



TECHNICAL MEMORANDUM

DATE June 19, 2023

Project No. 22524317

TO Mr. Frank Abrantes
Access Property Development

FROM Philippe Chevette and Paul Hurst

EMAIL Philippe.Chevette@wsp.com

864 LADY ELLEN PLACE, SUPPLEMENTAL SOIL VAPOUR SAMPLING

Background

WSP Canada Inc. (“WSP”), was retained by Access Property Developments (the “Client”) to conduct a Phase Two Environmental Site Assessment (“Phase Two ESA”) of the property located at 864 Lady Ellen Place in Ottawa, Ontario (the “Site” or the “Phase Two Property”).

The analytical results from the sampling and analysis program indicates that the reported concentrations of trichloroethylene (TCE) and chloroform in groundwater as well as hydrocarbons, Electrical Conductivity (EC) and Sodium Absorption Rate in soil at the Phase Two Property do not meet the applicable Ministry of the Environment, Conservation and Parks (“MECP”) Table 3 site condition standards for commercial use with coarse textured soil in a non-potable groundwater setting (“MECP Table 3 Standards”)¹. The reported concentrations of all other parameters tested in soil and groundwater were below the Table 3 Standards.

Given the presence of TCE and chloroform in groundwater greater than the MECP Table 3 Standards, a potential risk was identified with the presence these parameters in groundwater as a potential source of vapours into future site building(s). As such, an initial soil vapour sampling program was conducted in November 2022 to evaluate this potential. Based on the results of the initial sampling program the potential risks from vapour intrusion from VOC impacted groundwater were deemed to be low. The results of the initial soil vapour sampling event were based on a single round of soil vapour sampling.

To account for potential seasonal effects, WSP conducted a second round of soil vapour sampling on site on May 15, 2023. Based on the two rounds of vapour sampling, potential risks from vapour intrusion from TCE and chloroform impacted groundwater were deemed acceptable and no further action is required. This technical memorandum summarizes the results of the soil vapour sampling conducted in November 2022 and May 2023.

Methods

During both sampling events (November 2022 and May 2023), soil vapour probes were purged prior to sample collection. Prior to purging, an initial reading was taken from the probe using an RKI GX-6000 PID capable of reading parts per billion (ppb). During the purge, performance testing was completed on the probe.

¹ *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, Ministry of the Environment, April 15, 2011 (PIBS# 7382e01)

A leak testing program was implemented to assess whether there may be an introduction of atmospheric air into the soil vapour probes during the sampling program. Leak testing was conducted on probes prior to sampling. The leak test was performed by applying a tracer compound (helium) in a plastic shroud surrounding the probe assembly at the ground surface; a soil gas sample from the probe was then analyzed for helium.

In order to leak test, the soil vapour kit inlet barb was connected to the vapour probe by running a hose through a small hole in the top of the plastic shroud. The vapour probe valve was opened, and the helium analyzer was connected to a second small hole in the top of the shroud. Next, the shroud was slowly filled with ultra-pure helium gas until the measured concentration stabilized (to a minimum of 20%). The sampling pump was then turned on and allowed to run for approximately five minutes. A Tedlar sampling bag was then connected and filled to between 20-50% and analyzed using the helium analyzer. Helium concentrations in the sample bag below 2% of the concentration in the shroud were considered acceptable.

Performance testing was conducted on all probes that were leak tested. The purpose of the performance testing was to verify that an acceptable soil gas flow rate and vacuum could be achieved, and to confirm sampling flow rate for collection of samples for laboratory analysis. Flow and vacuum may vary depending on soil moisture and soil type. A vacuum test from approximately 0 to 2.5 kilopascals (kPa) indicates that soil vapour is readily able to penetrate through the soil and be collected effectively from the probe. The vapour probe was connected to the inlet barb on the soil vapour sampling kit. The pump was turned on and flow was adjusted to approximately 100-200 mL/min for all probes. Once the vacuum/flow stabilized, the readings were recorded.

The leak and performance test results for probes sampled were considered acceptable. The results for all probes are presented in Table A below.

Table A: Vapour Probe Performance and Leak Detection Testing

Vapour Probe	Sample Date	Performance Test (flow rate LPM) >0.005 LPM acceptable	Helium in Shroud (%) [>10% target]	Helium in Bag (%) <2% acceptable
SVP-22-1	10-Nov-22	0.1	21.5	0
SVP-22-2	10-Nov-22	0.1	25	0
SVP-22-1	15-May-23	NS	NS	NS
SVP-22-2	15-May-23	0.1	35	0

Notes: LPM = litres per minute; NS = Not sampled due to inoperable condition

Soil Vapour Results

Soil vapour results were compared to soil vapour screening levels (SVSLs). The SVSLs were calculated by dividing the applicable commercial/industrial Health-Based Indoor Air Criteria (HBIAC) (MOECC, 2016) by an applicable commercial/industrial attenuation factor (0.004) that accounts for the attenuation that occurs from soil vapour to indoor air through subslab foundation (MOE, 2013).

COCs in soil vapour were identified using the following approach:

- Parameters that exceeded their applicable screening values were retained as COCs.
- Parameters measured above the detection limit for which no screening values are available were retained as COCs.
- Parameters which were not measured above the limit of detection, but whose detection limits exceeded the screening value, were evaluated on a case-by-case basis.
- Parameters which did not measure above the detection limit for which screening values are unavailable were not retained as COCs.

Although SVP22-1 could not be re-sampled during the May 2023 event, SVP22-2 (which was sampled during both events) had higher analyte concentrations for all detected VOCs on November 11, 2022 and as such was deemed the worst case soil vapour probe based on the data available. The soil vapour results are shown in Table 1. Based on the screening approach outlined above, no COCs were identified in soil vapour in either sampling event.

Conclusions

Based on the results of the soil vapour sampling which includes two sampling events to account for seasonal fluctuation, potential risks from vapour intrusion from TCE and chloroform impacted groundwater were deemed acceptable and no further action is required.

WSP Canada Inc.



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[https://goldeassociates.sharepoint.com/sites/162763/project files/6 deliverables/soil vapour letter/22524317-tm-suppl soil vapour sampling - lady ellen.docx](https://goldeassociates.sharepoint.com/sites/162763/project%20files/6%20deliverables/soil%20vapour%20letter/22524317-tm-suppl%20soil%20vapour%20sampling%20-%20lady%20ellen.docx)

Attachments: Table 7A: Analytical Results for Soil Vapour
Certificates of Analysis

