800	---
	Commercial	0.03	0.37	0.082	11	30	150	300	2,800	---
	Industrial	0.03	0.37	0.082	11	30	150	300	2,800	---

Sample Description	Depth (mbgs)	Date	Vapours (ppmv)	Benzene	Toluene	Ethylbenzene	Xylenes	Fraction 1	Fraction 2	Fraction 3	Fraction 4	Comments
Source	---	Jan. 31, 2023	80	<0.005	0.07	**1**	7.4	**420**	**3,800**	**680**	<50	Source Soil - Excavated
BG-01	0.30		10	<0.005	<0.05	<0.01	<0.045	<10	10	55	<50	Background Soil
BG-02	0.30		10	<0.005	<0.05	<0.01	<0.045	<10	69	<50	<50	Background Soil
BG-03	0.30		5	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Background Soil
CS23-01	0.30		5	<0.005	<0.05	<0.01	<0.045	<10	94	55	<50	Confirmation Soil Sample
CS23-02	0.30		10	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Confirmation Soil Sample
CS23-03	0.30		10	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Confirmation Soil Sample
CS23-04	0.50		10	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Confirmation Soil Sample
CS23-05	0.30		5	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Confirmation Soil Sample
DUP-1	0-0.15		10	<0.005	<0.05	<0.01	<0.045	<10	<10	<50	<50	Duplicate Sample of CS23-04

*Canadian Council of Ministers of the Environment (CCME), 2008; Protection of Environmental and Human Health. Updated 2018
All concentrations in miligrams per kilogram (mg/kg)
--- = No value

	BG-01	BG-02	BG-03
Grain Size MUST PSA D50 > 75 um	90	72	64
Fine/Coarse Grained	Coarse Grained	Coarse Grained	Coarse Grained

Exceedes Guideline

Pario Engineering & Environmental Sciences

TABLE: **3**
TITLE: **Analytical Results - Soil Salinity**

PROJECT: 45629-199
CLIENT: Manitoulin Group of Companies
SITE: Thompson, MB
LOCATION: Highway 391, 12 km north of Nelson House

Sample Description	Source	BG-01	BG-02	BG-03	**CCME***			
					Grain Size: Coarse Grained			
Depth	---	0.3	0.3	0.3	**Land Use: Residential / Parkland**			
Sample Date	Jan. 31, 2023	Jan. 31, 2023	Jan. 31, 2023	Jan. 31, 2023	Agricultural	Residential/ Parkland	Commerical	Industrial
Salinity								
Electrical Conductivity (EC; dS/m)	0.41	1.4	1.1	1.3	2	2	4	4
Sodium Adsorption Ratio (SAR; Units)	2.4	**6.5**	1.7	**5.1**	5	5	12	12
pH	7.39	7.39	7.37	7.4	6 - 8.0			
Calcium	10	15	40	18	No comparable value provided within CCME*			
Chloride	14	70	20	58				
Magnesium	1.7	1.8	5.8	2.2				
Potassium	2.3	2.9	5.3	3.4				
Sodium	17	52	24	43				
Sulphate	67	5.1	16	15				

*Canadian Council of Ministers of the Environment (CCME), 2008; Protection of Environmental and Human Health. Updated 2018
All concentrations in miligrams per kilogram (mg/kg) unless otherwise stated.
--- = No Data
Exceeds Guideline

Pario Engineering & Environmental Sciences

TABLE: **4**
TITLE: **Analytical Results - Soil Metals**

PROJECT: 45629-199
CLIENT: Manitoulin Group of Companies
SITE: Thompson, MB
LOCATION: Highway 391, 12 km north of Nelson House

Sample Description	Source	BG-01	BG-02	BG-03	**CCME***			
					Grain Size: Coarse Grained			
Depth	---	0.3	0.3	0.3	**Land Use: Residential / Parkland**			
Sample Date	Jan. 31, 2023	Jan. 31, 2023	Jan. 31, 2023	Jan. 31, 2023	Agricultural	Residential/ Parkland	Commercial	Industrial
Metals								
Antimony	<0.5	<0.5	<0.5	<0.5	20	20	40	40
Arsenic	1.1	<1	<1	<1	12	12	12	12
Barium	140	65	110	72	750	500	2,000	2,000
Beryllium	1.5	<0.4	0.68	<0.4	4	4	8	8
Cadmium	0.093	<0.05	<0.05	<0.05	1.4	10	22	22
Chromium (total)	**160**	**88**	**160**	**95**	64	64	87	87
Cobalt	22	6.7	12	7.2	40	50	300	300
Copper	**150**	22	45	23	63	63	91	91
Lead	43	3.2	4.9	2.9	70	140	260	600
Molybdenum	3.5	1.2	2.5	1.3	5	10	40	40
Nickel	**110**	**46**	**79**	**47**	45	45	89	89
Selenium	<0.5	<0.5	<0.5	<0.5	1	1	2.9	2.9
Silver	<0.2	<0.2	<0.2	<0.2	20	20	40	40
Thallium	0.63	0.2	0.38	0.26	1	1	1	1
Tin	<1	<1	<1	<1	5	50	300	300
Uranium	2.6	0.5	1.5	0.95	23	23	33	300
Vanadium	88	36	58	40	130	130	130	130
Zinc	140	36	59	40	250	250	410	410

*Canadian Council of Ministers of the Environment (CCME), 2008; Protection of Environmental and Human Health. Updated 2018
All concentrations in miligrams per kilogram (mg/kg)
--- = No Data
Exceeds Guideline

APPENDIX A

2 pages

Photo 1: Looking north across incident site prior to vehicle recovery. Third-Party supplied photo.

