Lakeland Industry & Community Association

MARCH 2023

Monthly Ambient Air Quality Monitoring Integrated Sampling Report

LICA-202303-INTEGRATED

April 24, 2023

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April 24, 2023

Alberta Environment and Protected Areas (EPA)
11th Floor, Oxbridge Place
9820 106 Street
Edmonton, AB, T5K 2J6

RE: LICA –March 2023 Monthly Ambient Air Quality Monitoring Integrated Sampling Report

Enclosed is the March 2023 Monthly Ambient Air Quality Monitoring Integrated Sampling Report for the Lakeland Industry and Community Association's (LICA) regional air quality monitoring network. This report summarizes monitoring data for samples collected using integrated methods including volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polycyclic aromatic compounds (PAHs), particulate matter ($PM_{2.5}$ and $PM_{2.5-10}$), ozone (O_3), hydrogen sulphide (H_2S), sulphur dioxide (SO_2), nitrogen dioxide (NO_2), ammonia (NH_3) and nitric acid (HNO_3).

The representative of the Person Responsible for this monitoring program is

LICA Airshed
Michael Bisaga, Monitoring Programs Manager
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This report has been prepared, reviewed and submitted by Michael Bisaga & Lily Lin of the LICA Airshed.

NETWORK STATION SUMMARY

Listing of Air Monitoring Stations and Integrated Sampling Stations

Station Name	Cold Lake South
Station ID	1174
Coordinates	54.41402, -110.23316
VOCs	√
PAHs	√
Partisol	√
Passive	√

Listing of Passive Sampling Stations

Site ID	Name	Latitude	Longitude
2	Sand River	54.53658	-111.20898
3	Therien	54.31085	-111.22607
4	Flat Lake	54.07262	-111.20510
5	Lake Eliza	53.82417	-111.16605
6	Telegraph Creek	53.74068	-110.57655
8	Muriel-Kehewin	54.09340	-110.74437
9	Dupre	54.33462	-110.77965
10	La Corey	54.49967	-110.81792
11	Wolf lake	54.698845	-110.769700
12	Foster Creek	55.03343	-110.50453
13	Primrose	54.75848	-110.45217
14	Tamarack (formerly Maskwa)	54.60518	-110.45263
15	Ardmore	54.40670	-110.46202
16	Frog Lake	53.89065	-110.38418
17	Clear Range	53.55648	-110.15423
18	Fishing Lake	53.90295	-110.07623
19	Beaverdam	54.16925	-110.23285
22	Cold Lake South (1)	54.41370	-110.23285
23	Medley-Martineau	54.72430	-110.06618
24	Fort George	53.87830	-110.74807
25	Burnt Lake	54.79104	-110.33424
26	Mahihkan	54.63738	-110.57538
27	Mahkeses	54.59014	-110.38028
28	Town of Bonnyville	54.27530	-110.74065
29	Cold Lake South (2)	54.41385	-110.23283
32	St. Lina	54.21639	-111.50295
42	Lac La Biche	54.76516	-111.971449

Listing of Passive Aromatic Compounds Stations

Site ID	Name	Latitude	Longitude
9	Dupre	54.33462	-110.77965
10	La Corey	54.49967	-110.81792
15	Ardmore	54.40670	-110.46202
18	Fishing Lake	53.90295	-110.07623
24	Fort George	53.87830	-110.74807
32	St. Lina	54.21639	-111.50295

List of Contractors who performed the air monitoring activities

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Prepared By	Electronic Submission Conducted By
Intermittent (VOCs/PAHs)	Bureau Veritas	InnoTech Alberta Inc	LICA	LICA
Intermittent (PACs)	Bureau Veritas	ECCC	AEP	AEP
Partisols	Bureau Veritas	InnoTech Alberta Inc	LICA	LICA
Passives	Bureau Veritas	Bureau Veritas	LICA	LICA
NMHC Canisters	Bureau Veritas	InnoTech Alberta Inc	LICA	Not Applicable

Monitoring Notes during the Month of March 2023

Cold Lake South Station

- **Volatile Organic Compounds (VOCs)**
  - Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
  - The VOC sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Six samples were collected this month: on March 1, 7, 13, 19, 25 and 31.
- **Polycyclic Aromatic Hydrocarbons (PAHs)**
  - The PUF sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Six samples were collected this month: on March 1, 7, 13, 19, 25 and 31.
- **Partisols**
  - Measured parameters were below Alberta Ambient Air Quality Objectives (AAAQOs) where applicable.
  - The Partisol sampler is programed to collect a 24-hour sample of air every sixth day as per the North American Pollution Surveillance schedule (NAPS).
  - Six samples were collected this month: on March 1, 7, 13, 19, 25 and 31.

- **Passives**
    - There were no exceedances of the AAAQOs for all monitored parameters at any of the passive stations during this month.
    - The passive sample filters were installed at the stations February 27 and March 1, and were removed between March 30 and April 1.
    - A total of 13 duplicate samples were collected: 2 for H2S, 3 for SO2, 2 for NO2, 2 for O3, 2 for NMH3 and 2 for HNO3.
    - A total of 6 blank samples were collected: 3 for NMH3 and 3 for HNO3.
    - No samples were collected at station 25. The field technician has not completed the necessary safety orientation for the CNRL Primrose/Burnt Lake site and access is not permitted at this time.

Lac La Biche Station

- **Non-methane Hydrocarbons (NMHC) Canisters**
    - The canister sampling program collects a 1-hour sample of air when the continuously measured non-methane hydrocarbon (NMHC) concentration reaches a specified trigger point. The current trigger point is 0.3 ppm, and is based on real-time monitoring data that are averaged over a 5-minute period.
    - There were no canisters collected this month.

Passive polycyclic aromatic compounds (PACs) Stations

- The PAC sampling program began in December 2019, and is designed to collect a 2-month integrated sample.
- The media for the March/April monitoring period were between February 27 and March 1, and they are scheduled to be removed by the end of April.

Revisions to Alberta's Ambient Air Quality Data Warehouse

No revisions to historical data previously submitted to the Alberta's Ambient Air Quality Data Warehouse were made this month.

Deviations from Authorized Monitoring Methods

There were no deviations from authorized monitoring methods.

Certification

The report was prepared and submitted by Lily Lin in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

Lily Lin
Data & Reporting Specialist
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monitoring@lica.ca

The report was reviewed by Mike Bisaga in accordance with Chapter 9 of the Air Monitoring Directive (AMD 2016).

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. I also certify that at the time of this report's submission, all air data have been electronically uploaded to Alberta ETS as required by the AMD.

Michael Bisaga
Monitoring Programs Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca

INTEGRATED SAMPLING RESULTS SUMMARY

COLD LAKE SOUTH STATION

- **VOCs analytical results**

Sample Date	2023-03-01	2023-03-07	2023-03-13	2023-03-19
Canister ID	32224	32275	29026	28966
Maximum Reading (ppbv)	1.4	1.6	1.6	7.55
Parameter	Acetone	Acetone	Acetone	n-Butane
Sample Date	2023-03-25	2023-03-31		
Canister ID	29004	32247		
Maximum Reading (ppbv)	1.7	3.5		
Parameter	Acetone	Acetone		

- **PAHs analytical results**

Sample Date	2023-03-01		2023-03-07		2023-03-13		2023-03-19	
PUF S/N	P13-01		TE-12		TE-05		9802	
Volume (Vstd m^3)	330.42		330.41		330.44		330.41	
Maximum Reading	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3
	0.17	0.51	0.39	1.18	0.40	1.21	0.23	0.70
Parameter	Naphthalene		Naphthalene		Phenanthrene		Phenanthrene	
Sample Date	2023-03-25		2023-03-31					
PUF S/N	TE-11		TE-06					
Volume (Vstd m3)	330.42		330.42					
Maximum Reading	ug	ng/m3	ug	ng/m3				
	0.15	0.45	0.10	0.30				
Parameter	2-Methylnaphthalene		Phenanthrene					

- **Partisol analytical results**
  - **$PM_{2.5}$**

Sample Date	2023-03-01		2023-03-07		2023-03-13		2023-03-19	
Filter #	C1165517		C1165515		C1165507		C1165543	
Volume (Vstd m^3)	22.9		23.7		22.9		22.6	
Result	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
Particulate Matter	0.034	0.001	0.009	0.000	0.055	0.002	0.078	0.003

Sample Date	2023-03-25		2023-03-31	
Filter #	C1165513		C1165541	
Volume (Vstd m^3)	22.7		22.0	
Result	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
Particulate Matter	0.072	0.003	0.104	0.005

  - **$PM_{2.5-10}$**

Sample Date	2023-03-01		2023-03-07		2023-03-13		2023-03-19	
Filter #	C1165518		C1165516		C1165508		C1165544	
Volume (Vstd m^3)	2.56		2.64		2.55		2.51	
Result	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
PM2.5-10 Mass	0.022	0.009	<0.004	0.000	<0.004	0.000	0.007	0.003

Sample Date	2023-03-25		2023-03-31	
Filter #	C1165514		C1165542	
Volume (Vstd m^3)	2.52		2.45	
Result	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)
PM2.5-10 Mass	0.026	0.010	0.084	0.034

- **Passive analytical results**

	H_2S		NO_2		O_3		SO_2		NM3		HNO3	
	Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ppb)		Unit (ug/m3)	
Minimum	0.06	#42	0.2	#11	30.7	#29	0.3	#23	0.4	#23	0.09	#27
Maximum	0.24	#26	5.0	#6	50.1	#3	1.3	#27	3.1	#3	2.75	#32
Average	0.12	-	0.89	-	37.50	-	0.64	-	1.22	-	0.61	-

LAC LA BICHE STATION

- **NMHC canister sample analytical results**

No canister events were recorded this month.