Bureau Veritas ID			UGU743	UGU744	UGU745	VVB991	VVB992
Sampling Date			2022-11-10	2022-11-10	2022-11-10	2023-05-15	2023-05-15
COC Number			41365	41365	41365	51645	51645
Calculated Parameters	UNITS	SVSL ⁽¹⁾	SVP-22-1/SN10854	SVP-22-2/SN1221	DUP 1/SN6822	SVP22-2 / SX2490	DUP1 / SX0478
					SVP-22-2		SVP-22-2
1,1,1,2-Tetrachloroethane	µg/m ³	120.79	<0.69	<0.69	<0.69	<0.69	<0.69
1,1,1-Trichloroethane	µg/m ³	178775.51	<0.55	8.32	7.67	4.96	5.17
1,1,2,2-Tetrachloroethane	µg/m ³	15.41	<0.69	<0.69	<0.69	<0.69	<0.69
1,1,2-Trichloroethane	µg/m ³	55.87	<0.55	<0.55	<0.55	<0.55	<0.55
1,1-Dichloroethane	µg/m ³	29497.96	<0.40	<0.40	<0.40	<0.40	<0.40
1,1-Dichloroethylene	µg/m ³	12514.29	<0.40	<0.40	<0.40	<0.40	<0.40
1,2,4-Trichlorobenzene	µg/m ³	1430.20	<3.7	<3.7	<3.7	<3.7	<3.7
1,2,4-Trimethylbenzene	µg/m ³	NV	<2.5	<2.5	<2.5	<2.5	<2.5
1,2-Dichlorobenzene	µg/m ³	107265.31	<0.60	<0.60	<0.60	<0.60	<0.60
1,2-Dichloroethane	µg/m ³	34.38	<0.40	<1.2	<1.2	<0.40	<0.40
1,2-Dichloropropane	µg/m ³	715.10	<0.46	<0.46	<0.46	<0.46	<0.46
1,2-Dichlorotetrafluoroethane	µg/m ³	NV	<1.2	<2.8	<2.8	<1.2	<1.2
1,3,5-Trimethylbenzene	µg/m ³	NV	<2.5	<2.5	<2.5	<2.5	<2.5
1,3-Butadiene	µg/m ³	NV	<1.8	<8.0	<8.0	<1.1	<1.1
1,3-Dichlorobenzene	µg/m ³	223.47	<2.4	<2.4	<2.4	<2.4	<2.4
1,4-Dichlorobenzene	µg/m ³	223.47	<0.60	<0.60	<0.60	<0.60	<0.60
1,4-Dioxane	µg/m ³	643591.84	<3.6	<3.6	<3.6	<3.6	<3.6
2,2,4-Trimethylpentane	µg/m ³	446938.78	<0.93	<1.4	<1.4	<0.93	<0.93
2-propanol	µg/m ³	NV	<2.5	<2.5	<2.5	<2.5	<2.5
2-Propanone	µg/m ³	2145306.12	<19	31.3	29.2	3	4.2
4-ethyltoluene	µg/m ³	NV	<2.5	<2.5	<2.5	<2.5	<2.5
Benzene	µg/m ³	406.31	5.56	43.3	39.3	<0.32	0.34
Benzyl chloride	µg/m ³	NV	<2.6	<2.6	<2.6	<2.6	<2.6
Bromodichloromethane	µg/m ³	NV	<1.3	<1.3	<1.3	<1.3	<1.3
Bromoform	µg/m ³	NV	<2.1	<2.1	<2.1	<2.1	<2.1
Bromomethane	µg/m ³	893.88	<0.39	<0.39	<0.39	<0.39	<0.39
Carbon Disulfide ⁽³⁾	µg/m ³	NV	30.4	4.2	3.9	<1.6	<1.6
Carbon Tetrachloride	µg/m ³	357.55	<0.63	<0.63	<0.63	<0.63	<0.63
Chlorobenzene	µg/m ³	178775.51	<0.46	<0.46	<0.46	<0.46	<0.46
Chloroethane	µg/m ³	NV	<0.79	<0.79	<0.79	<0.79	<0.79
Chloroform	µg/m ³	17877.55	<0.49	5.37	4.85	<0.49	<0.49
Chloromethane	µg/m ³	NV	<0.62	<0.62	<0.62	<0.62	<0.62
cis-1,2-Dichloroethylene	µg/m ³	26816.33	<0.40	<0.40	<0.40	<0.40	<0.40
cis-1,3-Dichloropropene	µg/m ³	223.47	<0.45	<0.45	<0.45	<0.45	<0.45
Cyclohexane	µg/m ³	1525000.00	7.97	<14	<14	<0.69	<0.69
Dibromochloromethane	µg/m ³	NV	<1.7	<1.7	<1.7	<1.7	<1.7
Dichlorodifluoromethane (FREON 12)	µg/m ³	NV	2.59	10.3	10	5	5.41
Ethanol (ethyl alcohol)	µg/m ³	NV	<1.9	4.4	6.1	<1.9	2.1
Ethyl Acetate	µg/m ³	NV	<3.6	<3.6	<3.6	<3.6	<3.6
Ethylbenzene	µg/m ³	178775.51	<0.43	5.76	5.29	<0.43	<0.43
Ethylene Dibromide	µg/m ³	1.49	<0.77	<0.77	<0.77	<0.77	<0.77
Heptane ⁽³⁾	µg/m ³	NV	7	55.7	50.8	<1.2	<1.2
Hexachlorobutadiene	µg/m ³	40.63	<5.3	<5.3	<5.3	<5.3	<5.3
Hexane	µg/m ³	446938.78	15.2	503	460	<0.70	<0.70
Methyl Butyl Ketone (2-Hexanone)	µg/m ³	NV	<4.1	<4.1	<4.1	<4.1	<4.1
Methyl Ethyl Ketone (2-Butanone)	µg/m ³	250686.81	<2.9	5.62	5.68	<1.2	<2.4
Methyl Isobutyl Ketone	µg/m ³	150412.09	<0.82	<1.2	<1.2	<0.82	<0.82
Methyl t-butyl ether (MTBE)	µg/m ³	3437.99	<0.72	<0.72	<0.72	<0.72	<0.72
Methylene Chloride(Dichloromethane)	µg/m ³	38864.24	<2.1	<2.1	<2.1	<2.1	<2.1
Naphthalene	µg/m ³	661.47	<1.0	<1.0	<1.0	<1.0	<1.0
o-Xylene ⁽²⁾	µg/m ³	NV	0.56	8.08	7.48	<0.43	<0.43
p+m-Xylene ⁽²⁾	µg/m ³	NV	1.43	19.4	17.8	<0.87	<0.87
Propene	µg/m ³	NV	77.2	311	294	<1.7	<1.7
Styrene	µg/m ³	46481.63	<0.43	<0.43	<0.43	<0.43	<0.43
Tetrachloroethylene	µg/m ³	3437.99	<0.68	<0.68	<0.68	<0.68	<0.68
Tetrahydrofuran	µg/m ³	NV	<1.2	<1.2	<1.2	<1.2	<1.2
Toluene	µg/m ³	893877.55	8.66	19.7	18.6	<0.38	0.45
Total Xylenes	µg/m ³	125142.86	2	27.5	25.3	<1.3	<1.3
trans-1,2-Dichloroethylene	µg/m ³	10726.53	<0.40	<0.40	<0.40	<0.40	<0.40
trans-1,3-Dichloropropene	µg/m ³	223.47	<0.45	<0.45	<0.45	<0.45	<0.45
Trichloroethylene	µg/m ³	218.02	<0.54	<0.54	<0.54	<0.54	<0.54
Trichlorofluoromethane (FREON 11)	µg/m ³	NV	<1.1	<1.1	<1.1	<1.1	<1.1
Trichlorotrifluoroethane	µg/m ³	NV	<1.2	<1.2	<1.2	<1.2	<1.2
Vinyl Acetate	µg/m ³	NV	<0.70	<0.70	<0.70	<0.70	<0.70
Vinyl Bromide	µg/m ³	NV	<0.87	<0.87	<0.87	<0.87	<0.87
Vinyl Chloride	µg/m ³	101.58	<0.26	<0.26	<0.26	<0.26	<0.26

Notes:

$\mu\text{g}/\text{m}^3$ = microgram per cubic metre; NV = no value; < = less than reportable detection limit

(1) Soil Vapour Screening Level (SVSL) calculated as the MOECC (2016) Industrial Health Based Indoor Air Criteria (HBIAC) divided by a conservative commercial attenuation factor of 0.004 (MOE, 2013)

(2) Assessed as total xylenes.

(3) Not a contaminant of concern given that it was not detected in soil or groundwater

14	= Concentration above Soil Vapour Screening Level
<i>14</i>	= Minimum detection limit above Soil Vapour Screening Level
14	= Detected concentration with no available Soil Vapour Screening Level

References:

Ontario Ministry of the Environment (MOE), 2013. Draft Technical Guidance Soil Vapour Intrusion Assessment. PIBS #8477. Dated September 2013.

