

4/29/2019

Mr. Jim Tomalia  
Arcadis U.S., Inc.  
28550 Cabot Dr.  
Suite 500  
Novi MI 48377

Project Name: Ford LTP

Project #:

Workorder #: 1904510

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 4/23/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott

Project Manager

**WORK ORDER #: 1904510**

Work Order Summary

<b>CLIENT:</b>	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	<b>BILL TO:</b>	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
<b>PHONE:</b>	517-819-0356	<b>P.O. #</b>	MI001454.0003
<b>FAX:</b>		<b>PROJECT #</b>	Ford LTP
<b>DATE RECEIVED:</b>	04/23/2019	<b>CONTACT:</b>	Ausha Scott
<b>DATE COMPLETED:</b>	04/29/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	AA-34401CAPITOLST-01_041719	Modified TO-15	6.1 "Hg	5 psi
02A	IAF-34401CAPITOLST-01_041719	Modified TO-15	6.1 "Hg	4.7 psi
03A	IAG-34401CAPITOLST-01_041719	Modified TO-15	5.7 "Hg	4.9 psi
04A	DUP-34401CAPITOLST-01_041719	Modified TO-15	4.3 "Hg	5 psi
05A	DUP-34401CAPITOLST-02_041719	Modified TO-15	5.7 "Hg	5 psi
06A	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:   
 \_\_\_\_\_  
 Technical Director

DATE: 04/29/19

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935

Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)  
 Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.

Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics LLC.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE**  
**Modified TO-15**  
**Arcadis U.S., Inc.**  
**Workorder# 1904510**

Five 6 Liter Summa Canister (100% Cert Ambient) samples were received on April 23, 2019. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

**Receiving Notes**

There were no receiving discrepancies.

**Analytical Notes**

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

**Definition of Data Qualifying Flags**

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

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r1-File was requantified for the purpose of reissue

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	AA-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 08:22 PM
<b>Lab ID:</b>	1904510-01A	<b>Dilution Factor:</b>	1.68
<b>Date/Time Collected:</b>	4/18/19 09:02 AM	<b>Instrument/Filename:</b>	msd20.i / 20042417
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.60	0.67	Not Detected
1,4-Dioxane	123-91-1	0.49	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.60	0.67	Not Detected
Tetrachloroethene	127-18-4	0.71	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.60	0.67	Not Detected
Trichloroethene	79-01-6	0.44	0.81	0.90	Not Detected
Vinyl Chloride	75-01-4	0.14	0.39	0.43	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	IAF-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 09:22 PM
<b>Lab ID:</b>	1904510-02A	<b>Dilution Factor:</b>	1.66
<b>Date/Time Collected:</b>	4/18/19 09:11 AM	<b>Instrument/Filename:</b>	msd20.i / 20042418
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.66	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.59	0.66	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.66	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	IAG-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 10:02 PM
<b>Lab ID:</b>	1904510-03A	<b>Dilution Factor:</b>	1.65
<b>Date/Time Collected:</b>	4/18/19 09:18 AM	<b>Instrument/Filename:</b>	msd20.i / 20042419
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.65	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.59	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.35	0.59	0.65	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.65	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	94

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	DUP-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 10:41 PM
<b>Lab ID:</b>	1904510-04A	<b>Dilution Factor:</b>	1.56
<b>Date/Time Collected:</b>	4/18/19 12:00 AM	<b>Instrument/Filename:</b>	msd20.i / 20042420
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.15	0.56	0.62	Not Detected
1,4-Dioxane	123-91-1	0.46	0.50	0.56	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.33	0.56	0.62	Not Detected
Tetrachloroethene	127-18-4	0.66	0.95	1.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.35	0.56	0.62	Not Detected
Trichloroethene	79-01-6	0.41	0.75	0.84	Not Detected
Vinyl Chloride	75-01-4	0.13	0.36	0.40	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	91

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	DUP-34401CAPITOLST-02_041719	<b>Date/Time Analyzed:</b>	4/24/19 11:20 PM
<b>Lab ID:</b>	1904510-05A	<b>Dilution Factor:</b>	1.66
<b>Date/Time Collected:</b>	4/18/19 12:00 AM	<b>Instrument/Filename:</b>	msd20.i / 20042421
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.66	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.59	0.66	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.66	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	101

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	Lab Blank	<b>Date/Time Analyzed:</b>	4/24/19 02:25 PM
<b>Lab ID:</b>	1904510-06A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd20.i / 20042409c
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.095	0.36	0.40	Not Detected
1,4-Dioxane	123-91-1	0.29	0.32	0.36	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.21	0.36	0.40	Not Detected
Tetrachloroethene	127-18-4	0.42	0.61	0.68	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.22	0.36	0.40	Not Detected
Trichloroethene	79-01-6	0.26	0.48	0.54	Not Detected
Vinyl Chloride	75-01-4	0.082	0.23	0.26	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	112
4-Bromofluorobenzene	460-00-4	70-130	99
Toluene-d8	2037-26-5	70-130	97

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	CCV	<b>Date/Time Analyzed:</b>	4/24/19 08:19 AM
<b>Lab ID:</b>	1904510-07A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd20.i / 20042403
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	99
1,4-Dioxane	123-91-1	116
cis-1,2-Dichloroethene	156-59-2	103
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	104
Trichloroethene	79-01-6	104
Vinyl Chloride	75-01-4	100

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	92
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	104

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	LCS	<b>Date/Time Analyzed:</b>	4/24/19 12:25 PM
<b>Lab ID:</b>	1904510-08A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd20.i / 20042407
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	106
1,4-Dioxane	123-91-1	92
cis-1,2-Dichloroethene	156-59-2	108
Tetrachloroethene	127-18-4	103
trans-1,2-Dichloroethene	156-60-5	93
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	97
4-Bromofluorobenzene	460-00-4	70-130	95
Toluene-d8	2037-26-5	70-130	99

\* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	LCSD	<b>Date/Time Analyzed:</b>	4/24/19 01:28 PM
<b>Lab ID:</b>	1904510-08AA	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd20.i / 20042408
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	106
1,4-Dioxane	123-91-1	88
cis-1,2-Dichloroethene	156-59-2	112
Tetrachloroethene	127-18-4	106
trans-1,2-Dichloroethene	156-60-5	88
Trichloroethene	79-01-6	99
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	100
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	102

\* % Recovery is calculated using unrounded analytical results.