ANALYTICAL SAMPLING RESULTS

COLD LAKE SOUTH STATION

VOCS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - March 2023

Volatile Organic Compounds (VOCs) Results

Sample Date		2023-03-01	2023-03-07	2023-03-13	2023-03-19	2023-03-25	2023-03-31	
Canister ID		32224	32275	29026	28966	29004	32247	
Method		AC-058	AC-058	AC-058	AC-058	AC-058	AC-058	
Maximum Reading (ppbv)		1.4	1.6	1.6	7.55	1.7	3.5	
Parameter		Acetone	Acetone	Acetone	n-Butane	Acetone	Acetone	
Parameter	**AAAQOs (ppbv)**	**Result (ppbv)**	**Result (ppbv)**	**Result (ppbv)**	**Result (ppbv)**	**Result (ppbv)**	**Result (ppbv)**	**RDL (ppbv)**
1,1,1-Trichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1,2,2-Tetrachloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1,2-Trichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,1-Dichloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
1,2,3-Trimethylbenzene		< 0.05	< 0.05	0.08	0.08	0.09	< 0.05	0.05
1,2,4-Trichlorobenzene		< 0.3	< 0.3	< 0.3	< 0.3	0.80	< 0.3	0.8
1,2,4-Trimethylbenzene		< 0.03	< 0.03	0.07	0.07	< 0.03	< 0.03	0.05
1,2-Dibromoethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
1,2-Dichlorobenzene		< 0.03	< 0.03	< 0.03	0.07	0.08	< 0.03	0.03
1,2-Dichloroethane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
1,2-Dichloropropane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
1,3,5-Trimethylbenzene		< 0.03	< 0.03	0.03	0.03	< 0.03	< 0.03	0.02
1,3-Butadiene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
1,3-Dichlorobenzene		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.3
1,4-Dichlorobenzene		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4
1,4-Dioxane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.4
1-Butene		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.02
1-Hexene		< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	< 0.07	0.02
1-Pentene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
2,2,4-Trimethylpentane		< 0.02	< 0.02	0.02	0.08	< 0.02	< 0.02	0.01
2,2-Dimethylbutane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2,3,4-Trimethylpentane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2,3-Dimethylbutane		< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.02
2,3-Dimethylpentane		< 0.02	< 0.02	0.02	0.09	< 0.02	< 0.02	0.02
2,4-Dimethylpentane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
2-Methylheptane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
2-Methylhexane		< 0.03	< 0.03	< 0.03	0.03	< 0.03	< 0.03	0.01
2-Methylpentane		0.04	< 0.02	0.05	0.1	0.04	< 0.02	0.01
3-Methylheptane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
3-Methylhexane		< 0.02	< 0.02	0.02	0.04	< 0.02	< 0.02	0.02
3-Methylpentane		0.03	< 0.02	0.03	0.08	< 0.02	0.03	0.01
Acetone	2400	1.4	1.6	1.5	3.0	1.7	3.5	0.4
Acrolein	1.9	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.3
Benzene	9.0	0.09	0.06	0.07	0.12	0.05	0.08	0.01
Benzyl chloride		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Bromodichloromethane		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
Bromoform		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Bromomethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Carbon disulfide	10	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Carbon tetrachloride		0.07	0.08	0.06	0.06	0.05	0.05	0.01
Chlorobenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Chloroethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Chloroform		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Chloromethane		0.67	0.77	0.53	0.57	0.42	0.62	0.02
cis-1,2-Dichloroethene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
cis-1,3-Dichloropropene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.04
cis-2-Butene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02
cis-2-Pentene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Cyclohexane		< 0.04	< 0.04	< 0.04	< 0.04	0.04	0.05	0.02
Cyclopentane		< 0.02	< 0.02	< 0.02	0.02	0.02	< 0.02	0.01
Dibromochloromethane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Ethanol		0.9	1.4	1.6	4.1	1.2	1.4	0.3
Ethyl acetate		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Ethylbenzene	460	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
Freon-11		0.28	0.32	0.25	0.26	0.20	0.25	0.02
Freon-113		0.08	0.09	0.05	0.06	0.05	0.04	0.01
Freon-114		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.02

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - March 2023

Volatile Organic Compounds (VOCs) Results

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Method		AC-058	AC-058	AC-058	AC-058	AC-058	AC-058
Maximum Reading (ppbv)		1.4	1.6	1.6	7.55	1.7	3.5
Parameter		Acetone	Acetone	Acetone	n-Butane	Acetone	Acetone

Parameter	AAAQOs (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	Result (ppbv)	RDL (ppbv)
Freon-12		0.65	0.74	0.6	0.64	0.43	0.60	0.02
Hexachloro-1,3-butadiene		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.5
Isobutane		0.65	0.35	0.42	1.82	0.18	0.39	0.02
Isopentane		0.46	0.23	0.37	1.57	0.19	0.20	0.03
Isoprene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.01
Isopropyl alcohol		< 0.3	< 0.3	< 0.3	0.3	< 0.3	0.8	0.4
Isopropylbenzene		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
m,p-Xylene		< 0.04	< 0.04	< 0.04	0.06	< 0.04	< 0.04	0.03
m-Diethylbenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
m-Ethyltoluene		< 0.03	< 0.03	< 0.03	< 0.03	0.04	< 0.03	0.08
Methyl butyl ketone		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.5
Methyl ethyl ketone		< 0.3	< 0.3	< 0.3	0.4	< 0.3	0.4	0.3
Methyl isobutyl ketone		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Methyl methacrylate		< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	0.07
Methyl tert butyl ether		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03
Methylcyclohexane		< 0.02	< 0.02	< 0.02	0.03	0.07	< 0.02	0.01
Methylcyclopentane		< 0.05	< 0.05	< 0.05	0.07	0.1	< 0.05	0.02
Methylene chloride		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.3
n-Butane		1.05	0.59	0.71	7.55	0.26	0.64	0.03
n-Decane		< 0.06	< 0.06	< 0.06	< 0.06	0.08	< 0.06	0.06
n-Dodecane		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
n-Heptane		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
n-Hexane	5960	0.05	< 0.03	0.04	0.07	< 0.03	0.08	0.01
n-Nonane		< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.01
n-Octane		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
n-Pentane		0.26	0.06	0.18	0.44	0.11	0.1	0.1
n-Propylbenzene		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.05
n-Undecane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5
Naphthalene		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.5
o-Ethyltoluene		< 0.02	< 0.02	< 0.02	0.03	0.03	< 0.02	0.01
o-Xylene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
p-Diethylbenzene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
p-Ethyltoluene		< 0.04	< 0.04	0.05	0.05	< 0.04	< 0.04	0.07
Styrene	52.0	< 0.04	< 0.04	0.06	0.07	0.08	< 0.04	0.04
Tetrachloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
Tetrahydrofuran		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Toluene	499	< 0.03	< 0.03	< 0.03	0.09	< 0.03	< 0.03	0.01
trans-1,2-Dichloroethylene		< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.01
trans-1,3-Dichloropropylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
trans-2-Butene		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.01
trans-2-Pentene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02
Trichloroethylene		< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.04
Vinyl acetate		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	0.4
Vinyl chloride	51	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.02

PAHS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - March 2023

Polycyclic Aromatic Hydrocarbons (PAHs) Results

Sample Date	2023-03-01		2023-03-07		2023-03-13		2023-03-19		2023-03-25		2023-03-31		
PUF S/N	P13-01		TE-12		TE-05		9802		TE-11		TE-06		
Volume (Vstd m^3)	330.42		330.41		330.44		330.41		330.42		330.42		
Method	AC-066		AC-066		AC-066		AC-066		AC-066		AC-066		
Maximum Reading	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	ug	ng/m3	
	0.17	0.51	0.39	1.18	0.40	1.21	0.23	0.70	0.15	0.45	0.10	0.30	
Parameter	Naphthalene		Naphthalene		Naphthalene		Phenanthrene		2-Methylnaphthalene		Phenanthrene		

Parameter	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	Result (ug)	Result (ng/m^3)	RDL (ug)
1-Methylnaphthalene	0.14	0.42	0.22	0.67	0.05	0.15	0.04	0.12	0.09	0.27	0.04	0.12	0.01
2-Methylnaphthalene	0.16	0.48	0.26	0.79	0.09	0.27	0.08	0.24	0.15	0.45	0.08	0.24	0.01
3-Methylcholanthrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
7,12-Dimethylbenz(a)anthracene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Acenaphthene	0.02	0.06	0.07	0.21	0.06	0.18	0.03	0.09	0.03	0.09	0.02	0.06	0.01
Acenaphthylene	< 0.01	0.00	0.08	0.24	0.01	0.03	< 0.01	0.00	0.01	0.03	0.01	0.03	0.01
Acridine	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Anthracene	< 0.01	0.00	0.01	0.03	0.02	0.06	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(a)anthracene	0.02	0.06	0.02	0.06	0.02	0.06	0.02	0.06	0.02	0.06	0.01	0.03	0.01
Benzo(a)pyrene	< 0.01	0.00	< 0.01	0.00	0.01	0.03	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.01
Benzo(b,j,k)fluoranthene	0.02	0.06	0.02	0.06	0.03	0.09	0.03	0.09	0.02	0.06	< 0.01	0.00	0.01
Benzo(c)phenanthrene	< 0.01	0.00	< 0.01	0.00	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.01	0.03	0.01
Benzo(e)pyrene	0.02	0.06	0.02	0.06	0.01	0.03	0.02	0.06	0.01	0.03	< 0.01	0.00	0.01
Benzo(ghi)perylene	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.02	0.06	< 0.01	0.00	< 0.01	0.00	0.01
Chrysene	0.03	0.09	0.03	0.09	0.02	0.06	0.03	0.09	0.01	0.03	< 0.01	0.00	0.01
Dibenzo(a,h)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(a,i)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Dibenzo(a,l)pyrene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.02	0.06	0.01	0.03	< 0.01	0.00	0.01
Dibenzo(ah)anthracene	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.03	0.09	0.02	0.06	< 0.01	0.00	0.01
Fluoranthene	0.04	0.12	0.07	0.21	0.19	0.57	0.08	0.24	0.04	0.12	0.02	0.06	0.01
Fluorene	0.09	0.27	0.13	0.39	0.13	0.39	0.12	0.36	0.08	0.24	0.05	0.15	0.01
Indeno(1,2,3-cd)pyrene	0.02	0.06	0.01	0.03	< 0.01	0.00	0.01	0.03	< 0.01	0.00	< 0.01	0.00	0.01
Naphthalene	0.17	0.51	0.39	1.18	0.10	0.30	0.06	0.18	0.12	0.36	0.06	0.18	0.01
Perylene	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	< 0.01	0.00	0.01
Phenanthrene	0.16	0.48	0.26	0.79	0.40	1.21	0.23	0.70	0.13	0.39	0.10	0.30	0.01
Pyrene	0.02	0.06	0.04	0.12	0.12	0.36	0.06	0.18	0.04	0.12	0.02	0.06	0.01
Retene	0.02	0.06	0.06	0.18	0.10	0.30	0.11	0.33	0.03	0.09	< 0.01	0.00	0.01

