



July 28, 2022

Alberta Environment and Parks (AEP)
Monitoring Branch
11th Floor Oxbridge Place
9820-106 Street
Edmonton, Alberta
T5K 2J6

RE: Monthly Ambient Air Monitoring Report
June 2022
Clean Harbors Canada, Inc. Approval 10348-03-00

To whom it may concern:

Clean Harbors Canada, Inc. (Clean Harbors) is presenting this Monthly Ambient Air Monitoring Report, which was prepared by GHD (Consultant), for the reporting period of June 2022, to Alberta Environment and Parks (AEP). The Clean Harbors Ryley Industrial Waste Management Facility (Facility) is located in SE 09-050-17 W4M near Ryley, Alberta.

This ambient air monitoring program is conducted in accordance with the requirements outlined in the Facility's Environmental Protection and Enhancement Act (EPEA) Approval, Approval No. 10348-03-00 (Approval). As part of the Approval requirements, the Facility submitted a proposal for a New Ambient Air Monitoring Program, which was subsequently approved on June 24, 2009 by the AEP (formally AENV). Operating under the Approval and the approved proposal, Clean Harbors operates two ambient air monitoring stations: AEP Station ID 00010348-I-1 and AEP Station ID 00010348-C-1.

Included in this report are the following:

- Summary of the ambient air monitoring program for June 2022
- Summary of AMD Electronic Transfer System submittals
- Results for Particulate Matter ≤ 10 microns (PM_{10}) reported in $\mu\text{g}/\text{m}^3$
- Results for water-soluble cations; metal or anions if the PM_{10} results were $>50 \mu\text{g}/\text{m}^3$
- Results for Total Non-Methane Organic Compounds (TNMOC) and Volatile Organic Compounds (VOC)
- Wind frequency distribution tables, wind rose and monthly uptime



Should there be any questions and comments regarding this report, please do not hesitate to contact the undersigned.

Yours truly,

CLEAN HARBORS CANADA INC.

A handwritten signature in blue ink that reads "Stan Yuha".

Stan Yuha

Facility Manager
Ryley Facility



Alberta Environment and Parks (AEP)
Monthly Ambient Air Monitoring Report
June 2022
Report Completed on July 28, 2022

Clean Harbors Environmental Services Inc.
Approval Number: 10348-03-00
Ryley Facility, Alberta

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- Appendix B Sampling Field Sheets
- Appendix C Wind Class Frequency Distribution Graphs and Wind Rose
- Appendix D Chain of Custody Forms and Laboratory Analytical Reports
- Appendix E June Quarterly Audit

1. Introduction

The Facility operates two ambient air monitoring stations to assess ambient air quality at and around the Facility. One intermittent monitoring station, known as the Ryley Lift Station (AEP Station ID 00010348-I-1), is located on Secondary Road 854, approximately 350 metres southeast of the Facility. At this location, samples are collected and analyzed for the following: particulate matter less than or equal to 10 micrometers (μm) in diameter (PM_{10}), volatile organic compounds (VOCs), and total non-methane organic compounds (TNMOC). Additionally, PM_{10} samples that exceed 50 micrograms per cubic metre ($50 \mu\text{g}/\text{m}^3$) are analyzed for a target list of metals, anions, and cations. Sampling is conducted every 12 days as required by the Facility's Approval.

The second station, located at the Facility (AEP Station ID 00010348-C-1), is a continuous meteorological station that collects wind speed and wind direction data.

All sampling and monitoring is conducted in accordance with the Facility's Approval and the Alberta Air Monitoring Directive, 2016 (AMD).

1.1 Contact Information

As required by AMD Chapter 9, Section 2, contact information is provided for the following Facility personnel and Contractors that assisted with the performance of the Facility's Air Monitoring Program.

Name: Mr. Stan Yuha
Title: Plant Manager
Company: Clean Harbors
Responsibilities: Report Certifier/ETS Submitter
Address: PO Box 390, Ryley, AB T0B 4A0
Phone: 780-663-2509
Email: yuha.stan@cleanharbors.com

Name: Mr. Todd Webb
Title: Laboratory Chemist
Company: Clean Harbors
Responsibilities: Station Field Operator and Field Sampler
Address: PO Box 390, Ryley, AB T0B 4A0
Phone: 780-663-2513
Email: webb.todd@cleanharbors.com

Name: Mr. Pooya Shariaty
Title: Senior Air Quality Specialist/Project Manager
Company: GHD Limited
Responsibilities: Senior QA/QC
Address: 3445-114th Ave. SE, Suite 103 Calgary, AB
Phone: 403-271-2000
Email: Pooya.shariaty@ghd.com

Name: Ms. Stepheney Davey
 Title: Air Quality Engineer in Training
 Company: GHD Limited
 Responsibilities: Maintenance/Calibration Services/Report Preparer/ETS Submitter
 Address: 9426 – 51st Avenue NW, Suite 101 Edmonton, AB
 Phone: 780-229-3687
 Email: Stepheney.davey@ghd.com

Company: Innotech
 Responsibilities: Laboratory Analytical Services
 Address: PO Bag 4000, Vegreville, Alberta
 Phone: 780-632-8211
 Email: EAS.Results@albertainnovates.ca

2. Summary of Ambient Air Monitoring Activities

The following ambient air monitoring activities were conducted during the month of June 2022.

<i>Activity</i>	<i>Completed (Y/N)</i>	<i>Date(s)</i>
Wind Speed/Direction Sensor Calibration	N	March 18, 2022 ⁽¹⁾
Changes to the Wind Speed/Direction Sensor	N	-
PM ₁₀ Sampling Station Calibration	N	June 1, 2022
Changes to the PM ₁₀ Sampling Station	N	-
PM ₁₀ Samples Collected	Y	June 4, 2022 June 16, 2022 June 28, 2022
VOC and TNMOC Samples Collected	Y	June 4, 2022 June 16, 2022 June 28, 2022
Metal Analysis Conducted	Y	June 4, 2022 ²
Maintenance Activities	Y	June 1, 2022 June 4, 2022 June 16, 2022 June 28, 2022
Dust Suppression Activities	N	-

Note: (1) The wind speed/direction sensor was checked for calibration on March 18, 2022 and was shown to be within the allowable tolerances and was then re-installed after calibration.
 (2) Results from Test 799, conducted on June 4, 2022, resulted in PM₁₀ levels higher than 50 µg/m³. Therefore, a metal analysis was conducted as per the Facility approval.

3. Summary of Electronic Transfer System (ETS) Submittals

In addition to the June 2022 monthly report, the following summarized items were submitted to the ETS:

3.1 AMD XML Schema

An XML formatted Schema file was submitted to the AEP via the ETS portal. The XML Schema file contains the results from AEP Station ID 00010348-I-1 and AEP Station ID 00010348-C-1.

3.2 Ambient Air Monitoring Program Laboratory Reports

One laboratory report in PDF file format was submitted to the AEP via the ETS portal. The PDF file contains the results from AEP Station ID 00010348-I-1.

3.3 Ambient Air Monitoring Program Calibration Reports

One calibration report in PDF file format was submitted to the AEP via the ETS portal. The PDF file contains the results from AEP Station ID 00010348-C-1.

3.4 Quarterly Audit Report

The second quarterly audit report of 2022 was submitted to the AEP via the ETS portal. The PDF file contains the results from the quarterly audit done on AEP Station ID 00010348-I-1.

4. Calibration and Operation & Maintenance (O&M) Activities

4.1 Meteorological Station for Wind Speed and Direction (AEP Station ID 00010348-C-1)

The meteorological station was taken down and calibrated on March 18, 2022. The station was shown to be within all allowable tolerances, as required by the manufacturer. Provided in Appendix A is the calibration report and record of installation.

There were no changes to the meteorological station during June 2022.

4.2 PM₁₀ Sampling Station (AEP Station ID 00010348-I-1)

Maintenance activities for the Partisol Federal Reference Method PM₁₀ Sampler included inlet cleaning and leak checks that were conducted before each sampling event in June 2022. The pre-sampling maintenance activities are recorded in the field sampling sheets provided in Appendix B.

5. Ambient Air Monitoring Results

The following section presents the results from the ambient air monitoring program for AEP Station ID 00010348-C-1 and AEP Station ID 00010348-I-1 conducted in June 2022. Where applicable, comparisons were made to Alberta Ambient Air Quality Objectives (AAAQO) for parameters that had 24-hour average objectives. These parameters include o,m,p-xylene, hexane, and toluene. For all other parameters, AAAQO have not been established or the limits have averaging periods other than 24-hours.

5.1 Meteorological Data for Wind Speed and Direction (AEP Station ID 00010348-C-1)

In accordance with the Approval and the AMD, the Facility is required to collect wind speed and directional data continuously when operations are occurring on site. Table 1 presents the hourly and 24-hour average wind speeds for June 2022. Table 2 presents the hourly and 24-hour average wind direction data (degrees from north) for June 2022. Table 3 presents the Wind Class Frequency Distribution for June 2022. Appendix C provides a graphical representation of the Wind Class Frequency Distribution and the Wind Roses based on Tables 1, 2 and 3.

5.1.1 Data Verification and Validation and Uptime

Based on the verification and validation process conducted for the meteorological data that was collected in June 2022, it was determined that 100 percent of the data is valid, which represents 100 percent uptime of the meteorological station. This is above the 90 percent uptime limit required for compliance, as per the Approval.

5.2 PM₁₀ Concentrations (AEP Station ID 00010348-I-1)

Table 4 presents the results of the sampling conducted for PM₁₀. Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

AAAQO are specified for total suspended particulates (TSP) at 100 µg/m³ and PM_{2.5} at 29 µg/m³ (24-hour averaging period). There is currently no AAAQO specified for PM₁₀ for a 24-hour averaging period in Alberta. In accordance with the Facility's Approval, PM₁₀ samples that exceed 50 µg/m³ are analyzed for a target list of metals, anions, and cations.

5.3 Metal Concentrations

Two of the three PM₁₀ samples collected in June 2022 were below 50 µg/m³ and as such analysis for metals, anions, and cations was not conducted on those samples. Test 799 was shown to have elevated PM₁₀ concentrations of 83.628 µg/m³, which is over the 50 µg/m³ threshold. This sample was sent for additional analysis and the results for this test can be found in Table 6 of this report.

5.4 VOC and TNMOC Concentrations

Table 5 presents the VOC and TNMOC concentrations measured in June 2022. There are three VOC parameters that have corresponding AAAQO with 24-hour averaging periods including o,p,m-xylene, hexane and toluene. There were no exceedances for these parameters in June 2022.

Appendix B provides the field sheets completed for each sampling event. Appendix D provides the chain of custody forms and laboratory analytical reports.

5.5 Dust Suppression

There was no dust suppression activities conducted during June 2022.

6. Conclusions

The following summarizes the Ambient Air Monitoring Program that was conducted in June 2022.

- 1 The PM₁₀ concentrations measured on June 4, June 16 and June 28, 2022 were 83.628 µg/m³, 14.670 µg/m³ and 22.314 µg/m³ respectively.
- 2 The PM₁₀ concentration measured for test 799, conducted on June 4, 2022, was above the 50 µg/m³ threshold outlined in the Facility's approval. Because of the elevated PM₁₀ concentration, this sample was sent for additional analysis of metals, cations and anions. The results of this test showed that all parameters were below any applicable Alberta Ambient Air Quality Objectives (AAAQO).
- 3 Based on the ambient air monitoring results, no exceedances were detected for parameters with applicable AAAQO, which included o,m,p-xylene, hexane and toluene. There are no applicable AAAQO for other parameters that were monitored in June 2022.
- 4 During June 2022, the wind station operated at 100 percent uptime. Based on the data verification and validation procedure conducted, this is in compliance with the minimum 90 percent uptime required by the AMD. The wind data indicates that the predominant wind direction at the station in June 2022 was blowing from the Northwest.

Clean Harbors will continue perform their Facility's Ambient Air Monitoring Program in accordance with their Approval and the AMD and evaluate the data to determine impacts on the ambient air quality.

7. Certification

Per the requirements of AMD, Chapter 9, Section 2.3, the following certification is provided for the June 2022 Ambient Air Monitoring Report.

"I certify that I have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements."



