



March 31, 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
February 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 February 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 February 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
February 2022
Report Completed on March 30, 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

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 February 2022.

<i>Activity</i>	<i>Completed (Y/N)</i>	<i>Date(s)</i>
Wind Speed/Direction Sensor Calibration	N	May 28, 2021 ⁽¹⁾
Changes to the Wind Speed/Direction Sensor	N	-
PM ₁₀ Sampling Station Calibration	N	-
Changes to the PM ₁₀ Sampling Station	N	-
PM ₁₀ Samples Collected	Y	February 4, 2022 February 16, 2022 February 28, 2022
VOC and TNMOC Samples Collected	Y	February 4, 2022 February 16, 2022 February 28, 2022
Metal Analysis Conducted	N	-
Maintenance Activities	Y	February 4, 2022 February 16, 2022 February 28, 2022
Dust Suppression Activities	N	-
<p>Note: (1) The wind speed/direction sensor was replaced on May 28, 2021 after a malfunction with the previous sensor. The installed sensor was checked for calibration on August 28, 2020 and was shown to be within the allowable tolerances and was then stored, prior to installation this year.</p>		

3. Summary of Electronic Transfer System (ETS) Submittals

In addition to the February 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.

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 May 28, 2021. 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 February 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 February 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 February 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 February 2022. Table 2 presents the hourly and 24-hour average wind direction data (degrees from north) for February 2022. Table 3 presents the Wind Class Frequency Distribution for February 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 February 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

All of the PM₁₀ samples collected in February 2022 were below 50 µg/m³ and as such analysis for metals, anions, and cations was not conducted on those samples.

5.4 VOC and TNMOC Concentrations

Table 5 presents the VOC and TNMOC concentrations measured in February 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 February 2022. It is noted that for sample ID 789, higher than usual levels of isobutane and TNMOC (n-Propane) were analyzed in the sample. The wind direction was confirmed to be from the southeast, south, and south-southwest direction (not from Clean Harbors facility) during the sample period. 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, which include using leachate spread on the surface of the active landfill, conducted during February 2022.

6. Conclusions

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

- 1 The PM₁₀ concentrations measured on February 4, February 16, and February 28, 2022 were 14.646 µg/m³, 1.158 µg/m³, and 11.290 µg/m³ respectively.
- 2 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, though higher than normal levels of isobutane and TNMOC were detected. There are no applicable AAAQO for other parameters that were monitored in February 2022.
- 3 During February 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.

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 February 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
February 2022

Ryley Wind Speed Data (m/s) - Month of February 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	3.6	3.4	3.0	2.3	2.1	3.3	3.8	3.5	3.4	3.8	4.3	3.9	4.8	5.3	5.7	6.3	6.2	6.3	5.0	5.6	5.1	5.8	6.1	5.8
2	5.3	4.3	2.8	2.6	1.3	0.6	0.3	1.9	2.6	3.1	3.8	5.2	5.3	5.9	6.8	6.3	7.0	7.0	6.8	6.1	6.4	5.7	5.1	4.3
3	3.5	3.1	1.9	1.3	3.4	5.4	7.0	7.2	7.2	6.3	6.0	5.6	4.7	4.5	4.8	4.8	3.7	1.8	0.6	1.1	1.9	2.2	3.2	4.0
4	5.9	6.8	6.9	7.6	8.0	9.1	9.3	8.6	9.1	9.5	7.9	6.9	6.7	4.1	3.6	2.8	3.3	3.2	2.4	2.7	1.2	2.1	4.2	4.5
5	2.8	2.8	2.5	4.7	5.9	5.0	3.5	6.7	5.8	7.1	7.6	3.6	5.2	7.9	9.7	8.1	9.2	8.9	9.5	8.0	5.3	5.3	4.3	3.2
6	4.9	5.1	5.9	6.0	6.5	6.0	5.6	5.5	5.1	5.3	4.2	4.8	7.0	7.7	5.3	4.1	3.9	3.5	4.1	4.2	4.8	3.7	3.5	5.3
7	5.7	5.0	3.8	3.0	2.0	2.7	4.0	4.0	4.1	5.7	5.6	5.2	6.7	8.0	6.5	6.3	7.3	8.7	8.2	7.2	8.1	11.9	11.1	11.0
8	10.7	10.1	8.5	7.9	7.9	6.6	5.6	4.4	6.7	7.8	4.3	4.5	3.3	2.9	6.1	5.0	5.1	5.0	4.8	2.9	3.0	4.0	3.9	5.0
9	4.9	4.6	3.5	3.3	2.6	1.0	1.0	1.9	4.4	4.6	3.8	3.4	4.1	4.6	3.7	3.9	3.5	4.7	4.1	5.7	5.9	7.1	7.1	7.2
10	3.9	7.5	10.4	9.8	10.4	10.6	12.3	12.6	11.6	11.3	11.2	11.6	13.7	13.4	16.5	15.0	14.5	12.5	11.2	10.9	10.3	9.6	9.0	7.8
11	7.5	6.8	8.3	7.4	5.6	10.7	14.0	13.9	14.1	12.2	9.6	7.5	5.3	3.9	2.6	7.4	6.1	3.4	3.0	2.9	3.1	3.9	4.4	3.5
12	2.8	4.2	4.4	3.6	3.8	4.1	4.6	3.5	3.1	2.9	1.9	0.9	2.6	3.7	4.4	5.6	5.9	5.6	5.8	5.0	4.7	4.7	5.4	7.4
13	8.3	9.4	10.0	10.7	7.1	6.9	8.9	8.4	7.5	8.6	9.9	10.1	9.2	8.0	6.7	5.6	4.8	3.0	2.3	2.7	3.0	4.3	4.6	4.7
14	4.4	3.7	3.9	4.9	3.4	3.3	4.5	4.7	5.0	5.1	5.6	5.4	5.3	5.2	5.3	5.1	5.2	5.1	4.9	5.0	5.1	4.6	4.5	3.8
15	3.4	2.6	1.8	2.3	2.5	3.2	3.8	4.1	5.2	7.4	8.3	10.2	9.7	8.7	6.8	5.6	5.0	4.3	3.0	2.0	3.2	3.8	4.1	3.9
16	3.9	3.2	2.1	1.9	1.8	1.4	1.6	1.9	2.0	2.7	3.2	3.5	3.5	3.5	3.3	2.9	2.9	2.3	1.9	1.8	2.6	2.8	3.8	4.6
17	5.3	6.0	6.0	6.5	8.2	8.4	8.8	8.8	7.1	5.1	5.6	6.7	9.8	9.8	11.5	10.7	4.9	3.1	2.7	2.3	3.6	4.1	5.4	10.5
18	10.8	11.9	10.6	9.4	8.8	7.9	7.0	5.1	3.5	2.1	2.6	3.2	4.6	5.4	5.2	5.3	6.0	5.7	5.8	6.7	7.0	7.2	6.4	5.5
19	4.7	6.6	5.8	6.4	6.0	5.8	5.0	4.0	7.4	7.7	7.6	6.0	6.6	5.6	5.9	7.6	9.1	9.0	9.6	9.4	9.1	9.3	9.6	8.1
20	8.2	7.3	6.8	6.5	5.3	5.5	5.2	4.2	3.8	4.3	3.5	3.4	3.5	3.5	3.1	2.9	3.3	2.1	2.7	3.1	3.0	2.8	3.4	3.1
21	2.6	2.1	2.0	2.1	2.0	2.1	2.3	2.0	2.3	1.9	1.9	1.9	2.3	2.9	2.6	2.7	1.5	1.0	0.6	1.4	2.5	2.1	1.9	2.6
22	1.9	2.9	3.6	3.1	2.8	3.1	2.8	3.2	3.0	3.0	2.5	3.0	4.0	3.8	4.4	3.1	2.5	1.5	1.3	1.5	2.4	3.2	3.4	3.6
23	4.5	4.4	3.7	3.2	2.7	3.7	4.2	4.9	4.9	4.7	4.5	5.5	5.0	5.4	6.2	6.0	5.7	5.5	4.2	3.4	3.1	2.8	3.0	2.6
24	1.5	1.5	1.3	2.6	2.9	2.6	3.4	2.7	3.7	4.1	4.7	6.3	5.6	4.6	4.0	3.5	3.1	1.3	1.1	1.9	2.5	2.1	2.1	1.8
25	3.6	4.5	4.8	5.1	4.9	2.5	2.4	3.1	5.3	4.2	3.8	5.0	5.0	5.4	5.7	5.0	5.6	4.6	3.9	5.2	5.5	4.9	4.3	4.4
26	4.4	4.6	5.0	4.5	4.6	5.1	4.0	5.0	5.5	5.8	5.1	4.2	3.1	1.9	1.2	0.9	1.7	2.0	1.8	1.9	0.6	1.1	1.9	3.9
27	4.0	3.7	2.8	2.7	3.5	3.8	3.7	3.2	3.8	4.7	4.7	4.6	5.1	4.8	5.4	6.3	7.9	5.6	4.4	3.3	2.7	1.8	2.3	0.6
28	0.9	1.3	0.9	0.9	1.2	1.0	1.6	0.8	1.6	2.5	1.5	1.9	1.4	1.6	1.1	0.8	1.3	1.6	1.4	0.9	0.7	0.7	1.5	2.2