PARTISOLS

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - March 2023

Partisol Results - $PM_{2.5}$

Sample Date		2023-03-01		2023-03-07		2023-03-13		2023-03-19		2023-03-25		2023-03-31		
Filter #		C1165517		C1165515		C1165507		C1165543		C1165513		C1165541		
Volume (Vstd m^3)		22.9		23.7		22.9		22.6		22.7		22.0		
Method		AC-029		AC-029		AC-029		AC-029		AC-029		AC-029		
Parameter	**AAAQO (mg/m3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**Result (mg)**	**Result (mg/m^3)**	**RDL (mg)**
Particulate Matter	0.029	**0.034**	**0.001**	**0.009**	**0.000**	**0.055**	**0.002**	**0.078**	**0.003**	**0.072**	**0.003**	**0.104**	**0.005**	0.004
PM2.5 Mass in ug/m3			**1.485**		**0.380**		**2.402**		**3.451**		**3.172**		**4.727**	
RDL in ug/m3			**0.175**		**0.169**		**0.175**		**0.177**		**0.176**		**0.182**	

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Station - March 2023

Partisol Results -$PM_{2.5}$-PM_{10}

Sample Date	2023-03-01		2023-03-07		2023-03-13		2023-03-19		2023-03-25		2023-03-31		
Filter #	C1165518		C1165516		C1165508		C1165544		C1165514		C1165542		
Volume (Vstd m^3)	2.56		2.64		2.55		2.51		2.52		2.45		
Method	AC-029		AC-029		AC-029		AC-029		AC-029		AC-029		
Parameter	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	Result (mg)	Result (mg/m^3)	RDL (mg)
PM2.5-10 Mass	0.022	0.009	<0.004	0.000	<0.004	0.000	0.007	0.003	0.026	0.010	0.084	0.034	0.004

PM2.5-10 Mass in ug/m3	8.594	1.515	1.569	2.789	10.317	34.286
RDL in ug/m3	1.563	1.515	1.569	1.594	1.587	1.633

PASSIVE SAMPLES

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

March 2023

Passive Results

		H_2S		NO_2		O_3		SO_2		NMH3		HNO3	
	Unit	**ppb**		**ppb**		**ppb**		**ppb**		**ppb**		**ug/m3**	
	Minimum (ppb)	0.06	#42	0.2	#11	30.7	#29	0.3	#23	0.4	#23	0.09	#27
	Maximum (ppb)	0.24	#26	5.0	#6	50.1	#3	1.3	#27	3.1	#3	2.75	#32
	Average (ppb)	0.12	-	0.89	-	37.50	-	0.64	-	1.22	-	0.61	-
No.	**Station**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**	**Sample**	**Duplicate**
3	Therien	0.09		0.6		50.1		0.6		3.1		0.52	
4	Flat Lake	-		0.4		40.3		0.7		2.2		1.71	
5	Lake Eliza	0.12		0.6		40.0		0.6		1.1		0.36	
6	Telegraph Creek	-		5.0		40.9		0.6		2.3		0.65	
8	Muriel-Kehewin	-		0.4		41.8		0.7		1.7		0.32	
9	Dupre	-		0.7		40.8		0.5		1.0		0.15	
10	La Corey	0.10		1.4	1.7	36.0	36.3	0.5		0.5		0.45	
11	Wolf Lake	0.1		0.2	0.3	36.9	35.9	0.8		0.6		0.62	
12	Foster Creek	0.1		0.4		32.8		0.7		0.8		0.32	
13	Primrose	0.10		0.3		33.3		0.6		0.7		0.79	
14	Tamarack	0.16		0.8		34.3		0.5		0.7		0.52	
15	Ardmore	-		0.4		30.9		0.4		0.8		0.54	
16	Frog Lake	0.12		0.6		36.5		0.6		1.2		0.93	
17	Clear Range	0.15		0.4		42.9		1.0		3.0		0.26	
18	Fishing Lake	0.09		0.3		35.6		0.5		0.9		0.46	
19	Beaverdam	-		0.2		37.7		0.5		1.7		0.84	
22	Cold Lake South (1)	0.08		0.6		32.8		0.5		0.6		0.58	
23	Medley-Martineau	-		0.2		35.5		0.3		0.4		0.35	
24	Fort George	0.10		0.7		42.4		0.7		1.0		0.32	
25	Burnt Lake	Missing 1		-		-		Missing 1		-		-	
26	Mahihkan	0.24		-		-		1.2		0.8		0.61	
27	Mahkeses	0.22		-		-		1.3		0.8	0.7	0.09	0.12
28	Town of Bonnyville	0.1		3.0		34.3		0.4	0.4	1.0	0.9	0.49	0.92
29	Cold Lake South (2)	0.11		1.1		30.7		0.6	0.4	1.2		0.39	
32	St. Lina	0.08	0.09	0.6		40.3		0.8	0.6	1.2		2.75	
42	Lac La Biche	0.06	0.09	1.6		35.8		0.5		1.3		0.19	
BLANK -1		-		-		-		-		0.6		0.40	
BLANK -2		-		-		-		-		0.8		0.33	
BLANK -3		-		-		-		-		1.1		0.05	
Reportable Detection Limit (RDL)		**0.02**		**0.1**		**0.1**		**0.1**		**0.1**		**0.04**	

Note:

1 - : Sample collection was not required at the station.

2 Missing 1: Access to the station was not possible due to lack of permit to access the stations.

3 Blank (Duplicate): no duplicate sample was taken.

End of Report

Lakeland Industry & Community Association

MARCH 2023

Ambient Air Monitoring

Certified Laboratory Analysis Report

LAB-LICA-202303

Operation and Maintenance:
Bureau Veritas Canada

Data Validation and Analytical Report:
Bureau Veritas Canada and InnoTech Alberta

April 14, 2023

Table of Contents

Cold Lake South Station

Volatile Organic Compounds (VOCs) & Polycyclic Aromatic Hydrocarbons (PAHs) Samples

Sample ID: 23030092-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 1, 2023

RECEIVED
MAR 10 2023

Bureau Veritas

ple Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	32224
Station ID:	LICA 01	**Installation Date/Time (mst):**	Feb 24, 2023 @ 18:17
Sample ID:	LICA/VOC/CLS/Mar 1, 2023	**Removal Date/Time (mst):**	Mar 6, 2023 @ 15:30

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 1, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	18.1

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23030092-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 1, 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	P13-01
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Feb 24, 2023 @ 18:20
Field Sample ID:	LICA/PUF/CLS/Mar 1, 2023	**Removal Date/Time:**	Mar 6, 2023 @ 15:38

Sample Data Collection Information

Sample Date:	1-Mar-23	**Average Pressure (mmHg)**	708
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-9.9
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.42

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

Sample ID: 23030092-003 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 7, 2023

RECEIVED
MAR 10 2023

Bureau Veritas

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	32275
Station ID:	LICA 01	**Installation Date/Time (mst):**	Mar 6, 2023 @ 15:51
Sample ID:	LICA/VOC/CLS/Mar 7, 2023	**Removal Date/Time (mst):**	Mar 08, 2023 @ 17:25

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 7, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	19.0

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	**Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required**
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23030092-004 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 7, 2023

RECEIVED
MAR 10 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-12
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Mar 6, 2023 @ 15:53
Field Sample ID:	LICA/PUF/CLS/Mar 7, 2023	**Removal Date/Time:**	Mar 08, 2023 @ 17:31

Sample Data Collection Information

Sample Date:	7-Mar-23	**Average Pressure (mmHg)**	726
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-11.7
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.41

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: 32224

Proofed by: ISQ4 on: JAN 0 6 2023

Evacuated: JAN 1 7 2023 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 1, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: +18.1 "Hg/psig

InnoTech ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: PUF - 713 - 01

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 1 2023

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/ psig

InnoTech ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: 32275

Proofed by: ISQ4 on: JAN 2 3 2023

Evacuated: FEB 0 8 2023 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 7, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: +19.0 "Hg/psig

InnoTech ALBERTA

This cleaned canister meets or exceeds TO-15 Method Specifications

Canister ID: PUF - TE - 12

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 6, 2023

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Pressure: _____ "Hg/ psig

Sample ID: 23030092-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Mar 1, 2023

