# 🛟 eurofins

## Environment Testing TestAmerica

## **ANALYTICAL REPORT**

Eurofins TestAmerica, Canton 4101 Shuffel Street NW North Canton, OH 44720 Tel: (330)497-9396

## Laboratory Job ID: 240-126080-1

Client Project/Site: Ford LTP Off Site

## For:

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ARCADIS U.S., Inc. 28550 Cabot Drive Suite 500 Novi, Michigan 48377

Attn: Kristoffer Hinskey

Mole Del your

Authorized for release by: 2/25/2020 4:08:13 PM

Michael DelMonico, Project Manager I (330)497-9396 michael.delmonico@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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## Qualifiers

G	C/MS	VOA	
-			

Qualifiers		3
GC/MS VOA		
Qualifier	Qualifier Description	
U	Indicates the analyte was analyzed for but not detected.	
Glossary		5
Abbreviation	These commonly used abbreviations may or may not be present in this report.	
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis	
%R	Percent Recovery	
CFL	Contains Free Liquid	
CNF	Contains No Free Liquid	0
DER	Duplicate Error Ratio (normalized absolute difference)	0
Dil Fac	Dilution Factor	
DL	Detection Limit (DoD/DOE)	9
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample	
DLC	Decision Level Concentration (Radiochemistry)	
EDL	Estimated Detection Limit (Dioxin)	
LOD	Limit of Detection (DoD/DOE)	
LOQ	Limit of Quantitation (DoD/DOE)	
MDA	Minimum Detectable Activity (Radiochemistry)	
MDC	Minimum Detectable Concentration (Radiochemistry)	
MDL	Method Detection Limit	13
ML	Minimum Level (Dioxin)	
NC	Not Calculated	
ND	Not Detected at the reporting limit (or MDL or EDL if shown)	
PQL	Practical Quantitation Limit	
QC	Quality Control	
RER	Relative Error Ratio (Radiochemistry)	
RL	Reporting Limit or Requested Limit (Radiochemistry)	
RPD	Relative Percent Difference, a measure of the relative difference between two points	
TFF	Toxicity Equivalent Factor (Dioxin)	

Toxicity Equivalent Factor (Dioxin) TEF TEQ Toxicity Equivalent Quotient (Dioxin)

#### Job ID: 240-126080-1

#### Laboratory: Eurofins TestAmerica, Canton

Narrative

### **CASE NARRATIVE**

#### Client: ARCADIS U.S., Inc.

### Project: Ford LTP Off-Site - E203631

#### Report Number: 240-126080-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

#### **RECEIPT**

The samples were received on 2/11/2020 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

#### VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-126080-1) and MW-154S\_020720 (240-126080-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 02/13/2020.

Method 8260B: The MS/MSD for batch 240-422674 was not analyzed due to an instrument malfunction.

TRIP BLANK (240-126080-1) and MW-154S\_020720 (240-126080-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MW-154S\_020720 (240-126080-2) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 02/13/2020.

### Job ID: 240-126080-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## **Method Summary**

#### Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN

#### **Protocol References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Eurofins TestAmerica, Canton

## Sample Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-126080-1	TRIP BLANK	Water	02/07/20 00:00	02/11/20 08:40	
240-126080-2	MW-154S_020720	Water	02/07/20 16:25	02/11/20 08:40	

Detection	Summary
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Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Off Site

### Client Sample ID: TRIP BLANK

No Detections.

### Client Sample ID: MW-154S\_020720

No Detections.

Job ID: 240-126080-1

000 10. 240 120000 1

Lab Sample ID: 240-126080-1

Lab Sample ID: 240-126080-2

This Detection Summary does not include radiochemical test results.

#### Client Sample ID: TRIP BLANK Date Collected: 02/07/20 00:00 Date Received: 02/11/20 08:40

## Lab Sample ID: 240-126080-1

Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 15:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/13/20 15:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/13/20 15:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 15:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/13/20 15:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/13/20 15:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 130					02/13/20 15:42	1
4-Bromofluorobenzene (Surr)	68		47 - 134					02/13/20 15:42	1
Toluene-d8 (Surr)	81		69 - 122					02/13/20 15:42	1
Dibromofluoromethane (Surr)	93		78 - 129					02/13/20 15:42	1