TABLE 2

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

Ryley Wind Direction Data (degrees, blowing from) - Month of February 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	308	310	281	280	278	264	274	275	292	296	299	303	306	307	308	311	312	310	298	296	301	320	324	335
2	332	324	332	300	294	297	174	171	168	162	167	159	158	151	154	145	143	141	144	146	148	142	144	155
3	146	141	170	266	320	329	336	334	335	333	336	340	343	345	333	332	31	18	67	145	147	135	144	137
4	145	144	139	140	141	142	141	139	147	146	150	160	158	178	188	186	167	170	183	175	164	210	216	229
5	273	53	92	188	228	278	271	282	219	320	335	330	322	307	296	295	306	292	297	292	262	256	267	229
6	241	234	231	220	227	228	222	229	226	224	209	208	219	236	246	228	220	212	216	219	220	223	217	223
7	224	219	206	230	179	210	214	209	201	226	238	255	285	290	283	275	268	268	272	274	284	289	290	291
8	293	295	294	287	292	283	277	235	250	292	250	243	234	243	290	298	293	285	296	286	257	240	230	221
9	219	225	247	244	225	228	226	223	249	276	269	251	238	228	221	221	199	197	205	218	219	226	245	269
10	275	270	270	271	285	299	304	305	306	305	294	301	302	309	301	299	293	309	311	317	317	317	321	322
11	321	319	310	322	295	304	310	311	314	321	342	297	304	338	317	319	320	261	120	162	165	165	162	181
12	180	215	252	281	305	322	330	327	333	268	159	129	142	155	158	154	155	152	154	160	182	195	211	231
13	268	293	315	326	304	297	303	302	310	301	302	313	319	322	338	111	37	33	49	94	101	114	131	137
14	139	132	130	135	125	103	109	111	110	105	104	107	101	103	105	106	103	101	97	101	92	94	106	123
15	132	147	181	209	216	230	248	277	295	315	316	320	317	317	334	344	347	345	180	36	108	207	26	38
16	27	29	157	316	333	214	52	87	100	121	109	121	124	131	131	127	104	93	102	107	134	144	157	162
17	165	160	160	157	153	154	155	154	164	186	220	267	282	280	297	295	198	336	338	302	336	323	334	338
18	335	337	342	351	347	350	244	84	45	100	120	127	146	160	177	176	178	172	160	155	167	174	180	187
19	202	208	201	213	213	220	222	213	306	289	300	304	315	279	346	180	10	92	232	175	19	64	14	24
20	29	29	25	30	30	38	40	43	46	51	53	59	64	66	78	74	82	62	22	23	38	43	36	30
21	28	23	19	17	98	245	319	337	314	302	313	327	333	263	19	21	35	81	125	185	208	236	264	267
22	255	237	251	253	271	278	273	267	272	256	273	269	284	286	300	300	288	65	113	176	248	225	219	218
23	217	222	205	197	177	169	150	152	158	160	157	157	166	168	167	166	173	179	182	162	174	178	180	182
24	196	223	264	285	285	258	242	207	212	239	304	334	341	340	346	345	140	40	145	180	192	206	213	188
25	211	220	223	222	225	201	206	212	220	228	232	229	229	238	234	224	232	231	219	221	231	260	281	281
26	277	255	238	226	218	218	209	217	223	222	226	242	233	240	216	117	62	84	111	96	90	66	82	57
27	80	93	86	82	78	87	87	81	85	97	109	106	111	110	111	106	113	103	92	77	101	91	116	35
28	143	223	226	117	181	198	261	158	144	170	99	166	168	93	124	159	39	42	56	157	182	186	190	185

TABLE 3

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

Frequency Distribution Report: Ryley, Alberta - February 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	31	179	718	621	577	1801	9.7%	3927
Northeast	> 22.5 - 67.5	56	314	466	587	421	571	6.0%	2415
East	> 67.5 - 112.5	78	324	646	722	674	1164	8.9%	3608
Southeast	> 112.5 - 157.5	75	333	482	806	797	2505	12.4%	4998
South	> 157.5 - 202.5	118	432	919	933	788	1782	12.3%	4972
Southwest	> 202.5 - 247.5	29	300	622	1133	1859	3615	18.7%	7558
West	> 247.5 - 292.5	31	192	590	1017	909	2572	13.2%	5311
Northwest	> 292.5 - 337.5	47	113	508	542	773	5548	18.7%	7531
Missing/Invalid Hours								0.0%	0
Total Occurrences by Speed		465	2187	4951	6361	6798	19558		40320
Occurrences by %		1.2%	5.4%	12.3%	15.8%	16.9%	48.5%	100.00%	

TABLE 4

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

Filter ID	C9269724	C9269723	C9269722
Test ID	789	790	791
Sample Start Date/Time	22/02/04 00:00:00	22/02/16 00:00:00	22/02/28 00:00:00
Sample End Date/Time	22/02/05 00:00:00	22/02/17 00:00:00	22/03/01 00:00:00
Sampling Time (hours)	24	24	24
Flow Rate (l/min)	16.7	16.7	16.7
Volume (m³)	25.4	25.9	24.8
PM₁₀ Mass (mg)	0.372	0.030	0.280
PM₁₀ Concentration (ug/m³)	14.646	1.158	11.290
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
February 2022