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Mar 1, 2023
Matrix: Air Filter
CANISTER ID: P13-01
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 01-Mar-23 0:00
DATE RECEIVED: 10-Mar-23
REPORT CREATED: 23-Mar-23
REPORT NUMBER: 23030092
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-002	1-Methylnaphthalene		0.14	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	2-Methylnaphthalene		0.16	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Acenaphthene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(a)anthracene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(b,j,k)fluoranthene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(e)pyrene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Benzo(ghi)perylene		0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Chrysene		0.03	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: March 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 1, 2023	P13-01	Air Filter	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Dibenzo(ah)anthracene		0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Fluoranthene		0.04	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Fluorene		0.09	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Indeno(1,2,3-cd)pyrene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Naphthalene		0.17	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Phenanthrene		0.16	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Pyrene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-002	Retene		0.02	ug/Filter	0.01	AC-066	14-Mar-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 7, 2023	TE-12	Air Filter	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-004	1-Methylnaphthalene		0.22	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	2-Methylnaphthalene		0.26	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Acenaphthene		0.07	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Acenaphthylene		0.08	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Anthracene		0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(a)anthracene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(b,j,k)fluoranthene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(e)pyrene		0.02	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Chrysene		0.03	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Fluoranthene		0.07	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Fluorene		0.13	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Indeno(1,2,3-cd)pyrene		0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Naphthalene		0.39	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Phenanthrene		0.26	ug/Filter	0.01	AC-066	14-Mar-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 7, 2023	TE-12	Air Filter	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-004	Pyrene		0.04	ug/Filter	0.01	AC-066	14-Mar-23
23030092-004	Retene		0.06	ug/Filter	0.01	AC-066	14-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 1, 2023	32224	Ambient Air	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Mar-23
23030092-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Mar-23
23030092-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	10-Mar-23
23030092-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	10-Mar-23
23030092-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 1, 2023	32224	Ambient Air	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	2-Methylpentane	I	0.04	ppbv	0.02	AC-058	10-Mar-23
23030092-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	3-Methylpentane	I	0.03	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Acetone		1.4	ppbv	0.4	AC-058	10-Mar-23
23030092-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Benzene	I	0.09	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Carbon tetrachloride	I	0.07	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Chloromethane		0.67	ppbv	0.04	AC-058	10-Mar-23
23030092-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 1, 2023	32224	Ambient Air	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Ethanol	I	0.9	ppbv	0.5	AC-058	10-Mar-23
23030092-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Freon-11		0.28	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Freon-113	I	0.08	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Freon-12		0.65	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Isobutane		0.65	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Isopentane		0.46	ppbv	0.04	AC-058	10-Mar-23
23030092-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	10-Mar-23
23030092-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 1, 2023	32224	Ambient Air	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	n-Butane		1.05	ppbv	0.02	AC-058	10-Mar-23
23030092-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	n-Hexane	I	0.05	ppbv	0.03	AC-058	10-Mar-23
23030092-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	n-Pentane		0.26	ppbv	0.04	AC-058	10-Mar-23
23030092-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Mar-23
23030092-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 1, 2023	32224	Ambient Air	01-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 7, 2023	32275	Ambient Air	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Mar-23
23030092-003	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-003	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Mar-23
23030092-003	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-003	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	10-Mar-23
23030092-003	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	10-Mar-23
23030092-003	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 7, 2023	32275	Ambient Air	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-003	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	3-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Acetone		1.6	ppbv	0.4	AC-058	10-Mar-23
23030092-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Benzene	I	0.06	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Carbon tetrachloride	I	0.08	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Chloromethane		0.77	ppbv	0.04	AC-058	10-Mar-23
23030092-003	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 7, 2023	32275	Ambient Air	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-003	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Ethanol		1.4	ppbv	0.5	AC-058	10-Mar-23
23030092-003	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Freon-11		0.32	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Freon-113	I	0.09	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Freon-12		0.74	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Isobutane		0.35	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Isopentane		0.23	ppbv	0.04	AC-058	10-Mar-23
23030092-003	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	10-Mar-23
23030092-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	10-Mar-23
23030092-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 7, 2023	32275	Ambient Air	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	n-Butane		0.59	ppbv	0.02	AC-058	10-Mar-23
23030092-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-003	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	n-Hexane	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	n-Pentane	I	0.06	ppbv	0.04	AC-058	10-Mar-23
23030092-003	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	10-Mar-23
23030092-003	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	10-Mar-23
23030092-003	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	10-Mar-23
23030092-003	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	10-Mar-23
23030092-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23
23030092-003	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 7, 2023	32275	Ambient Air	07-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030092 **REPORT CREATED:** 23-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030092-003	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	10-Mar-23
23030092-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	10-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 23, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030092	01	23-Mar-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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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Order Comments

Sample Comments

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: 23030199-001 Priority: Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 13, 2023

RECEIVED
MAR 23 2023

Bureau Veritas

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	29026
Station ID:	LICA 01	**Installation Date/Time (mst):**	Mar 8, 2023 @ 17:47
Sample ID:	LICA/VOC/CLS/Mar 13, 2023	**Removal Date/Time (mst):**	Mar 18, 2023 @ 17:28

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 13, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	18.6

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	**Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required**
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23030199-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 13, 2023

RECEIVED
MAR 23 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-05
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Mar 8, 2023 @ 17:49
Field Sample ID:	LICA/PUF/CLS/Mar 13, 2023	**Removal Date/Time:**	Mar 18, 2023 @ 17:34

Sample Data Collection Information

Sample Date:	13-Mar-23	**Average Pressure (mmHg)**	709
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-8.7
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.44

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 29026

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: NOV 2 1 2022

Evacuated: JAN 3 0 2023 Recertified: FEB 1 4 2023

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 13, 2023

Sampled By: Alex Yanupov

Starting Vacuum: -27.1 "Hg

End Vacuum: 17 KG 18.6 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-05 PUF

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 13, 2023

Sampled By: Alex Yanupov

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/psig

Sample ID: 23030199-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Mar 13, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Mar 13, 2023
Matrix: Air Filter
CANISTER ID: TE-05
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 13-Mar-23 0:00
DATE RECEIVED: 23-Mar-23
REPORT CREATED: 18-Apr-23
REPORT NUMBER: 23030199
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-002	1-Methylnaphthalene		0.05	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	2-Methylnaphthalene		0.09	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Acenaphthene		0.06	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Anthracene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(a)anthracene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(a)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(b,j,k)fluoranthene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(c)phenanthrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(e)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Chrysene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 13, 2023	TE-05	Air Filter	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Fluoranthene		0.19	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Fluorene		0.13	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Naphthalene		0.10	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Phenanthrene		0.40	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Pyrene		0.12	ug/Filter	0.01	AC-066	14-Apr-23
23030199-002	Retene		0.10	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 13, 2023	29026	Ambient Air	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,2,3-Trimethylbenzene	I	0.08	ppbv	0.05	AC-058	28-Mar-23
23030199-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	1,2,4-Trimethylbenzene	I	0.07	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,3,5-Trimethylbenzene	I	0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030199-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030199-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Mar-23
23030199-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030199-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Mar-23
23030199-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	2,2,4-Trimethylpentane	I	0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Mar-23
23030199-001	2,3-Dimethylpentane	I	0.02	ppbv	0.02	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 13, 2023	29026	Ambient Air	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	2-Methylpentane	I	0.05	ppbv	0.02	AC-058	28-Mar-23
23030199-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	3-Methylhexane	I	0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	3-Methylpentane	I	0.03	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Acetone		1.5	ppbv	0.4	AC-058	28-Mar-23
23030199-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Benzene	I	0.07	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Carbon tetrachloride	I	0.06	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Chloromethane		0.53	ppbv	0.04	AC-058	28-Mar-23
23030199-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 13, 2023	29026	Ambient Air	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Ethanol		1.6	ppbv	0.5	AC-058	28-Mar-23
23030199-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Freon-11		0.25	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Freon-113	I	0.05	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Freon-12		0.60	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Isobutane		0.42	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Isopentane		0.37	ppbv	0.04	AC-058	28-Mar-23
23030199-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030199-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030199-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030199-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	28-Mar-23
23030199-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Mar-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 13, 2023	29026	Ambient Air	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	n-Butane		0.71	ppbv	0.02	AC-058	28-Mar-23
23030199-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030199-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030199-001	n-Hexane	I	0.04	ppbv	0.03	AC-058	28-Mar-23
23030199-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	n-Pentane		0.18	ppbv	0.04	AC-058	28-Mar-23
23030199-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030199-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Mar-23
23030199-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030199-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	p-Ethyltoluene	I	0.05	ppbv	0.04	AC-058	28-Mar-23
23030199-001	Styrene	I	0.06	ppbv	0.04	AC-058	28-Mar-23
23030199-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030199-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030199-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030199-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 13, 2023	29026	Ambient Air	13-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030199 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030199-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030199-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030199	01	18-Apr-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23030215-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 19, 2023

RECEIVED
MAR 27 2023

Bureau Veritas

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	28966
Station ID:	LICA 01	**Installation Date/Time (mst):**	Mar 18, 2023 @ 17:45
Sample ID:	LICA/VOC/CLS/Mar 19, 2023	**Removal Date/Time (mst):**	Mar 23, 2023 @ 15:37

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 19, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	19.4

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	**Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required**
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23030215-002 Priority: Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 19, 2023

RECEIVED
MAR 27 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	9802
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Mar 18, 2023 @ 17:46
Field Sample ID:	LICA/PUF/CLS/Mar 19, 2023	**Removal Date/Time:**	Mar 23, 2023 @ 15:39

Sample Data Collection Information

Sample Date:	19-Mar-23	**Average Pressure (mmHg)**	712
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-2.3
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.41

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 28966

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: JAN 18 2023

Evacuated: FEB 08 2023 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 19, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: +19.4 "Hg/psig