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

#### Client Sample ID: MW-154S\_020720 Date Collected: 02/07/20 16:25 Date Received: 02/11/20 08:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/13/20 15:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133			-		02/13/20 15:39	1
Method: 8260B - Volatile O	raanic Compo	unde (GC)							
Analyte	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/13/20 16:04	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/13/20 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 16:04	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/13/20 16:04	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/13/20 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 130			-		02/13/20 16:04	1
4-Bromofluorobenzene (Surr)	66		47 - 134					02/13/20 16:04	1
Toluene-d8 (Surr)	80		69 - 122					02/13/20 16:04	1
Dibromofluoromethane (Surr)	91		78 - 129					02/13/20 16:04	

2/25/2020

Job ID: 240-126080-1

### Lab Sample ID: 240-126080-2 Matrix: Water

## **Surrogate Summary**

98

MB 240-422706/5

### Method: 8260B - Volatile Organic Compounds (GC/MS) **Matrix: Water**

latrix: Water						Prep Type: Total/NA	
			Pe	ercent Surro	ogate Recovery (Ac	ceptance Limits)	
		DCA	BFB	TOL	DBFM		ŝ
Lab Sample ID	Client Sample ID	(75-130)	(47-134)	(69-122)	(78-129)		
240-126080-1	TRIP BLANK	97	68	81	93		ŝ
240-126080-2	MW-154S_020720	95	66	80	91		
LCS 240-422674/4	Lab Control Sample	88	80	85	93		
MB 240-422674/7	Method Blank	91	68	79	87		
Surrogate Legend							i
DCA = 1,2-Dichloroeth	nane-d4 (Surr)						
BFB = 4-Bromofluorob	enzene (Surr)						i
TOL = Toluene-d8 (Su	ırr)						
DBFM = Dibromofluor	omethane (Surr)						i
lathad: 9260B S	IM Volatilo Organio	Compour	de (CC)				
	IM - Volatile Organic	Compoun	us (GC/	1013)			
latrix: Water						Prep Type: Total/NA	
			Pe	ercent Surro	ogate Recovery (Ac	ceptance Limits)	
		DCA					
Lab Sample ID	Client Sample ID	(70-133)					i
240-126080-2	MW-154S_020720	97					
240-126095-G-3 MS	Matrix Spike	100					ł
240-126095-G-3 MSD	Matrix Spike Duplicate	101					
LCS 240-422706/4	Lab Control Sample	97					

#### Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)

Method Blank

Job ID: 240-126080-1

## Lab Sample ID: MB 240-422674/7

## **Client Sample ID: Method Blank** Prep Type: Total/NA

**Matrix: Water** Analysis Batch: 422674

	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 11:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/13/20 11:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/13/20 11:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 11:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/13/20 11:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/13/20 11:42	1
	MR	MR							

	IVIB	MВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	91		75 - 130		02/13/20 11:42	1
4-Bromofluorobenzene (Surr)	68		47 - 134		02/13/20 11:42	1
Toluene-d8 (Surr)	79		69 - 122		02/13/20 11:42	1
Dibromofluoromethane (Surr)	87		78 - 129		02/13/20 11:42	1

#### Lab Sample ID: LCS 240-422674/4 Matrix: Water Analysis Batch: 422674

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene		11.2		ug/L		112	73 - 129	
cis-1,2-Dichloroethene	10.0	11.1		ug/L		111	75 - 124	
Tetrachloroethene	10.0	10.9		ug/L		109	70 <sub>-</sub> 125	
trans-1,2-Dichloroethene	10.0	11.0		ug/L		110	74 - 130	
Trichloroethene	10.0	11.3		ug/L		113	71 <sub>-</sub> 121	
Vinyl chloride	10.0	7.68		ug/L		77	61 - 134	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	88		75 - 130
4-Bromofluorobenzene (Surr)	80		47 - 134
Toluene-d8 (Surr)	85		69 - 122
Dibromofluoromethane (Surr)	93		78 - 129

### Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-422706/ Matrix: Water Analysis Batch: 422706	5						Client Sam	ple ID: Method Prep Type: To	
	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/13/20 13:04	1
	MB	MB							
Surrogate 9	6 Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		70 - 133					02/13/20 13:04	1

#### **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

## **QC Sample Results**

Job ID: 240-126080-1

## Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-	422706/4					Clie	nt Sar	nnlo ID	: Lab Cor	atrol Sa	mnlo
Matrix: Water						Olle	ant Gai		Prep Ty		
Analysis Batch: 422706											
			Spike	LCS	LCS				%Rec.		
Analyte			Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 135		
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	97		70 - 133								
Lab Sample ID: 240-1260	95-G-3 MS						CI	ient Sa	mple ID:	Matrix 9	Snike
Matrix: Water									Prep Ty		
Analysis Batch: 422706											
-	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	46 - 170		
	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	100		70 - 133								
Lah Camala ID: 240 4200						Olient	<b>C</b>		lateix Cal		llanta
Lab Sample ID: 240-1260 Matrix: Water	95-G-3 WISD					Client	Samp		latrix Spi Prep Ty		
Analysis Batch: 422706									герту	pe. Tot	ai/INA
Analysis Daten. 422100	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	-	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	46 - 170	2	26
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	101		70 - 133								