Parameter	Units	Date	4-Feb-22	16-Feb-22	28-Feb-22
		Sample ID AAAQO ⁽¹⁾	789	790	791
Total Non-Methane Organic Carbon	ppmv	-	25.8	< 0.07	< 0.09
1,2,3-Trimethylbenzene	ppbv	-	< 0.08	< 0.08	< 0.09
1,2,4-Trimethylbenzene	ppbv	-	< 0.05	< 0.05	< 0.05
1,3,5-Trimethylbenzene	ppbv	-	< 0.05	< 0.05	< 0.05
1-Butene/Isobutylene	ppbv	-	0.38	0.22	0.27
1-Hexene/2-Methyl-1-pentene	ppbv	-	< 0.11	< 0.11	< 0.12
1-Pentene	ppbv	-	< 0.05	< 0.05	0.30
2,2,4-Trimethylpentane	ppbv	-	0.06	< 0.03	0.25
2,2-Dimethylbutane	ppbv	-	0.04	< 0.03	0.23
2,3,4-Trimethylpentane	ppbv	-	< 0.03	< 0.03	< 0.03
2,3-Dimethylbutane	ppbv	-	< 0.14	< 0.14	0.24
2,3-Dimethylpentane	ppbv	-	< 0.03	< 0.03	0.23
2,4-Dimethylpentane	ppbv	-	0.06	< 0.05	0.24
2-Methylheptane	ppbv	-	< 0.03	< 0.03	< 0.03
2-Methylhexane	ppbv	-	< 0.05	< 0.05	0.24
2-Methylpentane	ppbv	-	0.31	< 0.03	0.25
3-Methylheptane	ppbv	-	< 0.05	< 0.05	< 0.05
3-Methylhexane	ppbv	-	0.11	< 0.03	0.26
3-Methylpentane	ppbv	-	0.49	0.17	0.27
Benzene	ppbv	-	0.07	< 0.05	0.32
cis-2-Butene	ppbv	-	< 0.05	< 0.05	< 0.05
cis-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03
Cyclohexane	ppbv	-	0.29	0.29	0.31
Cyclopentane	ppbv	-	0.15	< 0.03	0.23
Ethylbenzene	ppbv	-	0.20	< 0.05	0.23
Isobutane	ppbv	-	111	1.14	0.64
Isopentane	ppbv	-	5.14	0.60	0.44
Isoprene	ppbv	-	< 0.03	< 0.03	< 0.03
Isopropylbenzene	ppbv	-	< 0.06	< 0.06	< 0.07
m,p-Xylene	ppbv	161	0.25	< 0.06	0.36
m-Diethylbenzene	ppbv	-	< 0.03	< 0.03	< 0.03
m-Ethyltoluene	ppbv	-	< 0.05	< 0.05	< 0.05
Methylcyclohexane	ppbv	-	0.18	< 0.03	0.27
Methylcyclopentane	ppbv	-	0.41	0.17	0.19
n-Butane	ppbv	-	21.2	1.15	0.65
n-Decane	ppbv	-	< 0.10	< 0.09	< 0.10
n-Dodecane	ppbv	-	< 0.5	< 0.5	< 0.5
n-Heptane	ppbv	-	0.13	< 0.06	0.29
n-Hexane	ppbv	1990	1.52	0.36	0.34
n-Nonane	ppbv	-	< 0.06	< 0.06	< 0.07
n-Octane	ppbv	-	0.14	< 0.03	0.28
n-Pentane	ppbv	-	3.90	0.55	0.42
n-Propylbenzene	ppbv	-	< 0.10	< 0.09	0.13
n-Undecane	ppbv	-	< 0.8	< 0.8	< 0.9
o-Ethyltoluene	ppbv	-	< 0.03	< 0.03	< 0.03
o-Xylene	ppbv	161	0.15	< 0.05	0.23
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	0.13	< 0.05	0.34
trans-2-Butene	ppbv	-	< 0.05	< 0.05	< 0.05
trans-2-Pentene	ppbv	-	< 0.03	< 0.03	< 0.03
Total VOCs ⁽²⁾	ppbv	-	149.050	7.950	10.980

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.

(3) For Sample ID 789, higher than usual levels of Isobutane and TMNOC (n-Propane) were noted in sample. Wind direction from SE, S, SSW (not from Clean Harbors facility) during sample period.

Appendix A

Meteorological Station Calibration Report

R. M. YOUNG COMPANY WIND SENSOR CALIBRATION CERTIFICATE

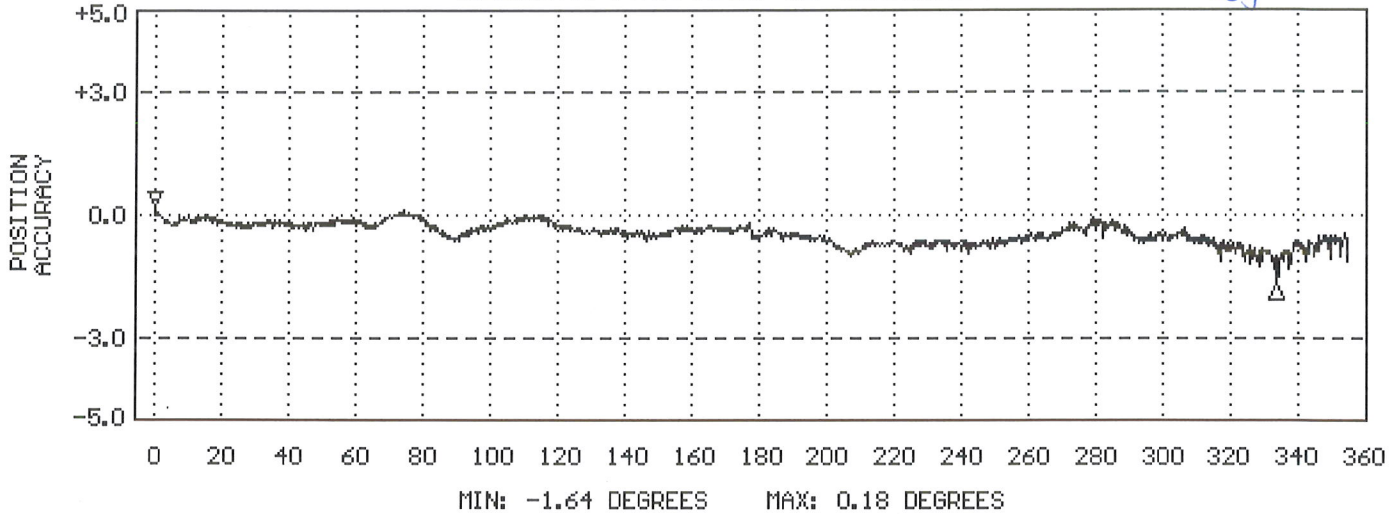
SENSOR: 05305-10A WIND MONITOR-AQ
SENSOR SERIAL NUMBER: WM149768
BEARINGS: SHIELDED/OIL LUBE
DATE: AUG 3 2016

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:

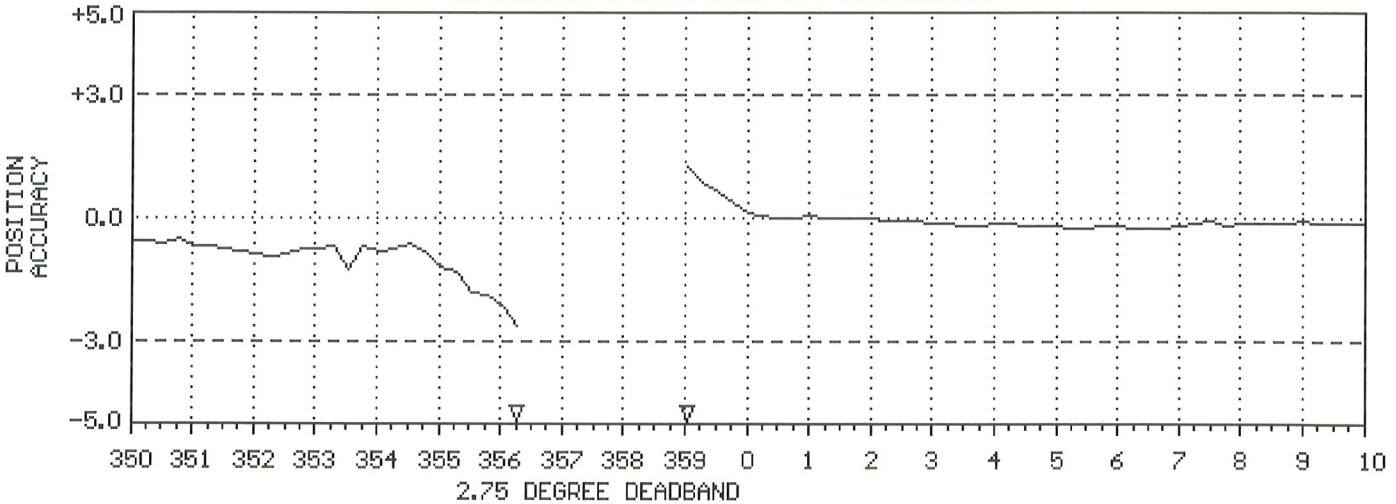
[Signature]
Insp. By

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					
Site			Wind Monitor		
Location:	Facility		Make:	RM Young	
Calibration Date:	Aug 28, 2020		Model:	05305	
Tech.:	T.Lewis		Serial #:	151040	
Instrument:	Continuous Wind Monitor		Calibration due:	Annually	
Time:	10:15 AM - 1:00 PM		Temperature:	19°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)
40	37	Y	9.7	9.7	Y
70	67	Y	9.2	9.2	Y
100	97	Y	7.7	7.6	Y
190	188	Y	5.6	5.6	Y
270	267	Y	4.1	4.1	Y
355	351	Y	2.6	2.5	Y
90	87	Y	1.0	1.0	Y
Comments			Conversion Factors		
Wind monitor (SN:151040) was removed from tower, inspected and calibration checked on August 28, 2020. Mechanical bearings and shaft alignment were inspected. Both bearings and alignment are in good condition with appropriate play. No additional maintenance is required. The wind monitor was installed on May 28, 2021.			m/s	RPM	
			19.460	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			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RYLEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	C9269724		
PO Number:	223069		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 789		
Sample Date:	22/02/04		yy/mm/dd
Shipping Date to Laboratory:	22/02/07		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/02/04		
Sampling Start Time:	00:00		
Current Instrument Date:	22/02/03		
Current Instrument Time:	13:53 PM		
Ambient Temperature °C:	-17.2		
Barometric Pressure (mm Hg):	710		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	cloudy and snow		
Weather Conditions set up:	cloudy and snow		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/02/05		
Sampling End Time:	00:00		
Current Instrument Date:	22/02/07		
Current Instrument Time:	7:54		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	25.4		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	3.8		
Barometric Pressure (mm Hg) :	691		
Sample Filter Temperature °C :	4.4		
Flow Rate Coefficient of Variation (%CV):	0.2		
Weather Conditions :	cloudy		
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:			

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

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 789
 Sample Canister Location: Riley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 789
 Sample Date: 22/02/04 yy/mm/dd
 Shipping Date to Laboratory: 22/02/07
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 32210
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/02/03	22/02/07
Ambient Temperature °C (inside shed):	10.7	17.7
Barometric Pressure (mm Hg):	710	691
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.2	(-)3
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, snow

Describe facility operations that may affect sampling event: None

Comments: Higher than usual levels of Isobutane and TMNOC (n-Pr) Wind direction from SE, S, SSW (not from Clean Harbors during sample period)

FIELD SHEET			
PM ₁₀ (Partisol Monitoring Unit)			
CLEAN HARBORS CANADA INC			
RYLEY, ALBERTA			
A) GENERAL INFORMATION			
Filter ID:	C9269723		
PO Number:	223069		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 790		
Sample Date:	22/02/16		yy/mm/dd
Shipping Date to Laboratory:	22/02/18		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/02/16		
Sampling Start Time:	00:00		
Current Instrument Date:	22/02/14		
Current Instrument Time:	8:50		
Ambient Temperature °C:	-6.4		
Barometric Pressure (mm Hg):	700		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	cloudy, light snow		
Weather Conditions set up:	cloudy		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/02/17		
Sampling End Time:	00:00		
Current Instrument Date:	22/02/17		
Current Instrument Time:	8:01		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	25.9		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	-8.9		
Barometric Pressure (mm Hg) :	692		
Sample Filter Temperature °C :	-7.8		
Flow Rate Coefficient of Variation (%CV):	0.2		
Weather Conditions :	light snow		
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:			

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

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 790
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 790
 Sample Date: 22/02/16 yy/mm/dd
 Shipping Date to Laboratory: 22/02/18
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 32213
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/02/14	22/02/17
Ambient Temperature °C (inside shed):	10.4	5.8
Barometric Pressure (mm Hg):	700	692
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.0	(-)3
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, light snow

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:	C9269722		
PO Number:	223069		
Partisol Sampler ID/Serial Number:	2000 FRM-AE / 200FB209860905		
Test number :	Particulate Test 791		
Sample Date:	22/02/28		yy/mm/dd
Shipping Date to Laboratory:	22/03/02		
B) SAMPLING INFORMATION			
SAMPLE START			
Sampling Start Date:	22/02/28		
Sampling Start Time:	00:00		
Current Instrument Date:	22/02/23		
Current Instrument Time:	15:14		
Ambient Temperature °C:	-12.8		
Barometric Pressure (mm Hg):	703		
Leak Check:	Pass		(Pass/Fail)
Clean PM10 Inlet:	Yes		(Yes/No)
Weather Conditions Sampling date :	cloudy		
Weather Conditions set up:	cloudy		
SAMPLE RETRIEVAL			
Sampled by	T. Webb		
Sampling End Date:	22/03/01		
Sampling End Time:	00:00		
Current Instrument Date:	22/03/01		
Current Instrument Time:	7:42		
Run Status:	OK		(Ensure Run Status is OK)
Total Sampling Time (Hours):	24		
Volume Sampled (m ³):	24.8		
Average Flow Rate (L/min):	16.7 L/min		
AmbT °C :	-6.0		
Barometric Pressure (mm Hg) :	700		
Sample Filter Temperature °C :	-3.9		
Flow Rate Coefficient of Variation (%CV):	0.2		
Weather Conditions :	cloudy		
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:			

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

A) GENERAL INFORMATION

Sample Identification Number: Organic Test 791
 Sample Canister Location: Ryley Lift Station -Shed
 Sampled by: T. Webb
 Sampler Name: Test 791
 Sample Date: 22/02/28 yy/mm/dd
 Shipping Date to Laboratory: 22/03/02
 Canister Type (ie. 1 Litre/6 Litre/Other): 6L
 Canister Serial No.: 29029
 Flow Controller Serial No.: H/L578699/A0334390-5

B) SAMPLE SET UP

	Set up Conditions	Sample Retrieval
Date:	22/02/23	22/03/01
Ambient Temperature °C (inside shed):	15.2	12.4
Barometric Pressure (mm Hg):	703	700
Canister Pressure Gauge Reading (- Inches Hg):	(-)27.3	(-)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