Photo 2: Looking north across site prior to excavation showing covered impacted material. Third-Party supplied photo.

SITE PHOTOGRAPHS

Manitoulin Group of Companies
154 Highway 540B, Gore Bay, ON

Photo 3: Looking northeast across site showing excavation extents.

Photo 4: Looking east across site after backfilling.

SITE PHOTOGRAPHS

Manitoulin Group of Companies
154 Highway 540B, Gore Bay, ON

APPENDIX B

Manitoba
Environment, Climate and Parks
Environmental Compliance and Enforcement Branch
1007 Century Street
Winnipeg, Manitoba, Canada R3H 0W4
T 204-945-7100 **F** 204-948-2338
www.manitoba.ca

Lindsay Kerr
Manitoulin Group of Companies
2165 Brookside Blvd.
Winnipeg, MB R2R 2Y3

January 13, 2023

Dear Ms. Kerr:

Re: Proposed Remediation Plan for Highway 391, 12km north of Nelson House, Manitoba; Approval under the Contaminated Sites Remediation Act

This will acknowledge receipt of the Remediation Plan for the above noted property (the site) dated December 2, 2022 and prepared by Pario Engineering and Environmental Services.

This letter constitutes written authorization as specified under The Contaminated Sites Remediation Act, C.C.S.M, c. C205, s. 17.1 (1) for Manitoulin Group of Companies to proceed with the remediation of the site as described in the Remediation Plan. Any change to the Remediation Plan must be approved by the undersigned prior to initiating the change.

It is requested that a Summary Report documenting the remediation is submitted to this office for review at the completion of the Remediation Plan.

It should be noted that the position of Manitoba Environment, Climate and Parks as stated in this letter is based on the information provided to this office by Pario Engineering and Environmental Services and relates only to the matters within the scope of the Remediation Plan submitted by Pario Engineering and Environmental Services.

If you have any questions regarding this letter, please contact Warren Rospad, Contaminated Sites Program Specialist at 204-330-2685 or warren.rospad@gov.mb.ca. Please note that electronic submissions are preferred for documents and correspondence.

Sincerely,

Kristal Harman
Director

c. File: 84736
Robert Anstey (Pario)
Regional Supervisor

APPENDIX C

Thompson

Thompson Landfill
Waste Scale Ticket / Sales Receipt

Ticket #: 178244

Vehicle: SM. #1 (SMOOK CONTRACTORS)
Customer: SMOOK CONTRACTORS (SMOOK CONTRACTORS)

Gross:	46,240 kg	04:33 pm, January 31, 2023
Tare:	18,490 kg	04:44 pm, January 31, 2023
Net:	27,750 kg	

APPENDIX D

Your P.O. #: 45629-199
Your Project #: 45429-199
Site#: MANITOBA
Site Location: HWY 391 THOMPSON
Your C.O.C. #: 1 of 1

Attention: Robert Anstey

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
210, 8826 Blackfoot Trail SE
Calgary, AB
CANADA T2J 3J1

Report Date: 2023/02/08
Report #: R3297605
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C307930
Received: 2023/02/02, 09:20

Sample Matrix: Soil
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	4	2023/02/07	2023/02/07	AB SOP-00034 / AB SOP-00042	EPA 6010d R5 m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	1	N/A	2023/02/04	AB SOP-00039	CCME CWS/EPA 8260d m
BTEX/F1 by HS GC/MS/FID (MeOH extract) (1, 2)	9	N/A	2023/02/05	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	10	N/A	2023/02/05		Auto Calc
Cation/EC Ratio (1)	4	N/A	2023/02/08		Auto Calc
Chloride (Soluble) (1)	4	2023/02/06	2023/02/07	AB SOP-00033 / AB SOP-00020	SM 23-4500-Cl-E m
Hexavalent Chromium (1, 3)	4	2023/02/04	2023/02/04	AB SOP-00063	SM 23 3500-Cr B m
Conductivity @25C (Soluble) (1)	4	2023/02/07	2023/02/07	AB SOP-00033 / AB SOP-00004	SM 23 2510 B m
CCME Hydrocarbons (F2-F4 in soil) (1, 4)	10	2023/02/03	2023/02/04	AB SOP-00036	CCME PHC-CWS m
Elements by ICPMS - Soils (1)	4	2023/02/07	2023/02/07	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Sum of Cations, Anions (1)	4	N/A	2023/02/08		Auto Calc
Moisture (1)	10	N/A	2023/02/04	AB SOP-00002	CCME PHC-CWS m
pH @25C (1:2 Calcium Chloride Extract) (1)	4	2023/02/06	2023/02/06	AB SOP-00033 / AB SOP-00006	SM 23 4500 H+B m
Particle Size by Sieve (75 micron) (1)	2	N/A	2023/02/05		Auto Calc
Particle Size by Sieve (75 micron) (1)	1	N/A	2023/02/06		Auto Calc
Particle Size by Sieve (1)	2	N/A	2023/02/05	AB SOP-00022	ASTM D6913-17 m
Particle Size by Sieve (1)	1	N/A	2023/02/06	AB SOP-00022	ASTM D6913-17 m
Sodium Adsorption Ratio (1)	4	N/A	2023/02/08		Auto Calc
Soluble Ions (1)	4	2023/02/06	2023/02/07	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Soluble Paste (1)	4	2023/02/06	2023/02/07	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	4	N/A	2023/02/04		Auto Calc
Theoretical Gypsum Requirement (1, 5)	4	N/A	2023/02/08		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