Ontario Ministry of the Environment and Climate Change (MOECC), 2016. Approved Model, November 1, 2016. Queen's Printer for Ontario, 2016. PIBS 7381e01



Your Project #: 22524317
 Site Location: LADY ELLEN PARK
 Your C.O.C. #: 41365

Attention: Phil Chevette

Golder Associates Ltd
 1931 Robertson Rd
 Ottawa, ON
 CANADA K2H 5B7

Report Date: 2022/11/17
 Report #: R7392205
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2X1275

Received: 2022/11/11, 09:00

Sample Matrix: Air
 # Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Canister Pressure (TO-15)	3	N/A	2022/11/14	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	3	N/A	2022/11/16	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	3	N/A	2022/11/14	BRL SOP-00304	EPA TO-15 m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO15. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO15 on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Bureau Veritas for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.



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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2X1275

Received: 2022/11/11, 09:00

Encryption Key

Cristina (Maria) Bacchus
Project Manager
17 Nov 2022 14:54:32

Please direct all questions regarding this Certificate of Analysis to:
Cristina (Maria) Bacchus, Project Manager
Email: maria.bacchus@bureauveritas.com
Phone# (905)817-5763

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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 Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



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VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

RESULTS OF ANALYSES OF AIR

Bureau Veritas ID		UGU743	UGU744	UGU745	
Sampling Date		2022/11/10	2022/11/10	2022/11/10	
COC Number		41365	41365	41365	
	UNITS	SVP-22-1/SN10854	SVP-22-2/SN1221	DUP 1/SN6822	QC Batch
Volatile Organics					
Pressure on Receipt	psig	(-3.1)	(-4.0)	(-3.0)	8344399
QC Batch = Quality Control Batch					



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Volatile Organics							
Dichlorodifluoromethane (FREON 12)	ppbv	0.52	0.20	2.09	2.03	0.20	8344129
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<0.40	<0.40	0.40	8344129
Chloromethane	ppbv	<0.30	0.30	<0.30	<0.30	0.30	8344129
Vinyl Chloride	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Chloroethane	ppbv	<0.30	0.30	<0.30	<0.30	0.30	8344129
1,3-Butadiene	ppbv	<0.80	0.80	<3.6	<3.6	3.6	8344129
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Ethanol (ethyl alcohol)	ppbv	<1.0	1.0	2.4	3.2	1.0	8344129
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<0.15	<0.15	0.15	8344129
2-propanol	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
2-Propanone	ppbv	<8.0	8.0	13.2	12.3	0.60	8344129
Methyl Ethyl Ketone (2-Butanone)	ppbv	<1.0	1.0	1.90	1.93	0.20	8344129
Methyl Isobutyl Ketone	ppbv	<0.20	0.20	<0.30	<0.30	0.30	8344129
Methyl Butyl Ketone (2-Hexanone)	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Ethyl Acetate	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
1,1-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
cis-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
trans-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Methylene Chloride(Dichloromethane)	ppbv	<0.60	0.60	<0.60	<0.60	0.60	8344129
Chloroform	ppbv	<0.10	0.10	1.10	0.99	0.10	8344129
Carbon Tetrachloride	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1-Dichloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichloroethane	ppbv	<0.10	0.10	<0.30	<0.30	0.30	8344129
Ethylene Dibromide	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1,1-Trichloroethane	ppbv	<0.10	0.10	1.52	1.41	0.10	8344129
1,1,2-Trichloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,1,2,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
cis-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
trans-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichloropropane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Bromomethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Bromoform	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Bromodichloromethane	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Dibromochloromethane	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Trichloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Tetrachloroethylene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Benzene	ppbv	1.74	0.10	13.5	12.3	0.10	8344129
Toluene	ppbv	2.30	0.10	5.23	4.94	0.10	8344129
Ethylbenzene	ppbv	<0.10	0.10	1.33	1.22	0.10	8344129
p+m-Xylene	ppbv	0.33	0.20	4.47	4.10	0.20	8344129
o-Xylene	ppbv	0.13	0.10	1.86	1.72	0.10	8344129
Styrene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
4-ethyltoluene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Chlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Benzyl chloride	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<0.40	<0.40	0.40	8344129
1,4-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
1,2,4-Trichlorobenzene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Hexachlorobutadiene	ppbv	<0.50	0.50	<0.50	<0.50	0.50	8344129
Hexane	ppbv	4.32	0.20	143	130	0.20	8344129
Heptane	ppbv	1.71	0.30	13.6	12.4	0.30	8344129
Cyclohexane	ppbv	2.32	0.20	<4.0	<4.0	4.0	8344129
Tetrahydrofuran	ppbv	<0.40	0.40	<0.40	<0.40	0.40	8344129
1,4-Dioxane	ppbv	<1.0	1.0	<1.0	<1.0	1.0	8344129
Naphthalene	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Total Xylenes	ppbv	0.46	0.30	6.33	5.83	0.30	8344129
1,1,1,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	<0.10	0.10	8344129
Vinyl Bromide	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Propene	ppbv	44.9	0.50	180	171	0.50	8344129
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.30	<0.30	0.30	8344129
Carbon Disulfide	ppbv	9.77	0.50	1.35	1.25	0.50	8344129
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Vinyl Acetate	ppbv	<0.20	0.20	<0.20	<0.20	0.20	8344129
Surrogate Recovery (%)							
Bromochloromethane	%	92		95	103		8344129
D5-Chlorobenzene	%	85		95	101		8344129
Difluorobenzene	%	92		96	105		8344129
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Calculated Parameters							
Dichlorodifluoromethane (FREON 12)	ug/m3	2.59	0.99	10.3	10.0	0.99	8340429
1,2-Dichlorotetrafluoroethane	ug/m3	<1.2	1.2	<2.8	<2.8	2.8	8340429
Chloromethane	ug/m3	<0.62	0.62	<0.62	<0.62	0.62	8340429
Vinyl Chloride	ug/m3	<0.26	0.26	<0.26	<0.26	0.26	8340429
Chloroethane	ug/m3	<0.79	0.79	<0.79	<0.79	0.79	8340429
1,3-Butadiene	ug/m3	<1.8	1.8	<8.0	<8.0	8.0	8340429
Trichlorofluoromethane (FREON 11)	ug/m3	<1.1	1.1	<1.1	<1.1	1.1	8340429
Ethanol (ethyl alcohol)	ug/m3	<1.9	1.9	4.4	6.1	1.9	8340429
Trichlorotrifluoroethane	ug/m3	<1.2	1.2	<1.2	<1.2	1.2	8340429
2-propanol	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
2-Propanone	ug/m3	<19	19	31.3	29.2	1.4	8340429
Methyl Ethyl Ketone (2-Butanone)	ug/m3	<2.9	2.9	5.62	5.68	0.59	8340429
Methyl Isobutyl Ketone	ug/m3	<0.82	0.82	<1.2	<1.2	1.2	8340429
Methyl Butyl Ketone (2-Hexanone)	ug/m3	<4.1	4.1	<4.1	<4.1	4.1	8340429
Methyl t-butyl ether (MTBE)	ug/m3	<0.72	0.72	<0.72	<0.72	0.72	8340429
Ethyl Acetate	ug/m3	<3.6	3.6	<3.6	<3.6	3.6	8340429
1,1-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
cis-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
trans-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
Methylene Chloride(Dichloromethane)	ug/m3	<2.1	2.1	<2.1	<2.1	2.1	8340429
Chloroform	ug/m3	<0.49	0.49	5.37	4.85	0.49	8340429
Carbon Tetrachloride	ug/m3	<0.63	0.63	<0.63	<0.63	0.63	8340429
1,1-Dichloroethane	ug/m3	<0.40	0.40	<0.40	<0.40	0.40	8340429
1,2-Dichloroethane	ug/m3	<0.40	0.40	<1.2	<1.2	1.2	8340429
Ethylene Dibromide	ug/m3	<0.77	0.77	<0.77	<0.77	0.77	8340429
1,1,1-Trichloroethane	ug/m3	<0.55	0.55	8.32	7.67	0.55	8340429
1,1,2-Trichloroethane	ug/m3	<0.55	0.55	<0.55	<0.55	0.55	8340429
1,1,2,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	<0.69	0.69	8340429
cis-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	<0.45	0.45	8340429
trans-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	<0.45	0.45	8340429
1,2-Dichloropropane	ug/m3	<0.46	0.46	<0.46	<0.46	0.46	8340429
Bromomethane	ug/m3	<0.39	0.39	<0.39	<0.39	0.39	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Bromoform	ug/m3	<2.1	2.1	<2.1	<2.1	2.1	8340429
Bromodichloromethane	ug/m3	<1.3	1.3	<1.3	<1.3	1.3	8340429
Dibromochloromethane	ug/m3	<1.7	1.7	<1.7	<1.7	1.7	8340429
Trichloroethylene	ug/m3	<0.54	0.54	<0.54	<0.54	0.54	8340429
Tetrachloroethylene	ug/m3	<0.68	0.68	<0.68	<0.68	0.68	8340429
Benzene	ug/m3	5.56	0.32	43.3	39.3	0.32	8340429
Toluene	ug/m3	8.66	0.38	19.7	18.6	0.38	8340429
Ethylbenzene	ug/m3	<0.43	0.43	5.76	5.29	0.43	8340429
p+m-Xylene	ug/m3	1.43	0.87	19.4	17.8	0.87	8340429
o-Xylene	ug/m3	0.56	0.43	8.08	7.48	0.43	8340429
Styrene	ug/m3	<0.43	0.43	<0.43	<0.43	0.43	8340429
4-ethyltoluene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
1,3,5-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
1,2,4-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	<2.5	2.5	8340429
Chlorobenzene	ug/m3	<0.46	0.46	<0.46	<0.46	0.46	8340429
Benzyl chloride	ug/m3	<2.6	2.6	<2.6	<2.6	2.6	8340429
1,3-Dichlorobenzene	ug/m3	<2.4	2.4	<2.4	<2.4	2.4	8340429
1,4-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	<0.60	0.60	8340429
1,2-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	<0.60	0.60	8340429
1,2,4-Trichlorobenzene	ug/m3	<3.7	3.7	<3.7	<3.7	3.7	8340429
Hexachlorobutadiene	ug/m3	<5.3	5.3	<5.3	<5.3	5.3	8340429
Hexane	ug/m3	15.2	0.70	503	460	0.70	8340429
Heptane	ug/m3	7.0	1.2	55.7	50.8	1.2	8340429
Cyclohexane	ug/m3	7.97	0.69	<14	<14	14	8340429
Tetrahydrofuran	ug/m3	<1.2	1.2	<1.2	<1.2	1.2	8340429
1,4-Dioxane	ug/m3	<3.6	3.6	<3.6	<3.6	3.6	8340429
Naphthalene	ug/m3	<1.0	1.0	<1.0	<1.0	1.0	8340429
Total Xylenes	ug/m3	2.0	1.3	27.5	25.3	1.3	8340429
1,1,1,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	<0.69	0.69	8340429
Vinyl Bromide	ug/m3	<0.87	0.87	<0.87	<0.87	0.87	8340429
Propene	ug/m3	77.2	0.86	311	294	0.86	8340429
2,2,4-Trimethylpentane	ug/m3	<0.93	0.93	<1.4	<1.4	1.4	8340429
Carbon Disulfide	ug/m3	30.4	1.6	4.2	3.9	1.6	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		UGU743		UGU744	UGU745		
Sampling Date		2022/11/10		2022/11/10	2022/11/10		
COC Number		41365		41365	41365		
	UNITS	SVP-22-1/SN10854	RDL	SVP-22-2/SN1221	DUP 1/SN6822	RDL	QC Batch
Vinyl Acetate	ug/m3	<0.70	0.70	<0.70	<0.70	0.70	8340429
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