Stan Yuha

Plant Manager/Report Certifier

END OF REPORT

Tables

TABLE 1

Average Wind Speed (metres/second)
AEP Station ID 00010348-C-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022

Ryley Wind Speed Data (m/s) - Month of June 2022																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	3.9	3.9	3.4	3.1	2.6	1.9	1.5	2.7	3.5	3.6	2.3	2.4	3.3	5.3	5.4	5.8	6.3	6.7	6.8	6.5	4.2	2.2	1.6	1.3
2	2.2	3.2	2.7	1.2	1.2	2.0	1.6	1.1	1.0	1.7	1.2	2.3	2.4	2.5	2.4	2.2	2.4	2.4	3.0	2.5	2.7	2.3	2.2	2.3
3	2.7	2.1	2.1	1.6	1.9	1.6	2.9	5.4	6.0	5.8	5.4	4.5	4.6	4.3	4.6	5.2	5.0	4.5	5.3	6.2	5.0	4.0	4.5	5.1
4	4.8	4.8	5.1	5.0	5.4	5.1	6.1	6.1	7.7	9.9	9.9	10.4	10.2	9.6	9.2	9.1	9.0	9.7	8.5	10.1	8.7	6.1	6.4	4.3
5	3.1	3.0	4.9	4.5	4.8	5.9	5.7	5.6	6.3	8.2	8.1	8.5	9.7	10.0	8.4	8.6	9.1	8.8	8.6	8.0	7.1	8.0	9.4	10.3
6	8.6	6.2	5.9	5.2	5.5	4.9	5.7	7.4	6.3	6.2	6.4	6.9	7.1	6.9	7.1	6.1	6.0	4.8	2.2	3.1	2.4	2.0	1.9	1.6
7	1.5	2.3	2.5	2.4	2.1	0.8	1.3	0.7	1.5	1.3	1.3	0.8	1.8	1.7	1.1	2.1	1.9	1.9	2.2	2.3	1.4	1.4	1.0	0.9
8	1.4	1.8	1.4	1.7	1.5	1.9	2.7	4.1	5.4	6.8	7.8	8.3	8.0	9.1	8.5	8.5	8.9	8.5	7.4	6.0	5.7	2.1	1.6	2.1
9	2.3	3.1	3.3	2.1	2.8	3.7	3.2	1.4	1.9	1.9	1.6	1.8	1.6	2.2	2.9	3.6	3.7	4.2	3.7	3.5	2.4	2.6	3.2	3.3
10	3.5	4.2	5.6	5.4	4.1	3.9	3.5	2.3	1.8	6.3	9.0	11.0	11.0	12.0	10.2	10.2	8.1	7.0	5.9	4.3	3.3	2.8	2.1	2.2
11	2.6	2.6	1.8	2.1	3.1	3.4	5.3	4.7	5.0	7.5	8.1	8.3	6.4	5.2	4.2	3.3	2.5	1.3	2.8	6.8	6.0	3.1	2.9	2.7
12	2.0	1.5	1.7	2.9	4.2	2.6	1.8	2.7	3.8	5.2	5.8	4.6	3.9	3.9	4.0	4.1	3.5	4.9	5.2	4.3	3.3	2.1	0.9	3.1
13	2.6	2.3	2.6	2.0	0.4	1.2	2.2	3.3	4.2	4.1	4.3	5.0	5.1	6.6	7.1	6.7	7.0	7.2	7.4	5.9	4.8	3.6	3.8	4.6
14	6.7	7.3	7.4	7.3	7.7	10.0	11.2	11.8	9.2	8.0	7.1	6.2	4.6	4.2	6.1	9.6	10.7	9.3	9.2	8.0	7.5	8.2	10.3	11.2
15	12.6	13.9	15.3	15.6	15.8	14.7	14.9	13.8	12.8	13.8	12.6	13.6	11.9	11.7	13.2	13.6	12.9	12.3	8.7	7.1	6.5	4.8	5.1	4.3
16	4.3	3.0	2.6	3.2	4.1	3.6	3.1	2.7	1.8	1.8	2.1	1.8	1.8	3.0	3.5	4.1	4.7	5.0	6.1	5.9	6.3	5.7	5.9	6.4
17	6.0	5.6	3.7	2.4	3.3	4.8	4.9	5.6	5.9	5.4	5.7	1.5	3.5	6.2	7.7	8.4	8.0	6.5	6.9	8.0	7.7	5.9	4.0	2.9
18	3.3	3.6	3.6	2.4	3.4	5.4	4.0	3.0	5.1	4.1	2.4	1.5	4.3	2.6	5.0	5.0	4.6	2.6	1.3	1.0	1.9	1.4	1.9	2.8
19	3.9	3.0	3.0	3.6	3.1	2.0	1.6	1.1	1.9	3.5	3.7	3.8	4.1	3.5	3.0	2.5	1.9	1.3	0.7	1.5	3.3	3.4	2.6	3.1
20	3.2	4.8	4.2	3.8	3.2	3.7	4.1	5.1	4.4	4.5	4.3	4.7	5.7	5.6	5.7	6.9	6.7	6.9	6.4	6.3	5.3	3.3	2.5	2.8
21	2.6	2.3	3.1	3.8	2.8	2.9	2.6	2.0	2.4	2.1	1.2	1.4	1.5	2.6	2.9	3.4	2.8	5.3	3.0	3.1	5.3	2.7	3.1	3.8
22	3.1	1.3	2.6	1.5	1.4	1.7	2.3	2.8	3.7	3.5	4.0	2.9	2.3	2.3	2.4	2.7	6.9	8.9	5.8	3.0	3.3	2.3	2.6	2.6
23	2.3	2.4	3.2	4.3	3.6	1.8	1.6	2.4	3.0	3.7	3.7	3.1	2.0	3.9	3.4	7.2	7.5	5.0	6.5	5.1	4.9	7.5	9.2	9.9
24	10.1	10.4	9.7	8.6	8.7	7.9	7.8	9.0	9.6	9.2	9.9	10.5	9.6	9.1	7.8	9.2	8.1	8.9	7.6	7.4	6.6	5.7	6.0	5.3
25	4.8	5.5	5.4	5.2	5.1	5.0	4.5	5.0	5.7	5.7	5.5	5.4	5.3	5.7	5.7	5.0	4.4	4.2	4.6	4.1	3.6	3.1	2.8	2.4
26	2.8	2.7	2.1	3.0	4.0	3.5	3.7	4.0	3.4	1.7	2.6	3.4	4.1	4.7	5.2	5.1	4.9	4.8	4.2	4.1	4.0	3.4	4.5	3.8
27	1.9	2.4	2.7	2.6	1.7	1.4	1.7	2.5	2.3	2.5	1.7	2.4	3.6	4.9	4.8	5.1	5.8	5.2	6.0	5.1	4.2	4.0	2.7	2.0
28	2.0	0.8	1.1	1.8	1.7	2.0	2.4	3.8	4.9	5.4	6.5	6.8	6.8	6.7	7.3	7.2	7.4	6.9	6.1	5.4	5.0	5.2	5.5	4.1
29	4.2	4.5	2.5	2.3	1.5	1.3	1.6	1.7	2.1	1.5	2.6	3.0	2.5	4.3	3.8	4.1	3.1	3.2	5.3	3.9	2.3	1.9	1.9	2.7
30	3.5	3.6	3.2	3.6	3.2	2.8	2.9	3.6	4.1	4.0	4.4	4.2	4.0	5.3	5.5	5.4	4.9	4.4	2.9	2.0	1.1	0.9	1.9	2.7

TABLE 2

Average Wind Direction (degrees from North)
AEP Station ID 00010348-C-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022

Ryley Wind Direction Data (degrees, blowing from) - Month of June 2022																								
Day/Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	276	281	281	289	320	313	239	56	66	63	105	173	252	274	294	272	152	207	239	266	332	192	56	256
2	277	263	256	300	286	276	282	286	165	116	102	109	117	108	135	193	80	119	85	61	74	119	128	152
3	165	155	154	155	160	159	183	195	192	187	177	159	138	165	158	127	127	133	142	130	133	128	128	128
4	131	139	141	143	138	138	130	137	142	148	141	134	137	141	128	135	128	132	178	168	168	166	145	104
5	97	98	94	103	102	97	99	99	100	101	101	101	97	101	109	102	106	107	104	106	106	102	97	89
6	92	95	92	93	95	95	90	97	88	94	96	96	98	105	107	108	104	106	112	96	77	93	107	92
7	57	41	32	103	107	201	97	155	167	115	143	244	294	298	119	137	158	162	202	250	246	279	281	170
8	148	167	160	174	169	148	163	161	167	168	164	161	160	158	160	150	167	165	180	187	286	257	59	162
9	198	236	209	218	222	250	251	297	311	314	245	187	107	242	229	231	223	190	197	191	184	155	144	142
10	134	131	133	139	127	106	102	109	258	324	321	324	321	319	326	327	328	322	308	164	37	85	122	154
11	153	151	154	160	157	153	164	168	186	183	177	177	172	231	236	216	216	251	208	303	86	63	149	152
12	216	235	198	229	265	283	302	306	268	175	22	30	72	64	63	73	120	276	231	250	278	224	251	311
13	323	273	301	298	254	302	308	319	196	94	37	50	43	39	30	47	55	57	62	83	90	73	51	34
14	23	17	21	14	122	45	45	20	41	48	65	85	94	73	95	26	19	13	16	7	223	345	346	353
15	347	347	345	344	345	347	344	345	342	338	337	336	341	332	331	335	340	334	332	328	325	316	313	309
16	308	223	216	292	278	284	297	301	72	57	48	142	100	62	90	98	106	114	112	115	117	123	125	133
17	134	128	121	120	111	117	122	132	138	157	176	147	90	86	84	91	100	89	83	74	71	63	70	94
18	32	66	143	198	314	289	130	244	44	198	177	150	272	307	299	300	313	305	280	153	180	195	226	227
19	251	277	279	277	314	334	330	148	69	213	218	271	243	297	259	187	98	120	167	149	258	271	284	271
20	243	223	252	285	314	312	313	313	318	324	317	321	321	331	328	338	321	322	267	330	341	150	224	314
21	292	294	281	288	301	304	299	315	309	279	193	220	172	222	220	223	241	197	194	155	193	181	126	139
22	142	219	321	263	175	211	299	325	339	250	121	193	241	178	206	112	178	319	184	65	322	300	265	267
23	284	287	284	261	264	319	332	319	314	332	326	324	321	319	295	290	307	62	111	63	52	37	29	28
24	14	9	9	104	351	232	348	345	345	347	343	332	243	15	223	338	336	295	333	328	324	312	316	311
25	300	308	310	311	312	306	303	313	317	321	318	320	317	319	321	321	314	312	297	280	260	241	228	220
26	227	225	225	226	230	229	225	227	242	220	182	212	232	255	280	301	304	333	304	259	250	259	248	47
27	189	282	295	318	36	270	258	51	71	106	140	51	36	40	58	67	53	56	49	61	60	49	60	71
28	107	141	95	129	119	136	118	124	133	146	153	148	155	146	148	152	145	141	133	118	122	125	116	136
29	153	145	151	127	160	254	38	47	65	64	50	51	70	56	79	56	36	126	28	28	23	233	315	289
30	286	287	279	278	289	295	284	290	297	298	324	330	282	326	213	262	307	168	236	323	298	203	193	196

TABLE 3

Wind Frequency Distribution
AEP Station ID 00010348-C-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022

Frequency Distribution Report: Ryley, Alberta - June 2022									
Direction	Angle	Wind Speed (m/s) and Number of Occurrences (minutes)						%	Total Occurrences by Direction
		< 0.5	0.5 to < 1.5	1.5 to < 2.5	2.5 to < 3.5	3.5 to < 4.5	>= 4.5		
North	> 337.5 - 22.5	47	453	811	861	775	3823	15.7%	6770
Northeast	> 22.5 - 67.5	66	381	769	802	695	1730	10.3%	4443
East	> 67.5 - 112.5	72	343	754	692	609	3182	13.1%	5652
Southeast	> 112.5 - 157.5	64	486	1022	800	846	3359	15.2%	6577
South	> 157.5 - 202.5	78	440	990	623	360	1660	9.6%	4151
Southwest	> 202.5 - 247.5	51	224	542	677	589	353	5.6%	2436
West	> 247.5 - 292.5	68	346	965	1232	1118	622	10.1%	4351
Northwest	> 292.5 - 337.5	113	663	1489	1468	1215	3871	20.4%	8819
Missing/Invalid Hours								0.0%	0
Total Occurrences by Speed		559	3336	7342	7155	6207	18600		43199
Occurrences by %		1.3%	7.7%	17.0%	16.6%	14.4%	43.1%	100.00%	

TABLE 4

Particulate Matter PM₁₀ Results
AEP Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022

Filter ID	C9270616	C9270619	C9270618
Test ID	799	800	801
Sample Start Date/Time	22/06/04 00:00:00	22/06/16 00:00:00	22/06/28 00:00:00
Sample End Date/Time	22/06/05 00:00:00	22/06/17 00:00:00	22/06/29 00:00:00
Sampling Time (hours)	24	24	24
Flow Rate (l/min)	16.7	16.7	16.7
Volume (m³)	22.6	22.7	22.9
PM₁₀ Mass (mg)	1.89	0.333	0.511
PM₁₀ Concentration (ug/m³)	83.628	14.670	22.314
Sampler Name	2000 FRM-AE / 200FB209860905	2000 FRM-AE / 200FB209860905	2000 FRM-AE / 200FB209860905