Bureau Veritas Winnipeg: Unit D, 675 Berry Street R3H 1A7 Telephone (204) 772-7276 Fax (204) 772-2386

Your P.O. #: 45629-199
Your Project #: 45429-199
Site#: MANITOBA
Site Location: HWY 391 THOMPSON
Your C.O.C. #: 1 of 1

Attention: Robert Anstey

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
210, 8826 Blackfoot Trail SE
Calgary, AB
CANADA T2J 3J1

Report Date: 2023/02/08
Report #: R3297605
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C307930
Received: 2023/02/02, 09:20

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is date sampled unless otherwise stated.
(3) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.
(4) All CCME results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil, Validation of Performance-Based Alternative Methods September 2003. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.
(5) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.

Your P.O. #: 45629-199
Your Project #: 45429-199
Site#: MANITOBA
Site Location: HWY 391 THOMPSON
Your C.O.C. #: 1 of 1

Attention: Robert Anstey

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
210, 8826 Blackfoot Trail SE
Calgary, AB
CANADA T2J 3J1

Report Date: 2023/02/08
Report #: R3297605
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C307930
Received: 2023/02/02, 09:20

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (204) 772-7276

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This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Manitoba Environmental laboratory operations.

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BLG760	BLG761	BLG762	BLG763		BLG764		
Sampling Date		2023/01/31	2023/01/31	2023/01/31	2023/01/31		2023/01/31		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		1 of 1		
	UNITS	**SOURCE**	**BG-01**	**BG-02**	**BG-03**	**QC Batch**	**CS23-01**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	3800	100	69	<10	A872043	94	10	A872043
F3 (C16-C34 Hydrocarbons)	mg/kg	680	55	<50	<50	A872043	55	50	A872043
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	<50	<50	<50	A872043	<50	50	A872043
Reached Baseline at C50	mg/kg	Yes	Yes	Yes	Yes	A872043	Yes		A872043
Volatiles									
Xylenes (Total)	mg/kg	7.4	<0.045	<0.045	<0.045	A872185	<0.045	0.045	A871740
F1 (C6-C10) - BTEX	mg/kg	420	<10	<10	<10	A872185	<10	10	A871740
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	A872808	<0.0050	0.0050	A872808
Toluene	mg/kg	0.070	<0.050	<0.050	<0.050	A872808	<0.050	0.050	A872808
Ethylbenzene	mg/kg	1.0	<0.010	<0.010	<0.010	A872808	<0.010	0.010	A872808
m & p-Xylene	mg/kg	4.4	<0.040	<0.040	<0.040	A872808	<0.040	0.040	A872808
o-Xylene	mg/kg	2.9	<0.020	<0.020	<0.020	A872808	<0.020	0.020	A872808
F1 (C6-C10)	mg/kg	430	<10	<10	<10	A872808	<10	10	A872808
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	114	100	115	113	A872808	114		A872808
4-Bromofluorobenzene (sur.)	%	107	102	101	101	A872808	100		A872808
D10-o-Xylene (sur.)	%	94	122	89	72	A872808	94		A872808
D4-1,2-Dichloroethane (sur.)	%	115	112	112	113	A872808	112		A872808
O-TERPHENYL (sur.)	%	104	98	99	99	A872043	98		A872043

RDL = Reportable Detection Limit

Bureau Veritas Job #: C307930
Report Date: 2023/02/08

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

AT1 BTEX AND F1-F4 IN SOIL (VIALS)