April 30, 2019

Kris Hinskey  
Arcadis Inc  
10559 Citation Ave  
Suite 100  
Brighton, MI 48116

CADENA project ID: E203631  
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater  
Project number: MI001454.0002/3/4.00002/2B/3B  
Client project scope reference: Sample COC only was used to define project analytical requirements.  
Laboratory: Eurofins Air Toxics - Folsom  
Laboratory submittal: 1904510  
Sample date: 2019-04-18  
Report received by CADENA: 2019-04-29  
Initial Data Verification completed by CADENA: 2019-04-30

5 Air sample were analyzed for TO-15 parameters.

There were no significant QC anomalies or exceptions to report.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

## CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

# Ford Motor Company – Livonia Transmission Project

## DATA REVIEW

### Livonia, Michigan

Volatile Organic Compounds (VOC) TO-15 Analysis

SDG #1904510

CADENA Verification Report: 2019-04-30

Analyses Performed By:  
Eurofins Air Toxics  
Folsom, California

Report #32707R  
Review Level: Tier III  
Project: MI001454.0003.00002



## DATA REVIEW

### SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 1904510 for samples collected in association with the Ford – Livonia, Michigan site. The review was conducted as a Tier III validation in addition to a verification/Tier II validation review performed by CADENA Inc. and included review of level IV laboratory data package completeness. Only elements of a Tier III validation effort (Tier III includes a detailed review of laboratory raw data to check for errors in calculation, calibration review, internal standard review and compound identification) and omitted deviations from the CADENA verification/Tier II report are documented in this report. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
						TO-15 (Full Scan)	TO-15 (SIM)	MISC
1904510	AA-34401CAPITOLST-01_041719	1904510-01A	Air	4/18/2019		X		
	IAF-34401CAPITOLST-01_041719	1904510-02A	Air	4/18/2019		X		
	IAG-34401CAPITOLST-01_041719	1904510-03A	Air	4/18/2019		X		
	DUP-34401CAPITOLST-01_041719	1904510-04A	Air	4/18/2019	IAG-34401CAPITO LST-01_041719	X		
	DUP-34401CAPITOLST-02_041719	1904510-05A	Air	4/18/2019	AA-34401CAPITO LST-01_041719	X		

## DATA REVIEW

### ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

## DATA REVIEW

### ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method TO-15 (Full Scan). Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
  - UJ The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

## DATA REVIEW

### VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

#### 1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation	Return Canister Pressure
USEPA TO-15	Air	30 days from collection to analysis (Canister)	Ambient Temperature	< -2" Hg

All samples were analyzed within the specified holding time and canister return pressure / vacuum criteria.

#### 2. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

#### 3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

##### 3.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

All compounds associated with the initial calibrations were within the specified control limits.

##### 3.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (30%) and RRF value greater than control limit (0.05).

All compounds associated with the continuing calibrations were within the specified control limits.

#### 4. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 140% or less than 60% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

## DATA REVIEW

### 5. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra. All identified compounds met the specified criteria.

### 6. Field Duplicate Sample Analysis

The field duplicate analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 35% for air matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are not greater than five times the RL, a control limit of one times the RL is applied to the difference between the duplicate sample results.

Results (in  $\mu\text{g}/\text{m}^3$ ) for the field duplicate samples are summarized in the following table.

Sample ID / Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
IAG-34401CAPITOLST-01_041719/ DUP-34401CAPITOLST-01_041719	All compounds	U	U	AC
AA-34401CAPITOLST-01_041719/ DUP-34401CAPITOLST-02_041719	All compounds	U	U	AC

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

### 7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

## DATA REVIEW

### DATA VALIDATION CHECKLIST FOR VOCs

VOCs: TO-15 ( Full Scan)	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
<b>GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)</b>					
<b>Tier II Validation</b>					
Canister return pressure (<-2"Hg)		X		X	
<b>Tier III Validation</b>					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Field Duplicate Sample RPD		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

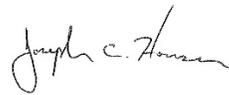
%R Percent recovery

RPD Relative percent difference

%D Percent difference

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE:



DATE: May 9, 2019

PEER REVIEW: Dennis Capria

DATE: May 10, 2019



**CHAIN OF CUSTODY  
CORRECTED SAMPLE ANALYSIS DATA  
SHEETS**



MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	AA-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 08:22 PM
<b>Lab ID:</b>	1904510-01A	<b>Dilution Factor:</b>	1.68
<b>Date/Time Collected:</b>	4/18/19 09:02 AM	<b>Instrument/Filename:</b>	msd20.i / 20042417
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.60	0.67	Not Detected
1,4-Dioxane	123-91-1	0.49	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.60	0.67	Not Detected
Tetrachloroethene	127-18-4	0.71	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.60	0.67	Not Detected
Trichloroethene	79-01-6	0.44	0.81	0.90	Not Detected
Vinyl Chloride	75-01-4	0.14	0.39	0.43	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	110
4-Bromofluorobenzene	460-00-4	70-130	103
Toluene-d8	2037-26-5	70-130	100

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	IAF-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 09:22 PM
<b>Lab ID:</b>	1904510-02A	<b>Dilution Factor:</b>	1.66
<b>Date/Time Collected:</b>	4/18/19 09:11 AM	<b>Instrument/Filename:</b>	msd20.i / 20042418
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.66	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.59	0.66	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.66	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	98

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	IAG-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 10:02 PM
<b>Lab ID:</b>	1904510-03A	<b>Dilution Factor:</b>	1.65
<b>Date/Time Collected:</b>	4/18/19 09:18 AM	<b>Instrument/Filename:</b>	msd20.i / 20042419
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.65	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.59	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.35	0.59	0.65	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.65	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	111
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	94

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	DUP-34401CAPITOLST-01_041719	<b>Date/Time Analyzed:</b>	4/24/19 10:41 PM
<b>Lab ID:</b>	1904510-04A	<b>Dilution Factor:</b>	1.56
<b>Date/Time Collected:</b>	4/18/19 12:00 AM	<b>Instrument/Filename:</b>	msd20.i / 20042420
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.15	0.56	0.62	Not Detected
1,4-Dioxane	123-91-1	0.46	0.50	0.56	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.33	0.56	0.62	Not Detected
Tetrachloroethene	127-18-4	0.66	0.95	1.0	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.35	0.56	0.62	Not Detected
Trichloroethene	79-01-6	0.41	0.75	0.84	Not Detected
Vinyl Chloride	75-01-4	0.13	0.36	0.40	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	109
4-Bromofluorobenzene	460-00-4	70-130	104
Toluene-d8	2037-26-5	70-130	91

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN  
Ford LTP

<b>Client ID:</b>	DUP-34401CAPITOLST-02_041719	<b>Date/Time Analyzed:</b>	4/24/19 11:20 PM
<b>Lab ID:</b>	1904510-05A	<b>Dilution Factor:</b>	1.66
<b>Date/Time Collected:</b>	4/18/19 12:00 AM	<b>Instrument/Filename:</b>	msd20.i / 20042421
<b>Media:</b>	6 Liter Summa Canister (100% Cert Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.16	0.59	0.66	Not Detected
1,4-Dioxane	123-91-1	0.48	0.54	0.60	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.36	0.59	0.66	Not Detected
Tetrachloroethene	127-18-4	0.70	1.0	1.1	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.37	0.59	0.66	Not Detected
Trichloroethene	79-01-6	0.44	0.80	0.89	Not Detected
Vinyl Chloride	75-01-4	0.14	0.38	0.42	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	108
4-Bromofluorobenzene	460-00-4	70-130	100
Toluene-d8	2037-26-5	70-130	101

# Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: \_\_\_\_\_ Workorder #: 1904510

Click links below to view:

[Canister Sampling Guide](#)  
[Helium Shroud Video](#)

180 Blue Ravine Rd. Suite B, Folsom, CA 95630  
Phone (800) 985-5955; Fax (916) 351-8279

Client: <u>Ford</u>	PID: <u>NA</u>	<b>Special Instructions/Notes:</b> Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jim.tomalia@cadena.com. Cadena #E203631. Level IV Reporting	<b>Turnaround Time (Rush surcharges may apply)</b>	
Project Name: <u>Ford LTP</u>			5 Day Turnaround Time	
Project Manager: <u>Kris Hinskey</u>	P.O.# <u>MI001454.0003</u>		<b>Canister Vacuum/Pressure</b>	
Sampler: <u>Alcubilla, E. Redner, M. Oberdor</u>			<b>Requested Analyses</b>	
Site Name: <u>34401 Capitol</u>			<b>Lab Use Only</b>	

Lab ID	Sample Identification	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N <sub>2</sub> / He	TO-15 (See Special Instructions/Notes)	Requested Analyses		
				Date	Time	Date	Time								
01A	AA-34401CAPITOLST-01_041719	6L0258	23881	4-17-19	1017	4-18-19	0902	-29.5	-6			X			
02A	IAF-34401CAPITOLST-01_041719	6L0337	22633	4-17-19	1020	4-18-19	0911	-29.5	-6			X			
03A	IAG-34401CAPITOLST-01_041719	6L1687	22289	4-17-19	1011	4-18-19	0918	-29	-6			X			
04A	DWP-34401CapitolSt-01-041719	6L0217	22878	4-17-19	—	4-18-19	—	-29.5	-4.5			X			
05A	DWP-34401CapitolSt-02-041719	6L2315	22122	4-17-19	—	4-18-19	—	-29.5	-5.5			X			

Relinquished by: (Signature/Affiliation) <u>[Signature] / Acadis</u>	Date <u>4-19-19</u>	Time <u>1600</u>	Received by: (Signature/Affiliation) <u>[Signature]</u>	Date <u>04/23/19</u>	Time <u>09150</u>
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: Fedex Custody Seals Intact?  Yes  No  None

**Sample Transportation Notice:** Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

5/6/2019

Mr. Jim Tomalia  
Arcadis U.S., Inc.  
28550 Cabot Dr.  
Suite 500  
Novi MI 48377

Project Name: Ford LTP Off-Site Sampling

Project #:

Workorder #: 1904648

Dear Mr. Jim Tomalia

The following report includes the data for the above referenced project for sample(s) received on 4/29/2019 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott  
Project Manager

**WORK ORDER #: 1904648**

Work Order Summary

<b>CLIENT:</b>	Mr. Jim Tomalia Arcadis U.S., Inc. 28550 Cabot Dr. Suite 500 Novi, MI 48377	<b>BILL TO:</b>	Accounts Payable Arcadis U.S., Inc. 630 Plaza Drive Suite 600 Highlands Ranch, CO 80129
<b>PHONE:</b>	517-819-0356	<b>P.O. #</b>	MI001454.0003.00002
<b>FAX:</b>		<b>PROJECT #</b>	Ford LTP Off-Site Sampling
<b>DATE RECEIVED:</b>	04/29/2019	<b>CONTACT:</b>	Ausha Scott
<b>DATE COMPLETED:</b>	05/06/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SSMP-34401CAPITOLST-01_042419	TO-15	6.1 "Hg	14.9 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY:   
 Technical Director

DATE: 05/06/19

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,  
 TX NELAP - T104704434-15-9, UT NELAP CA0093332015-6, VA NELAP - 8113, WA NELAP - C935  
 Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)  
 Accreditation number: CA300005, Effective date: 10/18/2015, Expiration date: 10/17/2016.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Eurofins Air Toxics, Inc.  
 180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
 (916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE**  
**EPA Method TO-15**  
**Arcadis U.S., Inc.**  
**Workorder# 1904648**

One 1 Liter Summa Canister (100% Certified) sample was received on April 29, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

**Receiving Notes**

There were no receiving discrepancies.

**Analytical Notes**

As per client project requirements, the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. Concentrations that are below the level at which the canister was certified may be false positives.

**Definition of Data Qualifying Flags**

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

EPA METHOD TO-15 GC/MS FULL SCAN  
 Ford LTP Off-Site Sampling

<b>Client ID:</b>	SSMP-34401CAPITOLST-01_042419	<b>Date/Time Analyzed:</b>	5/2/19 11:56 PM
<b>Lab ID:</b>	1904648-01A	<b>Dilution Factor:</b>	2.53
<b>Date/Time Collected:</b>	4/24/19 01:40 PM	<b>Instrument/Filename:</b>	msd17.i / 17050223
<b>Media:</b>	1 Liter Summa Canister (100% Certified)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	2.2	4.0	5.0	Not Detected
1,4-Dioxane	123-91-1	9.7	14	18	Not Detected
cis-1,2-Dichloroethene	156-59-2	1.4	4.0	5.0	Not Detected
Tetrachloroethene	127-18-4	3.4	6.9	8.6	140
trans-1,2-Dichloroethene	156-60-5	1.5	4.0	5.0	Not Detected
Trichloroethene	79-01-6	2.4	5.4	6.8	Not Detected
Vinyl Chloride	75-01-4	1.3	2.6	3.2	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	80
4-Bromofluorobenzene	460-00-4	70-130	107
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN  
 Ford LTP Off-Site Sampling

<b>Client ID:</b>	Lab Blank	<b>Date/Time Analyzed:</b>	5/2/19 12:34 PM
<b>Lab ID:</b>	1904648-02A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd17.i / 17050205c
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1-Dichloroethene	75-35-4	0.87	1.6	2.0	Not Detected
1,4-Dioxane	123-91-1	3.8	5.4	7.2	Not Detected
cis-1,2-Dichloroethene	156-59-2	0.56	1.6	2.0	Not Detected
Tetrachloroethene	127-18-4	1.4	2.7	3.4	Not Detected
trans-1,2-Dichloroethene	156-60-5	0.59	1.6	2.0	Not Detected
Trichloroethene	79-01-6	0.97	2.1	2.7	Not Detected
Vinyl Chloride	75-01-4	0.51	1.0	1.3	Not Detected

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	77
4-Bromofluorobenzene	460-00-4	70-130	101
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN  
 Ford LTP Off-Site Sampling

<b>Client ID:</b>	CCV	<b>Date/Time Analyzed:</b>	5/2/19 10:58 AM
<b>Lab ID:</b>	1904648-03A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd17.i / 17050202
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	116
1,4-Dioxane	123-91-1	93
cis-1,2-Dichloroethene	156-59-2	87
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	108
Trichloroethene	79-01-6	92
Vinyl Chloride	75-01-4	101

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	79
4-Bromofluorobenzene	460-00-4	70-130	110
Toluene-d8	2037-26-5	70-130	96

EPA METHOD TO-15 GC/MS FULL SCAN  
 Ford LTP Off-Site Sampling

<b>Client ID:</b>	LCS	<b>Date/Time Analyzed:</b>	5/2/19 11:39 AM
<b>Lab ID:</b>	1904648-04A	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd17.i / 17050203
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	115
1,4-Dioxane	123-91-1	88
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	109
trans-1,2-Dichloroethene	156-60-5	92
Trichloroethene	79-01-6	90
Vinyl Chloride	75-01-4	103

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	80
4-Bromofluorobenzene	460-00-4	70-130	105
Toluene-d8	2037-26-5	70-130	95

\* % Recovery is calculated using unrounded analytical results.