InnoTech ALBERTA

Canister ID: PUF - 9802

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 19, 20

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/psig

Sample ID: 23030215-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Mar 19, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Mar 19, 2023
Matrix: Air Filter
CANISTER ID: 9802
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 19-Mar-23 0:00
DATE RECEIVED: 27-Mar-23
REPORT CREATED: 18-Apr-23
REPORT NUMBER: 23030215
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-002	1-Methylnaphthalene		0.04	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	2-Methylnaphthalene		0.08	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Acenaphthene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Acenaphthylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(a)anthracene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(a)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(b,j,k)fluoranthene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(e)pyrene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Benzo(ghi)perylene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Chrysene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 19, 2023	9802	Air Filter	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-002	Dibenzo(a,l)pyrene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Dibenzo(ah)anthracene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Fluoranthene		0.08	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Fluorene		0.12	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Indeno(1,2,3-cd)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Naphthalene		0.06	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Phenanthrene		0.23	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Pyrene		0.06	ug/Filter	0.01	AC-066	14-Apr-23
23030215-002	Retene		0.11	ug/Filter	0.01	AC-066	14-Apr-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 19, 2023	28966	Ambient Air	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,2,3-Trimethylbenzene	I	0.08	ppbv	0.05	AC-058	28-Mar-23
23030215-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	1,2,4-Trimethylbenzene	I	0.07	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	1,2-Dichlorobenzene	I	0.07	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,3,5-Trimethylbenzene	I	0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030215-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030215-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Mar-23
23030215-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030215-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Mar-23
23030215-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	2,2,4-Trimethylpentane	I	0.08	ppbv	0.02	AC-058	28-Mar-23
23030215-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Mar-23
23030215-001	2,3-Dimethylpentane	I	0.09	ppbv	0.02	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 19, 2023	28966	Ambient Air	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	2-Methylhexane	I	0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	2-Methylpentane	I	0.10	ppbv	0.02	AC-058	28-Mar-23
23030215-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	3-Methylhexane	I	0.04	ppbv	0.02	AC-058	28-Mar-23
23030215-001	3-Methylpentane	I	0.08	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Acetone		3.0	ppbv	0.4	AC-058	28-Mar-23
23030215-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Benzene	I	0.12	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Carbon tetrachloride	I	0.06	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Chloromethane		0.57	ppbv	0.04	AC-058	28-Mar-23
23030215-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Cyclohexane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 19, 2023	28966	Ambient Air	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-001	Cyclopentane	I	0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Ethanol		4.1	ppbv	0.5	AC-058	28-Mar-23
23030215-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Freon-11		0.26	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Freon-113	I	0.06	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Freon-12		0.64	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Isobutane		1.82	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Isopentane		1.57	ppbv	0.04	AC-058	28-Mar-23
23030215-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Isopropyl alcohol	I	0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030215-001	m,p-Xylene	I	0.06	ppbv	0.04	AC-058	28-Mar-23
23030215-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Mar-23
23030215-001	Methyl ethyl ketone	I	0.4	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	28-Mar-23
23030215-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	Methylcyclohexane	I	0.03	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Methylcyclopentane	I	0.07	ppbv	0.05	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 19, 2023	28966	Ambient Air	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	n-Butane		7.55	ppbv	0.02	AC-058	28-Mar-23
23030215-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030215-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030215-001	n-Hexane	I	0.07	ppbv	0.03	AC-058	28-Mar-23
23030215-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	n-Pentane		0.44	ppbv	0.04	AC-058	28-Mar-23
23030215-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030215-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Mar-23
23030215-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Mar-23
23030215-001	o-Ethyltoluene	I	0.03	ppbv	0.02	AC-058	28-Mar-23
23030215-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	p-Ethyltoluene	I	0.05	ppbv	0.04	AC-058	28-Mar-23
23030215-001	Styrene	I	0.07	ppbv	0.04	AC-058	28-Mar-23
23030215-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Toluene	I	0.09	ppbv	0.03	AC-058	28-Mar-23
23030215-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Mar-23
23030215-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Mar-23
23030215-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23
23030215-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 19, 2023	28966	Ambient Air	19-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030215 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030215-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Mar-23
23030215-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

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Revision History

Order ID	Ver	Date	Reason
23030215	01	18-Apr-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23030219-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 25, 2023

RECEIVED
MAR 28 2023

Bureau Veritas

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	29004
Station ID:	LICA 01	**Installation Date/Time (mst):**	Mar 23, 2023 @ 15:46
Sample ID:	LICA/VOC/CLS/Mar 25, 2023	**Removal Date/Time (mst):**	Mar 27, 2023 @ 14:23

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 25, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	16.7

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	**Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required**
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

Sample ID: 23030219-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 25, 2023

RECEIVED
MAR 28 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-11
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Mar 23, 2023 @ 15:48
Field Sample ID:	LICA/PUF/CLS/Mar 25, 2023	**Removal Date/Time:**	Mar 27, 2023 @ 14:25

Sample Data Collection Information

Sample Date:	25-Mar-23	**Average Pressure (mmHg)**	713
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-3.8
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.42

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 29004

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: JAN 0 6 2023

Evacuated: JAN 1 7 2023 Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 25, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: KG 16.7 "Hg/psig

InnoTech ALBERTA

Canister ID: TE-11

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: PUF on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 25, 2023

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/psig

Sample ID: 23030219-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Mar 25, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Mar 25, 2023
Matrix: Air Filter
CANISTER ID: TE-11
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 25-Mar-23 0:00
DATE RECEIVED: 28-Mar-23
REPORT CREATED: 18-Apr-23
REPORT NUMBER: 23030219
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-002	1-Methylnaphthalene		0.09	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	2-Methylnaphthalene		0.15	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Acenaphthene		0.03	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(a)anthracene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(b,j,k)fluoranthene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(e)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Chrysene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 25, 2023	TE-11	Air Filter	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-002	Dibenzo(a,l)pyrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Dibenzo(ah)anthracene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Fluoranthene		0.04	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Fluorene		0.08	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Naphthalene		0.12	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Phenanthrene		0.13	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Pyrene		0.04	ug/Filter	0.01	AC-066	14-Apr-23
23030219-002	Retene		0.03	ug/Filter	0.01	AC-066	14-Apr-23

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 25, 2023	29004	Ambient Air	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,2,3-Trimethylbenzene	I	0.09	ppbv	0.05	AC-058	29-Mar-23
23030219-001	1,2,4-Trichlorobenzene		0.8	ppbv	0.3	AC-058	29-Mar-23
23030219-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	1,2-Dichlorobenzene	I	0.08	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Mar-23
23030219-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Mar-23
23030219-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Mar-23
23030219-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Mar-23
23030219-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Mar-23
23030219-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	29-Mar-23
23030219-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 25, 2023	29004	Ambient Air	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	2-Methylpentane	I	0.04	ppbv	0.02	AC-058	29-Mar-23
23030219-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	3-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Acetone		1.7	ppbv	0.4	AC-058	29-Mar-23
23030219-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Benzene	I	0.05	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Carbon tetrachloride	I	0.05	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Chloromethane		0.42	ppbv	0.04	AC-058	29-Mar-23
23030219-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Cyclohexane	I	0.04	ppbv	0.04	AC-058	29-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 25, 2023	29004	Ambient Air	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-001	Cyclopentane	I	0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Ethanol		1.2	ppbv	0.5	AC-058	29-Mar-23
23030219-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Freon-11		0.20	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Freon-113	I	0.05	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Freon-12		0.43	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Isobutane		0.18	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Isopentane		0.19	ppbv	0.04	AC-058	29-Mar-23
23030219-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Isopropyl alcohol	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Mar-23
23030219-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Mar-23
23030219-001	m-Diethylbenzene	I, K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	m-Ethyltoluene	I	0.04	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Mar-23
23030219-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	29-Mar-23
23030219-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	Methylcyclohexane	I	0.07	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Methylcyclopentane	I	0.06	ppbv	0.05	AC-058	29-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 25, 2023	29004	Ambient Air	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	n-Butane		0.26	ppbv	0.02	AC-058	29-Mar-23
23030219-001	n-Decane	I	0.08	ppbv	0.06	AC-058	29-Mar-23
23030219-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Mar-23
23030219-001	n-Hexane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	n-Pentane		0.11	ppbv	0.04	AC-058	29-Mar-23
23030219-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Mar-23
23030219-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Mar-23
23030219-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Mar-23
23030219-001	o-Ethyltoluene	I	0.03	ppbv	0.02	AC-058	29-Mar-23
23030219-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Mar-23
23030219-001	Styrene	I	0.08	ppbv	0.04	AC-058	29-Mar-23
23030219-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Mar-23
23030219-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Mar-23
23030219-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23
23030219-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 25, 2023	29004	Ambient Air	25-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23030219 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030219-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Mar-23
23030219-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030219	01	18-Apr-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23040069-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 31, 2023

RECEIVED
APR 11 2023

Bureau Veritas

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client:	LICA	**Sampler S/N:**	6167
Location:	Cold Lake South	**Canister ID:**	32247
Station ID:	LICA 01	**Installation Date/Time (mst):**	Mar 27, 2023 @ 14:30
Sample ID:	LICA/VOC/CLS/Mar 31, 2023	**Removal Date/Time (mst):**	Apr 05, 2023 @ 14:31

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
March 31, 2023	0:00	23:59	24

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-27.1	19.6

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.00	4.89	27.5

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****
Final leak check deployment vacuum (in. Hg) =	n/a	@	n/a	mst	
Total leak rate =	n/a	psi over	n/a	minutes	
Timer reset to zero prior to sampling?	YES	(yes/no)			

Comments: n/a

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov

4) Make sure to SAVE changes

Sample ID: 23040069-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Mar 31, 2023

RECEIVED
APR 11 2023

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-06
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	Mar 27, 2023 @ 14:31
Field Sample ID:	LICA/PUF/CLS/Mar 31, 2023	**Removal Date/Time:**	Apr 05, 2023 @ 15:33

Sample Data Collection Information

Sample Date:	31-Mar-23	**Average Pressure (mmHg)**	704
Start Time (mst):	0:00	**Average Flow (Q_{std})**	229
End Time (mst):	23:59	**Average Tempurature (°C)**	-1.1
Elapsed Time (Hours):	24	**Volume (Vstd m^3)**	330.42

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	**YES**	NO
Average temperature appears correct?	**YES**	NO
Average pressure appears correct?	**YES**	NO
Any error messages? (if yes list below)	YES	**NO**
Sample duration 24 hours?	**YES**	NO
Other observations?		n/a

Deployed By:	Alex Yakupov
Collected By:	Alex Yakupov

InnoTech ALBERTA

Canister ID: 32247

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: ISQ4 on: SEP 15 2022

Evacuated: JAN 30 2023 Recertified: DEC 17 2023 FEB 14 2023

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/VOC/CLS/Mar 31, 2023

Sampled By: Alex Yakupov

Starting Vacuum: -27.1 "Hg

End Vacuum: KG -19.6 "Hg/psig

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Canister ID: TE-06

This cleaned canister meets or exceeds TO-15 Method Specifications

Proofed by: _____ on: _____

Evacuated: _____ Recertified: _____

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

Laboratory Contact Number: 780-632-8403

Sample ID: LICA/PUF/CLS/Mar 31, 2

Sampled By: Alex Yakupov

Starting Vacuum: _____ "Hg

End Vacuum: _____ "Hg/psig

Sample ID: 23040069-001 **Priority:** Normal

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Mar 31, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: LICA/PUF/CLS/Mar 31, 2023
Matrix: Air Filter
CANISTER ID: TE-06
PRIORITY: Normal
DESCRIPTION: Cold Lake South
DATE SAMPLED: 31-Mar-23 0:00
DATE RECEIVED: 11-Apr-23
REPORT CREATED: 24-Apr-23
REPORT NUMBER: 23040069
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-002	1-Methylnaphthalene		0.04	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	2-Methylnaphthalene		0.08	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Acenaphthene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Acenaphthylene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Acridine	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(a)anthracene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(c)phenanthrene		0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Chrysene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 24, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 31, 2023	TE-06	Air Filter	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Fluoranthene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Fluorene		0.05	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Naphthalene		0.06	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Perylene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Phenanthrene		0.10	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Pyrene		0.02	ug/Filter	0.01	AC-066	14-Apr-23
23040069-002	Retene	K, T, U	< 0.01	ug/Filter	0.01	AC-066	14-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 24, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 31, 2023	32247	Ambient Air	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,1-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-23
23040069-001	1,2,4-Trichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,2-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,2-Dichloropropane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-23
23040069-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-23
23040069-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-23
23040069-001	1-Butene/Isobutylene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Apr-23
23040069-001	1-Hexene/2-Methyl-1-pentene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Apr-23
23040069-001	1-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	2,2,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	2,2-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	2,3,4-Trimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	2,3-Dimethylbutane	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Apr-23
23040069-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 31, 2023	32247	Ambient Air	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-001	2,4-Dimethylpentane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	2-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	2-Methylhexane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	2-Methylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	3-Methylpentane	I	0.03	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Acetone		3.5	ppbv	0.4	AC-058	13-Apr-23
23040069-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Benzene	I	0.08	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Benzyl chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Carbon disulfide	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Carbon tetrachloride	I	0.05	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Chloromethane		0.62	ppbv	0.04	AC-058	13-Apr-23
23040069-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	cis-1,3-Dichloropropene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Cyclohexane	I	0.05	ppbv	0.04	AC-058	13-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 24, 2023