Bureau Veritas ID		BLG765		BLG766	BLG767	BLG768	BLG769		
Sampling Date		2023/01/31		2023/01/31	2023/01/31	2023/01/31	2023/01/31		
COC Number		1 of 1		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	CS23-02	QC Batch	CS23-03	CS23-04	CS23-05	DUP-1	RDL	QC Batch
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/kg	<10	A872043	<10	110	<10	<10	10	A872043
F3 (C16-C34 Hydrocarbons)	mg/kg	<50	A872043	<50	58	<50	<50	50	A872043
F4 (C34-C50 Hydrocarbons)	mg/kg	<50	A872043	<50	<50	<50	<50	50	A872043
Reached Baseline at C50	mg/kg	Yes	A872043	Yes	Yes	Yes	Yes		A872043
Volatiles									
Xylenes (Total)	mg/kg	<0.045	A871740	<0.045	<0.045	<0.045	<0.045	0.045	A872185
F1 (C6-C10) - BTEX	mg/kg	<10	A871740	<10	<10	<10	<10	10	A872185
Field Preserved Volatiles									
Benzene	mg/kg	<0.0050	A872808	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	A872808
Toluene	mg/kg	<0.050	A872808	<0.050	<0.050	<0.050	<0.050	0.050	A872808
Ethylbenzene	mg/kg	<0.010	A872808	<0.010	<0.010	<0.010	<0.010	0.010	A872808
m & p-Xylene	mg/kg	<0.040	A872808	<0.040	<0.040	<0.040	<0.040	0.040	A872808
o-Xylene	mg/kg	<0.020	A872808	<0.020	<0.020	<0.020	<0.020	0.020	A872808
F1 (C6-C10)	mg/kg	<10	A872808	<10	<10	<10	<10	10	A872808
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	115	A872808	115	117	116	115		A872808
4-Bromofluorobenzene (sur.)	%	99	A872808	99	99	99	98		A872808
D10-o-Xylene (sur.)	%	91	A872808	92	90	95	82		A872808
D4-1,2-Dichloroethane (sur.)	%	111	A872808	111	111	111	111		A872808
O-TERPHENYL (sur.)	%	96	A872043	96	99	99	93		A872043

RDL = Reportable Detection Limit

Bureau Veritas Winnipeg: Unit D, 675 Berry Street R3H 1A7 Telephone (204) 772-7276 Fax (204) 772-2386

Bureau Veritas Job #: C307930
Report Date: 2023/02/08

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		BLG760		BLG761		BLG762		BLG763		
Sampling Date		2023/01/31		2023/01/31		2023/01/31		2023/01/31		
COC Number		1 of 1		1 of 1		1 of 1		1 of 1		
	UNITS	SOURCE	RDL	BG-01	RDL	BG-02	RDL	BG-03	RDL	QC Batch
Calculated Parameters										
Anion Sum	meq/L	5.9	N/A	8.0	N/A	3.1	N/A	7.7	N/A	A872169
Cation Sum	meq/L	4.7	N/A	12	N/A	12	N/A	12	N/A	A872169
Cation/EC Ratio	N/A	12	0.10	8.7	0.10	11	0.10	9.1	0.10	A872168
Calculated Calcium (Ca)	mg/kg	10	0.46	15	0.39	40	0.44	18	0.38	A872137
Calculated Magnesium (Mg)	mg/kg	1.7	0.30	1.8	0.26	5.8	0.29	2.2	0.25	A872137
Calculated Sodium (Na)	mg/kg	17	0.76	52	0.65	24	0.73	43	0.63	A872137
Calculated Potassium (K)	mg/kg	2.3	0.40	2.9	0.34	5.3	0.38	3.4	0.33	A872137
Calculated Chloride (Cl)	mg/kg	14	3.0	70	2.6	20	2.9	58	2.5	A872137
Calculated Sulphate (SO4)	mg/kg	67	1.5	5.1	1.3	16	1.5	15	1.3	A872137
Soluble Parameters										
Soluble Chloride (Cl)	mg/L	47	10	270	10	69	10	230	10	A874736
Soluble Conductivity	dS/m	0.41	0.020	1.4	0.020	1.1	0.020	1.3	0.020	A874809
Soluble (CaCl2) pH	pH	7.39	N/A	7.39	N/A	7.37	N/A	7.40	N/A	A873759
Sodium Adsorption Ratio	N/A	2.4	0.10	6.5	0.10	1.7	0.10	5.1	0.10	A872136
Soluble Calcium (Ca)	mg/L	33	1.5	58	1.5	140	1.5	69	1.5	A874803
Soluble Magnesium (Mg)	mg/L	5.5	1.0	6.8	1.0	20	1.0	8.6	1.0	A874803
Soluble Sodium (Na)	mg/L	56	2.5	200	2.5	81	2.5	170	2.5	A874803
Soluble Potassium (K)	mg/L	7.7	1.3	11	1.3	18	1.3	13	1.3	A874803
Saturation %	%	30	N/A	26	N/A	29	N/A	25	N/A	A873758
Soluble Sulphate (SO4)	mg/L	220	5.0	19	5.0	53	5.0	60	5.0	A874803
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	0.25	0.20	<0.20	0.20	<0.20	0.20	A872170