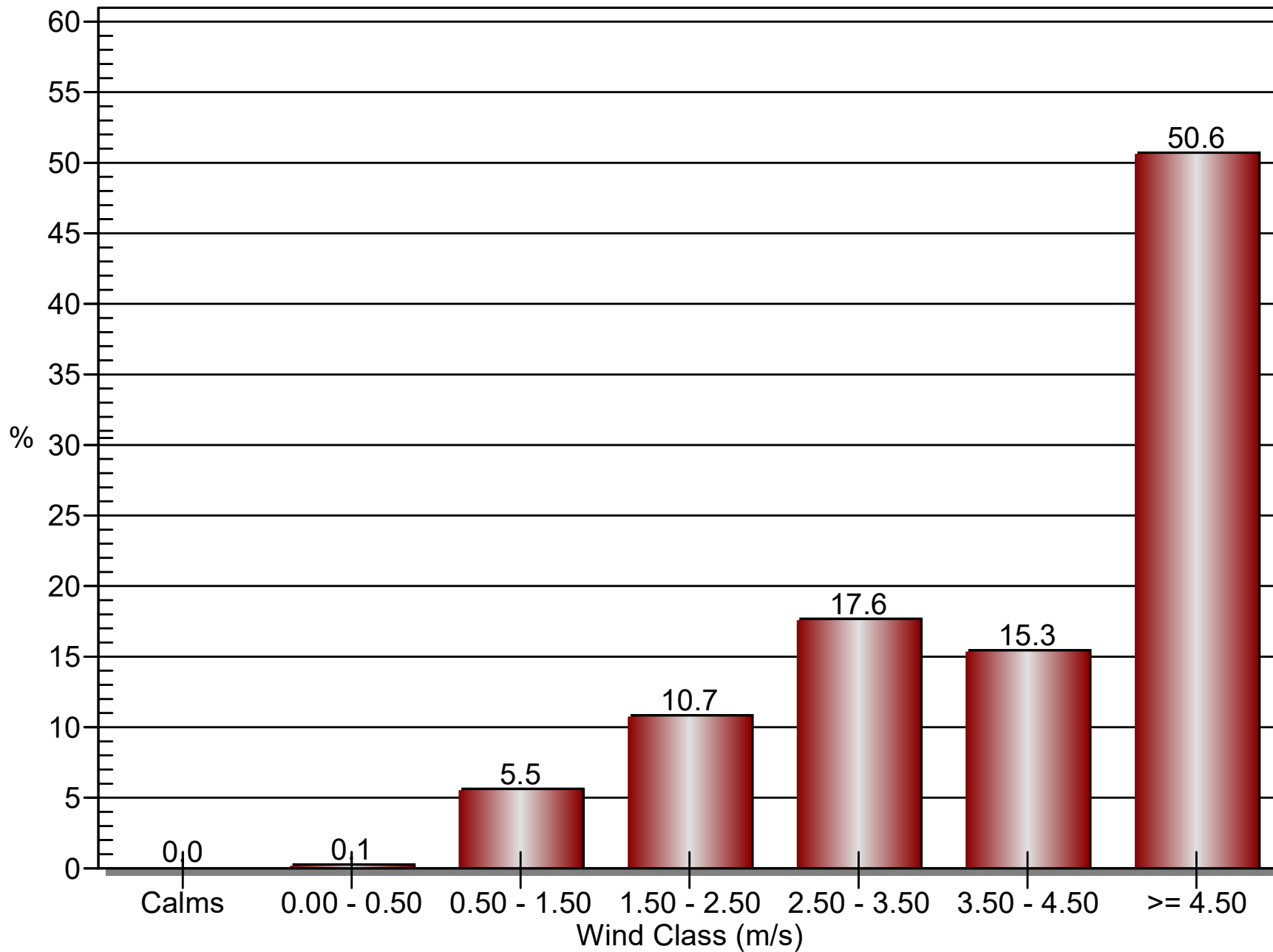
Describe general weather conditions during sampling event: cloudy

Describe facility operations that may affect sampling event: None

Comments: _____

Appendix C
Wind Class Frequency Distribution
Graphs and Wind Rose

Wind Class Frequency Distribution

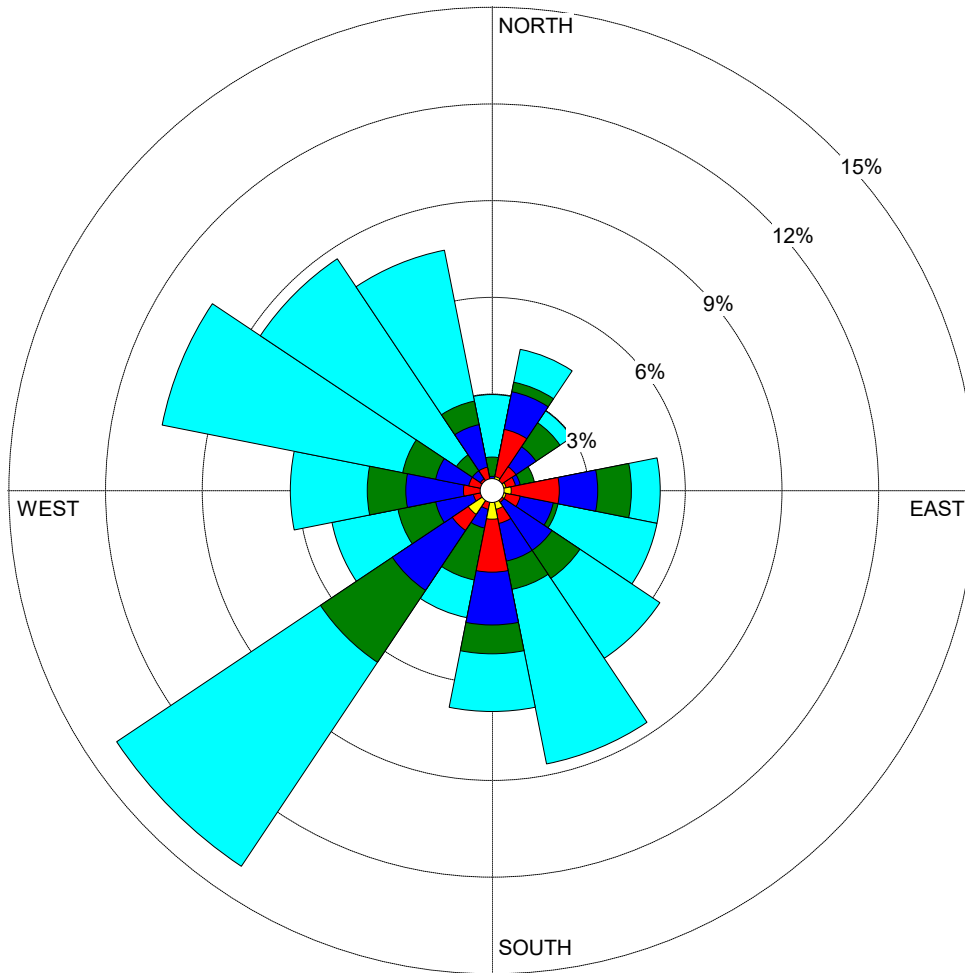


WIND ROSE PLOT:

**Wind Rose Plot - Ryley, AB
February 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: 2/1/2022 - 00:00
End Date: 2/28/2022 - 23:00**

COMPANY NAME:

Clean Harbors

MODELER:

GHD

CALM WINDS:

0.00%

TOTAL COUNT:

671 hrs.