EPA METHOD TO-15 GC/MS FULL SCAN  
 Ford LTP Off-Site Sampling

<b>Client ID:</b>	LCSD	<b>Date/Time Analyzed:</b>	5/2/19 12:06 PM
<b>Lab ID:</b>	1904648-04AA	<b>Dilution Factor:</b>	1.00
<b>Date/Time Collected:</b>	NA - Not Applicable	<b>Instrument/Filename:</b>	msd17.i / 17050204
<b>Media:</b>	NA - Not Applicable		

Compound	CAS#	%Recovery
1,1-Dichloroethene	75-35-4	112
1,4-Dioxane	123-91-1	90
cis-1,2-Dichloroethene	156-59-2	94
Tetrachloroethene	127-18-4	110
trans-1,2-Dichloroethene	156-60-5	93
Trichloroethene	79-01-6	91
Vinyl Chloride	75-01-4	102

D: Analyte not within the DoD scope of accreditation.

Surrogates	CAS#	Limits	%Recovery
1,2-Dichloroethane-d4	17060-07-0	70-130	82
4-Bromofluorobenzene	460-00-4	70-130	106
Toluene-d8	2037-26-5	70-130	96

\* % Recovery is calculated using unrounded analytical results.



May 6, 2019

Kris Hinskey  
Arcadis Inc  
10559 Citation Ave  
Suite 100  
Brighton, MI 48116

CADENA project ID: E203631  
Project: Ford Livonia Transmission Project - OFF-SITE - Soil Gas and Groundwater  
Project number: MI001454.0002/3/4.00002/2B/3B  
Client project scope reference: Sample COC only was used to define project analytical requirements.  
Laboratory: Eurofins Air Toxics - Folsom  
Laboratory submittal: 1904648  
Sample date: 2019-04-24  
Report received by CADENA: 2019-05-06  
Initial Data Verification completed by CADENA: 2019-05-06

1 Air sample was analyzed for TO-15 parameters.

There were no significant QC anomalies or exceptions to report.

Data verification for the report specified above was completed using the Ford Motor Company Environmental Laboratory Technical Specification, the CADENA Standard Operating Procedure for the Verification of Environmental Analytical Data and the associated analytical methods as references for evaluating the batch QC, sample data and report content. The EPA National Functional Guidelines for validating organic and inorganic data were used as guidance when addressing out of control QC results and the associated data qualifiers.

Analytical results reported between RDL and MDL are flagged 'J' and considered estimated values.

The definitions of the qualifiers used for this data package are defined in the analytical report. CADENA valid qualifiers are defined in the table below. To view and download a PDF copy of the laboratory analytical report access the CADENA CLMS at <http://clms.cadenaco.com/index.cfm>.

Please contact me if you have any questions.

Sincerely,

Jim Tomalia

Project Scientist

CADENA Inc, 1099 Highland Drive, Suite E, Ann Arbor, MI 48108 517-819-0356

## CADENA Valid Qualifiers

Valid Qualifiers	Description
<	Less than the reported concentration.
>	Greater than the reported concentration.
B	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was greater than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the reported concentration. For Inorganic methods the sample concentration was greater than the RDL and less than 10x the blank concentration and is considered non-detect at the reported concentration.
E	The analyte / Compound reported exceeds the calibration range and is considered estimated.
EMPC	Estimated Minimum Potential Contamination - Dioxin/Furan analyses only.
J	Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of an analyte / compound but the result is less than the sample Quantitation limit, but greater than zero. The flag is also used in data validation to indicate a reported value should be considered estimated due to associated quality assurance deficiencies.
J-	The result is an estimated quantity, but the result may be biased low.
JB	NON-DETECT AT THE CONCENTRATION REPORTED AND ESTIMATED
JH	The sample result is considered estimated and is potentially biased high.
JL	The sample result is considered estimated and is potentially biased low.
JUB	NON-DETECT AT THE REPORTING LIMIT AND ESTIMATED
NJ	Tentatively identified compound with approximated concentration.
R	Indicates the value is considered to be unusable. (Note: The analyte / compound may or may not be present.)
TNTC	Too Numerous to Count - Asbestos and Microbiological Results.
U	Indicates that the analyte / compound was analyzed for, but not detected.
UB	The analyte / compound was detected in the associated blank. For Organic methods the sample concentration was less than the RDL and less than 5x (or 10x for common lab contaminants) the blank concentration and is considered non-detect at the RDL. For Inorganic methods the sample concentration was less than the RDL and less than 10x the blank concentration and is considered non-detect at the RDL.
UJ	The analyte / compound was not detected above the reported sample Quantitation limit. However, the Quantitation limit is considered to be approximate due to associated quality assurance results and may or may not represent the actual limit of Quantitation to accurately and precisely report the analyte in the sample.

Daily Log - Ford Off Site VI Investigation - VISIT 1

Project No.: MI001454.0003 Page 1 of 1  
 Site Location: 34401 Capitol Livonia, MI  
 Prepared By: M. Olender

Date	Time	Description of Activities
4/16/19		Purpose: <u>R3 Visit 1</u>
↓		Arcadis: <u>H. Ladd; M. Olender; Quinn C.</u>
↓		Weather: <u>42° F, rainy, cloudy</u>
4/16/19	0900	Arcadis onsite
↓	0905	DEQ survey conducted
↓	0908	chemical inventory conducted
↓	0942	Arcadis offsite
<u>MJO</u>		

Visit 1 Checklist

Background sources of VOCs have been removed/isolated?  Yes  No  
 Location of background sources of VOCs that have been removed/isolated: Storage shed in backyard  
in sealed bin  
 Sump pit is present? Yes  No