TEST SUMMARY

Bureau Veritas ID: UGU743
Sample ID: SVP-22-1/SN10854
Matrix: Air

Collected: 2022/11/10
Shipped:
Received: 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith

Bureau Veritas ID: UGU744
Sample ID: SVP-22-2/SN1221
Matrix: Air

Collected: 2022/11/10
Shipped:
Received: 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith

Bureau Veritas ID: UGU745
Sample ID: DUP 1/SN6822
Matrix: Air

Collected: 2022/11/10
Shipped:
Received: 2022/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8344399	N/A	2022/11/14	Nicholas Smith
Volatile Organics in Air (ug/m3)	GC/MS	8340429	N/A	2022/11/16	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8344129	N/A	2022/11/14	Nicholas Smith



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

GENERAL COMMENTS

Sample UGU743 [SVP-22-1/SN10854] : Increased DL for 1,3-butadiene, 2-propanone and 2-butanone due to interference.

Sample UGU744 [SVP-22-2/SN1221] : Increased DL for 1,2-dichlorodifluoromethane, 1,3-butadiene, 1,2-dichloroethane, cyclohexane, 2,2,4-trimethylpentane and methyl isobutyl ketone due to interference.

Sample UGU745 [DUP 1/SN6822] : Increased DL for 1,2-dichlorodifluoromethane, 1,3-butadiene, 1,2-dichloroethane, cyclohexane, 2,2,4-trimethylpentane and methyl isobutyl ketone due to interference.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	Bromochloromethane	2022/11/14	113	60 - 140	101	%
8344129	D5-Chlorobenzene	2022/11/14	110	60 - 140	90	%
8344129	Difluorobenzene	2022/11/14	112	60 - 140	99	%
8344129	1,1,1,2-Tetrachloroethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	1,1,1-Trichloroethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	1,1,2,2-Tetrachloroethane	2022/11/14	92	70 - 130	<0.10	ppbv
8344129	1,1,2-Trichloroethane	2022/11/14	102	70 - 130	<0.10	ppbv
8344129	1,1-Dichloroethane	2022/11/14	98	70 - 130	<0.10	ppbv
8344129	1,1-Dichloroethylene	2022/11/14	100	70 - 130	<0.10	ppbv
8344129	1,2,4-Trichlorobenzene	2022/11/14	89	70 - 130	<0.50	ppbv
8344129	1,2,4-Trimethylbenzene	2022/11/14	104	70 - 130	<0.50	ppbv
8344129	1,2-Dichlorobenzene	2022/11/14	94	70 - 130	<0.10	ppbv
8344129	1,2-Dichloroethane	2022/11/14	97	70 - 130	<0.10	ppbv
8344129	1,2-Dichloropropane	2022/11/14	102	70 - 130	<0.10	ppbv
8344129	1,2-Dichlorotetrafluoroethane	2022/11/14	94	70 - 130	<0.17	ppbv
8344129	1,3,5-Trimethylbenzene	2022/11/14	97	70 - 130	<0.50	ppbv
8344129	1,3-Butadiene	2022/11/14	103	70 - 130	<0.50	ppbv
8344129	1,3-Dichlorobenzene	2022/11/14	98	70 - 130	<0.40	ppbv
8344129	1,4-Dichlorobenzene	2022/11/14	96	70 - 130	<0.10	ppbv
8344129	1,4-Dioxane	2022/11/14	102	70 - 130	<1.0	ppbv
8344129	2,2,4-Trimethylpentane	2022/11/14	106	70 - 130	<0.20	ppbv
8344129	2-propanol	2022/11/14	106	70 - 130	<1.0	ppbv
8344129	2-Propanone	2022/11/14	95	70 - 130	<0.60	ppbv
8344129	4-ethyltoluene	2022/11/14	106	70 - 130	<0.50	ppbv
8344129	Benzene	2022/11/14	98	70 - 130	<0.10	ppbv
8344129	Benzyl chloride	2022/11/14	117	70 - 130	<0.50	ppbv
8344129	Bromodichloromethane	2022/11/14	97	70 - 130	<0.20	ppbv
8344129	Bromoform	2022/11/14	103	70 - 130	<0.20	ppbv
8344129	Bromomethane	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Carbon Disulfide	2022/11/14	108	70 - 130	<0.50	ppbv
8344129	Carbon Tetrachloride	2022/11/14	102	70 - 130	<0.10	ppbv