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 31, 2023	32247	Ambient Air	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-001	Cyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Ethanol		1.4	ppbv	0.5	AC-058	13-Apr-23
23040069-001	Ethyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Ethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Freon-11		0.25	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Freon-113	I	0.04	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Freon-114	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Freon-12		0.60	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Hexachloro-1,3-butadiene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Isobutane		0.39	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Isopentane		0.20	ppbv	0.04	AC-058	13-Apr-23
23040069-001	Isoprene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Isopropyl alcohol		0.8	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Isopropylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	m-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	m-Ethyltoluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Methyl butyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-23
23040069-001	Methyl ethyl ketone	I	0.4	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Methyl isobutyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Apr-23
23040069-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	Methylcyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Methylcyclopentane	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 24, 2023 Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 31, 2023	32247	Ambient Air	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	n-Butane		0.64	ppbv	0.02	AC-058	13-Apr-23
23040069-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Apr-23
23040069-001	n-Dodecane	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	n-Heptane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	n-Hexane	I	0.08	ppbv	0.03	AC-058	13-Apr-23
23040069-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	n-Pentane	I	0.10	ppbv	0.04	AC-058	13-Apr-23
23040069-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Apr-23
23040069-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-23
23040069-001	Naphthalene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	n-Nonane	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	o-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	p-Diethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	p-Ethyltoluene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-23
23040069-001	Tetrachloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Tetrahydrofuran	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Toluene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	trans-1,2-Dichloroethylene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-Apr-23
23040069-001	trans-1,3-Dichloropropylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	trans-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-23
23040069-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23
23040069-001	Trichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Mar 31, 2023	32247	Ambient Air	31-Mar-23 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 23040069 **REPORT CREATED:** 24-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040069-001	Vinyl acetate	K, T, U	< 0.3	ppbv	0.3	AC-058	13-Apr-23
23040069-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 24, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23040069	01	24-Apr-23	Report created

Methods

Method	Description
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-066	Polycyclic Aromatic Hydrocarbons from Air

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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.

Partisol Samples

Sample ID: 23030091-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165517

ol 2000i-D Sample Data Sheet

Date Sampled:	1-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165517	C1165518
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-10	
Pressure	704.9	
Std Volume (Instrument)	22.9	2.56

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 24-Feb-23

Removed by (Sign/Date) Alex Yakupov Date: 6-Mar-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23030091-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165518

ol 2000i-D Sample Data Sheet

RECEIVED
MAR 10 2023

Date Sampled:	7-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165515	C1165516
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-12	
Pressure	722.8	
Std Volume (Instrument)	23.7	2.64

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 6-Mar-23

Removed by (Sign/Date) Alex Yakupov Date: 8-Mar-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23030091-003 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165515

RECEIVED
MAR 10 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: Jan 6/23

Project: LICA/Bureau Veritas Labs

Prepared by:

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165517 → C1165518

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

Sample ID: 23030091-004 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165516

RECEIVED
MAR 10 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: Jan 6/23

Project: LICA/Bureau Veritas Labs

Prepared by: S Melenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165515 → C1165516

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

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C1165515	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 07-Mar-23 0:00
DATE RECEIVED: 10-Mar-23
REPORT CREATED: 15-Mar-23
REPORT NUMBER: 23030091
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030091-003	Particulate Weight		0.009	mg	0.004	AC-029	13-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: March 15, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165516		Air Filter	07-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23030091 **REPORT CREATED:** 15-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030091-004	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	13-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 15, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165517		Air Filter	01-Mar-23 0:00

DESCRIPTION: Cold Lake South - Fine - PM 2.5

REPORT NUMBER: 23030091 **REPORT CREATED:** 15-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030091-001	Particulate Weight		0.034	mg	0.004	AC-029	13-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 15, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165518		Air Filter	01-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23030091 **REPORT CREATED:** 15-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030091-002	Particulate Weight		0.022	mg	0.004	AC-029	13-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 15, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030091	01	15-Mar-23	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23030198-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165507

RECEIVED
MAR 23 2023

›l 2000i-D Sample Data Sheet

Date Sampled:	13-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165507	C1165508
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-9.7	
Pressure	707	
Std Volume (Instrument)	22.9	2.55

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 8-Mar-23

Removed by (Sign/Date) Alex Yakupov Date: 18-Mar-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23030198-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165508

RECEIVED
MAR 23 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: Jan 6/23

Project: LICA/Bureau Veritas Labs

Prepared by: S Melenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165507 → C1165508

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

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C1165507	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 13-Mar-23 0:00
DATE RECEIVED: 23-Mar-23
REPORT CREATED: 28-Mar-23
REPORT NUMBER: 23030198
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030198-001	Particulate Weight		0.055	mg	0.004	AC-029	24-Mar-23

Report certified by: Andrea Conner, Admin Assistant
On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: March 28, 2023
Inquiries: (780) 632 8403
E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202303

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165508		Air Filter	13-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23030198 **REPORT CREATED:** 28-Mar-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030198-002	Particulate Weight	K, T, U	< 0.004	mg	0.004	AC-029	24-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: March 28, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030198	01	28-Mar-23	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23030214-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165543

l 2000i-D Sample Data Sheet

RECEIVED
MAR 27 2023

Date Sampled:	19-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165543	C1165544
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-4.1	
Pressure	712	
Std Volume (Instrument)	22.6	2.51

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 18-Mar-23

Removed by (Sign/Date) Alex Yakupov Date: 23-Mar-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23030214-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165544

RECEIVED
MAR 27 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: January 31/23

Project: LICA/Bureau Veritas Labs

Prepared by:

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165543 → C1165544

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

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C1165543	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 19-Mar-23 0:00
DATE RECEIVED: 27-Mar-23
REPORT CREATED: 03-Apr-23
REPORT NUMBER: 23030214
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030214-001	Particulate Weight		0.078	mg	0.004	AC-029	30-Mar-23

Report certified by: Andrea Conner, Admin Assistant
On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 3, 2023
Inquiries: (780) 632 8403
E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202303

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165544		Air Filter	19-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23030214 **REPORT CREATED:** 03-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030214-002	Particulate Weight		0.007	mg	0.004	AC-029	30-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 3, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030214	01	03-Apr-23	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23030218-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165513

I 2000i-D Sample Data Sheet

RECEIVED
MAR 28 2023

Date Sampled:	25-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165513	C1165514
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-5.3	
Pressure	713	
Std Volume (Instrument)	22.7	2.52

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 23-Mar-23

Removed by (Sign/Date) Alex Yakupov Date: 27-Mar-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23030218-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165513

RECEIVED
MAR 28 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: Jan 6/23

Project: LICA/Bureau Veritas Labs

Prepared by: S Melenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165513 → C1165514

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

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	Matrix
C1165513	Air Filter

CANISTER ID:
PRIORITY: Normal
DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 25-Mar-23 0:00
DATE RECEIVED: 28-Mar-23
REPORT CREATED: 03-Apr-23
REPORT NUMBER: 23030218
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030218-001	Particulate Weight		0.072	mg	0.004	AC-029	30-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing
Date: April 3, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165514		Air Filter	25-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23030218 **REPORT CREATED:** 03-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23030218-002	Particulate Weight		0.026	mg	0.004	AC-029	30-Mar-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 3, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23030218	01	03-Apr-23	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

List of Analytical Method IDs within InnoTech's ISO/IEC 17025:2017 CALA Scope of Accreditation

Method ID	Description
AC-013	Mercury in Waters by Cold Vapor Atomic Fluorescence Detection (CVAFS)
AC-020	Ion Chromatographic Procedures using the Dionex ICS 3000 and 5000 Systems
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
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance
AC-035	Analysis of Glyphosate, Aminomethylphosphonic Acid and Glufosinate in Water
AC-038	Trace Metal Analysis of Water Samples by ICP-MS
AC-048	Specific Conductance (Conductivity Meter Method)
AC-049	pH (Meter Method)
AC-054	Alkalinity Total and Phenolphthalein
AC-058	Determination of Volatile Organic Compounds in Ambient Air by Gas Chromatography Mass Spectrometry
AC-060	Trace Metal Analysis of Soil Sediment and Industrial Waste Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-061	Trace Metal Analysis for Biological Samples by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
AC-065	Analysis of Naphthenic Acids in Water by HPLC-Orbitrap-MS analysis
AC-074	Pesticides in Water
AC-079	Alkylated PAH in Soil and Sediment
AC-080	Alkylated PAH in Water (SPE Extraction)
NA-006	Determination of BTEX, F1 Hydrocarbons and F2, F3 and F4 Hydrocarbons in Water
NA-024	Analysis of Reduced Sulfur Compounds in Air

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

Order Comments

Sample Comments

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: 23040068-001 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165541

l 2000i-D Sample Data Sheet

RECEIVED
APR 11 2023

Date Sampled:	31-Mar-23
Location:	Cold Lake South
Parameter:	PM 2.5 / PM 10
Start Time	0:00
End Time	23:59
Valid Time	24 hours
Total Time	24 hours
Status	Done