Daily Log - Ford Off Site VI Investigation - VISIT 2 & 3

Project No.: MI001454.0003 Page 1 of 1

Site Location: 34401 CAPITOL Livonia, MI

Prepared By: M. Olender

Date	Time	Description of Activities
4/17/19		Purpose: R3 VISIT 2 - deploy canisters
		Arcadis: M. Olender, E. Redner, A. Richmond
		Weather: 47°F, cloudy
		SUMMA Canisters used: 5 - 24hr SUMMA canisters, 1-10min
4/17/19	1000	Arcadis onsite
	1005	Deploy canisters
	1020	Remind homeowner to keep all doors/windows
		to outside closed as much as possible
	1025	Arcadis off site
<i>Euf</i>		

Visit 2 & 3 Checklist

Background sources of VOCs have been removed/isolated?  Yes  No

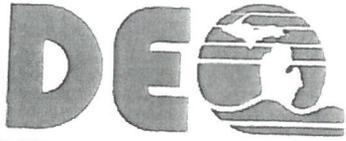
Number of SSMP samples collected: 1

Number of indoor/ambient air samples collected: 3 + 2 DUPs

Occupancy hours (for commercial properties only): n/a







Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM

Date: 10/3/18 Survey Performed by: Donald Richmond  
 Round 2: 2-20-19 Hayden Ladd

1. OCCUPANT: R3: 4-16-19 Hayden Ladd

Rent: \_\_\_\_\_ Own:

Resident Name: Francis W. Antrobus

Address: 34401 Capital St

Telephone: Home: 734 716 3975 Work: \_\_\_\_\_

How long have you lived at this location? 2006

List current occupants/occupation below (attach additional pages if necessary):

Age (If under 18)	Sex (M/F)	Occupation
		2 - Frantz and wife (Dorris)

2. OWNER OR LANDLORD: (If same as occupant, check here  and go to Item No. 3).

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Address: \_\_\_\_\_

City and State: \_\_\_\_\_

County: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Office Phone: \_\_\_\_\_



Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)

3. SENSITIVE POPULATION:

Daycare/Nursing Home/Hospital/School/Other (specify): NA

4. BUILDING CHARACTERISTICS:

Residential/Multi-family Residential/Office/Strip Mall/Commercial/Industrial/School

Describe Building: Residential Year Constructed: ? 1950s-1960s

Number of floors at or above grade: 1

Number of floors below grade: 0 (full basement/crawl space/slab on grade)

Depth of structure below grade: 0 ft. Basement size: NA ft<sup>2</sup>

If the property is residential, what type? (Circle all appropriate responses.)

Ranch	2-Family	3-Family	Raised Ranch
Split Level	Colonial	<u>Cape Cod</u>	Contemporary
Mobile Home	Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other: _____	

If multiple units, how many? \_\_\_\_\_

If the property is commercial:

Business type(s) NA

Does it include residences (i.e., multi-use)? Yes No If yes, how many? \_\_\_\_\_

5. OCCUPANCY:

Is basement/lowest level occupied? (Circle one)

Full-time Occasionally Seldom Almost Never



**Indoor Air Sampling Procedure Via USEPA Method TO-15**

**INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)**

Level	General Use (e.g., family room, bedroom, laundry, workshop, storage)
Basement	NA
1 <sup>st</sup> Floor	Family Room
2 <sup>nd</sup> Floor	Bedrooms
3 <sup>rd</sup> Floor	
4 <sup>th</sup> Floor	

(Use additional page(s) as necessary)

**6. CONSTRUCTION CHARACTERISTICS: (Circle all that apply.)**

a. Above Grade Construction: (Describe type: wood frame, concrete, stone, brick).

~~concrete block~~

b. Basement Type: Full    Crawlspace    Slab    Other: no basement

c. Basement Floor: Concrete    Dirt    Stone    Other: (crawl space)

d. Finished Basement Floor: Uncovered    Covered NA  
 If covered, what with? \_\_\_\_\_

e. Foundation Walls: Poured    Block    Stone    Other: \_\_\_\_\_

f. Foundation Walls: Unsealed    Sealed    Sealed with: \_\_\_\_\_

g. The Basement is: Wet    Damp    Dry NA

h. The Basement is: Finished    Unfinished    Partially Finished NA

i. Sump Present (Y/N) N    If yes, how many? \_\_\_\_\_

Where Discharged? NA

Water in Sump? Yes    No    Not Applicable



Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)

Identify all potential soil vapor entry points and estimated size (e.g., cracks, utility parts, drains).

Expansion Joints in Garage, Soil in crawl space

Are the basement walls or floor sealed with waterproof paint or epoxy coatings? Yes No NA

Type of ground cover outside of building: Grass Concrete Asphalt Other \_\_\_\_\_

Is an existing subsurface depressurization (radon) system in place? Yes No

If yes, is it active, or passive?

Is a sub-slab vapor/moisture barrier in place? Yes No

Type of barrier: NA

7. HEATING, VENTING, and AIR CONDITIONING

Type of heating system(s) used in this building: (Circle all that apply: Note the primary).

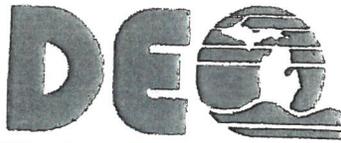
Hot Air Circulation Heat Pump Hot Water Baseboard  
Space Heaters Steam Radiation Radiant Floor  
Electric Baseboard Wood Stove Outdoor Wood Boiler  
Other: Forced air with electric space heater

The primary type of fuel used is:

Natural Gas Fuel Oil Kerosene  
Electric Propane Solar  
Wood Coal

Domestic hot water tank fueled by: Natural Gas

Location of Boiler/Furnace: Basement Outdoors Main Floor Other \_\_\_\_\_



Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)

Air Conditioning: Central Air Window Units Open Windows None

Are air distribution ducts present?  Yes No

Is there a whole house fan? Yes  No

Describe the air intake system (outside air supply, cold air return, ductwork, etc.) and its condition where visible. Indicate the locations on the floor plan diagram.

Ductwork is in good condition.

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B. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a) Is there an attached garage? Yes  No

If yes, does it have a separate heating unit? Yes  No

b) Are any petroleum-powered machines or vehicles stored in an attached garage (e.g., lawn mower, ATV, car)  Yes No

Vehicle - car  
 c) Has the building ever had a fire? Yes  No

d) Is there a fuel burning or unvented gas space heater? Yes  No

e) Is there a workshop or hobby/craft area?  Yes No

If yes, where and what type? Car Pk - Store

f) Is there smoking in the building?  Yes  No

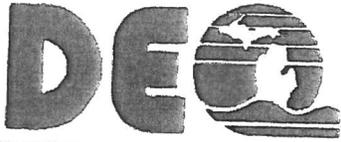
If yes, how frequently? Every day - wife quit smoking  
R3: Infrequent smoking



Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)

- g) Have cleaning products been used recently?  Yes  No  
If yes, when and what type? Once a week - general purpose cleaning
- h) Have cosmetic products been used recently?  Yes  No  
If yes, when and what type? \_\_\_\_\_
- i) Has there been painting or staining in the last six months?  Yes  No  
If yes, when and where? In Garage only (Spray paint)
- j) Is there new carpet, drapes, or other textiles? Yes  No  
If yes, when and where? \_\_\_\_\_
- k) Have air fresheners been used recently?  Yes  No  
If yes, when and what type? plug-in in bathroom (Glade) - taken out of bathroom
- l) Is there a kitchen exhaust fan? Yes  No  
If yes, where is it vented? \_\_\_\_\_
- m) Is there a clothes dryer?  Yes  No  
If yes, is it vented outside?  Yes  No
- n) Has there been a pesticide application? Yes  No  
If yes, when and what type? \_\_\_\_\_
- o) Are there odors in the building?  Yes  No  
If yes, please describe: Cigarette smoke, paint in garage



Indoor Air Sampling Procedure Via USEPA Method TO-15

INDOOR AIR BUILDING SURVEY AND SAMPLING FORM (continued)

p) Do any of the building occupants use solvents at work (e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetology)?