## **QC** Association Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

## GC/MS VOA

#### Analysis Batch: 422674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126080-1	TRIP BLANK	Total/NA	Water	8260B	
240-126080-2	MW-154S_020720	Total/NA	Water	8260B	
MB 240-422674/7	Method Blank	Total/NA	Water	8260B	
LCS 240-422674/4	Lab Control Sample	Total/NA	Water	8260B	

#### Analysis Batch: 422706

Lab Sample ID	Client Sample ID	Ргер Туре	Matrix	Method	Prep Batch
240-126080-2	MW-154S_020720	Total/NA	Water	8260B SIM	
MB 240-422706/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-422706/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-126095-G-3 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-126095-G-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

#### **Client Sample ID: TRIP BLANK** Date Collected: 02/07/20 00:00 4. 02/44/20 09.40

Analysis

8260B SIM

Date Received	Batch	8:40 Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260B		1	422674	02/13/20 15:42	LRW	TAL CAN	
Client Sam	ole ID: MW	-154S 020720					Lab Sa	mple ID:	240-126080-2
Date Collecte	d: 02/07/20 1	6:25							Matrix: Water
Date Received	d: 02/11/20 0	8:40							
_	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab	
Total/NA	Analysis	8260B			422674	02/13/20 16:04	LRW	TAL CAN	

1

422706 02/13/20 15:39 SAM

TAL CAN

#### Laboratory References:

Total/NA

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

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Eurofins TestAmerica, Canton

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

#### Job ID: 240-126080-1

#### Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date	
California	State	2927	02-23-20 *	
Connecticut	State	PH-0590	12-31-19 *	
Florida	NELAP	E87225	06-30-20	
Georgia	State	4062	02-23-20 *	
Illinois	NELAP	004498	07-31-20	
lowa	State	421	06-01-21	
Kansas	NELAP	E-10336	04-30-20	
Kentucky (UST)	State	112225	02-23-20	
Kentucky (WW)	State	KY98016	12-31-20	
Minnesota	NELAP	OH00048	12-31-20	
Minnesota (Petrofund)	State	3506	08-01-21	
New Jersey	NELAP	OH001	06-30-20	
New York	NELAP	10975	03-31-20	
Ohio VAP	State	CL0024	06-05-21	
Oregon	NELAP	4062	02-23-20 *	
Pennsylvania	NELAP	68-00340	08-31-20	
Texas	NELAP	T104704517-18-10	08-31-20	
USDA	US Federal Programs	P330-16-00404	12-28-19 *	
Virginia	NELAP	010101	09-14-20	
Washington	State	C971	01-12-21	
West Virginia DEP	State	210	12-31-20	

\* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Indication         Regulatory         Other         Other         Other           500         Telephone: 34: 44: 43.13         Telephone: 34: 44: 43.13         Telephone: 34: 44: 43.13           500         Telephone: 34: 44: 44: 43.13         Telephone: 34: 44: 44: 43.13         Telephone: 34: 44: 44: 43.13           500         Telephone: 34: 44: 44: 43.13         Telephone: 34: 44: 44: 43.13         Telephone: 34: 44: 44: 43.13           500         Sampler Name: 51 (NT R_RCMTR, Comment Time         Ambra R_RMCM, Comment Time         Ambra R_RMCM, Comment Time           8         Sampler Name: 51 (NT R_RCMTR, Comment Time         Ambra R_RMCM, Comment Time         Ambra R_RMCM, Comment AR_RMCM, Comment AR_R	International         Regulatory program:         DN         Color         Other         Color         Other         Color         Co		Testanerica Laboratory location: Brighton	1	Chain of Custody Record 10448 Citation Drive, Sulte 200 / Brighton, MI 48116 / 810-229-2763	d I 48116 / 810-229	-2763			
0         Client Polyter Vinager: Krit Hinky, Technine: 346:794-234         Sile Contract: Juliu MCC/Lifery, Technine: 346:794-234         Land Contact: Mile DolVinio           Exail: Livit of Technine: 346:794-234         Technine: 346:794-234         Technine: 346:794-234         Technine: 346:794-234           Exail: Livit of Technine: 346:794-234         Technine: 346:794-234         Technine: 346:794-234         Technine: 346:794-234           Exail: Livit of Technine: EUK/N         Reconstant reaction: Analysis         Addition of the constant reaction of the constant reactent reaction of the constant reacti	0         Constrained         Services Constrained         Services Constrained         Advances         A	Client Contact	Regulatory program:						1	Total and a second second
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Tanit: Evitorifier Intaky: Garcetaticom         Autobra         Autobra         Autobra         Partitional Autobra         Pari	Tanis: Livio/Fachador, Sample Transmitter     Tanis: Livio/Fachador, Sample Transmitter       Sample Transmitter     Sample Transmitter       Sample Transmitter     Orbit	Address: 26550 Clippe Drive, Suite Sun	Telephone: 248-994-2240		Telephone: 734-644-5131		Telephone: 330	497-9396		
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Receipt After-hours: Drop-off Date/Time Storage Location	
COOLANT: WetTee Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt See Multiple Cooler F	
IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. <u>1.4</u> °C Corrected Cooler IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. <u>°C</u> Corrected Cooler	r Temp C
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11. Are these work share samples? You If yes, Questions 12-16 have been checked at the originating laboratory.	
12. Were all preserved sample(s) at the correct pH upon receipt? Y	es No (NA) pH Strip Lot# HC995364
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17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES	Samples processed by:
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18. SAMPLE CONDITION	
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19. SAMPLE PRESERVATION	
Sample(s) were	further preserved in the laboratory.
Sample(s) were : Time preserved: Preservative(s) added/Lot number(s):	
VOA Sample Preservation - Date/Time VOAs Frozen:	

Q

## **DATA VERIFICATION REPORT**



February 26, 2020

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: 30042006.0402.02 off site Event Specific Scope of Work References: Sample COC Laboratory: TestAmerica - North Canton Laboratory submittal: 126080-1 Sample date: 2020-02-07 Report received by CADENA: 2020-02-25 Initial Data Verification completed by CADENA: 2020-02-26 Number of Samples:2 Sample Matrices:Water Test Categories:GCMS VOC Please see attached criteria report or sample result/qualified analytical result summary for qualifier flags assigned to sample data.

The following minor QC exceptions or missing information were noted:

GCMS VOC QC batch MS/MSD issues as noted in the laboratory submittal case narrative were not used to qualify client sample results as part of this level 2 data package verification review.

Sample/MS/MSD Surrogate Recovery, Blank/LCS Surrogate Recovery, LCS/LCD Recovery, Blank Contamination and Hold Time Exception were reviewed as part of our verification.

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.

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 <u>http://clms.cadenaco.com/index.cfm</u>.

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.
В	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 contaminates) 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 contaminates) 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.

## SAMPLING AND ANALYSIS SUMMARY

### CADENA Project ID: E203631 Laboratory: TestAmerica-North Canton Laboratory Submittal: 126080-1

		Collection Date	Collection Time	Volatile Organics	8260B with Single	
Lab Sample ID	Sample ID	(mm/yy/dd)	(hh:mm:ss)	by GCMS	Ion Monitoring	Comment
2401260801	TRIP BLANK	2/7/2020	12:00:00	х		
2401260802	MW-154S_020720	2/7/2020	4:25:00	х	х	

## Analytical Results Summary

**Reportable Results Only** 

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton Laboratory Submittal: 126080-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BL/ 2401260 2/7/202	0801			MW-154 2401260 2/7/202		20	
		<b>a b</b>	- II	Report		Valid	- II	Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260</u>	<u>)B</u>									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	
	Tetrachloroethene	127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	
	Trichloroethene	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	
	Vinyl chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	
<u>OSW-8260</u>	<u>DBBSim</u>									
	1,4-Dioxane	123-91-1					ND	2.0	ug/l	



## Ford Motor Company – Livonia Transmission Project

## **DATA REVIEW**

## Livonia, Michigan

Volatile Organic Compounds (VOC) Analysis

SDG # 240-126080-1 CADENA Verification Report: 2020-02-26

Analyses Performed By: TestAmerica Edison, New Jersey

Report #36037R Review Level: Tier III Project: 30042006.0402.02

## SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-126080-1 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	VOC (Full Scan)	Analysis VOC (SIM)	MISC
	TRIP BLANK	240-126080-1	Water	2/7/2020		Х		
240-126080-1	MW-154S_020720	240-126080-2	Water	2/7/2020		Х	Х	

#### ANALYTICAL DATA PACKAGE DOCUMENTATION

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

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

#### **ORGANIC ANALYSIS INTRODUCTION**

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260B and 8260B SIM. 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.