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	Chlorobenzene	2022/11/14	97	70 - 130	<0.10	ppbv
8344129	Chloroethane	2022/11/14	99	70 - 130	<0.30	ppbv
8344129	Chloroform	2022/11/14	100	70 - 130	<0.10	ppbv
8344129	Chloromethane	2022/11/14	92	70 - 130	<0.30	ppbv
8344129	cis-1,2-Dichloroethylene	2022/11/14	99	70 - 130	<0.10	ppbv
8344129	cis-1,3-Dichloropropene	2022/11/14	109	70 - 130	<0.10	ppbv
8344129	Cyclohexane	2022/11/14	98	70 - 130	<0.20	ppbv
8344129	Dibromochloromethane	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Dichlorodifluoromethane (FREON 12)	2022/11/14	98	70 - 130	<0.20	ppbv
8344129	Ethanol (ethyl alcohol)	2022/11/14	98	70 - 130	<1.0	ppbv
8344129	Ethyl Acetate	2022/11/14	105	70 - 130	<1.0	ppbv
8344129	Ethylbenzene	2022/11/14	105	70 - 130	<0.10	ppbv
8344129	Ethylene Dibromide	2022/11/14	107	70 - 130	<0.10	ppbv
8344129	Heptane	2022/11/14	105	70 - 130	<0.30	ppbv
8344129	Hexachlorobutadiene	2022/11/14	87	70 - 130	<0.50	ppbv
8344129	Hexane	2022/11/14	100	70 - 130	<0.20	ppbv
8344129	Methyl Butyl Ketone (2-Hexanone)	2022/11/14	108	70 - 130	<1.0	ppbv
8344129	Methyl Ethyl Ketone (2-Butanone)	2022/11/14	100	70 - 130	<0.20	ppbv
8344129	Methyl Isobutyl Ketone	2022/11/14	106	70 - 130	<0.20	ppbv
8344129	Methyl t-butyl ether (MTBE)	2022/11/14	95	70 - 130	<0.20	ppbv
8344129	Methylene Chloride(Dichloromethane)	2022/11/14	94	70 - 130	<0.60	ppbv
8344129	Naphthalene	2022/11/14	94	70 - 130	<0.20	ppbv
8344129	o-Xylene	2022/11/14	105	70 - 130	<0.10	ppbv
8344129	p+m-Xylene	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Propene	2022/11/14	98	70 - 130	<0.50	ppbv
8344129	Styrene	2022/11/14	107	70 - 130	<0.10	ppbv
8344129	Tetrachloroethylene	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Tetrahydrofuran	2022/11/14	98	70 - 130	<0.40	ppbv
8344129	Toluene	2022/11/14	104	70 - 130	<0.10	ppbv
8344129	Total Xylenes	2022/11/14	105	70 - 130	<0.30	ppbv
8344129	trans-1,2-Dichloroethylene	2022/11/14	103	70 - 130	<0.10	ppbv



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275

Report Date: 2022/11/17

QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 22524317

Site Location: LADY ELLEN PARK

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank	
			% Recovery	QC Limits	Value	UNITS
8344129	trans-1,3-Dichloropropene	2022/11/14	112	70 - 130	<0.10	ppbv
8344129	Trichloroethylene	2022/11/14	101	70 - 130	<0.10	ppbv
8344129	Trichlorofluoromethane (FREON 11)	2022/11/14	101	70 - 130	<0.20	ppbv
8344129	Trichlorotrifluoroethane	2022/11/14	98	70 - 130	<0.15	ppbv
8344129	Vinyl Acetate	2022/11/14	105	70 - 130	<0.20	ppbv
8344129	Vinyl Bromide	2022/11/14	108	70 - 130	<0.20	ppbv
8344129	Vinyl Chloride	2022/11/14	97	70 - 130	<0.10	ppbv

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

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

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



BUREAU
VERITAS

Bureau Veritas Job #: C2X1275
Report Date: 2022/11/17

Golder Associates Ltd
Client Project #: 22524317
Site Location: LADY ELLEN PARK
Sampler Initials: PC

VALIDATION SIGNATURE PAGE

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

Melanie Mabini, Team Leader

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 {0}, {1} responsible for {2} {3} laboratory operations.



Your Project #: 22524317
 Site Location: LADY ELLEN PLACE
 Your C.O.C. #: 51645

Attention: Phil Chevette

WSP Canada Inc.
 1931 Robertson Rd
 Ottawa, ON
 CANADA K2H 5B7

Report Date: 2023/05/31
 Report #: R7650648
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3D9156

Received: 2023/05/16, 09:00

Sample Matrix: Air
 # Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Canister Pressure (TO-15)	2	N/A	2023/05/18	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	2	N/A	2023/05/23	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	2	N/A	2023/05/18	BRL SOP-00304	EPA TO-15 m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

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

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO15. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO15 on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Bureau Veritas for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.



Your Project #: 22524317
Site Location: LADY ELLEN PLACE
Your C.O.C. #: 51645

Attention: Phil Chevrette

WSP Canada Inc.
1931 Robertson Rd
Ottawa, ON
CANADA K2H 5B7

Report Date: 2023/05/31
Report #: R7650648
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3D9156

Received: 2023/05/16, 09:00

Encryption Key

Cristina (Maria) Bacchus
Project Manager
31 May 2023 12:15:13

Please direct all questions regarding this Certificate of Analysis to:

Cristina (Maria) Bacchus, Project Manager
Email: maria.bacchus@bureauveritas.com
Phone# (905)817-5763

=====

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 Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



**BUREAU
VERITAS**

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

RESULTS OF ANALYSES OF AIR

Bureau Veritas ID		VVB991	VVB992	
Sampling Date		2023/05/15	2023/05/15	
COC Number		51645	51645	
	UNITS	SVP22-2	DUP1	QC Batch
Volatile Organics				
Pressure on Receipt	psig	(-3.6)	(-3.6)	8678570
QC Batch = Quality Control Batch				