AVG. WIND SPEED:

4.89 m/s

DATE:

3/28/2022

PROJECT NO.:

11114644



Appendix D

Chain of Custody Forms and Laboratory Analytical Reports

<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 32210</p> <p>CANISTER ID: 32210 PRIORITY: Normal DESCRIPTION: Canister</p> <p>DATE SAMPLED: 04-Feb-22 0:00 DATE RECEIVED: 14-Feb-22 REPORT CREATED: 25-Feb-22 REPORT NUMBER: 22020114 VERSION: Version 01</p>	<p style="text-align: center;">Matrix Ambient Air</p>
---	--	--

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
22020114-001	Total Non-Methane Organic Carbon		25.8	ppmv	0.08	NA-028	18-Feb-22
22020114-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08	ppbv	0.08	AC-058	15-Feb-22
22020114-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	1-Butene/Isobutylene		0.38	ppbv	0.10	AC-058	15-Feb-22
22020114-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11	ppbv	0.11	AC-058	15-Feb-22
22020114-001	1-Pentene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	2,2,4-Trimethylpentane	I	0.06	ppbv	0.03	AC-058	15-Feb-22
22020114-001	2,2-Dimethylbutane	I	0.04	ppbv	0.03	AC-058	15-Feb-22
22020114-001	2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	2,3-Dimethylbutane	K, T, U	< 0.14	ppbv	0.14	AC-058	15-Feb-22
22020114-001	2,3-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	2,4-Dimethylpentane	I	0.06	ppbv	0.05	AC-058	15-Feb-22
22020114-001	2-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	2-Methylhexane	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	2-Methylpentane		0.31	ppbv	0.03	AC-058	15-Feb-22
22020114-001	3-Methylheptane	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	3-Methylhexane	I	0.11	ppbv	0.03	AC-058	15-Feb-22

CLIENT SAMPLE ID	32210	CANISTER ID	32210	Matrix	Ambient Air	DATE SAMPLED	04-Feb-22 0:00
DESCRIPTION:	Canister						
REPORT NUMBER:	22020114	REPORT CREATED:	25-Feb-22	VERSION:	Version 01		

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
22020114-001	3-Methylpentane		0.49	ppbv	0.03	AC-058	15-Feb-22
22020114-001	Benzene	I	0.07	ppbv	0.05	AC-058	15-Feb-22
22020114-001	cis-2-Butene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	Cyclohexane	I	0.29	ppbv	0.06	AC-058	15-Feb-22
22020114-001	Cyclopentane	I	0.15	ppbv	0.03	AC-058	15-Feb-22
22020114-001	Ethylbenzene	I	0.20	ppbv	0.05	AC-058	15-Feb-22
22020114-001	Isobutane		111	ppbv	0.48	AC-058	15-Feb-22
22020114-001	Isopentane		5.14	ppbv	0.06	AC-058	15-Feb-22
22020114-001	Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	Isopropylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	15-Feb-22
22020114-001	m,p-Xylene	I	0.25	ppbv	0.06	AC-058	15-Feb-22
22020114-001	m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	15-Feb-22
22020114-001	m-Ethyltoluene	K, T, U	< 0.05	ppbv	0.05	AC-058	15-Feb-22
22020114-001	Methylcyclohexane		0.18	ppbv	0.03	AC-058	15-Feb-22
22020114-001	Methylcyclopentane		0.41	ppbv	0.08	AC-058	15-Feb-22
22020114-001	n-Butane		21.2	ppbv	0.03	AC-058	15-Feb-22
22020114-001	n-Decane	K, T, U	< 0.10	ppbv	0.10	AC-058	15-Feb-22
22020114-001	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	15-Feb-22
22020114-001	n-Heptane	I	0.13	ppbv	0.06	AC-058	15-Feb-22
22020114-001	n-Hexane		1.52	ppbv	0.05	AC-058	15-Feb-22
22020114-001	n-Octane	I	0.14	ppbv	0.03	AC-058	15-Feb-22
22020114-001	n-Pentane		3.90	ppbv	0.06	AC-058	15-Feb-22
22020114-001	n-Propylbenzene	K, T, U	< 0.10	ppbv	0.10	AC-058	15-Feb-22
22020114-001	n-Undecane	K, T, U	< 0.8	ppbv	0.8	AC-058	15-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: February 25, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



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 (780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	32210	CANISTER ID	32210	Matrix	Ambient Air	DATE SAMPLED	04-Feb-22 0:00
DESCRIPTION:	Canister						
REPORT NUMBER:	22020114	REPORT CREATED:	25-Feb-22	VERSION:	Version 01		

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020114-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Feb-22
22020114-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Feb-22
22020114-001	o-Xylene	I	0.15 ppbv	0.05	AC-058	15-Feb-22
22020114-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Feb-22
22020114-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Feb-22
22020114-001	Styrene	K, T, U	< 0.06 ppbv	0.06	AC-058	15-Feb-22
22020114-001	Toluene	I	0.13 ppbv	0.05	AC-058	15-Feb-22
22020114-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	15-Feb-22
22020114-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	15-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: February 25, 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 # C9269724 - Test #: 789	CANISTER ID	Matrix Air Filter	DATE SAMPLED 04-Feb-22 0:00
DESCRIPTION: PM10 Filter			
REPORT NUMBER: 22020114	REPORT CREATED: 25-Feb-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020114-002	Particulate Weight		0.372 mg	0.004	AC-029	16-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: February 25, 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

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Revision History

Order ID	Ver	Date	Reason
22020114	01	25-Feb-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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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

22020114

Report to Stan Yuha. Project ID: Test 789



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Page 9 of 10

Sample Comments



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ENVIRONMENTAL ANALYTICAL SERVICES

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.*



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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 #: C9269723, PM10 Test # 790</p> <p>MATRIX: Air Filter</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM 10 Filter</p> <p>DATE SAMPLED: 16-Feb-22 0:00 DATE RECEIVED: 22-Feb-22</p> <p>REPORT CREATED: 04-Mar-22 REPORT NUMBER: 22020172</p> <p style="text-align: right;">VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020172-002	Particulate Weight		0.030 mg	0.004	AC-029	25-Feb-22