Yes  No

If yes, what types of solvents are used? Paint thinner

If yes, are their clothes washed at work?

Yes  No at home

q) Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response.)

- No
- Unknown
- Yes, use dry-cleaning regularly (weekly)
- Yes, use dry-cleaning infrequently (monthly or less)
- Yes, work at a dry-cleaning service

r) Is there a radon mitigation system for the building/structure?

Yes  No

If yes, what is date of installation? NA

Active  Passive

s) Additional mitigation system information (fan size, location, operating status, liner installed, etc.):

NA  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

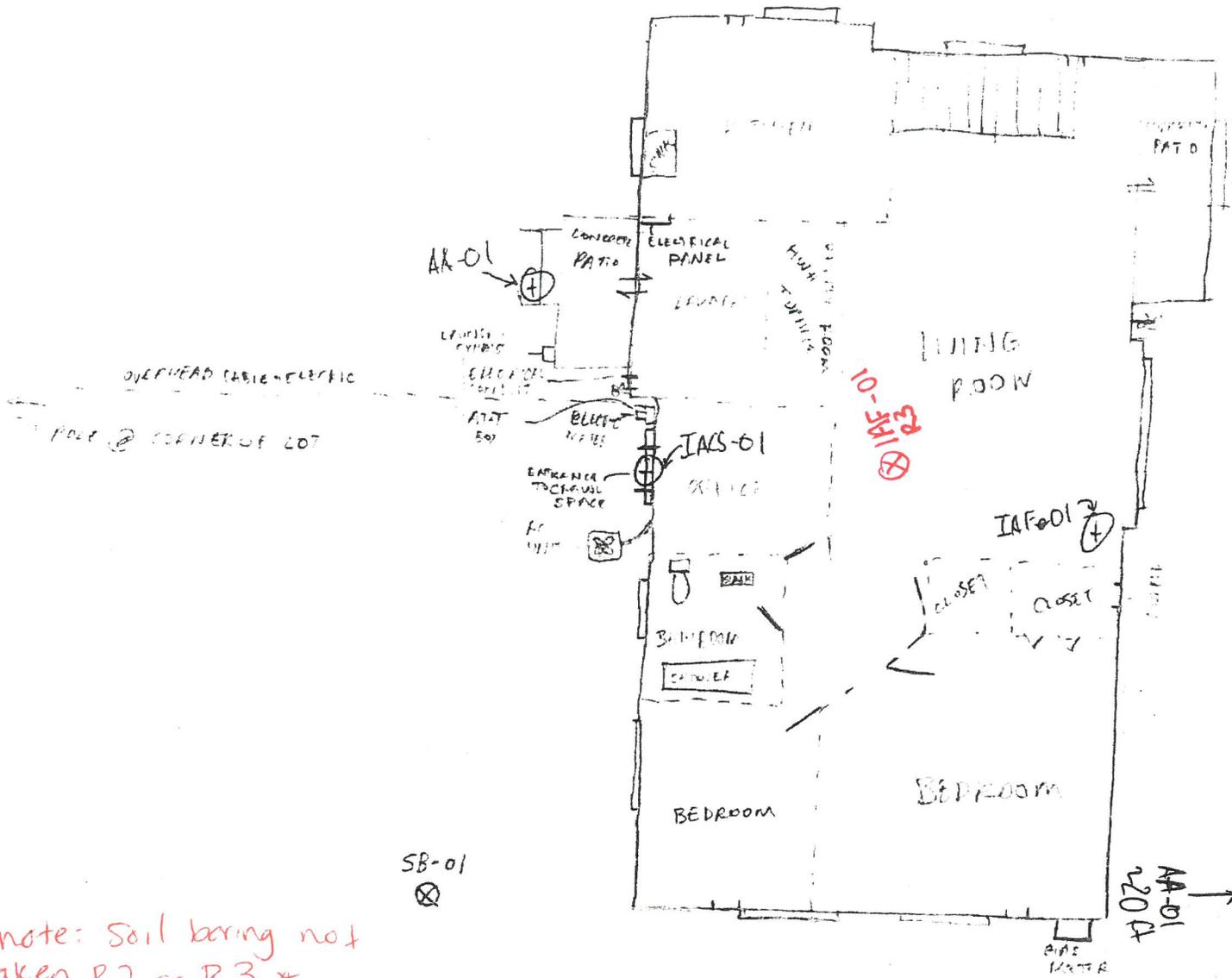
Camera 9272 R# 457

**PRODUCT INVENTORY FORM:**

**Make and Model of field instrument used:**

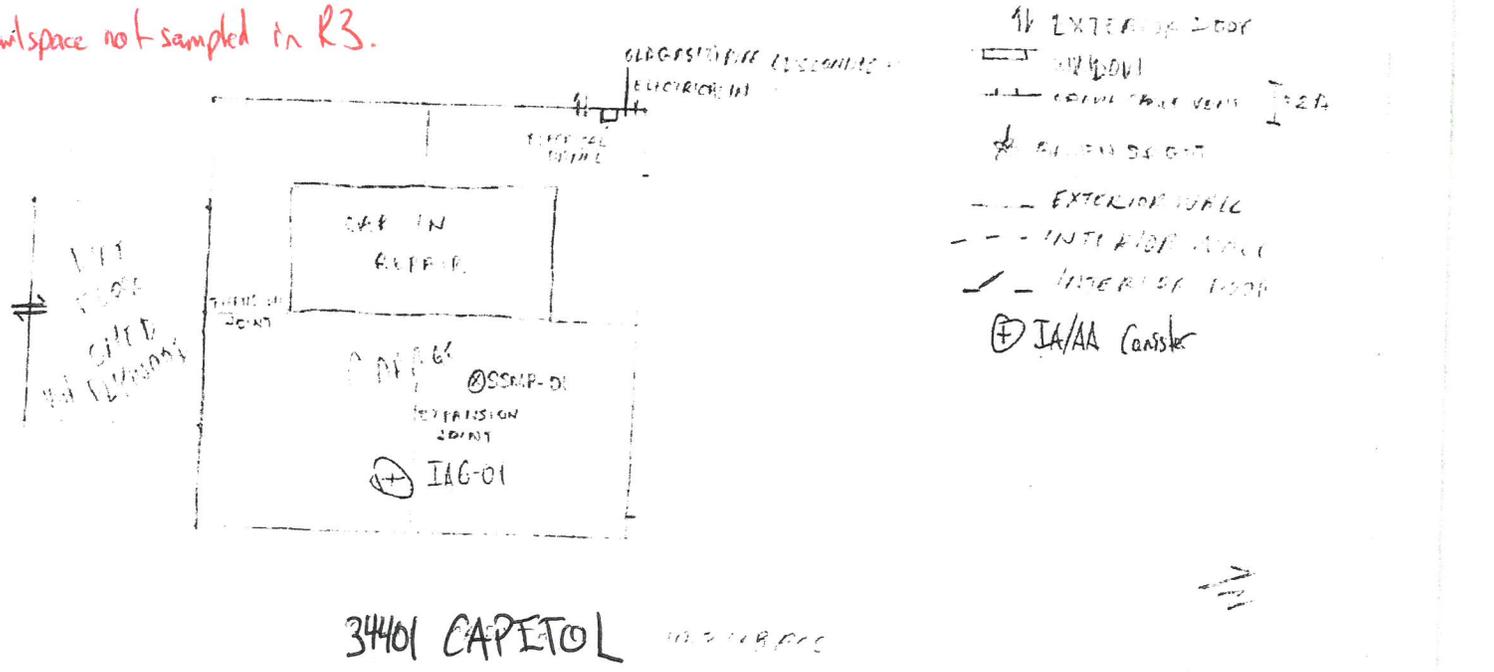
List specific products found in the residence or area that have the potential to affect indoor air quality (e.g., gasoline or kerosene storage cans, glues, paints, cleaning solvents/products, polishes/waxes, new furniture/ carpet, nail polish/hairspray/cologne).

Potential Source	Location	Size and Condition	Chemical Ingredients	Field Instrument Reading (units)	Photo Y/N
Gasoline Storage Cans and Equipment				<del>2606 PFB</del>	<del>Y</del>
Kerosene Storage Cans					
Paints/Thinners/Strippers					
Cleaning Solvents	Garage	1 gal	VOC'S	2606 PFB	Y
Hobby Supplies - Glue, Paint, Etc.	Garage	1/2 gal	VOC'S	986 PIB	Y
Oven Cleaner	Garage	1 gal	VOC'S	2604 PFB	Y
Carpet/Upholstery Cleaners					
Household Cleaners (non-solvent)	Master (laundry area)	1 gal	VOC'S	160 PFB	Y
Moth Balls	Garage	1 box	VOC'S	4171	Y
Polishes/Waxes					
Insecticides	Garage	1/2 gal	VOC'S	519 PFB	Y
Furniture/Floor Polish					
Hairspray					
Cologne/Perfume					
Air Fresheners					
Interior Fuel Tank	<del>Garage</del>				
Wood Stove/Fireplace					
New Furniture/Upholstery					
New Carpeting/Flooring					
Others (fill in below)					



\* note: Soil boring not taken R2 or R3 \*

\* Crawlspace not sampled in R3.



34401 CAPITOL

Round 2 2/20/19

Product Inventory Form

i.e. gasoline cans/equipment, kerosene, paints/thinners/strippers, cleaning solvents, hobby supplies (glues), oven cleaner, carpet/upholstery cleaners, household cleaners, moth balls, polishes/waxes, insecticides, furniture/floor polish, hairspray, cologne/perfume, air fresheners, interior fuel tank, wood stove/fireplace, new furniture/upholstery, new carpet/flooring

Location	Product Description	Chemical Ingredients	Quantity	PID Reading (ppb)	Photo	Removed (Y/N)