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#### **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
SW-846 8260B/8260B-SIM	Water	14 days from collection to analysis	Cool to < 6 °C; pH < 2 with HCl

All samples were analyzed within the specified holding time 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 (20%) 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 (20%) and RRF value greater than control limit (0.05).

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

#### 4. Internal Standard Performance

Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

#### DATA REVIEW

#### 5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water 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 less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

A field duplicate was not performed on a sample within this SDG.

#### 6. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

No compounds were detected in the samples within this SDG.

#### 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 VALIDATION CHECKLIST FOR VOCs

VOCs: 8260B/8260B-SIM	Re	ported	Performance Acceptable		Not
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMET	RY (GC/I	MS)			
Tier II Validation					
Holding times/Preservation		X		Х	
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		Х	
Continuing calibration RRFs		X		Х	
Continuing calibration %Ds		X		Х	
Instrument tune and performance check		X		Х	
Ion abundance criteria for each instrument used		X		Х	
Field Duplicate RPD		X		Х	
Internal standard		X		Х	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		Х	
B. Quantitation Reports		X		Х	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		Х	
E. Reporting limits adjusted to reflect sample dilutions		Х		Х	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

## VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

a Kazi

DATE: March 6, 2020

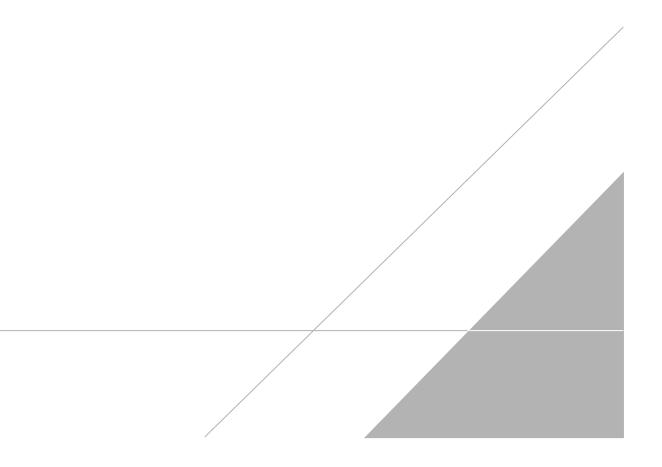
PEER REVIEW: Dennis Capria

DATE: March 9, 2020

# CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



# NO CORRECTIONS/QUALIFERS ADDED TO SAMPLE ANALYSIS DATA SHEETS



Other         Regulatory program:         DW         NDDS         RCA         Other           560         Telephone: 74: 94: 4230         Telephone: 74: 94: 4230         Telephone: 74: 94: 4230         Telephone: 74: 94: 44: 431.1         Telephone: 74: 94: 44: 431.1         Telephone: 74: 94: 44: 431.1           560         Telephone: 74: 94: 44: 431.1         Telephone: 74: 94: 44: 431.1         Telephone: 74: 44: 44: 431.1         Telephone: 74: 44: 44: 431.1           550         Sunptie Yane: [][[U][N]         Reduct of Shipment Foundaria Tance         Analysis         Telephone: 74: 44: 44: 431.1         Telephone: 74: 44: 44: 431.1           550         Sunptie Yane: [][[U][N]         Reduct of Shipment Foundaria Tance         Analysis         Telephone: 74: 44: 44: 431.1         Telephone: 74: 44: 44: 431.1           6         Reduct of Shipment Foundaria Tance         [][[U][N]         Reduct of Shipment Foundaria Tance         Analysis         Telephone: 74: 44: 44: 431.1         Telephone: 74: 44: 44: 431.1           8         Sample Pone: Sample Due         Sample Pone: 74: 44: 44: 44: 44: 44: 44: 44: 44: 44	Itati     Regulatory program:     DW       00     Telephone: 248-994-2340     Telephone: 248-994-2340       1     Famil: kritor/ffer hinakey: @arcadis.com     Email: kritor/ffer hinakey: @arcadis.com       1     Sumpler Name: [T] R/M Redyner/     Ital       Sumple Date     Sample Date       Sumple Date     Sample Inter       Addition     X       Addition     X       Addition     X       Addition     Addition       Addition     X	Chain of Custody Record 10448 Citation Drive, Suite 200 / Brighton, MI 48115 / 810-229-2753