RDL = Reportable Detection Limit
N/A = Not Applicable

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PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		BLG760	BLG761	BLG762	BLG763		
Sampling Date		2023/01/31	2023/01/31	2023/01/31	2023/01/31		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	SOURCE	BG-01	BG-02	BG-03	RDL	QC Batch
Elements							
Soluble (Hot water) Boron (B)	mg/kg	<0.10	<0.10	0.15	<0.10	0.10	A874955
Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	<0.080	<0.080	0.080	A872776
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	A874381
Total Arsenic (As)	mg/kg	1.1	<1.0	<1.0	<1.0	1.0	A874381
Total Barium (Ba)	mg/kg	140	65	110	72	1.0	A874381
Total Beryllium (Be)	mg/kg	1.5	<0.40	0.68	<0.40	0.40	A874381
Total Cadmium (Cd)	mg/kg	0.093	<0.050	<0.050	<0.050	0.050	A874381
Total Chromium (Cr)	mg/kg	160	88	160	95	1.0	A874381
Total Cobalt (Co)	mg/kg	22	6.7	12	7.2	0.50	A874381
Total Copper (Cu)	mg/kg	150	22 (1)	45	23	1.0	A874381
Total Lead (Pb)	mg/kg	43	3.2 (1)	4.9	2.9	0.50	A874381
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	A874381
Total Molybdenum (Mo)	mg/kg	3.5	1.2	2.5	1.3	0.40	A874381
Total Nickel (Ni)	mg/kg	110	46 (2)	79	47	1.0	A874381
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	0.50	A874381
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	0.20	A874381
Total Thallium (Tl)	mg/kg	0.63	0.20	0.38	0.26	0.10	A874381
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	1.0	A874381
Total Uranium (U)	mg/kg	2.6	0.50	1.5	0.95	0.20	A874381
Total Vanadium (V)	mg/kg	88	36	58	40	1.0	A874381
Total Zinc (Zn)	mg/kg	140	36	59	40	10	A874381

RDL = Reportable Detection Limit

(1) Duplicate exceeds acceptance criteria due to sample non homogeneity. Reanalysis yields similar results.

(2) Matrix spike exceeds acceptance limits due to probable matrix interference.

Bureau Veritas Winnipeg: Unit D, 675 Berry Street R3H 1A7 Telephone (204) 772-7276 Fax (204) 772-2386

Bureau Veritas Job #: C307930
Report Date: 2023/02/08

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		BLG761	BLG762		BLG763		
Sampling Date		2023/01/31	2023/01/31		2023/01/31		
COC Number		1 of 1	1 of 1		1 of 1		
	UNITS	**BG-01**	**BG-02**	**QC Batch**	**BG-03**	**RDL**	**QC Batch**
Physical Properties							
Grain Size	N/A	COARSE	COARSE	A872189	COARSE	N/A	A872189
Sieve - #10 (>2.00mm)	%	31	53	A872799	26	0.20	A873161
Sieve - #200 (>0.075mm)	%	90	72	A872799	64	0.20	A873161
Sieve - Pan	%	9.5	28	A872799	36	0.20	A873161

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Winnipeg: Unit D, 675 Berry Street R3H 1A7 Telephone (204) 772-7276 Fax (204) 772-2386

Bureau Veritas Job #: C307930
Report Date: 2023/02/08

PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		BLG760	BLG761	BLG762	BLG763	BLG764	BLG765	BLG766		
Sampling Date		2023/01/31	2023/01/31	2023/01/31	2023/01/31	2023/01/31	2023/01/31	2023/01/31		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	SOURCE	BG-01	BG-02	BG-03	CS23-01	CS23-02	CS23-03	RDL	QC Batch
Physical Properties										
Moisture	%	5.7	18	14	12	17	7.1	11	0.30	A872407
RDL = Reportable Detection Limit										

Bureau Veritas ID		BLG767	BLG768	BLG769		
Sampling Date		2023/01/31	2023/01/31	2023/01/31		
COC Number		1 of 1	1 of 1	1 of 1		
	UNITS	CS23-04	CS23-05	DUP-1	RDL	QC Batch
Physical Properties						
Moisture	%	20	11	7.0	0.30	A872407
RDL = Reportable Detection Limit						