CLIENT SAMPLE ID VOCs and TNMOC Test # 790	CANISTER ID 32213	Matrix Ambient Air	DATE SAMPLED 16-Feb-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22020172	REPORT CREATED: 04-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020172-001	Total Non-Methane Organic Carbon	K, T, U	< 0.07 ppmv	0.07	NA-028	23-Feb-22
22020172-001	1,2,3-Trimethylbenzene	K, T, U	< 0.08 ppbv	0.08	AC-058	24-Feb-22
22020172-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	1-Butene/Isobutylene	I	0.22 ppbv	0.09	AC-058	24-Feb-22
22020172-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.11 ppbv	0.11	AC-058	24-Feb-22
22020172-001	1-Pentene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	2,2,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	2,2-Dimethylbutane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	2,3,4-Trimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	2,3-Dimethylbutane	K, T, U	< 0.14 ppbv	0.14	AC-058	24-Feb-22
22020172-001	2,3-Dimethylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	2,4-Dimethylpentane	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	2-Methylheptane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	2-Methylhexane	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	2-Methylpentane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	3-Methylheptane	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	3-Methylhexane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	3-Methylpentane		0.17 ppbv	0.03	AC-058	24-Feb-22
22020172-001	Benzene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	cis-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	cis-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	Cyclohexane	I	0.29 ppbv	0.06	AC-058	24-Feb-22
22020172-001	Cyclopentane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	Ethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 4, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 790	CANISTER ID 32213	Matrix Ambient Air	DATE SAMPLED 16-Feb-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22020172	REPORT CREATED: 04-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020172-001	Isobutane		1.14 ppbv	0.05	AC-058	24-Feb-22
22020172-001	Isopentane		0.60 ppbv	0.06	AC-058	24-Feb-22
22020172-001	Isoprene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	Isopropylbenzene	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	m,p-Xylene	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	m-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	m-Ethyltoluene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	Methylcyclohexane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	Methylcyclopentane		0.17 ppbv	0.08	AC-058	24-Feb-22
22020172-001	n-Butane		1.15 ppbv	0.03	AC-058	24-Feb-22
22020172-001	n-Decane	K, T, U	< 0.09 ppbv	0.09	AC-058	24-Feb-22
22020172-001	n-Dodecane	K, T, U	< 0.5 ppbv	0.5	AC-058	24-Feb-22
22020172-001	n-Heptane	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	n-Hexane		0.36 ppbv	0.05	AC-058	24-Feb-22
22020172-001	n-Octane	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	n-Pentane		0.55 ppbv	0.06	AC-058	24-Feb-22
22020172-001	n-Propylbenzene	K, T, U	< 0.09 ppbv	0.09	AC-058	24-Feb-22
22020172-001	n-Undecane	K, T, U	< 0.8 ppbv	0.8	AC-058	24-Feb-22
22020172-001	n-Nonane	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	o-Ethyltoluene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	o-Xylene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	p-Diethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22
22020172-001	p-Ethyltoluene	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	Styrene	K, T, U	< 0.06 ppbv	0.06	AC-058	24-Feb-22
22020172-001	Toluene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 4, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID VOCs and TNMOC Test # 790	CANISTER ID 32213	Matrix Ambient Air	DATE SAMPLED 16-Feb-22 0:00
DESCRIPTION: Air Canister			
REPORT NUMBER: 22020172	REPORT CREATED: 04-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22020172-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	24-Feb-22
22020172-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	24-Feb-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 4, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
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(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

Revision History

Order ID	Ver	Date	Reason
22020172	01	04-Mar-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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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

22020172

Send results to Stan Yuha. Project ID: Test # 790.



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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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ENVIRONMENTAL ANALYTICAL SERVICES

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 # C9269722 - Test #: 791</p> <p>CANISTER ID:</p> <p>PRIORITY: Normal</p> <p>DESCRIPTION: PM10 Filter</p> <p>DATE SAMPLED: 28-Feb-22 0:00</p> <p>REPORT CREATED: 17-Mar-22</p>	<p style="text-align: center;">Matrix Air Filter</p> <p>DATE RECEIVED: 04-Mar-22</p> <p>REPORT NUMBER: 22030028</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22030028-002	Particulate Weight		0.280 mg	0.004	AC-029	07-Mar-22

CLIENT SAMPLE ID VOCs and TNMOC Test # 791	CANISTER ID 29029	Matrix Ambient Air	DATE SAMPLED 28-Feb-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22030028	REPORT CREATED: 17-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
22030028-001	Total Non-Methane Organic Carbon	K, T, U	< 0.09	ppmv	0.09	NA-028	08-Mar-22
22030028-001	1,2,3-Trimethylbenzene	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Mar-22
22030028-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Mar-22
22030028-001	1,3,5-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Mar-22
22030028-001	1-Butene/Isobutylene	I	0.27	ppbv	0.10	AC-058	08-Mar-22
22030028-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.12	ppbv	0.12	AC-058	08-Mar-22
22030028-001	1-Pentene		0.30	ppbv	0.05	AC-058	08-Mar-22
22030028-001	2,2,4-Trimethylpentane		0.25	ppbv	0.03	AC-058	08-Mar-22
22030028-001	2,2-Dimethylbutane		0.23	ppbv	0.03	AC-058	08-Mar-22
22030028-001	2,3,4-Trimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	2,3-Dimethylbutane		0.24	ppbv	0.16	AC-058	08-Mar-22
22030028-001	2,3-Dimethylpentane		0.23	ppbv	0.03	AC-058	08-Mar-22
22030028-001	2,4-Dimethylpentane		0.24	ppbv	0.05	AC-058	08-Mar-22
22030028-001	2-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	2-Methylhexane		0.24	ppbv	0.05	AC-058	08-Mar-22
22030028-001	2-Methylpentane		0.25	ppbv	0.03	AC-058	08-Mar-22
22030028-001	3-Methylheptane	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Mar-22
22030028-001	3-Methylhexane		0.26	ppbv	0.03	AC-058	08-Mar-22
22030028-001	3-Methylpentane		0.27	ppbv	0.03	AC-058	08-Mar-22
22030028-001	Benzene	I	0.32	ppbv	0.05	AC-058	08-Mar-22
22030028-001	cis-2-Butene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Mar-22
22030028-001	cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	Cyclohexane	I	0.31	ppbv	0.07	AC-058	08-Mar-22
22030028-001	Cyclopentane		0.23	ppbv	0.03	AC-058	08-Mar-22
22030028-001	Ethylbenzene	I	0.23	ppbv	0.05	AC-058	08-Mar-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 17, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca

CLIENT SAMPLE ID VOCs and TNMOC Test # 791	CANISTER ID 29029	Matrix Ambient Air	DATE SAMPLED 28-Feb-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22030028	REPORT CREATED: 17-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
22030028-001	Isobutane		0.64	ppbv	0.05	AC-058	08-Mar-22
22030028-001	Isopentane		0.44	ppbv	0.07	AC-058	08-Mar-22
22030028-001	Isoprene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	Isopropylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Mar-22
22030028-001	m,p-Xylene	I	0.36	ppbv	0.07	AC-058	08-Mar-22
22030028-001	m-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	m-Ethyltoluene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Mar-22
22030028-001	Methylcyclohexane		0.27	ppbv	0.03	AC-058	08-Mar-22
22030028-001	Methylcyclopentane		0.19	ppbv	0.09	AC-058	08-Mar-22
22030028-001	n-Butane		0.65	ppbv	0.03	AC-058	08-Mar-22
22030028-001	n-Decane	K, T, U	< 0.10	ppbv	0.10	AC-058	08-Mar-22
22030028-001	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Mar-22
22030028-001	n-Heptane	I	0.29	ppbv	0.07	AC-058	08-Mar-22
22030028-001	n-Hexane	I	0.34	ppbv	0.05	AC-058	08-Mar-22
22030028-001	n-Octane		0.28	ppbv	0.03	AC-058	08-Mar-22
22030028-001	n-Pentane		0.42	ppbv	0.07	AC-058	08-Mar-22
22030028-001	n-Propylbenzene	I	0.13	ppbv	0.10	AC-058	08-Mar-22
22030028-001	n-Undecane	K, T, U	< 0.9	ppbv	0.9	AC-058	08-Mar-22
22030028-001	n-Nonane	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Mar-22
22030028-001	o-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	o-Xylene	I	0.23	ppbv	0.05	AC-058	08-Mar-22
22030028-001	p-Diethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Mar-22
22030028-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Mar-22
22030028-001	Styrene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Mar-22
22030028-001	Toluene	I	0.34	ppbv	0.05	AC-058	08-Mar-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 17, 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 # 791	CANISTER ID 29029	Matrix Ambient Air	DATE SAMPLED 28-Feb-22 0:00
DESCRIPTION: Canister			
REPORT NUMBER: 22030028	REPORT CREATED: 17-Mar-22		VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
22030028-001	trans-2-Butene	K, T, U	< 0.05 ppbv	0.05	AC-058	08-Mar-22
22030028-001	trans-2-Pentene	K, T, U	< 0.03 ppbv	0.03	AC-058	08-Mar-22