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Volatile Organics						
Dichlorodifluoromethane (FREON 12)	ppbv	1.01	0.20	1.09	0.20	8672299
1,2-Dichlorotetrafluoroethane	ppbv	<0.17	0.17	<0.17	0.17	8672299
Chloromethane	ppbv	<0.30	0.30	<0.30	0.30	8672299
Vinyl Chloride	ppbv	<0.10	0.10	<0.10	0.10	8672299
Chloroethane	ppbv	<0.30	0.30	<0.30	0.30	8672299
1,3-Butadiene	ppbv	<0.50	0.50	<0.50	0.50	8672299
Trichlorofluoromethane (FREON 11)	ppbv	<0.20	0.20	<0.20	0.20	8672299
Ethanol (ethyl alcohol)	ppbv	<1.0	1.0	1.1	1.0	8672299
Trichlorotrifluoroethane	ppbv	<0.15	0.15	<0.15	0.15	8672299
2-propanol	ppbv	<1.0	1.0	<1.0	1.0	8672299
2-Propanone	ppbv	1.28	0.60	1.75	0.60	8672299
Methyl Ethyl Ketone (2-Butanone)	ppbv	<0.40	0.40	<0.80	0.80	8672299
Methyl Isobutyl Ketone	ppbv	<0.20	0.20	<0.20	0.20	8672299
Methyl Butyl Ketone (2-Hexanone)	ppbv	<1.0	1.0	<1.0	1.0	8672299
Methyl t-butyl ether (MTBE)	ppbv	<0.20	0.20	<0.20	0.20	8672299
Ethyl Acetate	ppbv	<1.0	1.0	<1.0	1.0	8672299
1,1-Dichloroethylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
cis-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
trans-1,2-Dichloroethylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
Methylene Chloride(Dichloromethane)	ppbv	<0.60	0.60	<0.60	0.60	8672299
Chloroform	ppbv	<0.10	0.10	<0.10	0.10	8672299
Carbon Tetrachloride	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,1-Dichloroethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,2-Dichloroethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
Ethylene Dibromide	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,1,1-Trichloroethane	ppbv	0.91	0.10	0.95	0.10	8672299
1,1,2-Trichloroethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,1,2,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
cis-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	0.10	8672299
trans-1,3-Dichloropropene	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,2-Dichloropropane	ppbv	<0.10	0.10	<0.10	0.10	8672299
Bromomethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Bromoform	ppbv	<0.20	0.20	<0.20	0.20	8672299
Bromodichloromethane	ppbv	<0.20	0.20	<0.20	0.20	8672299
Dibromochloromethane	ppbv	<0.20	0.20	<0.20	0.20	8672299
Trichloroethylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
Tetrachloroethylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
Benzene	ppbv	<0.10	0.10	0.11	0.10	8672299
Toluene	ppbv	<0.10	0.10	0.12	0.10	8672299
Ethylbenzene	ppbv	<0.10	0.10	<0.10	0.10	8672299
p+m-Xylene	ppbv	<0.20	0.20	<0.20	0.20	8672299
o-Xylene	ppbv	<0.10	0.10	<0.10	0.10	8672299
Styrene	ppbv	<0.10	0.10	<0.10	0.10	8672299
4-ethyltoluene	ppbv	<0.50	0.50	<0.50	0.50	8672299
1,3,5-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	0.50	8672299
1,2,4-Trimethylbenzene	ppbv	<0.50	0.50	<0.50	0.50	8672299
Chlorobenzene	ppbv	<0.10	0.10	<0.10	0.10	8672299
Benzyl chloride	ppbv	<0.50	0.50	<0.50	0.50	8672299
1,3-Dichlorobenzene	ppbv	<0.40	0.40	<0.40	0.40	8672299
1,4-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,2-Dichlorobenzene	ppbv	<0.10	0.10	<0.10	0.10	8672299
1,2,4-Trichlorobenzene	ppbv	<0.50	0.50	<0.50	0.50	8672299
Hexachlorobutadiene	ppbv	<0.50	0.50	<0.50	0.50	8672299
Hexane	ppbv	<0.20	0.20	<0.20	0.20	8672299
Heptane	ppbv	<0.30	0.30	<0.30	0.30	8672299
Cyclohexane	ppbv	<0.20	0.20	<0.20	0.20	8672299
Tetrahydrofuran	ppbv	<0.40	0.40	<0.40	0.40	8672299
1,4-Dioxane	ppbv	<1.0	1.0	<1.0	1.0	8672299
Naphthalene	ppbv	<0.20	0.20	<0.20	0.20	8672299
Total Xylenes	ppbv	<0.30	0.30	<0.30	0.30	8672299
1,1,1,2-Tetrachloroethane	ppbv	<0.10	0.10	<0.10	0.10	8672299
Vinyl Bromide	ppbv	<0.20	0.20	<0.20	0.20	8672299
Propene	ppbv	<1.0	1.0	<1.0	1.0	8672299
2,2,4-Trimethylpentane	ppbv	<0.20	0.20	<0.20	0.20	8672299
Carbon Disulfide	ppbv	<0.50	0.50	<0.50	0.50	8672299
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

VOLATILE ORGANICS BY GC/MS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Vinyl Acetate	ppbv	<0.20	0.20	<0.20	0.20	8672299
Surrogate Recovery (%)						
Bromochloromethane	%	89		87		8672299
D5-Chlorobenzene	%	75		75		8672299
Difluorobenzene	%	83		79		8672299
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156

Report Date: 2023/05/31

WSP Canada Inc.

Client Project #: 22524317

Site Location: LADY ELLEN PLACE

Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Calculated Parameters						
Dichlorodifluoromethane (FREON 12)	ug/m3	5.00	0.99	5.41	0.99	8667772
1,2-Dichlorotetrafluoroethane	ug/m3	<1.2	1.2	<1.2	1.2	8667772
Chloromethane	ug/m3	<0.62	0.62	<0.62	0.62	8667772
Vinyl Chloride	ug/m3	<0.26	0.26	<0.26	0.26	8667772
Chloroethane	ug/m3	<0.79	0.79	<0.79	0.79	8667772
1,3-Butadiene	ug/m3	<1.1	1.1	<1.1	1.1	8667772
Trichlorofluoromethane (FREON 11)	ug/m3	<1.1	1.1	<1.1	1.1	8667772
Ethanol (ethyl alcohol)	ug/m3	<1.9	1.9	2.1	1.9	8667772
Trichlorotrifluoroethane	ug/m3	<1.2	1.2	<1.2	1.2	8667772
2-propanol	ug/m3	<2.5	2.5	<2.5	2.5	8667772
2-Propanone	ug/m3	3.0	1.4	4.2	1.4	8667772
Methyl Ethyl Ketone (2-Butanone)	ug/m3	<1.2	1.2	<2.4	2.4	8667772
Methyl Isobutyl Ketone	ug/m3	<0.82	0.82	<0.82	0.82	8667772
Methyl Butyl Ketone (2-Hexanone)	ug/m3	<4.1	4.1	<4.1	4.1	8667772
Methyl t-butyl ether (MTBE)	ug/m3	<0.72	0.72	<0.72	0.72	8667772
Ethyl Acetate	ug/m3	<3.6	3.6	<3.6	3.6	8667772
1,1-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	0.40	8667772
cis-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	0.40	8667772
trans-1,2-Dichloroethylene	ug/m3	<0.40	0.40	<0.40	0.40	8667772
Methylene Chloride(Dichloromethane)	ug/m3	<2.1	2.1	<2.1	2.1	8667772
Chloroform	ug/m3	<0.49	0.49	<0.49	0.49	8667772
Carbon Tetrachloride	ug/m3	<0.63	0.63	<0.63	0.63	8667772
1,1-Dichloroethane	ug/m3	<0.40	0.40	<0.40	0.40	8667772
1,2-Dichloroethane	ug/m3	<0.40	0.40	<0.40	0.40	8667772
Ethylene Dibromide	ug/m3	<0.77	0.77	<0.77	0.77	8667772
1,1,1-Trichloroethane	ug/m3	4.96	0.55	5.17	0.55	8667772
1,1,2-Trichloroethane	ug/m3	<0.55	0.55	<0.55	0.55	8667772
1,1,2,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	0.69	8667772
cis-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	0.45	8667772
trans-1,3-Dichloropropene	ug/m3	<0.45	0.45	<0.45	0.45	8667772
1,2-Dichloropropane	ug/m3	<0.46	0.46	<0.46	0.46	8667772
Bromomethane	ug/m3	<0.39	0.39	<0.39	0.39	8667772
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156

Report Date: 2023/05/31

WSP Canada Inc.