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A872043	CAU	Matrix Spike	O-TERPHENYL (sur.)	2023/02/03		81	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2023/02/03		78	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2023/02/03		84	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2023/02/03		81	%	60 - 140
A872043	CAU	Spiked Blank	O-TERPHENYL (sur.)	2023/02/03		81	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2023/02/03		81	%	60 - 140
			F3 (C16-C34 Hydrocarbons)	2023/02/03		87	%	60 - 140
			F4 (C34-C50 Hydrocarbons)	2023/02/03		85	%	60 - 140
A872043	CAU	Method Blank	O-TERPHENYL (sur.)	2023/02/03		90	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2023/02/03	<10		mg/kg	
			F3 (C16-C34 Hydrocarbons)	2023/02/03	<50		mg/kg	
			F4 (C34-C50 Hydrocarbons)	2023/02/03	<50		mg/kg	
A872043	CAU	RPD	F2 (C10-C16 Hydrocarbons)	2023/02/03	NC		%	40
			F3 (C16-C34 Hydrocarbons)	2023/02/03	NC		%	40
			F4 (C34-C50 Hydrocarbons)	2023/02/03	NC		%	40
A872407	MGL	Method Blank	Moisture	2023/02/04	<0.30		%	
A872407	MGL	RPD [BLG769-01]	Moisture	2023/02/04	2.8		%	20
A872776	GPJ	Matrix Spike	Hex. Chromium (Cr 6+)	2023/02/04		94	%	75 - 125
A872776	GPJ	Spiked Blank	Hex. Chromium (Cr 6+)	2023/02/04		97	%	80 - 120
A872776	GPJ	Method Blank	Hex. Chromium (Cr 6+)	2023/02/04	<0.080		mg/kg	
A872776	GPJ	RPD	Hex. Chromium (Cr 6+)	2023/02/04	NC		%	35
A872799	VSO	QC Standard	Sieve - #200 (>0.075mm)	2023/02/05		103	%	75 - 125
			Sieve - Pan	2023/02/05		99	%	75 - 125
A872799	VSO	RPD	Sieve - #10 (>2.00mm)	2023/02/05	20		%	30
			Sieve - #200 (>0.075mm)	2023/02/05	53 (1)		%	30
			Sieve - Pan	2023/02/05	8.9		%	30
A872808	LZ3	Matrix Spike	1,4-Difluorobenzene (sur.)	2023/02/04		109	%	50 - 140
			4-Bromofluorobenzene (sur.)	2023/02/04		100	%	50 - 140
			D10-o-Xylene (sur.)	2023/02/04		86	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2023/02/04		103	%	50 - 140
			Benzene	2023/02/04		96	%	50 - 140
			Toluene	2023/02/04		85	%	50 - 140
			Ethylbenzene	2023/02/04		84	%	50 - 140
			m & p-Xylene	2023/02/04		86	%	50 - 140
			o-Xylene	2023/02/04		86	%	50 - 140
			F1 (C6-C10)	2023/02/04		83	%	60 - 140
A872808	LZ3	Spiked Blank	1,4-Difluorobenzene (sur.)	2023/02/04		113	%	50 - 140
			4-Bromofluorobenzene (sur.)	2023/02/04		101	%	50 - 140
			D10-o-Xylene (sur.)	2023/02/04		94	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2023/02/04		110	%	50 - 140
			Benzene	2023/02/04		106	%	60 - 130
			Toluene	2023/02/04		92	%	60 - 130
			Ethylbenzene	2023/02/04		89	%	60 - 130
			m & p-Xylene	2023/02/04		91	%	60 - 130
			o-Xylene	2023/02/04		89	%	60 - 130
			F1 (C6-C10)	2023/02/04		95	%	60 - 140
A872808	LZ3	Method Blank	1,4-Difluorobenzene (sur.)	2023/02/04		113	%	50 - 140
			4-Bromofluorobenzene (sur.)	2023/02/04		100	%	50 - 140
			D10-o-Xylene (sur.)	2023/02/04		74	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2023/02/04		113	%	50 - 140
			Benzene	2023/02/04	<0.0050		mg/kg	
			Toluene	2023/02/04	<0.050		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Ethylbenzene	2023/02/04	<0.010		mg/kg	
			m & p-Xylene	2023/02/04	<0.040		mg/kg	
			o-Xylene	2023/02/04	<0.020		mg/kg	
			F1 (C6-C10)	2023/02/04	<10		mg/kg	
A872808	LZ3	RPD	Benzene	2023/02/04	NC		%	50
			Toluene	2023/02/04	NC		%	50
			Ethylbenzene	2023/02/04	NC		%	50
			m & p-Xylene	2023/02/04	NC		%	50
			o-Xylene	2023/02/04	NC		%	50
			F1 (C6-C10)	2023/02/04	NC		%	30
A873161	RDL	QC Standard	Sieve - #200 (>0.075mm)	2023/02/06		102	%	75 - 125
			Sieve - Pan	2023/02/06		99	%	75 - 125
A873161	RDL	RPD [BLG763-01]	Sieve - #10 (>2.00mm)	2023/02/06	17		%	30
			Sieve - #200 (>0.075mm)	2023/02/06	20		%	30
			Sieve - Pan	2023/02/06	28		%	30
A873758	BMH	QC Standard	Saturation %	2023/02/07		103	%	75 - 125
A873758	BMH	RPD [BLG761-01]	Saturation %	2023/02/07	3.3		%	12
A873759	DPL	QC Standard	Soluble (CaCl2) pH	2023/02/06		99	%	97 - 103
A873759	DPL	Spiked Blank	Soluble (CaCl2) pH	2023/02/06		100	%	97 - 103
A873759	DPL	RPD [BLG761-01]	Soluble (CaCl2) pH	2023/02/06	0.61		%	N/A
A874381	JAB	Matrix Spike [BLG761-01]	Total Antimony (Sb)	2023/02/07		98	%	75 - 125
			Total Arsenic (As)	2023/02/07		92	%	75 - 125
			Total Barium (Ba)	2023/02/07		NC	%	75 - 125
			Total Beryllium (Be)	2023/02/07		102	%	75 - 125
			Total Cadmium (Cd)	2023/02/07		97	%	75 - 125
			Total Chromium (Cr)	2023/02/07		NC	%	75 - 125
			Total Cobalt (Co)	2023/02/07		98	%	75 - 125
			Total Copper (Cu)	2023/02/07		108	%	75 - 125
			Total Lead (Pb)	2023/02/07		106	%	75 - 125
			Total Mercury (Hg)	2023/02/07		95	%	75 - 125
			Total Molybdenum (Mo)	2023/02/07		103	%	75 - 125
			Total Nickel (Ni)	2023/02/07		126 (1)	%	75 - 125
			Total Selenium (Se)	2023/02/07		96	%	75 - 125
			Total Silver (Ag)	2023/02/07		99	%	75 - 125
			Total Thallium (Tl)	2023/02/07		97	%	75 - 125
			Total Tin (Sn)	2023/02/07		102	%	75 - 125
			Total Uranium (U)	2023/02/07		95	%	75 - 125
			Total Vanadium (V)	2023/02/07		109	%	75 - 125
			Total Zinc (Zn)	2023/02/07		101	%	75 - 125
A874381	JAB	QC Standard	Total Antimony (Sb)	2023/02/07		107	%	15 - 182
			Total Arsenic (As)	2023/02/07		103	%	53 - 147
			Total Barium (Ba)	2023/02/07		97	%	80 - 119
			Total Cadmium (Cd)	2023/02/07		100	%	72 - 128
			Total Chromium (Cr)	2023/02/07		83	%	59 - 141
			Total Cobalt (Co)	2023/02/07		92	%	58 - 142
			Total Copper (Cu)	2023/02/07		103	%	83 - 117
			Total Lead (Pb)	2023/02/07		107	%	79 - 121
			Total Molybdenum (Mo)	2023/02/07		106	%	67 - 133
			Total Nickel (Ni)	2023/02/07		99	%	79 - 121
			Total Silver (Ag)	2023/02/07		99	%	47 - 153
			Total Tin (Sn)	2023/02/07		101	%	67 - 133
			Total Uranium (U)	2023/02/07		86	%	77 - 123