Report certified by: Rebecca Dasilva, Account Coordinator

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

Date: March 17, 2022

Inquiries: (780) 632 8455

E-mail: EAS.Results@innotechalberta.ca



PO Bag 4000
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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Revision History

Order ID	Ver	Date	Reason
22030028	01	17-Mar-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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Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Order Comments

22030028

Report to Stan Yuha. Project ID: Test 791



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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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Sample Comments



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ENVIRONMENTAL ANALYTICAL SERVICES

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.*

Sample ID: 22020114-001 Priority: Normal

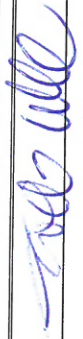
CHAIN OF CUSTODY FORM

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
Cust Samp ID: 32210

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@cleanharbours.com , Yuha.Stan@cleanharbours.com		Client Billing Information Contact: Robbi Gooding Phone: 780-663-3828 Email: Gooding.Robbi@cleanharbours.com Project ID: Test 789 PO #:		Turnaround Time <input checked="" type="checkbox"/> Normal (10 business days) <input type="checkbox"/> Rush Note: Rush service not available for all tests. Confirm rush requests with InnoTech Alberta.	
Special Instructions/Comments Date Received – Lab Use Only <div style="border: 2px solid blue; padding: 5px; display: inline-block; text-align: center;"> RECEIVED FEB 14 2022 </div>					

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: 789	Canister	32210	04/02/22	00:00	VOC PAMS & TNMOC
2	PM10 Test Number: 789	PM10 filter	C9269724	05/02/22	00:00	FLT Particulate Weight
				04/02/22	00:00	
				05/02/22	00:00	

Client Authorization:  Laboratory Personnel: _____ (Signature)

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

Sample ID: 22020114-002 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: Filter # C9269724 - Test #: 789

Filter Shipping Record



Date: December 2/21

Sent To: Clean Harbours

PO Box 390

Ryley, AB T0B 4A0

(1/2 mile north, Hwy 854)

Todd Webb

780-663-2513

Project: Clean Harbours

Prepared by:

Todd Webb

Filter Size	# of Filters in Cassettes	Filter IDs
47 mm	1	C9269724

Returns: coolers, large and small containers may be shipped to: Innotech, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4



Canister ID: 32210

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISO 4 on: DEC 03 2021

Evacuated: DEC 06 2021 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: Test 789

Sampled By: T. Webb

Starting Vacuum:

-27.2 "Hg

End Vacuum: ~~KG~~

-3 "Hg/psig

Sample ID: 22020114-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: 32210

Sample ID: 22020114-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: 32210

From: Webb, Todd <Webb.Todd@cleanharbors.com>
Sent: February-17-22 1:24 PM
To: Environmental Analytical Services Reception
Subject: Clean Harbors Ryley - Test 789 PO

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

Hi
Please use PO 223069 for Test 789, I believe you received this sample earlier this week or later last week

Thank you

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





Sample ID 22020172-001 Priority: Normal
 Environmental Analytical Services
 Highway 16A & 75 Street
 Vegreville, AB T9C 1T4

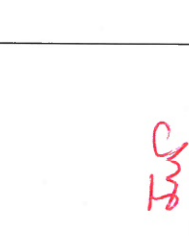
Phone: 780-632-8403
 Email: EAS.Reception@innotechalberta.ca
www.innotechalberta.ca

Client Reporting Information
 Company: Clean Harbors 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.Robbj@cleanharbors.com
 Project ID: Test 790
 PO #: 223069

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
1	VOCs and TNMOC Test Number: 790	Canister	32213	16/02/22	00:00	VOC PAMS & TNMOC
2	PM10 Test Number: 790	PM10 filter	C9269723	17/02/22	00:00	FLT Particulate Weight
				16/02/22	00:00	
				17/02/22	00:00	

add bill
 (Signature)

Client Authorization: _____
 Laboratory Personnel: _____
 (Signature)

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

Sample ID 22020172-002 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: Fil # C9269723, PM Test # 790

Filter Shipping Record

Sent To: Clean Harbors
 PO Box 390
 Ryley, AB T0B 4A0
 (1/2 mile north, Hwy 854)
 Todd Webb
 780-663-2513

Date: December 2/21

Project: Clean Harbors

Prepared by:




Filter Size	# of Filters in Cassettes	Filter IDs
47 mm	1	C9269723

Returns: coolers, large and small containers may be shipped to: Innotech, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4



Canister ID: 32213

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: LSY on: DEC 08 2021

Evacuated: DEC 09 2021 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: Test 790

Sampled By: T. Webb

-4" Hg JWP

End Vacuum: -3

Starting Vacuum: -27.0 "Hg

"Hg/psig

Sample ID 22020172-001 Priority: Normal



Customer ID: Clean Harbours

Cust Samp ID: VOCs and TNMOC Test # 790

CHAIN OF CUSTODY FORM

Sample ID: 22030028-001 Priority: Normal



Customer ID: Clean Harbours

Test Samp ID: VOCs and TNMOC Test # 791

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@cleanharbours.com,
Yuha.Stan@cleanharbours.com

Client Billing Information

Contact: Robbi Gooding
Phone: 780-663-3828
Email: Gooding.Robbj@cleanharbours.com
Project ID: Test 791
PO #: 223069

Turnaround Time

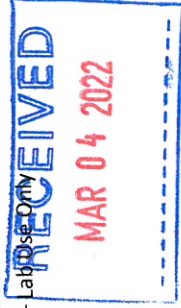
X Normal (10 business days)

Rush

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

Special Instructions/Comments

Date Received -



Lab 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: 791	Canister	29029	28/02/22 01/03/22	00:00 00:00	VOC PAMS & TNMOC
2	PM10 Test Number: 791	PM10 filter	C9269722	28/02/22 01/03/22	00:00 00:00	FLT Particulate Weight

Client Authorization: _____

[Signature]
(Signature)

Laboratory Personnel: _____

(Signature)

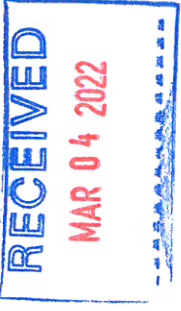
This "Chain of Custody" form is subject to InnoTech Alberta standard terms and conditions.

Sample ID: 22030028-002 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: Filter # C9269722 - Test #: 791

Filter Shipping Record



Sent To: Clean Harbors
PO Box 390
Ryley, AB T0B 4A0
(1/2 mile north, Hwy 854)
Todd Webb
780-663-2513

Date: December 2/21
Project: Clean Harbors
Prepared by: [Signature]


Filter Size	# of Filters in Cassettes	Filter IDs
47 mm	1	C9269722

Returns: coolers, large and small containers may be shipped to: Innotech, PO Bag 4000, HWY 16A & 75th Street, Vegreville, AB T9C 1T4

Sample ID: 22030028-001 Priority: Normal



Customer ID: Clean Harbours
Cust Samp ID: VOCs and TNMOC Test # 791

 This cleaned canister meets or exceeds TO-15 Method Specifications	Canister ID: <u>29029</u>	Sample ID: <u>Test 791</u>
	Proofed by: <u>ISO4</u> on: <u>DEC 10 2021</u>	Sampled By: <u>T. Webb</u>
Evacuated: <u>DEC 15 2021</u> Recertified: <u>JAN 10 2022</u>	Starting Vacuum: <u>-27.3</u> "Hg	
<small>(Use within: 3 months from evacuation or recertification date) Laboratory Contact Number: 780-632-8403</small>		