TABLE 5

VOC and TNMOC Analytical Results
AEP Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022

Parameter	Units	Date	4-Jun-22	16-Jun-22	28-Jun-22
		Sample ID AAAQO ⁽¹⁾	799	800	801
Total Non-Methane Organic Carbon	ppmv	-	< 0.07	< 0.08	< 0.08
1,2,3-Trimethylbenzene	ppbv	-	< 0.07	< 0.08	< 0.08
1,2,4-Trimethylbenzene	ppbv	-	< 0.04	< 0.05	< 0.05
1,3,5-Trimethylbenzene	ppbv	-	< 0.04	< 0.05	< 0.05
1-Butene/Isobutylene	ppbv	-	0.18	0.16	< 0.10
1-Hexene/2-Methyl-1-pentene	ppbv	-	< 0.10	< 0.11	< 0.11
1-Pentene	ppbv	-	< 0.04	< 0.05	0.13
2,2,4-Trimethylpentane	ppbv	-	0.06	< 0.03	< 0.03
2,2-Dimethylbutane	ppbv	-	< 0.03	< 0.03	< 0.03
2,3,4-Trimethylpentane	ppbv	-	< 0.03	< 0.03	< 0.03
2,3-Dimethylbutane	ppbv	-	< 0.13	< 0.14	< 0.15
2,3-Dimethylpentane	ppbv	-	< 0.03	< 0.03	< 0.03
2,4-Dimethylpentane	ppbv	-	< 0.04	< 0.05	< 0.05
2-Methylheptane	ppbv	-	< 0.03	< 0.03	< 0.03
2-Methylhexane	ppbv	-	< 0.04	< 0.05	< 0.05
2-Methylpentane	ppbv	-	< 0.03	< 0.03	< 0.03
3-Methylheptane	ppbv	-	< 0.04	< 0.05	< 0.05
3-Methylhexane	ppbv	-	< 0.03	< 0.03	0.37
3-Methylpentane	ppbv	-	0.10	< 0.03	< 0.03
Benzene	ppbv	-	0.10	0.06	0.36
cis-2-Butene	ppbv	-	< 0.04	< 0.05	< 0.05
cis-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03
Cyclohexane	ppbv	-	0.07	< 0.06	< 0.07
Cyclopentane	ppbv	-	< 0.03	< 0.03	< 0.03
Ethylbenzene	ppbv	-	< 0.04	< 0.05	< 0.05
Isobutane	ppbv	-	0.92	0.07	11.8
Isopentane	ppbv	-	0.51	< 0.06	3.03
Isoprene	ppbv	-	0.16	0.13	0.22
Isopropylbenzene	ppbv	-	< 0.06	< 0.06	< 0.07
m,p-Xylene	ppbv	161	0.12	0.10	0.73
m-Diethylbenzene	ppbv	-	0.03	< 0.03	< 0.03
m-Ethyltoluene	ppbv	-	< 0.04	< 0.05	< 0.05
Methylcyclohexane	ppbv	-	0.14	< 0.03	0.57
Methylcyclopentane	ppbv	-	0.13	< 0.08	0.34
n-Butane	ppbv	-	0.65	0.09	14.8
n-Decane	ppbv	-	0.10	< 0.09	< 0.10
n-Dodecane	ppbv	-	< 0.4	< 0.5	< 0.5
n-Heptane	ppbv	-	0.08	< 0.06	< 0.07
n-Hexane	ppbv	1990	0.40	0.05	0.73
n-Nonane	ppbv	-	< 0.06	< 0.06	0.38
n-Octane	ppbv	-	0.05	< 0.03	0.70
n-Pentane	ppbv	-	0.24	0.13	1.61
n-Propylbenzene	ppbv	-	< 0.09	< 0.09	< 0.10
n-Undecane	ppbv	-	< 0.7	< 0.8	< 0.8
o-Ethyltoluene	ppbv	-	< 0.03	< 0.03	< 0.03
o-Xylene	ppbv	161	< 0.04	< 0.05	< 0.05
p-Diethylbenzene	ppbv	-	< 0.03	< 0.03	< 0.03
p-Ethyltoluene	ppbv	-	< 0.06	< 0.06	< 0.07
Styrene	ppbv	-	< 0.06	< 0.06	< 0.07
Toluene	ppbv	106	0.10	0.16	< 0.05
trans-2-Butene	ppbv	-	< 0.04	0.10	< 0.05
trans-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03
Total VOCs ⁽²⁾	ppbv	-	6.640	4.340	39.000

Notes:

(1) Alberta Ambient Air Quality Objectives for a 24 hour averaging period.

(2) Total VOCs are calculated under the assumption that values under the detection limit are equal to the detection limit, as per the AMD.

TABLE 6

**Metals Analytical Results
AEP Station ID 00010348-I-1
Clean Harbors Canada, Inc.
Monthly Ambient Air Monitoring Report
June 2022**

Parameter	Date		4-Jun-22	AAAQO ⁽²⁾ (ug/m ³)
	Sample ID	Lab Results ⁽¹⁾	799 (ug/m ³)	
Antimony	2.65	ng/Filter	1.17E-04	-
Arsenic	19.1	ng/Filter	8.45E-04	0.01 (Annual Average)
Barium	1440	ng/Filter	6.37E-02	-
Beryllium	2.20	ng/Filter	9.73E-05	-
Boron	207	ng/Filter	9.16E-03	-
Cadmium	1.23	ng/Filter	5.44E-05	-
Chromium	87	ng/Filter	3.85E-03	1.00 (1-Hour Average)
Cobalt	14.0	ng/Filter	6.19E-04	-
Copper	84	ng/Filter	3.72E-03	-
Ammonium	5.49	ug/Filter	2.43E-04	-
Chloride	0.595	ug/Filter	2.63E-05	-
Nitrate	7.80	ug/Filter	3.45E-04	-
Sulfate	90.9	ug/Filter	4.02E-03	-
Iron	38000	ng/Filter	3.54E-01	-
Lead	78.6	ng/Filter	3.48E-03	-
Mercury	< 0.07	ug/Filter	3.10E-06	-
Nickel	63.5	ng/Filter	2.81E-03	-
Selenium	12.4	ng/Filter	5.49E-04	-
Silver	1.78	ng/Filter	7.88E-05	-
Thallium	0.71	ng/Filter	3.14E-05	-
Uranium	3.24	ng/Filter	1.43E-04	-
Vanadium	133	ng/Filter	5.88E-03	-
Zinc	920	ng/Filter	4.07E-02	-
Zirconium	108	ng/Filter	4.78E-03	-
Calcium	9.81	ug/Filter	4.34E-04	-
Magnesium	2.60	ug/Filter	1.15E-04	-
Potassium	3.11	ug/Filter	1.38E-04	-
Sodium	17.0	ug/Filter	7.52E-04	-
Sampling Time (hours)	24			
Flow Rate (l/min)	16.7			
Volume Sampled (m³)	22.6			

Notes:

(1) These results are from a 24 hour averaging period that took place on June 4, 2022.

(2) Alberta Ambient Air Quality Objectives

Appendix A

Meteorological Station Calibration Report

R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

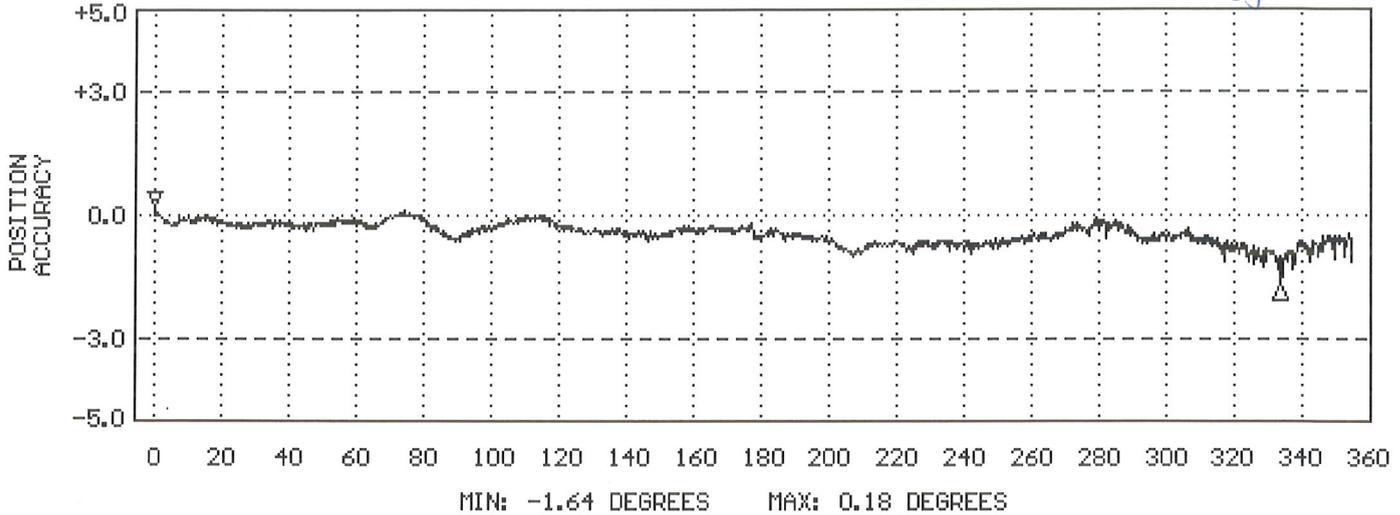
SENSOR: 05305-10A WIND MONITOR-AQ
SENSOR SERIAL NUMBER: WM149768
BEARINGS: SHIELDED/OIL LUBE
DATE: AUG 3 2016

WIND SPEED THRESHOLD TEST: PASS
LOW WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
HIGH WIND SPEED AMPLITUDE/FREQUENCY TEST: PASS
VANE TORQUE TEST: PASS
SPECIAL NOTES:
SPECIAL NOTES:

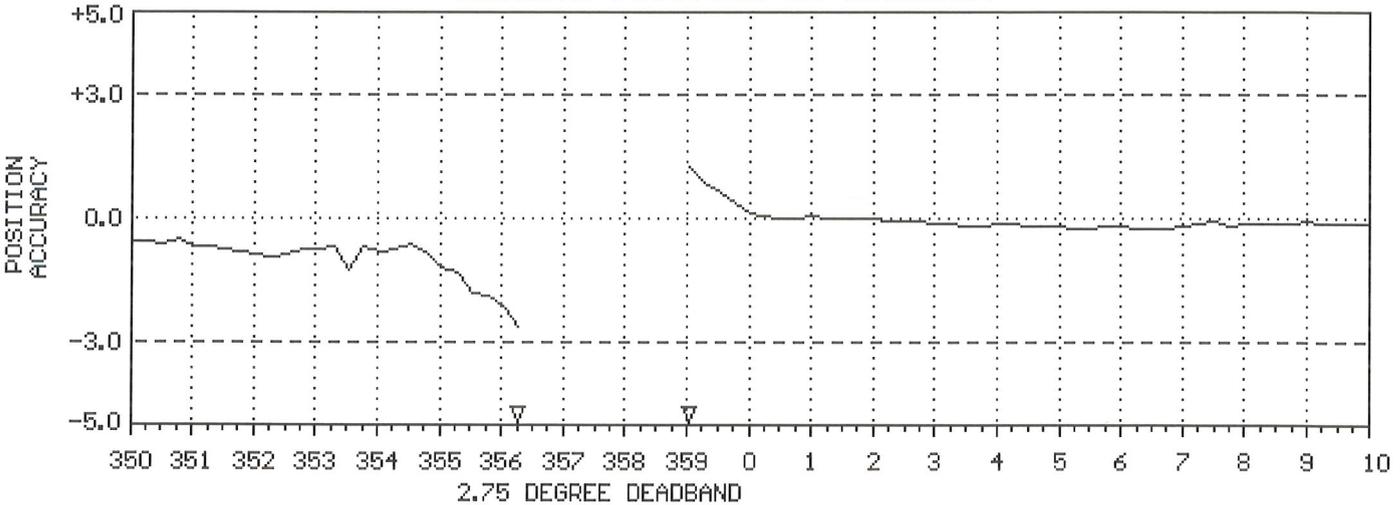
[Signature]
Insp. By

Installed Nov. 8/16
By S.Y. dy.

AZIMUTH POSITION vs ACCURACY



AZIMUTH POSITION vs ACCURACY



NOTE: Azimuth Position vs Accuracy graphs are accurate to within 0.5 degrees. The accuracy shown in the potentiometer deadband region between 355 and 0 degrees is the result of no resistance change while position changes. The gap represents the actual deadband (open circuit).