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2023/02/07		91	%	79 - 121
			Total Zinc (Zn)	2023/02/07		98	%	79 - 121
A874381	JAB	Spiked Blank	Total Antimony (Sb)	2023/02/07		105	%	80 - 120
			Total Arsenic (As)	2023/02/07		95	%	80 - 120
			Total Barium (Ba)	2023/02/07		101	%	80 - 120
			Total Beryllium (Be)	2023/02/07		103	%	80 - 120
			Total Cadmium (Cd)	2023/02/07		99	%	80 - 120
			Total Chromium (Cr)	2023/02/07		98	%	80 - 120
			Total Cobalt (Co)	2023/02/07		99	%	80 - 120
			Total Copper (Cu)	2023/02/07		99	%	80 - 120
			Total Lead (Pb)	2023/02/07		100	%	80 - 120
			Total Mercury (Hg)	2023/02/07		103	%	80 - 120
			Total Molybdenum (Mo)	2023/02/07		102	%	80 - 120
			Total Nickel (Ni)	2023/02/07		97	%	80 - 120
			Total Selenium (Se)	2023/02/07		98	%	80 - 120
			Total Silver (Ag)	2023/02/07		100	%	80 - 120
			Total Thallium (Tl)	2023/02/07		101	%	80 - 120
			Total Tin (Sn)	2023/02/07		103	%	80 - 120
			Total Uranium (U)	2023/02/07		100	%	80 - 120
			Total Vanadium (V)	2023/02/07		98	%	80 - 120
			Total Zinc (Zn)	2023/02/07		95	%	80 - 120
A874381	JAB	Method Blank	Total Antimony (Sb)	2023/02/07	<0.50		mg/kg	
			Total Arsenic (As)	2023/02/07	<1.0		mg/kg	
			Total Barium (Ba)	2023/02/07	<1.0		mg/kg	
			Total Beryllium (Be)	2023/02/07	<0.40		mg/kg	
			Total Cadmium (Cd)	2023/02/07	<0.050		mg/kg	
			Total Chromium (Cr)	2023/02/07	<1.0		mg/kg	
			Total Cobalt (Co)	2023/02/07	<0.50		mg/kg	
			Total Copper (Cu)	2023/02/07	<1.0		mg/kg	
			Total Lead (Pb)	2023/02/07	<0.50		mg/kg	
			Total Mercury (Hg)	2023/02/07	<0.050		mg/kg	
			Total Molybdenum (Mo)	2023/02/07	<0.40		mg/kg	
			Total Nickel (Ni)	2023/02/07	<1.0		mg/kg	
			Total Selenium (Se)	2023/02/07	<0.50		mg/kg	
			Total Silver (Ag)	2023/02/07	<0.20		mg/kg	
			Total Thallium (Tl)	2023/02/07	<0.10		mg/kg	
			Total Tin (Sn)	2023/02/07	<1.0		mg/kg	
			Total Uranium (U)	2023/02/07	<0.20		mg/kg	
			Total Vanadium (V)	2023/02/07	<1.0		mg/kg	
			Total Zinc (Zn)	2023/02/07	<10		mg/kg	
A874381	JAB	RPD [BLG761-01]	Total Antimony (Sb)	2023/02/07	NC		%	30
			Total Arsenic (As)	2023/02/07	NC		%	30
			Total Barium (Ba)	2023/02/07	7.9		%	35
			Total Beryllium (Be)	2023/02/07	NC		%	30
			Total Cadmium (Cd)	2023/02/07	2.9		%	30
			Total Chromium (Cr)	2023/02/07	15		%	30
			Total Cobalt (Co)	2023/02/07	20		%	30
			Total Copper (Cu)	2023/02/07	50 (1)		%	30
			Total Lead (Pb)	2023/02/07	127 (1)		%	35
			Total Mercury (Hg)	2023/02/07	NC		%	35
			Total Molybdenum (Mo)	2023/02/07	8.7		%	35
			Total Nickel (Ni)	2023/02/07	6.6		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2023/02/07	NC		%	30
			Total Silver (Ag)	2023/02/07	NC		%	35
			Total Thallium (Tl)	2023/02/07	13		%	30
			Total Tin (Sn)	2023/02/07	NC		%	35
			Total Uranium (U)	2023/02/07	NC		%	30
			Total Vanadium (V)	2023/02/07	13		%	30