	FINE (1)	COURSE (2)
Filter Type:	47mm	47mm
Filter #:	C1165541	C1165542
Average Flow Rate	15	1.67
Sample Volume	21.6	2.41
Temperature	-0.3	
Pressure	704	
Std Volume (Instrument)	22	2.45

Comments: Weather Conditions, etc.

n/a

Install by (Sign/Date): Alex Yakupov Date: 27-Mar-23

Removed by (Sign/Date) Alex Yakupov Date: 5-Apr-23

Programming
1) Make sure system is in "Stop Mode"
2) Sample Setup >Apply EPA times (start at 00:00 for 24hrs)
3) Navigate to SAMPLE 1 and check/correct START and STOP date/time
4) Make sure to SAVE changes
5). Make sure system is left in WAIT mode

Sample ID: 23040068-002 **Priority:** Normal

Customer ID: LICA
Cust Samp ID: C1165542

RECEIVED
APR 11 2023

Filter Shipping Record

Sent To: R&B Moving Systems
3410-50 Street
Cold Lake, AB T9M 1S6
(Purolator Depot)
HFPO: Alex Yakupov, BV Labs
780-545-9363

Date: January 31/23

Project: LICA/Bureau Veritas Labs

Prepared by: A Melenka

For information contact:
EAS.Reception@albertainnovates.ca

Filter Size	# of Filters (in cassettes)	Filter IDs
47 mm	2	C1165541 → C1165542

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

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Lica Communal Mail
Lakeland Industry and Community Assn

INVOICE: Maria Cueva
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID: C1165541

Matrix: Air Filter

CANISTER ID:

PRIORITY: Normal

DESCRIPTION: Cold Lake South - Fine - PM 2.5

DATE SAMPLED: 31-Mar-23 0:00

DATE RECEIVED: 11-Apr-23

REPORT CREATED: 18-Apr-23

REPORT NUMBER: 23040068

VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040068-001	Particulate Weight		0.104	mg	0.004	AC-029	12-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

InnoTech's ISO/IEC 17025:2017 scope of accreditation can be located at https://directory.cala.ca// LAB-LICA-202303

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

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
C1165542		Air Filter	31-Mar-23 0:00

DESCRIPTION: Cold Lake South - Coarse - PM 10

REPORT NUMBER: 23040068 **REPORT CREATED:** 18-Apr-23 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
23040068-002	Particulate Weight		0.084	mg	0.004	AC-029	12-Apr-23

Report certified by: Andrea Conner, Admin Assistant On behalf of: Adam Malcolm, Manager, Chemical Testing

Date: April 18, 2023

Inquiries: (780) 632 8403 E-mail: EAS.Results@innotechalberta.ca

Revision History

Order ID	Ver	Date	Reason
23040068	01	18-Apr-23	Report created

Methods

Method	Description
AC-029	Procedure for the Equilibration and Weighing of Membrane Filters and PUFs on the Mettler Toledo Micro Balance

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AC-049	pH (Meter Method)
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PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

Order Comments

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

Sample Comments

Result Comments

Note:

1. Results relate only to items tested and apply to the sample as received.

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Passive Samples

Passive Sampler Field Sheet for LICA, Mar 2023 sample period

ID	SAMPLER						START		END		NOTES
							DATE	TIME	DATE	TIME	
3	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	17:16	Mar 30	16:05	
4	---	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	13:20	Mar 31	13:16	
5	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	14:40	Mar 31	14:20	
6	---	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	16:55	Mar 31	16:02	
8	---	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	12:10	Mar 31	12:14	
9	---	SO_2	NO_2	O_3	HNO3	NH3	Mar 1	11:57	Mar 30	12:44	
10	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Mar 1	19:34	Apr 1	16:00	
11	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Mar 1	18:25	Apr 1	15:25	
12	H2S	SO2	NO2	O3	HNO3	NH3	Mar 1	17:07	Apr 1	14:01	
13	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	15:25	Mar 30	19:26	
14	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	13:50	Mar 30	18:10	water isotope sample taken
15	---	SO_2	NO_2	O_3	HNO3	NH3	Mar 1	10:07	Mar 30	10:02	
16	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	19:45	Mar 31	19:31	
17	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	17:20	Mar 31	17:05	
18	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	18:45	Mar 31	18:38	
19	---	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	20:45	Mar 31	20:07	
22	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	10:16	Apr 1	17:02	
23	---	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	11:55	Mar 31	09:55	
24	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	15:22	Mar 31	15:10	
25	H2S	SO2	---	---							
26	H_2S	SO_2	---	---	HNO3	NH3	Feb 27	13:14	Mar 30	18:44	
27	H_2S	SO_2	---	---	HNO3	NH3	Feb 27	14:22	Mar 30	17:35	
28	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 28	21:10	Mar 30	12:02	
29	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	10:23			
32	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Feb 27	17:50	Mar 30	14:12	
42	H_2S	SO_2	NO_2	O_3	HNO3	NH3	Mar 1	14:26	Apr 1	11:15	
							DUPLICATES				
10	---	---	NO_2	O_3	---	---	Mar 1	19:34	Apr 1	16:00	
11	---	---	NO_2	O_3	---	---	Mar 1	18:25	Apr 1	15:25	
27	---	---	---	---	HNO3	NH3	Feb 27	14:22	Mar 30	17:35	
28	---	SO2	---	---	HNO3	NH3	Feb 28	21:10	Mar 30	12:02	
29	---	SO2	---	---	---	---	Feb 27	10:23	Apr 1	17:15	
32	H2S	SO2	---	---	---	---	Feb 27	17:50	Mar 30	14:12	
42	H2S	---	---	---	---	---	Mar 1	14:26	Apr 1	11:15	

28 NO_2 3 NH_3
33 SO_2 23 H_2S
32 HNO_3 28 O_3

Your Project #: MARCH 2023 PASSIVES
Site Location: BONNYVILLE, AB

Attention: Monitoring

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
PO BOX 8237
5107W- 50TH STREET
BONNYVILLE, AB
CANADA T9N 2J5

Report Date: 2023/04/19
Report #: R3324037
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C324520
Received: 2023/04/10, 10:30

Sample Matrix: Air
Samples Received: 61

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
H2S Passive Analysis	20	2023/04/17	2023/04/18	PTC SOP-00150	Passive H2S in ATM
HNO3 by Passive Sampler	30	2023/04/12	2023/04/13	PTC SOP-00288	Passive HNO3 in ATM
NH3 by Passive Sampler	30	2023/04/12	2023/04/18	PTC SOP-00157	ASTM D6919
NO2 Passive Analysis	25	2023/04/13	2023/04/18	PTC SOP-00148	Passive NO2 in ATM
O3 Passive Analysis	25	2023/04/17	2023/04/18	PTC SOP-00197	EPA 300 R2.1
SO2 Passive Analysis	28	2023/04/11	2023/04/18	PTC SOP-00149	Passive SO2 in ATM

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Belma Elefante
Customer Service Associate
19 Apr 2023 10:39:34

Please direct all questions regarding this Certificate of Analysis to:
Customer Service Passives,
Email: PassiveAir@bureauveritas.com
Phone# (780) 378-8500

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Branko Banjac, General Manager responsible for Alberta Petroleum laboratory operations.

Bureau Veritas Edmonton: 6744 - 50th Street T6B 3M9 Telephone (780) 378-8500 Fax (780) 378-8699

Bureau Veritas Job #: C324520
Report Date: 2023/04/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: MARCH 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BOQ364			BOQ365			BOQ366		
Sampling Date		2023/02/27 17:16			2023/02/28 13:20			2023/02/28 14:40		
	UNITS	3	RDL	QC Batch	4	RDL	QC Batch	5	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.09	0.02	A936367				0.12	0.02	A936367
Calculated NO2	ppb	0.6	0.1	A936562	0.4	0.1	A936562	0.6	0.1	A936562
Calculated O3	ppb	50.1	0.1	A936399	40.3	0.1	A936399	40.0	0.1	A936399
Calculated SO2	ppb	0.6	0.1	A932343	0.7	0.1	A932343	0.6	0.1	A932343
RDL = Reportable Detection Limit										

Bureau Veritas ID		BOQ367	BOQ368		BOQ369			BOQ370	BOQ371		
Sampling Date		2023/02/28 16:15	2023/02/28 12:10		2023/03/01 11:57			2023/03/01 19:34	2023/03/01 18:25		
	UNITS	6	8	QC Batch	9	RDL	QC Batch	10	11	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb							0.10	0.10	0.02	A936367
Calculated NO2	ppb	5.0	0.4	A936562	0.7	0.1	A936567	1.4	0.2	0.1	A936567
Calculated O3	ppb	40.9	41.8	A936399	40.8	0.1	A936399	36.0	36.9	0.1	A936399
Calculated SO2	ppb	0.6	0.7	A932343	0.5	0.1	A932343	0.5	0.8	0.1	A932343
RDL = Reportable Detection Limit											

Bureau Veritas ID		BOQ372	BOQ373	BOQ374			BOQ375		
Sampling Date		2023/03/01 17:07	2023/02/27 15:25	2023/02/27 13:50			2023/03/01 10:07		
	UNITS	12	13	14	RDL	QC Batch	15	RDL	QC Batch
Passive Monitoring									
Calculated H2S	ppb	0.10	0.10	0.16	0.02	A936367			
Calculated NO2	ppb	0.4	0.3	0.8	0.1	A936567	0.4	0.1	A936567
Calculated O3	ppb	32.8	33.3	34.3	0.1	A936399	30.9	0.1	A936399
Calculated SO2	ppb	0.7	0.6	1.5	0.1	A932343	0.4	0.1	A932343
RDL = Reportable Detection Limit									

Bureau Veritas Job #: C324520
Report Date: 2023/04/19

LAKELAND INDUSTRY AND COMMUNITY ASSOCIATION
Client Project #: MARCH 2023 PASSIVES
Site Location: BONNYVILLE, AB
Sampler Initials: AY

RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BOQ376	BOQ377	BOQ378			BOQ379		
Sampling Date		2023/02/28 19:45	2023/02/28 17:20	2023/02/28 18:49			2023/02/28 20:45		
	UNITS	16	17	18	RDL	QC Batch	19	RDL	QC Batch
Passive Monitoring									
Calculated H2S	ppb	0.12	0.15	0.09	0.02	A936367			
Calculated NO2	ppb	0.6	0.4	0.3	0.1	A936567	0.2	0.1	A936567
Calculated O3	ppb	36.5	42.9	35.6	0.1	A936399	37.7	0.1	A936399
Calculated SO2	ppb	0.6	1.0	0.5	0.1	A932345	0.5	0.1	A932345
RDL = Reportable Detection Limit									

Bureau Veritas ID		BOQ380			BOQ381			BOQ382		
Sampling Date		2023/02/27 10:16			2023/02/27 11:55			2023/02/28 15:22		
	UNITS	22	RDL	QC Batch	23	RDL	QC Batch	24	RDL	QC Batch
Passive Monitoring										
Calculated H2S	ppb	0.08	0.02	A936367				0.10	0.02	A936367
Calculated NO2	ppb	0.6	0.1	A936567	0.2	0.1	A936567	0.7	0.1	A936562
Calculated O3	ppb	32.8	0.1	A936399	35.5	0.1	A936399	42.4	0.1	A936399
Calculated SO2	ppb	0.5	0.1	A932345	0.3	0.1	A932345	0.7	0.1	A932345
RDL = Reportable Detection Limit										

Bureau Veritas ID		BOQ383	BOQ384			BOQ385		BOQ386	BOQ387		
Sampling Date		2023/02/27 13:14	2023/02/27 14:22			2023/02/28 21:10		2023/02/27 10:23	2023/02/27 17:50		
	UNITS	26	27	RDL	QC Batch	28	QC Batch	29	32	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb	0.24	0.22	0.02	A936367	0.10	A936367	0.11	0.08	0.02	A936367
Calculated NO2	ppb					3.0	A936562	1.1	0.6	0.1	A936562
Calculated O3	ppb					34.3	A936399	30.7	40.3	0.1	A936431
Calculated SO2	ppb	1.2	1.3	0.1	A932345	0.4	A932345	0.6	0.8	0.1	A932345
RDL = Reportable Detection Limit											

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RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BOQ388			BOQ392	BOQ393			BOQ394		
Sampling Date		2023/03/01 14:26			2023/02/28 21:10	2023/02/27 10:23			2023/02/27 17:50		
	UNITS	42	RDL	QC Batch	28 DUP	29 DUP	RDL	QC Batch	32 DUP	RDL	QC Batch
Passive Monitoring											
Calculated H2S	ppb	0.06	0.02	A936367					0.09	0.02	A936367
Calculated NO2	ppb	1.6	0.1	A936562							
Calculated O3	ppb	35.8	0.1	A936431							
Calculated SO2	ppb	0.5	0.1	A932345	0.4	0.4	0.1	A932345	0.6	0.1	A932345
RDL = Reportable Detection Limit											

Bureau Veritas ID		BOQ395	BOQ396			BOQ397			BOQ399		
Sampling Date		2023/03/01 19:34	2023/03/01 18:25			2023/03/01 14:26			2023/02/27 17:16		
	UNITS	10 DUP	11 DUP	RDL	QC Batch	42 DUP	RDL	QC Batch	3-NH3 HNO3	RDL	QC Batch
Passive Monitoring											
Ammonia by Passive Sampler	ppb								3.1	0.1	A933460
Calculated H2S	ppb					0.09	0.02	A936367			
HNO3 by Passive Sampler	ug/m3								0.52	0.04	A932752
Calculated NO2	ppb	1.7	0.3	0.1	A936562						
Calculated O3	ppb	36.3	35.9	0.1	A936431						
RDL = Reportable Detection Limit											

Bureau Veritas ID		BOQ400	BOQ401	BOQ402	BOQ403	BOQ404	BOQ405		
Sampling Date		2023/02/28 13:20	2023/02/28 14:40	2023/02/28 16:15	2023/02/28 12:10	2023/03/01 11:57	2023/03/01 19:34		
	UNITS	4-NH3 HNO3	5-NH3 HNO3	6-NH3 HNO3	8-NH3 HNO3	9-NH3 HNO3	10-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	2.2	1.1	2.3	1.7	1.0	0.5	0.1	A933460
HNO3 by Passive Sampler	ug/m3	1.71	0.36	0.65	0.32	0.15	0.45	0.04	A932752
RDL = Reportable Detection Limit									

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RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BOQ406	BOQ407	BOQ408	BOQ409	BOQ410		
Sampling Date		2023/03/01 18:25	2023/03/01 17:07	2023/02/27 15:25	2023/02/27 13:50	2023/03/01 10:07		
	UNITS	11-NH3 HNO3	12-NH3 HNO3	13-NH3 HNO3	14-NH3 HNO3	15-NH3 HNO3	RDL	QC Batch
Passive Monitoring								
Ammonia by Passive Sampler	ppb	0.6	0.8	0.7	0.7	0.8	0.1	A933460
HNO3 by Passive Sampler	ug/m3	0.62	0.32	0.79	0.52	0.54	0.04	A932752
RDL = Reportable Detection Limit								

Bureau Veritas ID		BOQ411	BOQ412	BOQ413	BOQ414		BOQ415		
Sampling Date		2023/02/28 19:45	2023/02/28 17:20	2023/02/28 18:49	2023/02/28 20:45		2023/02/27 10:16		
	UNITS	16-NH3 HNO3	17-NH3 HNO3	18-NH3 HNO3	19-NH3 HNO3	QC Batch	22-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	1.2	3.0	0.9	1.7	A933462	0.6	0.1	A933462
HNO3 by Passive Sampler	ug/m3	0.93	0.26	0.46	0.84	A932752	0.58	0.04	A932755
RDL = Reportable Detection Limit									

Bureau Veritas ID		BOQ416	BOQ417	BOQ418	BOQ419	BOQ420	BOQ421		
Sampling Date		2023/02/27 11:55	2023/02/28 15:22	2023/02/27 13:14	2023/02/27 14:22	2023/02/28 21:10	2023/02/27 10:23		
	UNITS	23-NH3 HNO3	24-NH3 HNO3	26-NH3 HNO3	27-NH3 HNO3	28-NH3 HNO3	29-NH3 HNO3	RDL	QC Batch
Passive Monitoring									
Ammonia by Passive Sampler	ppb	0.4	1.0	0.8	0.8	1.0	1.2	0.1	A933462
HNO3 by Passive Sampler	ug/m3	0.35	0.32	0.61	0.09	0.49	0.39	0.04	A932755
RDL = Reportable Detection Limit									

Bureau Veritas ID		BOQ422	BOQ423	BOQ424	BOQ425	BOQ426		
Sampling Date		2023/02/27 17:50	2023/03/01 14:26	2023/02/27 14:22	2023/02/28 21:10			
	UNITS	32-NH3 HNO3	42-NH3 HNO3	27-NH3 HNO3 DUP	28-NH3 HNO3 DUP	BLANK 1-NH3 HNO3	RDL	QC Batch
Passive Monitoring								
Ammonia by Passive Sampler	ppb	1.2	1.3	0.7	0.9	0.6	0.1	A933462
HNO3 by Passive Sampler	ug/m3	2.75	0.19	0.12	0.92	0.40	0.04	A932755
RDL = Reportable Detection Limit								

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RESULTS OF CHEMICAL ANALYSES OF AIR

Bureau Veritas ID		BOQ427	BOQ428		
Sampling Date					
	UNITS	BLANK 2-NH3 HNO3	BLANK 3-NH3 HNO3	RDL	QC Batch
Passive Monitoring					
Ammonia by Passive Sampler	ppb	0.8	1.1	0.1	A933462
HNO3 by Passive Sampler	ug/m3	0.33	0.05	0.04	A932755
RDL = Reportable Detection Limit					

GENERAL COMMENTS

Sample BOQ426 [BLANK 1-NH3 HNO3] : Default exposure time(720 hrs) is used for calculation.--YL6 20230413

Sample BOQ427 [BLANK 2-NH3 HNO3] : Default exposure time(720 hrs) is used for calculation.--YL6 20230413

Sample BOQ428 [BLANK 3-NH3 HNO3] : Default exposure time(720 hrs) is used for calculation.--YL6 20230413

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A932343	OZ	Spiked Blank	Calculated SO2			102	%	90 - 110
A932343	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A932345	OZ	Spiked Blank	Calculated SO2			100	%	90 - 110
A932345	OZ	Method Blank	Calculated SO2		<0.1		ppb	
A932752	OZ	Method Blank	HNO3 by Passive Sampler		<0.04		ug/m3	
A932752	OZ	RPD [BOQ399-01]	HNO3 by Passive Sampler	2023/04/13	NC		%	N/A
A932755	OZ	Method Blank	HNO3 by Passive Sampler		<0.04		ug/m3	
A932755	OZ	RPD [BOQ415-01]	HNO3 by Passive Sampler	2023/04/13	NC		%	N/A
A933460	YL6	Spiked Blank	Ammonia by Passive Sampler			99	%	90 - 110
A933460	YL6	Method Blank	Ammonia by Passive Sampler		<0.1		ppb	
A933462	YL6	Spiked Blank	Ammonia by Passive Sampler			96	%	90 - 110
A933462	YL6	Method Blank	Ammonia by Passive Sampler		<0.1		ppb	
A936367	YYA	Spiked Blank	Calculated H2S			100	%	90 - 110
A936399	SDK	Spiked Blank	Calculated O3			100	%	90 - 110
A936399	SDK	Method Blank	Calculated O3		<0.1		ppb	
A936431	SDK	Spiked Blank	Calculated O3			101	%	90 - 110
A936431	SDK	Method Blank	Calculated O3		<0.1		ppb	
A936562	SDK	Spiked Blank	Calculated NO2			98	%	90 - 110
A936562	SDK	Method Blank	Calculated NO2		<0.1		ppb	
A936567	SDK	Spiked Blank	Calculated NO2			97	%	90 - 110
A936567	SDK	Method Blank	Calculated NO2		<0.1		ppb	

N/A = Not Applicable

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

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

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

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

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Sampler Initials: AY

VALIDATION SIGNATURE PAGE

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

Carmen Toker, CT, Manager Air Laboratory Services

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End of Report