GHD Wind Calibration Form

Site and Instrument Information						
<u>Site</u>			<u>Wind Monitor</u>			
Location:	Facility		Make:	RM Young		
Calibration Date:	Mar 18, 2022		Model:	05305		
Tech.:	P. Shariaty & S. Davey		Serial #:	149768		
Instrument:	Continuous Wind Monitor		Calibration due:	Annually		
Time:	10:15 AM - 2:00 PM		Temperature:	4°C		
Pre-Calibration Inspection				Y/N		
Is the wind direction < +/- 10° from compass observation?				Y		
Is siting aligned?				Y		
Does the propeller rotate 360° with no friction?				Y		
Does the vane rotate 360° with no friction?				Y		
Calibration Information						
Direction (degrees °)			Anemometer Speed (m/s)			
Test Angle (°)	Recorded Angle (°)	Within +/- 5°? (Y/N)	Test Speed (m/s)	Recorded Speed (m/s)	Within +/- 3 (m/s)? (Y/N)	
180	181	Y	26.1	26.0	Y	
210	213	Y	20.5	20.4	Y	
240	242	Y	15.4	15.3	Y	
270	272	Y	10.2	10.2	Y	
300	303	Y	5.1	5.1	Y	
330	332	Y				
0	4	Y				
30	31	Y				
60	61	Y				
90	90	Y				
120	122	Y				
150	151	Y				
Comments				Conversion Factors		
Wind monitor (SN:149768) was removed from tower, inspected and the calibration was checked on March 18, 2022. Mechanical bearings and shaft alignment were inspected. Bearings were replaced and instrument was cleaned of any dust buildup. Alignment was in good condition. Other than the bearings and cleaning, no additional maintenance was required. It is recommended that instrument be cleaned biannually and bearings checked/replaced at the 2023 calibration interval. After calibration check, wind monitor was re-installed and sited back to original position.				m/s	RPM	
				19.456	3800	
				15.360	3000	
				12.800	2500	
				9.216	1800	
				7.680	1500	
				5.632	1100	
4.096	800					
2.560	500					
1.024	200					
Calibration Adjustment Required?: No						

Appendix B

Sampling Field Sheets

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RILEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 799
 Sample Canister Location: Riley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 799
 Sample Date: 22/06/04 yy/mm/dd
 Shipping Date to Laboratory: 22/06/07
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 29032
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/06/03	22/06/06
Ambient Temperature °C (inside shed):	20.5	18.4
Barometric Pressure (mm Hg):	700	699
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.2	(-)6
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: Cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RILEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	C9270616		
PO Number:	225922		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 799		
Sample Date:	22/06/04		yy/mm/dd
Shipping Date to Laboratory:	22/06/07		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/06/04		
Sampling Start Time:	00:00		
Current Instrument Date:	22/06/03		
Current Instrument Time:	8:21		
Ambient Temperature °C:	18.0		
Barometric Pressure (mm Hg):	700		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	Cloudy		
Weather Conditions set up:	Partly cloudy		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/06/05		
Sampling End Time:	00:00		
Current Instrument Date:	22/06/06		
Current Instrument Time:	8:03		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	22.6		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	9.7		
Barometric Pressure (mm Hg) :	699		
Sample Filter Temperature °C :	11.3		
Flow Rate Coefficient of Variation (%CV):	0		
Weather Conditions :	Cloudy, light rain		
Leak Check:	Pass		(Pass/Fail)
FIELD BLANK			
Was a field blank collected	Yes		(Once every quarter) (Yes/No)
Filter ID:	C9270617		
Filter Batch Number:			
Current Instrument Date:	22/06/06		
Current Instrument Time:	8:10		
C) OBSERVATIONS			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:	None		
Comments:	Test 799 PM10 filter looks very dirty, brown PM10 Filter was >1.2 mg, metals analysis performed (>50 µg/m3)		

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RILEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 800
 Sample Canister Location: Riley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 800
 Sample Date: 22/06/16 yy/mm/dd
 Shipping Date to Laboratory: 22/06/19
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 28950
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/06/15	22/06/17
Ambient Temperature °C (inside shed):	18.0	20.1
Barometric Pressure (mm Hg):	695	699
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.5	(-)6
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RYLEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	C9270619		
PO Number:	225922		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 800		
Sample Date:	22/06/16		yy/mm/dd
Shipping Date to Laboratory:	22/06/19		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/06/16		
Sampling Start Time:	00:00		
Current Instrument Date:	22/06/15		
Current Instrument Time:	13:26		
Ambient Temperature °C:	15.1		
Barometric Pressure (mm Hg):	695		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	cloudy		
Weather Conditions set up:	rainy		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/06/17		
Sampling End Time:	00:00		
Current Instrument Date:	22/06/17		
Current Instrument Time:	8:10		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	22.7		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	15.5		
Barometric Pressure (mm Hg) :	699		
Sample Filter Temperature °C :	15.7		
Flow Rate Coefficient of Variation (%CV):	0.2		
Weather Conditions :	Cloudy, light rain		
Leak Check:	Pass		(Pass/Fail)
FIELD BLANK			
Was a field blank collected	No		(Once every quarter) (Yes/No)
Filter ID:			
Filter Batch Number:			
Current Instrument Date:			
Current Instrument Time:			
C) OBSERVATIONS			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	Yes		
Describe facility operations that may affect sampling event:	None		
Comments:			

**FIELD SHEET
VOLATILE ORGANIC COMPOUNDS
CLEAN HARBORS CANADA INC
RILEY, ALBERTA**

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 801
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 801
 Sample Date: 22/06/28 yy/mm/dd
 Shipping Date to Laboratory: 22/06/30
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 32219
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/06/27	22/06/29
Ambient Temperature °C (inside shed):	32.4	20.0
Barometric Pressure (mm Hg):	707	696
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.0	(-)4
Sample Time:	24	24

C) OBSERVATIONS

Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event? No

Describe general weather conditions during sampling event: mostly cloudy

Describe facility operations that may affect sampling event: None

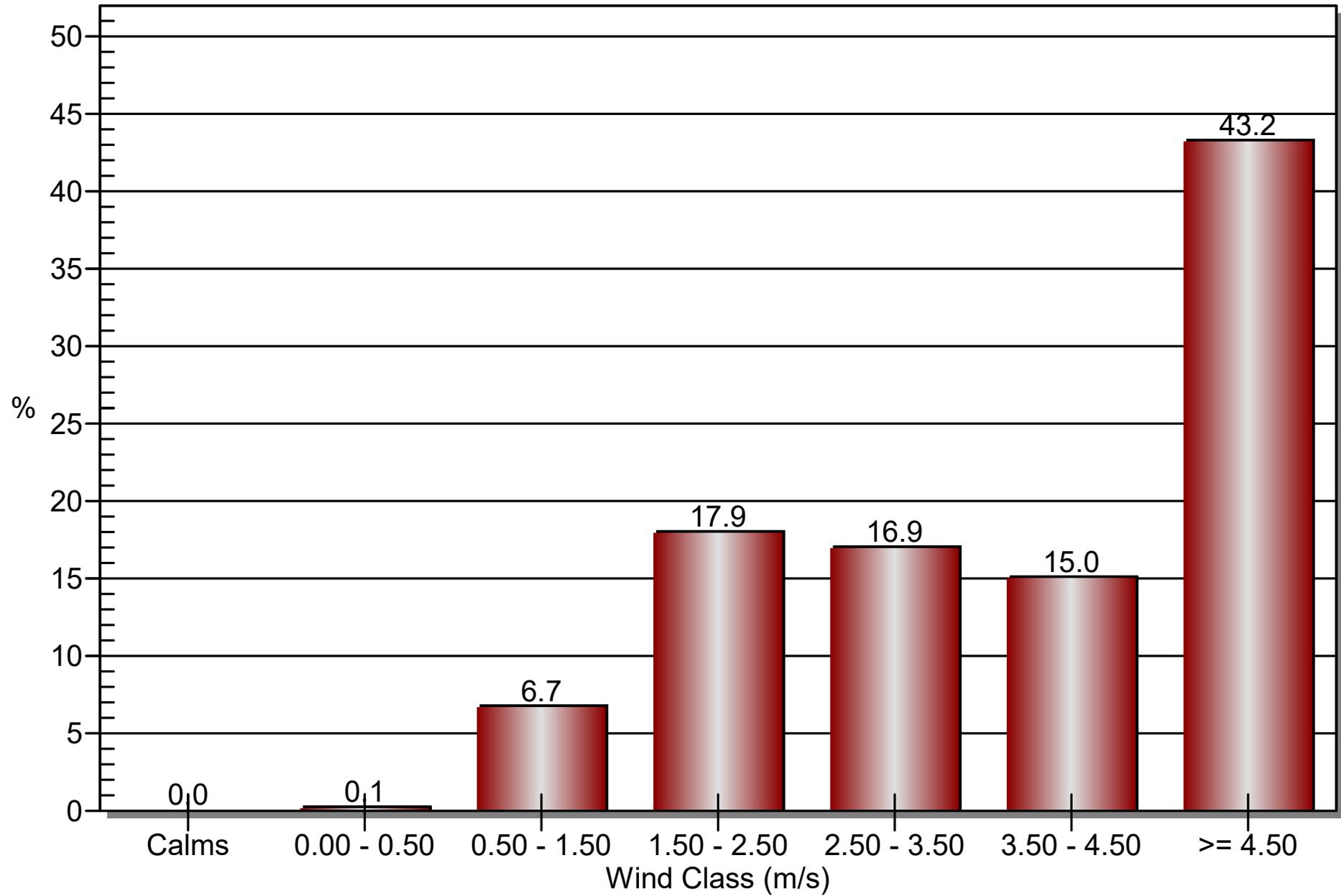
Comments: _____

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RYLEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	C9270618		
PO Number:	225922		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 801		
Sample Date:	22/06/28		yy/mm/dd
Shipping Date to Laboratory:	22/06/30		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/06/28		
Sampling Start Time:	00:00		
Current Instrument Date:	22/06/27		
Current Instrument Time:	13:16		
Ambient Temperature °C:	21.4		
Barometric Pressure (mm Hg):	707		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	mostly cloudy		
Weather Conditions set up:	mostly cloudy		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/06/29		
Sampling End Time:	00:00		
Current Instrument Date:	22/06/29		
Current Instrument Time:	8:08		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	22.9		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	14.6		
Barometric Pressure (mm Hg) :	696		
Sample Filter Temperature °C :	14.7		
Flow Rate Coefficient of Variation (%CV):	0.1		
Weather Conditions :	Cloudy, light rain		
Leak Check:	Pass		(Pass/Fail)
FIELD BLANK			
Was a field blank collected	No		(Once every quarter) (Yes/No)
Filter ID:			
Filter Batch Number:			
Current Instrument Date:			
Current Instrument Time:			
C) OBSERVATIONS			
Was there significant precipitation (e.g., >1/2-inch rain) within 24 hours prior to (or during) the sampling event?	No		
Describe facility operations that may affect sampling event:	None		
Comments:			

Appendix C

Wind Class Frequency Distribution Graphs and Wind Rose

Wind Class Frequency Distribution

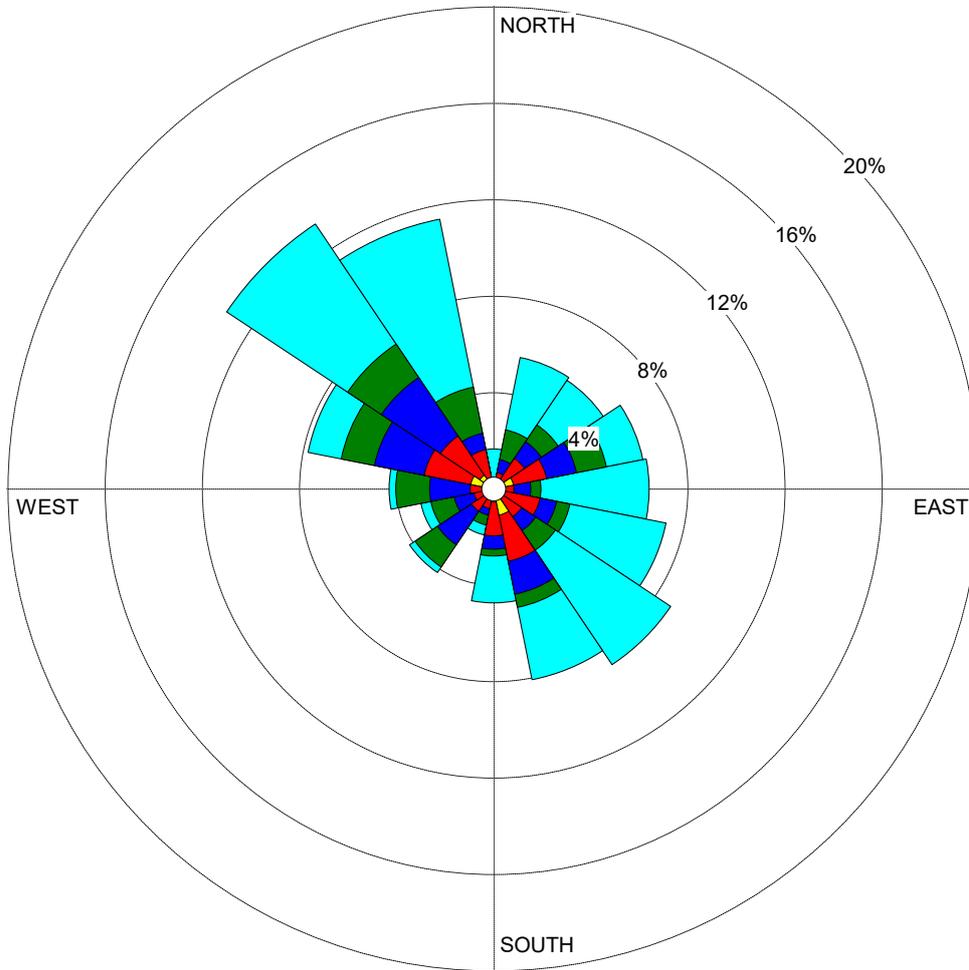


WIND ROSE PLOT:

Wind Rose Plot - Ryley, AB June 2022

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 4.50
- 3.50 - 4.50
- 2.50 - 3.50
- 1.50 - 2.50
- 0.50 - 1.50
- 0.00 - 0.50

Calms: 0.00%

COMMENTS:

DATA PERIOD:

Start Date: 6/1/2022 - 00:00
End Date: 6/30/2022 - 23:00

COMPANY NAME:

Clean Harbors

MODELER:

GHD

CALM WINDS:

0.00%

TOTAL COUNT:

719 hrs.