			Total Zinc (Zn)	2023/02/07	19		%	30
A874736	ZI	Matrix Spike [BLG761-01]	Soluble Chloride (Cl)	2023/02/07		98	%	75 - 125
A874736	ZI	QC Standard	Soluble Chloride (Cl)	2023/02/07		90	%	75 - 125
A874736	ZI	Spiked Blank	Soluble Chloride (Cl)	2023/02/07		101	%	80 - 120
A874736	ZI	Method Blank	Soluble Chloride (Cl)	2023/02/07	<10		mg/L	
A874736	ZI	RPD [BLG761-01]	Soluble Chloride (Cl)	2023/02/07	12		%	30
A874803	PL	Matrix Spike [BLG761-01]	Soluble Calcium (Ca)	2023/02/07		98	%	75 - 125
			Soluble Magnesium (Mg)	2023/02/07		100	%	75 - 125
			Soluble Sodium (Na)	2023/02/07		97	%	75 - 125
			Soluble Potassium (K)	2023/02/07		96	%	75 - 125
A874803	PL	QC Standard	Soluble Calcium (Ca)	2023/02/07		86	%	75 - 125
			Soluble Magnesium (Mg)	2023/02/07		89	%	75 - 125
			Soluble Sodium (Na)	2023/02/07		94	%	75 - 125
			Soluble Potassium (K)	2023/02/07		92	%	75 - 125
			Soluble Sulphate (SO4)	2023/02/07		86	%	75 - 125
A874803	PL	Spiked Blank	Soluble Calcium (Ca)	2023/02/07		99	%	80 - 120
			Soluble Magnesium (Mg)	2023/02/07		99	%	80 - 120
			Soluble Sodium (Na)	2023/02/07		98	%	80 - 120
			Soluble Potassium (K)	2023/02/07		96	%	80 - 120
A874803	PL	Method Blank	Soluble Calcium (Ca)	2023/02/07	<1.5		mg/L	
			Soluble Magnesium (Mg)	2023/02/07	<1.0		mg/L	
			Soluble Sodium (Na)	2023/02/07	<2.5		mg/L	
			Soluble Potassium (K)	2023/02/07	<1.3		mg/L	
			Soluble Sulphate (SO4)	2023/02/07	<5.0		mg/L	
A874803	PL	RPD [BLG761-01]	Soluble Calcium (Ca)	2023/02/07	1.2		%	30
			Soluble Magnesium (Mg)	2023/02/07	2.6		%	30
			Soluble Sodium (Na)	2023/02/07	0.37		%	30
			Soluble Potassium (K)	2023/02/07	1.5		%	30
			Soluble Sulphate (SO4)	2023/02/07	0.58		%	30
A874809	EBO	QC Standard	Soluble Conductivity	2023/02/07		104	%	75 - 125
A874809	EBO	Spiked Blank	Soluble Conductivity	2023/02/07		99	%	90 - 110
A874809	EBO	Method Blank	Soluble Conductivity	2023/02/07	<0.020		dS/m	
A874809	EBO	RPD [BLG761-01]	Soluble Conductivity	2023/02/07	9.2		%	20
A874955	MPU	Matrix Spike	Soluble (Hot water) Boron (B)	2023/02/07		84	%	75 - 125
A874955	MPU	Spiked Blank	Soluble (Hot water) Boron (B)	2023/02/07		94	%	80 - 120
A874955	MPU	Method Blank	Soluble (Hot water) Boron (B)	2023/02/07	<0.10		mg/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A874955	MPU	RPD	Soluble (Hot water) Boron (B)	2023/02/07	16		%	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Bureau Veritas Job #: C307930
Report Date: 2023/02/08

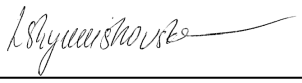
PARIO ENGINEERING & ENVIRONMENTAL SCIENCES
Client Project #: 45429-199
Site Location: HWY 391 THOMPSON
Your P.O. #: 45629-199
Sampler Initials: RA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Janet Gao, B.Sc., QP, Supervisor, Organics



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