0         Спользет Кла Цлаку         Star Contract. Juliu MCC. Паттура         Lark Contract. Male DMUnico           Technine: 3.45.94.2.310         Technine: 3.45.94.2.310         Technine: 3.45.94.2.311         Technine: 3.45.94.2.304           Exanit: Livit of Technine: 3.45.94.2.310         Exanit: Livit of Technine: 3.45.94.2.311         Technine: 3.45.94.2.311         Technine: 3.45.94.2.304           Exanit: Livit of Technine: 3.45.94.2.310         Exanit: Livit of Technine: 3.45.94.2.311         Technine: 3.45.94.2.304         Technine: 3.45.94.2.9104           Exanit: Livit of Technine: Ed. (N. R. Coll ACL         Addata of Suprement Carrier:         Addata of Suprement Carrier:         Addata of Suprement Carrier:         Addata of Suprement Carrier:           Suppling Techning         Suppling Techning         Suppling Techning         Onex: 1.44.4.5.1.1         Technine: 3.45.94.2.94.94.94.94.94.94.94.94.94.94.94.94.94.	Offen         Chen Project Manager: Kris Hindery         Stat           Rephone: 248-994-3240         Telephone: 248-994-3240         Telephone: 148-994-3240           Email: kritterfirer.hindery@arcadit.com         Email: kritterfirer.hindery@arcadit.com         Email: kritterfirer.hindery@arcadit.com           Sample: Taxling No:         Sample: Trans.         Elipping Tracking No:         Matrix           Antrix         Sample: Date:         Sample: Trans.         Elipping Tracking No:           Antrix         Sample: Trans.         Elipping Tracking No:         Elipping Tracking No:           Antrix         Sample: Trans.         Elipping Tracking No:         Elipping Tracking No:           Antrix         Plot         Elipping Tracking No:         Elipping Tracking No:	
Тодерноне: 24.044.2340         Lefendure: 74.044.511         Tedephone: 74.044.511	Interplane:     Telephone:     248-994-22-40       Email:     Enail:     Enail:     Enail:       Sample:     Sample:     Sample:     Sample:       Sample:     Sample:     Sample:     Matrix       D120     2.17/20     16.25     X     Matrix       Instant     Sample:     Sample:     Matrix     Matrix       Instant     Sample:     Sample:     Matrix     Matrix       Instant     Sample:     Sample:     Name:     Name:       Instant     Sample:     Sample:     Name:     Name:       Instant     Sample:     Name:     Name:     Name:       Instant     Sample:     Name:     Name:     Name:       Instant     Sample:     Name:     Name:     Name:       Instant     Poison B     Librown     240-126000       240-126000     240-126000     240-126000       Instant:     Poison B     Librown       Instant:     Company:     Date:       Instant:     Poison B     Librown       Instant:     Poison B     Librown       Instant:     Company:     Date:       Instant:     Company:     Date:       Instant     Company:     Date:	
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#### Client Sample ID: TRIP BLANK Date Collected: 02/07/20 00:00 Date Received: 02/11/20 08:40

## Lab Sample ID: 240-126080-1

Matrix: Water

5 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 15:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/13/20 15:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/13/20 15:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 15:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/13/20 15:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/13/20 15:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		75 - 130					02/13/20 15:42	1
4-Bromofluorobenzene (Surr)	68		47 - 134					02/13/20 15:42	1
Toluene-d8 (Surr)	81		69 - 122					02/13/20 15:42	1
Dibromofluoromethane (Surr)	93		78 - 129					02/13/20 15:42	1

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP Off Site

#### Client Sample ID: MW-154S\_020720 Date Collected: 02/07/20 16:25 Date Received: 02/11/20 08:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			02/13/20 15:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		70 - 133			-		02/13/20 15:39	1
Method: 8260B - Volatile O	rganic Compo	unde (GC/							
Analyte	-	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 16:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/13/20 16:04	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/13/20 16:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/13/20 16:04	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/13/20 16:04	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/13/20 16:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	95		75 - 130			-		02/13/20 16:04	1
4-Bromofluorobenzene (Surr)	66		47 - 134					02/13/20 16:04	1
Toluene-d8 (Surr)	80		69 - 122					02/13/20 16:04	1
Dibromofluoromethane (Surr)	91		78 - 129					02/13/20 16:04	

2/25/2020

Job ID: 240-126080-1

### Lab Sample ID: 240-126080-2 Matrix: Water