AVG. WIND SPEED:

4.61 m/s

DATE:

7/27/2022

PROJECT NO.:

11114644



Appendix D

Chain of Custody Forms and Laboratory Analytical Reports



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Robbi Gooding PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p>CLIENT SAMPLE ID PM10 Quarter 2 Field Blank - Filter # C9270617</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM10 Filter</p> <p>DATE SAMPLED: 06-Jun-22 8:10</p> <p>REPORT CREATED: 22-Jun-22</p>	<p>DATE RECEIVED: 08-Jun-22</p> <p>REPORT NUMBER: 22060059</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060059-003	Particulate Weight	K, T, U	< 0.004 mg	0.004	AC-029	10-Jun-22



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID PM10 Test # 799 - Filter # C9270616	CANISTER ID	Matrix Air Filter	DATE SAMPLED 04-Jun-22 0:00
DESCRIPTION: PM10 Filter			
REPORT NUMBER: 22060059	REPORT CREATED: 22-Jun-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060059-002	Particulate Weight		1.89 mg	0.004	AC-029	10-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: June 22, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 799	CANISTER ID 29032	Matrix Ambient Air	DATE SAMPLED 04-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22060059	REPORT CREATED: 22-Jun-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060059-001	Total Non-Methane Organic Carbon	K, T, U	< 0.07 ppmv	0.07	NA-028	08-Jun-22
22060059-001	1,2,3-Trimethylbenzene	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jun-22
22060059-001	1,2,4-Trimethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	1,3,5-Trimethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	1-Butene/Isobutylene	I	0.18 ppbv	0.09	AC-058	08-Jun-22
22060059-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.10 ppbv	0.10	AC-058	08-Jun-22
22060059-001	1-Pentene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	2,2,4-Trimethylpentane	I	0.06 ppbv	0.03	AC-058	08-Jun-22
22060059-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	2,3-Dimethylbutane	K, T, U	< 0.13 ppbv	0.13	AC-058	08-Jun-22
22060059-001	2,3-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	2,4-Dimethylpentane	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	2-Methylhexane	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	2-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	3-Methylheptane	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	3-Methylhexane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	3-Methylpentane	I	0.10 ppbv	0.03	AC-058	08-Jun-22
22060059-001	Benzene	I	0.10 ppbv	0.04	AC-058	08-Jun-22
22060059-001	cis-2-Butene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	Cyclohexane	I	0.07 ppbv	0.06	AC-058	08-Jun-22
22060059-001	Cyclopentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	Ethylbenzene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: June 22, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 799	CANISTER ID 29032	Matrix Ambient Air	DATE SAMPLED 04-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22060059	REPORT CREATED: 22-Jun-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060059-001	Isobutane		0.92 ppbv	0.04	AC-058	08-Jun-22
22060059-001	Isopentane		0.51 ppbv	0.06	AC-058	08-Jun-22
22060059-001	Isoprene		0.16 ppbv	0.03	AC-058	08-Jun-22
22060059-001	Isopropylbenzene	K, T, U	< 0.06 ppbv	0.06	AC-058	08-Jun-22
22060059-001	m,p-Xylene	I	0.12 ppbv	0.06	AC-058	08-Jun-22
22060059-001	m-Diethylbenzene	I	0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	m-Ethyltoluene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	Methylcyclohexane	I	0.14 ppbv	0.03	AC-058	08-Jun-22
22060059-001	Methylcyclopentane	I	0.13 ppbv	0.07	AC-058	08-Jun-22
22060059-001	n-Butane		0.65 ppbv	0.03	AC-058	08-Jun-22
22060059-001	n-Decane	I	0.10 ppbv	0.09	AC-058	08-Jun-22
22060059-001	n-Dodecane	K, T, U	< 0.4 ppbv	0.4	AC-058	08-Jun-22
22060059-001	n-Heptane	I	0.08 ppbv	0.06	AC-058	08-Jun-22
22060059-001	n-Hexane		0.40 ppbv	0.04	AC-058	08-Jun-22
22060059-001	n-Octane	I	0.05 ppbv	0.03	AC-058	08-Jun-22
22060059-001	n-Pentane		0.24 ppbv	0.06	AC-058	08-Jun-22
22060059-001	n-Propylbenzene	K, T, U	< 0.09 ppbv	0.09	AC-058	08-Jun-22
22060059-001	n-Undecane	K, T, U	< 0.7 ppbv	0.7	AC-058	08-Jun-22
22060059-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	08-Jun-22
22060059-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	o-Xylene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22
22060059-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	08-Jun-22
22060059-001	Styrene	K, T, U	< 0.06 ppbv	0.06	AC-058	08-Jun-22
22060059-001	Toluene	I	0.10 ppbv	0.04	AC-058	08-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: June 22, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test # 799	CANISTER ID 29032	Matrix Ambient Air	DATE SAMPLED 04-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22060059	REPORT CREATED: 22-Jun-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060059-001	trans-2-Butene	K, T, U	< 0.04 ppbv	0.04	AC-058	08-Jun-22
22060059-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: June 22, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Revision History

Order ID	Ver	Date	Reason
22060059	01	22-Jun-22	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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TEST REPORT

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Order Comments

22060059

Send results to Stan Yuha. Test #: 799



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TEST REPORT

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Sample Comments



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TEST REPORT

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Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Robbi Gooding PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID Filter # C9270616 - PM Test #: 799</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM10 Filter</p> <p>DATE SAMPLED: 04-Jun-22 0:00 DATE RECEIVED: 23-Jun-22</p> <p>REPORT CREATED: 21-Jul-22 REPORT NUMBER: 22060297</p> <p style="text-align: right;">VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060297-001	Antimony		2.65 ng/Filter	0.03	AC-021	15-Jul-22
22060297-001	Arsenic		19.1 ng/Filter	0.03	AC-021	15-Jul-22
22060297-001	Barium		1440 ng/Filter	0.3	AC-021	15-Jul-22
22060297-001	Beryllium		2.20 ng/Filter	0.06	AC-021	15-Jul-22
22060297-001	Boron		207 ng/Filter	0.6	AC-021	15-Jul-22
22060297-001	Cadmium		1.23 ng/Filter	0.08	AC-021	15-Jul-22
22060297-001	Chromium		87 ng/Filter	2	AC-021	15-Jul-22
22060297-001	Cobalt		14.0 ng/Filter	0.05	AC-021	15-Jul-22
22060297-001	Copper		84 ng/Filter	2	AC-021	15-Jul-22
22060297-001	Iron		38000 ng/Filter	8	AC-021	15-Jul-22
22060297-001	Lead		78.6 ng/Filter	0.07	AC-021	15-Jul-22
22060297-001	Zirconium		108 ng/Filter	0.1	AC-021	15-Jul-22
22060297-001	Nickel		63.5 ng/Filter	0.5	AC-021	15-Jul-22
22060297-001	Selenium		12.4 ng/Filter	0.4	AC-021	15-Jul-22
22060297-001	Silver		1.78 ng/Filter	0.05	AC-021	15-Jul-22
22060297-001	Uranium		3.24 ng/Filter	0.020	AC-021	15-Jul-22
22060297-001	Vanadium		133 ng/Filter	0.04	AC-021	15-Jul-22
22060297-001	Mercury	K, T, U	< 0.07 ng/Filter	0.07	AC-021	15-Jul-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 21, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
 Vegreville, Alberta
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 (780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID Filter # C9270616 - PM Test #: 799	CANISTER ID	Matrix Air Filter	DATE SAMPLED 04-Jun-22 0:00
DESCRIPTION: PM10 Filter			
REPORT NUMBER: 22060297	REPORT CREATED: 21-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060297-001	Zinc		920 ng/Filter	1	AC-021	15-Jul-22
22060297-001	Thallium		0.71 ng/Filter	0.02	AC-021	15-Jul-22
22060297-001	Ammonium		5.49 ug/Filter	0.048	AC-026	29-Jun-22
22060297-001	Chloride		0.595 ug/Filter	0.200	AC-026	01-Jul-22
22060297-001	Nitrate		7.80 ug/Filter	0.30	AC-026	01-Jul-22
22060297-001	Sulfate		90.9 ug/Filter	0.300	AC-026	01-Jul-22
22060297-001	Calcium		9.81 ug/Filter	0.14	NA-049	18-Jul-22
22060297-001	Magnesium		2.60 ug/Filter	0.0005	NA-049	18-Jul-22
22060297-001	Potassium		3.11 ug/Filter	0.023	NA-049	18-Jul-22
22060297-001	Sodium		17.0 ug/Filter	0.01	NA-049	18-Jul-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 21, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Revision History

Order ID	Ver	Date	Reason
22060297	01	21-Jul-22	Report created

Methods

Method	Description
AC-021	Elemental Analysis Methodology of Filter-collected Airborne Particulate Matter (PM) by ICP-MS
AC-026	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
NA-049	Determination of water soluble cations on Teflon air filters by ICP-MS.

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

22060297

Filter was over 1.2 mg, refeerence order # 22060059. Send results to Stan Yuha.



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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TEST REPORT

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Result Comments

Note:

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Robbi Gooding PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID Filter C9270619 - PM10 Test # 800</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM10 Filter</p> <p>DATE SAMPLED: 16-Jun-22 0:00</p> <p>REPORT CREATED: 07-Jul-22</p>	<p>DATE RECEIVED: 22-Jun-22</p> <p>REPORT NUMBER: 22060251</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060251-002	Particulate Weight		0.333 mg	0.004	AC-029	27-Jun-22

CLIENT SAMPLE ID VOCs and TNMOC Test #: 800	CANISTER ID 28950	Matrix Ambient Air	DATE SAMPLED 16-Jun-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22060251	REPORT CREATED: 07-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060251-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08 ppmv	0.08	NA-028	22-Jun-22
22060251-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	28-Jun-22
22060251-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	1-Butene/Isobutylene	I	0.16 ppbv	0.09	AC-058	28-Jun-22
22060251-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11 ppbv	0.11	AC-058	28-Jun-22
22060251-001	1-Pentene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	2,2,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	2,3-Dimethylbutane	K, T, U	< 0.14 ppbv	0.14	AC-058	28-Jun-22
22060251-001	2,3-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	2,4-Dimethylpentane	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	2-Methylhexane	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	2-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	3-Methylheptane	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	3-Methylhexane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	3-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	Benzene	I	0.06 ppbv	0.05	AC-058	28-Jun-22
22060251-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	Cyclohexane	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	Cyclopentane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	Ethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 7, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test #: 800	CANISTER ID 28950	Matrix Ambient Air	DATE SAMPLED 16-Jun-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22060251	REPORT CREATED: 07-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060251-001	Isobutane	I	0.07 ppbv	0.05	AC-058	28-Jun-22
22060251-001	Isopentane	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	Isoprene	I	0.13 ppbv	0.03	AC-058	28-Jun-22
22060251-001	Isopropylbenzene	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	m,p-Xylene	I	0.10 ppbv	0.06	AC-058	28-Jun-22
22060251-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	m-Ethyltoluene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	Methylcyclohexane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	Methylcyclopentane	K, T, U	< 0.08 ppbv	0.08	AC-058	28-Jun-22
22060251-001	n-Butane	I	0.09 ppbv	0.03	AC-058	28-Jun-22
22060251-001	n-Decane	K, T, U	< 0.09 ppbv	0.09	AC-058	28-Jun-22
22060251-001	n-Dodecane	K, T, U	< 0.5 ppbv	0.5	AC-058	28-Jun-22
22060251-001	n-Heptane	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	n-Hexane	I	0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	n-Octane	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	n-Pentane	I	0.13 ppbv	0.06	AC-058	28-Jun-22
22060251-001	n-Propylbenzene	K, T, U	< 0.09 ppbv	0.09	AC-058	28-Jun-22
22060251-001	n-Undecane	K, T, U	< 0.8 ppbv	0.8	AC-058	28-Jun-22
22060251-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	o-Xylene	K, T, U	< 0.05 ppbv	0.05	AC-058	28-Jun-22
22060251-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22
22060251-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	Styrene	K, T, U	< 0.06 ppbv	0.06	AC-058	28-Jun-22
22060251-001	Toluene	I	0.16 ppbv	0.05	AC-058	28-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 7, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test #: 800	CANISTER ID 28950	Matrix Ambient Air	DATE SAMPLED 16-Jun-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22060251	REPORT CREATED: 07-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22060251-001	trans-2-Butene	I	0.10 ppbv	0.05	AC-058	28-Jun-22
22060251-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	28-Jun-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 7, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 5 of 10

Revision History

Order ID	Ver	Date	Reason
22060251	01	07-Jul-22	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 8 of 10

Order Comments

22060251

Test # 800. Send results to Stan Yuha.