Kitchen	General Household Cleaner	NA	Multiple	100	Yes	N
Laundry Room	OER Interior Paint	Dimethyl Ether, MEK, Xylene, Ethyl Acetate, Methyl Isobutyl Ketone	3	150	Yes	Y
Laundry Room	Rust Olcum High Performance Protective Enamel	Stoddard solvent, hydro-treated light distillate oil-based paint carbon black resin	1	150	Yes	N
Laundry Room	Systemic Houseplant Insect Control	Imidacloprid	1	150	Yes	N
Laundry Room	Raid House and Garden	d-cis, trans allethrin	1	137	Yes	Y
Laundry Room	OFF Deep Woods	DEET	1	146	Yes	Y
Laundry Room	Roach and Ant Killer	S-Bioallethrin, Delta metho <sup>th</sup>	1	146	Yes	Y
Garage	Cank Liquid wrench	Petroleum distillates	1	527	Yes	Y
Garage	Multi Purpose Lubricant	Petroleum distillate	1	527	Yes	Y
Garage	WD-40	Petroleum distillate	1	527	Yes	Y
Garage	CRC Belt Conditioner	Isohexane, n-hexane	1	527	Yes	Y
Garage	Oatey PVC Cement	MEK, Cyclohexanone, Toluene, Acetone	1	527	Yes	Y
Garage	Turtle Wax Chrome Polish	NA	1	527	Yes	Y
Garage	POK 15 Metal Prep	Phosphoric Acid solution	1	527	Yes	Y
Garage	GOOF OFF	VOCs	1	527	Yes	Y



Office Name & Address (Reporting Information): Arcadis of Michigan, LLC 28550 Cabot Drive, Suite 500, Novi, MI 48377		Project Name: Ford LTP Off-site Sampling	
Field Manager: Adam Richmond		Project Number: MI001454.0003	
Phone Number: 248.994.2240	Special Instructions:  	Site Address: 34401 Capitol	
Email Address for Result Reporting: Kristoffer.Hinskey@arcadis.com		Sampler Name: M. Olander, E. Redner	
Summa Canister Size (1L, 2.7 L, 6L) 6 Liter	Lab: Eurofins		

Sample ID	Sample Location Description	Indoor/Outdoor	PID in Sampling Area (ppb)	Canister Number	Flow Controller Number	Sample Collection Start Date	Sample Collection Start Time	Beginning Canister Pressure (in. Hg)	Sample Collection End Date	Sample Collection End Time	Ending Canister Pressure (in. Hg)	HVAC System Information			Notes
												HVAC Fan On?	Heat On?	Temperature Setting (°F) (start/end)	
AA-34401CAPITOLST-01_041719	NE corner of (front) yard	O	0	6L0258	23881	4-17-19	1017	-29.5	4-18-19	0902	-6	-	-	-	
IAF-34401CAPITOLST-01_041719	Next to TV in living room	I	46	6L0337	22633	4/17/19	1020	-29.5	4/18/19	0911	-6	Y	Y	66/66	
IAG-34401CAPITOLST-01_041719	Middle of garage	I	38	6L1687	22289	4-17-19	1011	-29	4-18-19	0918	-6	-	-	-	
DUP-34401capitolst-01-041719	Middle of garage	I	38	6L0217	22878	4-17-19	1011	-29.5	4-18-19	0918	-4.5	-	-	-	
DUP-34401capitolst-02-041719	NE corner of (front) yard	O	0	6L2315	22122	4-17-19	1017	-29.5	4-18-19	0902	-5.5	-	-	-	