Client Project #: 22524317

Site Location: LADY ELLEN PLACE

Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Bromoform	ug/m3	<2.1	2.1	<2.1	2.1	8667772
Bromodichloromethane	ug/m3	<1.3	1.3	<1.3	1.3	8667772
Dibromochloromethane	ug/m3	<1.7	1.7	<1.7	1.7	8667772
Trichloroethylene	ug/m3	<0.54	0.54	<0.54	0.54	8667772
Tetrachloroethylene	ug/m3	<0.68	0.68	<0.68	0.68	8667772
Benzene	ug/m3	<0.32	0.32	0.34	0.32	8667772
Toluene	ug/m3	<0.38	0.38	0.45	0.38	8667772
Ethylbenzene	ug/m3	<0.43	0.43	<0.43	0.43	8667772
p+m-Xylene	ug/m3	<0.87	0.87	<0.87	0.87	8667772
o-Xylene	ug/m3	<0.43	0.43	<0.43	0.43	8667772
Styrene	ug/m3	<0.43	0.43	<0.43	0.43	8667772
4-ethyltoluene	ug/m3	<2.5	2.5	<2.5	2.5	8667772
1,3,5-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	2.5	8667772
1,2,4-Trimethylbenzene	ug/m3	<2.5	2.5	<2.5	2.5	8667772
Chlorobenzene	ug/m3	<0.46	0.46	<0.46	0.46	8667772
Benzyl chloride	ug/m3	<2.6	2.6	<2.6	2.6	8667772
1,3-Dichlorobenzene	ug/m3	<2.4	2.4	<2.4	2.4	8667772
1,4-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	0.60	8667772
1,2-Dichlorobenzene	ug/m3	<0.60	0.60	<0.60	0.60	8667772
1,2,4-Trichlorobenzene	ug/m3	<3.7	3.7	<3.7	3.7	8667772
Hexachlorobutadiene	ug/m3	<5.3	5.3	<5.3	5.3	8667772
Hexane	ug/m3	<0.70	0.70	<0.70	0.70	8667772
Heptane	ug/m3	<1.2	1.2	<1.2	1.2	8667772
Cyclohexane	ug/m3	<0.69	0.69	<0.69	0.69	8667772
Tetrahydrofuran	ug/m3	<1.2	1.2	<1.2	1.2	8667772
1,4-Dioxane	ug/m3	<3.6	3.6	<3.6	3.6	8667772
Naphthalene	ug/m3	<1.0	1.0	<1.0	1.0	8667772
Total Xylenes	ug/m3	<1.3	1.3	<1.3	1.3	8667772
1,1,1,2-Tetrachloroethane	ug/m3	<0.69	0.69	<0.69	0.69	8667772
Vinyl Bromide	ug/m3	<0.87	0.87	<0.87	0.87	8667772
Propene	ug/m3	<1.7	1.7	<1.7	1.7	8667772
2,2,4-Trimethylpentane	ug/m3	<0.93	0.93	<0.93	0.93	8667772
Carbon Disulfide	ug/m3	<1.6	1.6	<1.6	1.6	8667772
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

CALCULATED VOLATILE ORGANICS (AIR)

Bureau Veritas ID		VVB991		VVB992		
Sampling Date		2023/05/15		2023/05/15		
COC Number		51645		51645		
	UNITS	SVP22-2	RDL	DUP1	RDL	QC Batch
Vinyl Acetate	ug/m3	<0.70	0.70	<0.70	0.70	8667772
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

TEST SUMMARY

Bureau Veritas ID: VVB991
Sample ID: SVP22-2
Matrix: Air

Collected: 2023/05/15
Shipped:
Received: 2023/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8678570	N/A	2023/05/18	Narinderjeet Kaur
Volatile Organics in Air (ug/m3)	GC/MS	8667772	N/A	2023/05/23	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8672299	N/A	2023/05/18	Narinderjeet Kaur

Bureau Veritas ID: VVB992
Sample ID: DUP1
Matrix: Air

Collected: 2023/05/15
Shipped:
Received: 2023/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	8678570	N/A	2023/05/18	Narinderjeet Kaur
Volatile Organics in Air (ug/m3)	GC/MS	8667772	N/A	2023/05/23	Automated Statchk
Volatile Organics in Air (TO-15)	GC/MS	8672299	N/A	2023/05/18	Narinderjeet Kaur



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VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
Site Location: LADY ELLEN PLACE
Sampler Initials: PC

GENERAL COMMENTS

Sample VVB991 [SVP22-2] : Increased DL for propene due to interference from propane.
Increased DL for 2-Butanone due to interference.

Sample VVB992 [DUP1] : Increased DL for propene due to interference from propane.
Increased DL for 2-Butanone due to interference.

Results relate only to the items tested.



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Bureau Veritas Job #: C3D9156

Report Date: 2023/05/31

QUALITY ASSURANCE REPORT

WSP Canada Inc.

Client Project #: 22524317

Site Location: LADY ELLEN PLACE

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8672299	Bromochloromethane	2023/05/18	101	60 - 140	96	%		
8672299	D5-Chlorobenzene	2023/05/18	98	60 - 140	90	%		
8672299	Difluorobenzene	2023/05/18	97	60 - 140	94	%		
8667772	1,2-Dichloroethane	2023/05/26					NC	25
8667772	Benzene	2023/05/26					0.84	25
8667772	Ethylbenzene	2023/05/26					0.24	25
8667772	Naphthalene	2023/05/30					NC	25
8667772	o-Xylene	2023/05/26					4.9	25
8667772	p+m-Xylene	2023/05/26					4.5	25
8667772	Toluene	2023/05/26					1.0	25
8667772	Total Xylenes	2023/05/26					4.7	25
8672299	1,1,1,2-Tetrachloroethane	2023/05/18	107	70 - 130	<0.10	ppbv		
8672299	1,1,1-Trichloroethane	2023/05/18	108	70 - 130	<0.10	ppbv		
8672299	1,1,2,2-Tetrachloroethane	2023/05/18	111	70 - 130	<0.10	ppbv		
8672299	1,1,2-Trichloroethane	2023/05/18	119	70 - 130	<0.10	ppbv		
8672299	1,1-Dichloroethane	2023/05/18	109	70 - 130	<0.10	ppbv		
8672299	1,1-Dichloroethylene	2023/05/18	107	70 - 130	<0.10	ppbv		
8672299	1,2,4-Trichlorobenzene	2023/05/18	102	70 - 130	<0.50	ppbv		
8672299	1,2,4-Trimethylbenzene	2023/05/18	109	70 - 130	<0.50	ppbv		
8672299	1,2-Dichlorobenzene	2023/05/18	108	70 - 130	<0.10	ppbv		
8672299	1,2-Dichloroethane	2023/05/18	111	70 - 130	<0.10	ppbv		
8672299	1,2-Dichloropropane	2023/05/18	117	70 - 130	<0.10	ppbv		
8672299	1,2-Dichlorotetrafluoroethane	2023/05/18	119	70 - 130	<0.17	ppbv		
8672299	1,3,5-Trimethylbenzene	2023/05/18	107	70 - 130	<0.50	ppbv		
8672299	1,3-Butadiene	2023/05/18	119	70 - 130	<0.50	ppbv		
8672299	1,3-Dichlorobenzene	2023/05/18	110	70 - 130	<0.40	ppbv		
8672299	1,4-Dichlorobenzene	2023/05/18	110	70 - 130	<0.10	ppbv		
8672299	1,4-Dioxane	2023/05/18	117	70 - 130	<1.0	ppbv		
8672299	2,2,4-Trimethylpentane	2023/05/18	123	70 - 130	<0.20	ppbv		
8672299	2-propanol	2023/05/18	102	70 - 130	<1.0	ppbv		
8672299	2-Propanone	2023/05/18	101	70 - 130	<0.60	ppbv		



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QUALITY ASSURANCE REPORT(CONT'D)

WSP Canada Inc.