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 9 of 10

Sample Comments



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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 10 of 10

Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*



PO Bag 4000
 Vegreville, Alberta
 Canada T9C 1T4
 (780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

<p>RESULTS: Todd Webb Clean Harbors Environmental PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p> <p>INVOICE: Robbi Gooding PO Box 390 2 km N of Hwy 14 on Sec Road 854 50114 RR 173 Ryley AB TOB 4A0</p>	<p style="text-align: center;">CLIENT SAMPLE ID PM10 Test # 801 - Filter # C9270618</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM10 Filter</p> <p>DATE SAMPLED: 28-Jun-22 0:00 DATE RECEIVED: 05-Jul-22</p> <p>REPORT CREATED: 20-Jul-22 REPORT NUMBER: 22070007</p> <p>VERSION: Version 01</p>
--	---

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22070007-002	Particulate Weight		0.511 mg	0.004	AC-029	07-Jul-22

CLIENT SAMPLE ID VOCs and TNMOC Test # 801	CANISTER ID 32219	Matrix Ambient Air	DATE SAMPLED 28-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22070007	REPORT CREATED: 20-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22070007-001	Total Non-Methane Organic Carbon	K, T, U	< 0.08 ppmv	0.08	NA-028	05-Jul-22
22070007-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	08-Jul-22
22070007-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	1-Butene/Isobutylene	K, T, U	< 0.10 ppbv	0.10	AC-058	08-Jul-22
22070007-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11 ppbv	0.11	AC-058	08-Jul-22
22070007-001	1-Pentene	I	0.13 ppbv	0.05	AC-058	08-Jul-22
22070007-001	2,2,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	2,3-Dimethylbutane	K, T, U	< 0.15 ppbv	0.15	AC-058	08-Jul-22
22070007-001	2,3-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	2,4-Dimethylpentane	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	2-Methylhexane	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	2-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	3-Methylheptane	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	3-Methylhexane		0.37 ppbv	0.03	AC-058	08-Jul-22
22070007-001	3-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	Benzene		0.36 ppbv	0.05	AC-058	08-Jul-22
22070007-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	Cyclohexane	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jul-22
22070007-001	Cyclopentane	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	Ethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 20, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 801	CANISTER ID 32219	Matrix Ambient Air	DATE SAMPLED 28-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22070007	REPORT CREATED: 20-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22070007-001	Isobutane		11.8 ppbv	0.05	AC-058	08-Jul-22
22070007-001	Isopentane		3.03 ppbv	0.07	AC-058	08-Jul-22
22070007-001	Isoprene		0.22 ppbv	0.03	AC-058	08-Jul-22
22070007-001	Isopropylbenzene	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jul-22
22070007-001	m,p-Xylene		0.73 ppbv	0.07	AC-058	08-Jul-22
22070007-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	m-Ethyltoluene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	Methylcyclohexane		0.57 ppbv	0.03	AC-058	08-Jul-22
22070007-001	Methylcyclopentane		0.34 ppbv	0.08	AC-058	08-Jul-22
22070007-001	n-Butane		14.8 ppbv	0.03	AC-058	08-Jul-22
22070007-001	n-Decane	K, T, U	< 0.10 ppbv	0.10	AC-058	08-Jul-22
22070007-001	n-Dodecane	K, T, U	< 0.5 ppbv	0.5	AC-058	08-Jul-22
22070007-001	n-Heptane	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jul-22
22070007-001	n-Hexane		0.73 ppbv	0.05	AC-058	08-Jul-22
22070007-001	n-Octane		0.70 ppbv	0.03	AC-058	08-Jul-22
22070007-001	n-Pentane		1.61 ppbv	0.07	AC-058	08-Jul-22
22070007-001	n-Propylbenzene	K, T, U	< 0.10 ppbv	0.10	AC-058	08-Jul-22
22070007-001	n-Undecane	K, T, U	< 0.8 ppbv	0.8	AC-058	08-Jul-22
22070007-001	n-Nonane		0.38 ppbv	0.07	AC-058	08-Jul-22
22070007-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	o-Xylene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22
22070007-001	p-Ethyltoluene	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jul-22
22070007-001	Styrene	K, T, U	< 0.07 ppbv	0.07	AC-058	08-Jul-22
22070007-001	Toluene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 20, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test # 801	CANISTER ID 32219	Matrix Ambient Air	DATE SAMPLED 28-Jun-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22070007	REPORT CREATED: 20-Jul-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22070007-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Jul-22
22070007-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Jul-22

Report certified by: Rebecca Dasilva, Account Coordinator

On behalf of: A. Prefontaine, Manager, Chemical Testing

Date: July 20, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



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Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Revision History

Order ID	Ver	Date	Reason
22070007	01	20-Jul-22	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
NA-028	Determination of Total Non-methane Hydrocarbons and Total Hydrocarbons in Ambient Air by Gas Chromatography Flame Ionization Detector

Qualifiers

Data Qualifier Translation

B	Blank contamination; Analyte detected above the method reporting limit in an associated blank
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit
J1	Reported value is estimated; Surrogate recoveries limits were exceeded
J2	Reported value is estimated; No known QC criteria for this component
J3	Reported value is estimated; The value failed to meet QC criteria for either precision or accuracy
J4	Reported value is estimated; The sample matrix interfered with the analysis
K	Off-scale low. Actual value is known to be less than the value given
L	Off-scale high. Actual value is known to be greater than value given
N	Non-target analyte; Tentatively identified compound (using mass spectroscopy)
Q	Sample held beyond the accepted holding time
R	Rejected data; Not suitable for the projects intended use
T	Value reported is less than the laboratory method detection limit
U	Compound was analyzed for but not detected
V	Analyte was detected in both the sample and the associated method blank



PO Bag 4000
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Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 8 of 10

Order Comments

22070007

Send results to Stan Yuha. Test #: 801



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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 9 of 10

Sample Comments



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 10 of 10

Result Comments

Note:

- 1. Results relate only to items tested and apply to the sample as received.*
- 2. This report shall not be reproduced, except in full, without the explicit approval of the laboratory.*

CHAIN OF CUSTODY FORM

Environmental Analytical Services
 Highway 16A & 75 Street
 Vegreville, AB T9C 1T4
 Phone: 780-632-8403
 Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca



Customer ID: Clean Harbours
 Test Samp ID: VOCs and TNMOC Test # 799

<p>Client Billing Information</p> <p>Contact: Robbi Gooding Phone: 780-663-3828 Email: Gooding.Robbie@cleanharbours.com Project ID: Test 799 PO #:</p>	<p>Turnaround Time</p> <p>X Normal (10 business days) Rush</p> <p>Note: Rush service not available for all tests. Confirm rush requests with InnoTech Alberta.</p>
<p>Company: Clean Harbours Canada, Inc PO Box 390, 50114 Range Road 173, Ryley, AB T0B 4A0 Contact: Todd Webb or Stan Yuha Phone: 780-663-2513 or 780-663-3828 Email: Webb.Todd@cleanharbours.com, Yuha.Stan@cleanharbours.com</p>	<p>Date Received – Lab Use Only</p> <div style="border: 2px dashed blue; padding: 5px; text-align: center; color: blue; font-weight: bold; font-size: 1.2em;"> RECEIVED JUN 08 2022 </div>

Special Instructions/Comments

Lab Sample No.	Client Sample ID	Sample Source/ Description	Canister Number/ Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
1	VOCs and TNMOC Test Number: 799	Canister	29032	04/06/22 05/06/22	00:00 00:00	VOC PAMS & TNMOC
2	PM10 Test Number: 799	PM10 filter	C9270616	04/06/22 05/06/22	00:00 00:00	FLT Particulate Weight
3	PM10 Quarter 2 Field Blank	PM10 filter	C9270617	06/06/22	8:10	FLT Particulate Weight

Client Authorization: Laboratory Personnel: _____ (Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



Canister ID: 29032

This cleaned canister meets or exceeds TO-15 Method Specifications

FEB 25 2022

Proofed by: _____ on: _____

Evacuated: FEB 28 2022 Recertified: APR 14 2022

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: test 799

Sampled By: T. Webb

Starting Vacuum:

-27.2 "Hg

End Vacuum: KG

-6 "Hg/psig

Sample ID: 22060059-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test # 799

Sample ID: 22060059-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test # 799

From: Webb, Todd <Webb.Todd@cleanharbors.com>
Sent: June-09-22 9:07 AM
To: Krista Gegolick; YUHA, STAN; Gooding, Robbi
Subject: RE: Proof of Receipt - IA Order # 22060058, 22060059

*** EXTERNAL E-mail. Please be cautious and evaluate the sender and content before you click on any links or open attachments. ***

Thanks Krista
Please use PO 225922

Safety Starts with Me: Live It 3-6-5

Todd Webb
Lab Chemist
Clean Harbours
P.O. Box 390
Ryley, AB T0B 4A0
(o) 780.663.2513
webb.todd@cleanharbors.com
www.cleanharbors.com



From: Krista Gegolick <Krista.Gegolick@innotechalberta.ca>
Sent: Thursday, June 09, 2022 8:51 AM
To: Webb, Todd <Webb.Todd@cleanharbors.com>; YUHA, STAN <YUHA.STAN@cleanharbors.com>; Gooding, Robbi <Gooding.Robbi@cleanharbors.com>
Subject: Proof of Receipt - IA Order # 22060058, 22060059

Hello,

Please see the attached COC for proof of receipt for IA Orders # 22060058 and 22060059. Please note order # 22060059 was missing a PO #, if you wish to include one please let me know!

Thanks!

Krista



Krista Gegolick
Chemical Testing – EAS Sample Reception
780-632-8230 Office

Sample ID 22060297-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: C9270616, PM Test #: 799

From: Webb, Todd <Webb.Todd@cleanharbors.com>
Sent: June-09-22 9:07 AM
To: Krista Gegolick; YUHA, STAN; Gooding, Robbi
Subject: RE: Proof of Receipt - IA Order # 22060058, 22060059

*** EXTERNAL E-mail. Please be cautious and evaluate the sender and content before you click on any links or open attachments. ***

Thanks Krista
Please use PO 225922

Safety Starts with Me: Live It 3-6-5

Todd Webb
Lab Chemist
Clean Harbors
P.O. Box 390
Ryley, AB T0B 4A0
(o) 780.663.2513
webb.todd@cleanharbors.com
www.cleanharbors.com



From: Krista Gegolick <Krista.Gegolick@innotechalberta.ca>
Sent: Thursday, June 09, 2022 8:51 AM
To: Webb, Todd <Webb.Todd@cleanharbors.com>; YUHA, STAN <YUHA.STAN@cleanharbors.com>; Gooding, Robbi <Gooding.Robbi@cleanharbors.com>
Subject: Proof of Receipt - IA Order # 22060058, 22060059

Hello,

Please see the attached COC fore proof of receipt for IA Orders # 22060058 and 22060059. Please note order # 22060059 was missing a PO #, if you wish to include one please let me know!

Thanks!

Krista



Krista Gegolick
Chemical Testing – EAS Sample Reception
780-632-8230 Office



CHAIN OF CUSTODY FORM

Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test #. 800

Environmental Analytical Services
Highway 16A & 75 Street
Vegreville, AB T9C 1T4

Phone: 780-632-8403
Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca

Client Reporting Information

Company: Clean Harbours Canada, Inc
 Address: PO Box 390, 50114 Range Road 173, Ryley, AB T0B 4A0
 Contact: Todd Webb or Stan Yuha
 Phone: 780-663-2513 or 780-663-3828
 Email: Webb.Todd@cleanharbors.com, Yuha.Stan@cleanharbors.com

Client Billing Information

Contact: Robbi Gooding
 Phone: 780-663-3828
 Email: Gooding.Robbi@cleanharbors.com
 Project ID: Test 800
 PO #: 225922

Turnaround Time

Normal (10 business days)

Rush

Note: Rush service not available for all tests.
Confirm rush requests with InnoTech Alberta.