Meteorological Data							General Notes or Observations	
Date	Time	Temp. (°F)		Relative Humidity (%)	Barometric Pressure (in. Hg)	Air Speed (mph)	Source of Weather Information	<hr style="width: 100%;"/>
		Indoor	Outdoor					
4/17/19	1000	66	47	77	30.07	ENE 8	weather.com app	
4-18-19	0900	66	62	72	29.63	SSW 12	weather.com app	
							weather.com app	
							weather.com app	

Office Name & Address (Reporting Information): Arcadis of Michigan, LLC 28550 Cabot Drive, Suite 500, Novi, MI 48377		Project Name: Ford LTP Off-site Sampling	
Field Manager: Adam Richmond		Project Number: MI001454.0003	
Phone Number: 248.994.2240	Special Instructions: 	Site Address:	
Email Address for Result Reporting: Kristoffer.Hinskey@arcadis.com		34401 Capitol	
Helium Detector Model Used: Dielectric MGD-2002	Helium Leak Test Method: Bucket Shroud	Summa Canister Size (1L, 2.7 L, 6L): 1 Liter	Lab: Eurofins

Sample ID	Sample Location Description	Date	Pre-Sampling Shut-In / Leak-Down Test Pass/Fail?	Helium Tracer Test - Performed During Sample Point Purge			Purge Volume (mL)	Purge Rate (mL/min)	Canister Number	Flow Controller Number	Sample Collection Start Time	Starting Canister Pressure (in. Hg)	Sample Collection End Time	Ending Canister Pressure (in. Hg)	Post-Sampling CO <sub>2</sub> Reading from GEM (%)	Post-Sampling O <sub>2</sub> Reading from GEM (%)	Micromanometer Reading (in. WC)
				Shroud Helium Concentration During Purge (% Helium)	Helium Reading in Purged Vapor (% Helium)	Helium Test Pass/Fail (Purge contains <5% of shroud to pass)?											
SSMP34401CAPITOL-ST-01_041819	Garage	4-18-19	PASS	42	0	PASS	100 mL	100 ml/min	1L1633	232.76	09:40	-28.5	09:51	-5.5	2.8	19.3	-0.0048
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									
							100 mL	100 ml/min									

Meteorological Data							
Date	Time	Temp. (°F)		Relative Humidity (%)	Barometric Pressure (in. Hg)	Source of Weather Information	Purge Volume Calculations: The purge volume for each sample has been pre-calculated using the information below. For sub-slab soil vapor samples the sample train tubing length is ~54 inches and the interior tubing radius is 0.085". Three volumes of the sample train is 60 milliliters using the equation for volume of a cylinder (volume = pi * radius <sup>2</sup> * height) where Volume = 60 ml, radius = 0.85" and height = 54". To have sufficient volume to conduct helium leak testing 100 milliliters should be purged from each sample point. For exterior soil vapor sampling 60 milliliters should be used for the above ground sample train. Each additional foot of sub-grade tubing account for approximately 13 ml. To have sufficient volume to conduct helium leak testing at least 100 milliliters should be purged from each sample point.
		Indoor	Outdoor				
4-18-19	0955	66	62	73	29.62	weather.com app	General Notes or Observations
						weather.com app	
						weather.com app	
						weather.com app	
						weather.com app	



# Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: \_\_\_\_\_  
 Workorder #: \_\_\_\_\_  
 Click links below to view:  
[Canister Sampling Guide](#)  
[Helium Shroud Video](#)

180 Blue Ravine Rd. Suite B, Folsom, CA 95630  
 Phone (800) 985-5955; Fax (916) 351-8279

Client: Ford Ford LTP		PID: NA		Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC.				Turnaround Time (Rush surcharges may apply)		
Project Name: Kris Hinskey		P.O.# MI001454.0003		Submit results through Cadena at jim.tomalia@cadena.com.				5 Day Turnaround Time		
Site Name: 34401 Capitol		Flow Controller # 23276		Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		
Lab ID	Sample Identification	Can #	Flow Controller #	Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Requested Analyses
	SSMP34401CAPITOLST-01-041819	11633	23276	4-18-19	0940	4-18-19	0951	28.5	5.5	X
Relinquished by: (Signature/Affiliation)		Date		Date	Time	Received by: (Signature/Affiliation)		Date		
Relinquished by: (Signature/Affiliation)		Date		Date	Time	Received by: (Signature/Affiliation)		Date		
Relinquished by: (Signature/Affiliation)		Date		Date	Time	Received by: (Signature/Affiliation)		Date		

Lab Use Only	
Shipper Name:	Custody Seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> None
<p><b>Sample Transportation Notice:</b> Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922</p>	

**Analyte Request/Canister Chain of Custody  
For Laboratory Use**

Page 1 of 1

PID: \_\_\_\_\_  
Workorder #: \_\_\_\_\_

180 Blue Ravine Rd. Suite B, Folsom, CA 95630  
Phone (800) 988-9955; Fax (916) 351-9279

Client:	Arcadia	PID:	
Project Name:	Ford LTP Off-Site Sampling	P.O.#	
Project Manager:	Kira Hinkley	Canister #	112709
Sampler:	Hyden Ladd	Flow Controller #	23519
Site Name:	34401 CAPITOL	Canister #	112709
Lab ID	SSMP-34401/CAPITOL/ST-01_042419	Flow Controller #	23519
Relinquished by: (Signature/Affiliation)	<i>[Signature]</i>	Date	4/25/19
Relinquished by: (Signature/Affiliation)	<i>[Signature]</i>	Date	
Relinquished by: (Signature/Affiliation)	<i>[Signature]</i>	Date	

Special Instructions/Notes: Report ONLY: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, 1,4-Dioxane, PCE, TCE and VC. Submit results through Cadena at jlm.tomalia@cadena.com. Cadena #E205331. Level IV Reporting

Turnaround Time (rush surcharges may apply)  
6 Day Turnaround Time

Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Requested Analytes	
Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Lab Use Only Receipt	Final (g/g) Gas: N2/H2
04/24/2019	13:29	04/24/2019	13:40	-29	-8		
Time: 1:00		Time: 1:40					
Relinquished by: (Signature/Affiliation)		Relinquished by: (Signature/Affiliation)					
Relinquished by: (Signature/Affiliation)		Relinquished by: (Signature/Affiliation)					
Time		Time				TO-15 (See Special Instructional Notes)	
Time		Time				Time	
Time		Time				Time	

Shipper Name: \_\_\_\_\_  
Custody Seals Intact? Yes  No  None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, state, federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 487-4922