Client Project #: 22524317

Site Location: LADY ELLEN PLACE

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8672299	4-ethyltoluene	2023/05/18	114	70 - 130	<0.50	ppbv		
8672299	Benzene	2023/05/18	114	70 - 130	<0.10	ppbv	2.9	25
8672299	Benzyl chloride	2023/05/18	114	70 - 130	<0.50	ppbv		
8672299	Bromodichloromethane	2023/05/18	112	70 - 130	<0.20	ppbv		
8672299	Bromoform	2023/05/18	117	70 - 130	<0.20	ppbv		
8672299	Bromomethane	2023/05/18	114	70 - 130	<0.10	ppbv		
8672299	Carbon Disulfide	2023/05/18	112	70 - 130	<0.50	ppbv		
8672299	Carbon Tetrachloride	2023/05/18	111	70 - 130	<0.10	ppbv		
8672299	Chlorobenzene	2023/05/18	109	70 - 130	<0.10	ppbv		
8672299	Chloroethane	2023/05/18	115	70 - 130	<0.30	ppbv		
8672299	Chloroform	2023/05/18	111	70 - 130	<0.10	ppbv		
8672299	Chloromethane	2023/05/18	120	70 - 130	<0.30	ppbv		
8672299	cis-1,2-Dichloroethylene	2023/05/18	109	70 - 130	<0.10	ppbv		
8672299	cis-1,3-Dichloropropene	2023/05/18	113	70 - 130	<0.10	ppbv		
8672299	Cyclohexane	2023/05/18	111	70 - 130	<0.20	ppbv		
8672299	Dibromochloromethane	2023/05/18	120	70 - 130	<0.20	ppbv		
8672299	Dichlorodifluoromethane (FREON 12)	2023/05/18	108	70 - 130	<0.20	ppbv		
8672299	Ethanol (ethyl alcohol)	2023/05/18	96	70 - 130	<1.0	ppbv		
8672299	Ethyl Acetate	2023/05/18	120	70 - 130	<1.0	ppbv		
8672299	Ethylbenzene	2023/05/18	113	70 - 130	<0.10	ppbv	NC	25
8672299	Ethylene Dibromide	2023/05/18	119	70 - 130	<0.10	ppbv		
8672299	Heptane	2023/05/18	124	70 - 130	<0.30	ppbv		
8672299	Hexachlorobutadiene	2023/05/18	100	70 - 130	<0.50	ppbv		
8672299	Hexane	2023/05/18	83	70 - 130	<0.20	ppbv		
8672299	Methyl Butyl Ketone (2-Hexanone)	2023/05/18	118	70 - 130	<1.0	ppbv		
8672299	Methyl Ethyl Ketone (2-Butanone)	2023/05/18	123	70 - 130	<0.20	ppbv		
8672299	Methyl Isobutyl Ketone	2023/05/18	118	70 - 130	<0.20	ppbv		
8672299	Methyl t-butyl ether (MTBE)	2023/05/18	95	70 - 130	<0.20	ppbv		
8672299	Methylene Chloride(Dichloromethane)	2023/05/18	116	70 - 130	<0.60	ppbv		
8672299	Naphthalene	2023/05/18	105	70 - 130	<0.20	ppbv	NC	25
8672299	o-Xylene	2023/05/18	109	70 - 130	<0.10	ppbv	0.77	25



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QUALITY ASSURANCE REPORT(CONT'D)

WSP Canada Inc.

Client Project #: 22524317

Site Location: LADY ELLEN PLACE

Sampler Initials: PC

QC Batch	Parameter	Date	SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8672299	p+m-Xylene	2023/05/18	111	70 - 130	<0.20	ppbv	0.51	25
8672299	Propene	2023/05/18	106	70 - 130	<0.50	ppbv		
8672299	Styrene	2023/05/18	111	70 - 130	<0.10	ppbv		
8672299	Tetrachloroethylene	2023/05/18	118	70 - 130	<0.10	ppbv		
8672299	Tetrahydrofuran	2023/05/18	116	70 - 130	<0.40	ppbv		
8672299	Toluene	2023/05/18	116	70 - 130	<0.10	ppbv	4.4	25
8672299	Total Xylenes	2023/05/18	110	70 - 130	<0.30	ppbv	0.60	25
8672299	trans-1,2-Dichloroethylene	2023/05/18	109	70 - 130	<0.10	ppbv		
8672299	trans-1,3-Dichloropropene	2023/05/18	122	70 - 130	<0.10	ppbv		
8672299	Trichloroethylene	2023/05/18	117	70 - 130	<0.10	ppbv		
8672299	Trichlorofluoromethane (FREON 11)	2023/05/18	110	70 - 130	<0.20	ppbv		
8672299	Trichlorotrifluoroethane	2023/05/18	110	70 - 130	<0.15	ppbv		
8672299	Vinyl Acetate	2023/05/18	114	70 - 130	<0.20	ppbv		
8672299	Vinyl Bromide	2023/05/18	99	70 - 130	<0.20	ppbv		
8672299	Vinyl Chloride	2023/05/18	119	70 - 130	<0.10	ppbv		

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.

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

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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VERITAS

Bureau Veritas Job #: C3D9156
Report Date: 2023/05/31

WSP Canada Inc.
Client Project #: 22524317
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Sampler Initials: PC

VALIDATION SIGNATURE PAGE

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

Anke Macfarlane, Laboratory Manager, VOC

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 {0}, {1} responsible for {2} {3} laboratory operations.



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Chain of Custody Form - Summa™ Canister

CAM FCD-01302 / 5

51645

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Received in Ottawa

ANALYSIS REQUESTED

INVOICE INFORMATION		REPORT INFORMATION				START VACUUM (inches of Hg)	END VACUUM (inches of Hg)	SOIL VAPOUR	AMBIENT/INDOOR AIR	AMBIENT/COMMERCIAL/INDUSTRIAL	SUB-SLAB GAS	FULL LIST OF VOCs (reference TO15A)	BTEX/Aromatic/Aliphatic Hydrocarbon Fractions	BTEX/F1 (C6-C10) and F2 (C10-C16)	Selected VOC's - please specify	Other	CANISTERS NOT USED
Company Name: <u>WSP</u>	Company Name:	Project Manager:	Address:	Address:													
Contact Name: <u>Philippe Chevette</u>	Project Manager:	Address:	Address:	Address:													
Address: <u>1931 Robertson Rd.</u>	Project Manager:	Address:	Address:	Address:													
E-mail: <u>philippe.chevette@wsp.ca</u>	E-mail:	E-mail:	E-mail:	E-mail:													
Ph: <u>613-297-9555</u>	Ph:	Ph:	Ph:	Ph:													
Sampled by: <u>Philippe Chevette</u>	Sampled by:	Sampled by:	Sampled by:	Sampled by:													
Field Sample ID	Canister Serial #	Flow Regulator Serial #	Collection Date														
<u>SUP22-2</u>	<u>5X2490</u>	<u>FX1474</u>	<u>15/05</u>		<u>29-27</u>	<u>75-6.5</u>	<u>XX</u>				<u>XX</u>						
<u>DUPI</u>	<u>5X 0478</u>	<u>FX 0223</u>	<u>15/05</u>		<u>29-27</u>	<u>75-6.5</u>	<u>XX</u>				<u>XX</u>						
<u>Attached, emptied, no sample</u>	<u>other Summa</u>																<u>X</u>

16-May-23 09:00
Katherine Szozda
C3D9156
BSU AIR-001

TAT Requirement <input checked="" type="checkbox"/> STD 10 Business day <input type="checkbox"/> Rush 5 Business day * <input type="checkbox"/> Rush 2 Business day * <input type="checkbox"/> Rush Other * <small>* need approval from Bureau Veritas</small>	PROJECT INFORMATION Project #: <u>2292 4317</u> Name: <u>Lady Ellen Place</u> PO #: Bureau Veritas Quote #: Bureau Veritas Contact: <u>Latic</u> Task Order/Line Item:	REPORTING REQUIREMENTS EDD Regulations: <input type="checkbox"/> ON 153 <input type="checkbox"/> ON 419 <input type="checkbox"/> BC CSR Other:	Notes 1) please indicate on chain of custody if your samples are soil vapour or ambient air 2) please list all canisters on the chain of custody even if unused PROJECT SPECIFIC COMMENTS <u>One Summa Not used</u>
Client Signature: <u>Philippe Chevette</u>	Received by: <u>Lawrence Brown Lawrence</u>	PLEASE RETURN ALL UNUSED EQUIPMENT	
Date/Time: <u>15/05/2013 / 3:30</u>	Date/Time: <u>2023/05/15 1950</u>		

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at <http://www.bvna.com/coc-terms-and-conditions>
 CFC 1000 (06/21)

Christine Brinkley 2023/05/16 09:10