Special Instructions/Comments

Date Received – Lab Use Only

RECEIVED
JUN 22 2022

Lab Sample No.	Client Sample ID	Sample Source/Description	Canister Number/Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
	VOCs and TNMOC Test Number: 800	Canister	28950	16/06/22	00:00	VOC PAMS & TNMOC
				17/06/22	00:00	
	PM10 Test Number: 800	PM10 filter	C9270619	16/06/22	00:00	FLT Particulate Weight
				17/06/22	00:00	

Client Authorization: 
(Signature)

Laboratory Personnel: _____
(Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.

Sample ID: 22060251-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test #. 800

 Canister ID: <u>28950</u> This cleaned canister meets or exceeds TO-15 Method Specifications Proofed by: <u>ISQH</u> on: <u>APR 13 2022</u> Evacuated: <u>APR 19 2022</u> Recertified: <u>MAY 15 2022</u> <small>(Use within: 3 months from evacuation or recertification date)</small> Laboratory Contact Number: 780-632-8403	Sample ID: <u>Test 800</u>
	Sampled By: <u>T. Webb</u>
	Starting Vacuum: <u>-27.5</u> "Hg End Vacuum: <u>-6</u> "Hg/psig ^{-6 "Hg JWP}



CHAIN OF CUSTODY FORM

Environmental Analytical Services
Highway 16A & 75 Street
Vegreville, AB T9C 1T4

Phone: 780-632-8403
Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca

Customer ID: Clean Harbours
Test Samp ID: VOCs and TNMOC Test # 801

Client Reporting Information Company: Clean Harbours Canada, Inc Address: PO Box 390, 50114 Range Road 173, Ryley, AB T0B 4A0 Contact: Todd Webb or Stan Yuha Phone: 780-663-2513 or 780-663-3828 Email: Webb.Todd@cleanharbors.com , Yuha.Stan@cleanharbors.com	Client Billing Information Contact: Robbi Gooding Phone: 780-663-3828 Email: Gooding.Robbi@cleanharbors.com Project ID: Test 801 PO #: 225922	Turnaround Time X Normal (10 business days) Rush Note: Rush service not available for all tests. Confirm rush requests with InnoTech Alberta.
Special Instructions/Comments		Date Received – Lab Use Only

Lab Sample No.	Client Sample ID	Sample Source/Description	Canister Number/Sampler ID	Date Sampled (dd/mm/yy) From / To	Time Sampled (24 hour) From / To	Analysis Requested
	VOCs and TNMOC Test Number: 801	Canister	32219	28/06/22	00:00	VOC PAMS & TNMOC
				29/06/22	00:00	
	PM10 Test Number: 801	PM10 filter	C9270618	28/06/22	00:00	FLT Particulate Weight
				29/06/22	00:00	

Client Authorization:  Laboratory Personnel: _____
 (Signature) (Signature)

This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.



Canister ID: 32219

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISO4 on: MAY 04 2022

Evacuated: MAY 05 2022 Recertified: MAY 17 2022

(Use within: 3 months from evacuation or recertification date)

Laboratory Contact Number: 780-632-8403

Sample ID: Test 801

Sampled By: T. Webb

Starting Vacuum:

-27.0 "Hg

End Vacuum:

-4 KG
"Hg/psig

Sample ID: 22070007-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 801

Appendix E

June Quarterly Audit



Quarterly Audit Partisol FRM Model 2000

Clean Harbors
50114 Range Rd. 173
Ryley, Alberta T0B 4A0
Quarterly Audit Date: June 1, 2022

Clean Harbors

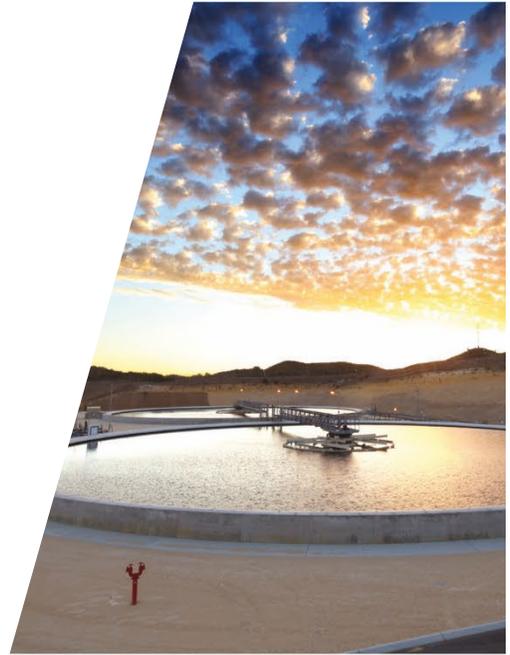




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Appendix B	Calibration Certificates



1. Introduction

GHD Limited (GHD) was retained by Clean Harbors to conduct a Quarterly Audit at 50114 Range Road 173 Ryley, Alberta (Facility) on June 1, 2022. The Quarterly Audit was conducted on the Partisol FRM 2000 Particulate Matter less than 10 microns (PM₁₀) Sampler (Partisol Sampler), located on the roof of the Ryley Lift Station (AEP Station ID 00010348-I-1), which is southeast of the Facility. The coordinates of the lift station are 53.297961, -112.416076.

2. Audit Procedure

The Partisol Sampler was audited in accordance with the instrument manual and the Alberta Air Monitoring Directive, 2016 (AMD). Siting location, ambient pressure, ambient temperature, filter temperature, leakage rate and flow rate were audited, as well as overall instrument condition to ensure compliance with the instrument manual and the AMD. Below is a summary of the tasks performed on the Partisol Sampler:

- Siting Location Audit
- Ambient Pressure Audit
- Ambient Temperature Audit
- Filter Temperature Audit
- Leakage Rate Audit
- Flow Rate Audit
- Instrument Condition and Recommendations

GHD verified all of these parameters using calibrated reference instruments. GHD reference instruments either have National Institute of Standards and Technology (NIST) Traceable Certifications, current manufacturer certification, or were verified by a primary standard. The GHD quarterly audit field form can be found in Appendix A. All calibrations and certifications can be found in Appendix B.

3. Audit Results

3.1 Siting Location Audit Results (AEP Station ID 00010348-I-1)

The siting location of the Partisol Sampler meets the requirements of Chapter 3, of the AMD. Table 3.1 of this report compares the AMD Siting Requirements for Intermittent Samplers versus the current Partisol sampler location.

- The current coordinates of the Partisol Sampler are 53.297961, -112.416076.
- The distance from the nearest roadway is 21 m.



Table 3.1 AMD Requirements vs. Current Partisol Sampler Location

Site Characteristics	AMD Requirements	Current Location	Specification
Sampler Inlet-height above ground (abg)	Minimum 2 m, Maximum 15 m	Meets Requirement	4.63 m abg
Other Requirements	a. Distance from an obstacle greater than 2.5 times the height of the obstacle above the sampler.	Meets Requirement	>2.5 times
	b. At least 2 m from any other samplers or inlets with flow rates greater than 200 litres (L) per minute,	Meets Requirement	None
	Or at least 1 m apart from any other samplers or inlets with flow rates less than or equal of 200 L per minute.	Meets Requirement	None
	c. Unrestricted air flow in three to four wind quadrants.	Meets Requirement	4/4 Unrestricted Quadrants

3.2 Pressure and Temperature Audit Results (AEP Station ID 00010348-I-1)

The pressure and temperature audit results of the Partisol Sampler meet the requirements of Chapter 4, of the AMD. Table 3.2 of this report compares the reference results versus the Partisol Sampler readings.

Table 3.2 Reference Results vs. Partisol Sampler Readings

Parameter	Partisol	Reference	Difference	Limit	Pass/Fail
Ambient Temperature (°C)	18.5	19.0	0.5	±2°C	Pass
Barometric Pressure (mmHg)	707.0	706.6	0.4	±10 mmHg	Pass
Filter Temperature (°C)	17.6	18.7	1.1	±2°C	Pass
Flow (L/min)	16.7	16.1	0.6	±1.0 L/min	Pass

3.3 Leak Check Results (AEP Station ID 00010348-I-1)

3.3.1 Automatic Leak Check

The Partisol firmware performs leak checks in automatic mode and indicates either a "pass" or "fail" based on a pressure drop threshold of 127 mmHg per minute. The Partisol Sampler passed the requirements outlined in the service manual with a pressure drop of 5 mmHg per minute during the audit.

3.3.2 External Manual Leak Check

GHD also performs an external manual leak check on the Partisol Sampler as part of the quarterly audit. The external manual leak check measures the pressure drop on a vacuum gauge located on



the sampler. The pressure drop may not exceed more than 8.5 inHg (216 mmHg) over a 30-second span. The Partisol Sampler passed the requirements of the service manual with a pressure drop of 0.16 inHg in a 30-second span.

3.4 Flow Audit (AEP Station ID 00010348-I-1)

The flow audit results of the Partisol Sampler meet the requirements of Chapter 4 of the AMD, refer to Table 3.2.

3.5 Instrument Condition and Recommendations (AEP Station ID 00010348-I-1)

The Partisol Sampler was visually and functionally inspected on the audit day. Audit recommendations and instrument conditions are listed below:

- Liquid crystal display screen is functioning.
- Filter exchange cabinet has been cleaned.
- Ventilation fan filters are clean.
- Filter exchange mechanism is operating normally.
- Filter v-seals are in good condition.
- Ambient temperature and pressure sensor wires in good condition.
- Main power connection wire in good condition.

3.5.1 Recommendations

GHD recommends opening and cleaning PM₁₀ sampling inlet prior to next sampling event.

Appendices

Appendix A

Quarterly Audit Form



GHD Quarterly Audit Form

Date	6/1/2022	Weather Cond.:	Partly Cloudy/19.0°C
Owner	Clean Harbors	Start Time:	9:45:00 AM
Station Name	Ryley Lift Station	End Time:	10:10:00 AM
Parameter	PM ₁₀	Performed By:	P. Shariaty & S. Davey

Partisol FRM Model 2000 Identification		Sampler Data	
Make/Model:	R & P Partisol FRM 2000	Temperature:	19.0°C
Unit ID:	Ryley Lift Station	Pressure:	706.63 mmHg
S/N:	200FB209860905	Flow Set Point:	16.7 L/min

GHD Reference Standards				
	Flow	Pressure	Temperature	Manometer
Make:	AirMetrics	TSI	Fluke	Dwyer
Model:	FRM	9565-P	1551A Ex	475-0-FM
Serial Number:	FRM1218	9565P1224025	3520009	MAN-CAL-001
Calibration Date:	5/17/2016	5/31/2022	3/22/2022	12/14/2020

Audit Data					
	Sampler Data	Reference Data	Difference	Pass/Fail	Units
Ambient Temperature (+/- 2 °C)	18.50	19.00	0.5	Pass	°C
Barometric Pressure (+/- 10 mmHg)	707.00	706.63	0.4	Pass	mmHg
Filter Temperature (+/- 2 °C)	17.60	18.70	1.1	Pass	°C
Flow (+/- 1.0 Litres/min)	16.70	16.10	0.6	Pass	Litres/min

Leak Check					
Manual Check (-8.5 inHg)					
	Initial Pressure	Final Pressure	Pressure Drop	Pass/Fail	Units
	-13.94	-13.78	-0.16	Pass	inHG
Automatic Check (-127 mmHg)					
Leak check was performed in automatic mode, sampler indicated:			5 mmHg/min	Pass	mmHg/min

As Found/As Left		Yes/No	As Found	As Left	Pass/Fail
Did the ambient temperature require adjustment?		No	18.5	18.5	Pass
Did the barometric pressure require adjustment?		No	707	707	Pass
Did the filter temperature require adjustment?		No	17.6	17.6	Pass
Did the flow audit require adjustment?		No	16.7	16.7	Pass

Comments
Partisol sampler was moderately dirty, GHD cleaned the components of the sampling inlet, inside the cabinet, all filters and wiped down all seals.

Flow Equation						
Set Point	Actual Flow (Q _{act})	Absolute Difference	Pass/Fail	Manometer (DH)	4.3 "H ₂ O	
(lpm)	(lpm)	(lpm)	(± 1 lpm)	Actual Temp (T _{act})	292.15 °K	19.0°C
16.7	16.3	0.4	Pass	Actual Pres (P _{act})	0.942 bar	
				Actual Pres (P _{act})	27.82 inHg	

FTS Linear Regression Constants

(m_{flo}) = 0.4452

(b_{flo}) = 0.4430

$$Q_{act} = m_{flo} \times \frac{\sqrt{\Delta H \times T_{act}}}{P_{act}} + b_{flo}$$

Appendix B

Calibration Certificates



TORONTO
 16975 Leslie Street
 Newmarket, ON L3Y 9A1
 Tel: (905) 952-3750
 Fax: (905) 952-3751

MONTREAL
 20800 Boul. Industriel
 Ste-Anne-de-Bellevue, QC H9X 0A1
 Tel: (514) 457-7280
 Fax: (514) 457-4329

CALGARY
 #209, 4615 112 Ave SE
 Calgary, AB T2C 5J3
 Tel: (403) 272-9332
 Fax: (403) 248-5194

VANCOUVER
 1282 Cliveden Av
 Delta, BC V3M 6G4
 Tel: (604) 254-9622
 Fax: (604) 254-3123

www.itm.com - information@itm.com

Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C479807-00-01

Unit Identification

Manufacturer: Fluke
 Model: 1551A Ex
 Description: Stik Thermometer

Serial: 3520009
 Unit ID: THM-CAL-001

Calibration Date

Calibration Date: 3-Mar-2022
 Due Date: 3-Mar-2023

Calibration Conditions

Temperature: 22.8°C
 Humidity: 20 %
 Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

Unit ID	Manufacturer	Model	Cal Date	Due Date
CAL0124	Hart Scientific	1502A	20-Jun-2021	20-Jun-2022
CAL0125	Hart Scientific	5614	27-Feb-2020	27-Feb-2022
CAL0223	Ametek	RTC-158B	9-Nov-2021	9-Nov-2022

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of $k=2$ corresponding to a confidence level of approximately 95%.

Calibrated by: *D. Gano*

Approved by:

Certificate: C479807-00-01
 Asset: ITM0003733

Calibration Certificate

Page 1/2



TORONTO 16975 Leslie Street Newmarket, ON L3Y 9A1 Tel: (905) 952-3750 Fax: (905) 952-3751	MONTRÉAL 20800 Boul. Industriel Ste-Anne-de-Bellevue, QC H9X 0A1 Tel: (514) 457-7280 Fax: (514) 457-4329	CALGARY #209, 4615 112 Ave SE Calgary, AB T2C 5J3 Tel: (403) 272-9332 Fax: (403) 248-5194	VANCOUVER 1282 Cliveden Av Delta, BC V3M 6G4 Tel: (604) 254-9622 Fax: (604) 254-3123
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www.itm.com - information@itm.com

Test Results

Procedure: Fluke Stik Thermometer /RTC-158B,1502,PRT Rev: 1.0

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
0.020 °C		0.00 °C	-0.03 °C	0.07 °C	Pass	8.3e-003 °C
24.979 °C		24.98 °C	24.93 °C	25.03 °C	Pass	8.8e-003 °C
100.023 °C		100.02 °C	99.97 °C	100.07 °C	Pass	1.0e-002 °C
150.125 °C		150.09 °C	150.07 °C	150.18 °C	Pass	1.2e-002 °C

NIST Traceable Transfer Standard Calibration

Calibration Date: 05/17/2016
 Ambient Temp, °K: 295.5
 Amb Press, Atm: 1.0000

Orifice # FRM1218-
 Pri Std # LFE774300
 Manometer # FRM1218

By:
 Chk:

Std ΔH (inH ₂ O)	Manometer ΔH (inH ₂ O)	Actual Flow (alpm)	Calc Flow (alpm)	Difference* (%diff)
6.67	6.67	20.179	20.209	-0.15
5.86	5.86	18.988	18.970	0.09
5.10	5.10	17.733	17.727	0.03
4.39	4.39	16.490	16.479	0.07
3.73	3.73	15.233	15.224	0.06
3.12	3.12	13.964	13.962	0.02
2.56	2.56	12.683	12.688	-0.04
2.05	2.05	11.390	11.401	-0.10

**Manometer ΔH vs Act Flow
 Linear Regression Results:**
 m_{flo} = 0.4452
 b_{flo} = 0.4430
 r² = 1.0000

* all points must be within ± 2%

The MiniFlo calibration is performed with an NIST-traceable standard. Each unit has a unique pair of calibration constants derived from the calibration which are used to calculate the actual air flow rate at all ambient conditions. The unit's calibration should be recertified annually.

The actual flow rate is a function of the pressure drop across the device, the ambient temperature, and the ambient pressure. The relationship of these variables and the unique calibration constants ("m" and "b") for each device is presented in the following equation (Eq.A):

$$Q_{act} = m_{flo} \times \sqrt{\frac{\Delta H \times T_{act}}{P_{act}}} + b_{flo}$$

Q_{act} = actual flowrate, liters per min
 ΔH = manometer reading, inches of water
 T_{act} = ambient temperature, °K
 P_{act} = ambient pressure, atmospheres

CAUTION: The weather service, most airports, etc, reduce the atmospheric pressure to a common reference (sea level). The equation above requires the atmospheric pressure at the location where the MiniFlo is being used.

The equation below may be used to estimate the ambient atmospheric pressure at any elevation if the sea level pressure is known.

$$P_{act} = P_{sea} \times \left(1 - \frac{E}{145300} \right)^{5.25}$$

P_{act} = Ambient Atmospheric Pressure
 P_{sea} = Sea Level Atmospheric Pressure
 E = Site elevation, feet

Airmetrics

1940 Don St., Suite 300
 Springfield, OR 97477
 (541) 683-5420



ITM INSTRUMENTS INC.

TORONTO

16975 Leslie Street
Newmarket, ON L3Y 9A1
Tel: (905) 952-3750
Fax: (905) 952-3751

MONTREAL

20800 Boul. Industriel
Ste-Anne-de-Bellevue, QC H9X 0A1
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Tel: (604) 254-9622
Fax: (604) 254-3123

www.itm.com - information@itm.com

Calibration Certificate

Customer: *GHD Ltd.*

Certificate: C378442-00-01

Unit Identification

Manufacturer: Dwyer

Serial: N/A

Model: 475-0-FM

Unit ID: MAN-CAL-001

Description: Digital Manometer

Calibration Date

Calibration Date: 14-Dec-2020

Calibration Conditions

Temperature: 20.9°C

Due Date: 14-Dec-2021

Humidity: 15 %

Barometric Pressure: N/A

General Information

Remark: N/A

Standards Used

<u>Unit ID</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Cal Date</u>	<u>Due Date</u>
CAL0224	Fluke	750P01	24-Aug-2020	24-Feb-2021

The calibration was performed using measurement standards traceable to the National Measurement Institute Standards (NMIS) part of the National Research Council of Canada (NRC) or the National Institute of Standards and Technology (NIST), or to accepted intrinsic standards or measurement, or is derived by ratio type self-calibration techniques. Measurement uncertainties given in this report are based on a coverage factor of k=2 corresponding to a confidence level of approximately 95%.

Calibrated by: *A. Atton*

Approved by:

Certificate: C378442-00-01
Asset: ITM0017905

Calibration Certificate

Page 1 2

**TORONTO**

16975 Leslie Street
Newmarket, ON L3Y 9A1
Tel: (905) 952-3750
Fax: (905) 952-3751

MONTREAL

20800 Boul. Industriel
Ste-Anne-de-Bellevue, QC H9X 0A1
Tel: (514) 457-7280
Fax: (514) 457-4329

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#209, 4615 112 Ave SE
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Delta, BC V3M 6G4
Tel: (604) 254-9622
Fax: (604) 254-3123

ITM INSTRUMENTS INC.**www.itm.com - information@itm.com****Test Results**

Procedure: Pressure Gauge 10.00 IN.W.C 0.5% FS /750P01 Rev: 1.1

Data Type: As Found Results: Pass

<u>Test Description</u>	<u>True Value</u>	<u>Reading</u>	<u>Lower Limit</u>	<u>Upper Limit</u>	<u>Test Status</u>	<u>Exp Uncert</u>
Tolerance used (additive if more than one listed):						
0.5% of full scale						
UUT is set to the nominal value, Reading is the actual pressure read by the system instrument.						
1.000 inH2O		1.008 inH2O	0.950 inH2O	1.050 inH2O	Pass	1.6e-002 inH2O
2.000 inH2O		2.003 inH2O	1.950 inH2O	2.050 inH2O	Pass	1.6e-002 inH2O
4.000 inH2O		3.984 inH2O	3.950 inH2O	4.050 inH2O	Pass	1.6e-002 inH2O
6.000 inH2O		5.981 inH2O	5.950 inH2O	6.050 inH2O	Pass	1.6e-002 inH2O
8.000 inH2O		7.985 inH2O	7.950 inH2O	8.050 inH2O	Pass	1.6e-002 inH2O
10.000 inH2O		9.965 inH2O	9.950 inH2O	10.050 inH2O	Pass	1.6e-002 inH2O

Certificate: C378442-00-01
Asset: ITM0017905

Calibration Certificate

Page 2/2

INSTRUMENT CALIBRATION REPORT



Pine Environmental Services LLC

4911-99 Street NW
Edmonton, AB T6E 4Y1
Office: 780-643-2680
Fax: 780-468-3050

Pine Environmental Services, Inc.

Instrument ID 19769
Description TSI 9565-P
Calibrated 5/31/2022 12:21:16PM

Manufacturer	Tsi	State Certified	
Model Number	9565-P	Status	Pass
Serial Number/ Lot Number	9565P1224025	Temp °C	20.2
Location	Edmonton	Humidity %	24.8
Department			

Calibration Specifications

Group # 1
Group Name Functional / Datalogging Test
Test Performed: Yes As Found Result: Pass As Left Result: Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

<u>Test Standard ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number / Lot Number</u>	<u>Next Cal Date / Last Cal Date/ Expiration Date</u>	<u>Opened Date</u>
-------------------------	--------------------	---------------------	---------------------	-----------------------------------	---	--------------------

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated Matt Lehnert

All instruments are calibrated by Pine Environmental Services LLC according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

**Notify Pine Environmental Services LLC of any defect within 24 hours of receipt of equipment
Please call 800-301-9663 for Technical Assistance**

INSTRUMENT CALIBRATION REPORT



Advanced Labs, Inc.

Pine Environmental Services, Inc

Instrument ID 19769
 Description TSI 9565-P VelociCalc
 Calibrated 6/11/2021

Manufacturer TSI	Classification
Model Number 9565-P	Status pass
Serial Number 9565P1224025	Frequency Yearly EOM
Location New Jersey	Department Lab
Temp 76	Humidity 30

Calibration Specifications

<u>Nom In Val / In Val</u>	<u>In Type</u>	<u>Out Val</u>	<u>Out Type</u>	<u>Fnd As</u>	<u>Lft As</u>	<u>Dev%</u>	<u>Pass/Fail</u>
Group # 1				Range Acc % 0.0000			
Group Name Barometric Pressure				Reading Acc % 2.0000			
Stated Accy Pct of Reading				Plus/Minus 0.000			
30.000 / 29.830	inHg	29.830	inHg	29.810	29.830	0.00%	Pass
Group # 2				Range Acc % 0.0000			
Group Name Differential Pressure				Reading Acc % 1.0000			
Stated Accy Pct of Reading				Plus/Minus 0.000			
-4.000 / -4.040	inH2O	-4.040	inH2O	-4.080	-4.080	0.99%	Pass
4.000 / 4.070	inH2O	4.070	inH2O	4.110	4.110	0.98%	Pass
8.000 / 8.080	inH2O	8.080	inH2O	8.160	8.160	0.99%	Pass
12.000 / 12.080	inH2O	12.080	inH2O	12.160	12.160	0.66%	Pass

Test Instruments Used During the Calibration

<u>Test Instrument ID</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Serial Number</u>	<u>(As Of Cal Entry Date)</u>	
				<u>Last Cal Date</u>	<u>Next Cal Date</u>
DWYER 477AV	Dwyer 477AV-000 Digital Manometer	Dwyer	005TRQ	10/12/2020	10/12/2021
DWYER 477AV-1	Dwyer 477AV-1 Digital Manometer	Dwyer	005PM2	10/12/2020	10/12/2021
DWYER 477AV-3	Dwyer 477AV-3 Digital Manometer	Dwyer	005PM1	10/12/2020	10/12/2021
OMEGA HX93AC/DP25-E	Omega HX93AC/DP25-E	Omega Engineering	1010368 035025 035026	11/25/2020	11/25/2022
OMEGA PX02K1-16A5T /DP25-E-A	Omega PX02K1-16A5T/DP25-E-A	Omega Engineering	168377/8375030	11/25/2020	11/25/2022
OMEGA WT4401-D	Omega WT4401-D	Omega Engineering	101105	11/25/2020	11/25/2022

Notes about this calibration



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

Pooya Shariaty
Pooya.Shariaty@ghd.com
403.538.7479

www.ghd.com