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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 240-139779-1

Client Project/Site: Ford LTP - Off Site

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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: 11/23/2020 10:52:58 AM

Michael DelMonico, Project Manager I (330)497-9396 Michael.DelMonico@Eurofinset.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

GC	/MS	VOA
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Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
U	Indicates the analyte was analyzed for but not detected.

Glossary

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
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-139779-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-139779-1

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 11/7/2020 9:40 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-139779-1) and MW-223S_110520 (240-139779-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 11/18/2020.

Vinyl chloride failed the recovery criteria high for LCS 240-461636/4. Refer to the QC report for details.

The continuing calibration verification (CCV) associated with batch 461636 recovered above the upper control limit for Vinyl Chloride. The samples associated with this CCV were non-detect for the affected analytes; therefore, the data have been reported. The associated samples are impacted: TRIP BLANK (240-139779-1) and MW-223S_110520 (240-139779-2).

The laboratory control sample (LCS) for 461636 recovered outside control limits for one or multiple analytes. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported: TRIP BLANK (240-139779-1), MW-223S_110520 (240-139779-2) and (LCS 240-461636/4).

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

Job ID: 240-139779-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MW-223S_110520 (240-139779-2) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The sample was analyzed on 11/12/2020.

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

Sample Summary

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

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-139779-1	TRIP BLANK	Water	11/05/20 00:00	11/07/20 09:40	
240-139779-2	MW-223S_110520	Water	11/05/20 14:25	11/07/20 09:40	

Dete	ction	Summary	

Client Sample ID: TRIP BLANK

No Detections.

Client Sample ID: MW-223S_110520

No Detections.

Lab Sample ID: 240-139779-2

Lab Sample ID: 240-139779-1

Client Sample ID: TRIP BLANK Date Collected: 11/05/20 00:00 Date Received: 11/07/20 09:40

Lab Sample ID: 240-139779-1 Matrix: Water

Matrix: Water

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Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/18/20 22:00	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			11/18/20 22:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/18/20 22:00	1
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			11/18/20 22:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)			75 - 130					11/18/20 22:00	1
4-Bromofluorobenzene (Surr)	89		47 - 134					11/18/20 22:00	1
Toluene-d8 (Surr)	103		69 - 122					11/18/20 22:00	1
Dibromofluoromethane (Surr)	111		78 - 129					11/18/20 22:00	1

Client Sample ID: MW-223S_110520 Date Collected: 11/05/20 14:25 Date Received: 11/07/20 09:40

Job ID: 240-139779-1	I
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Lab Sample ID: 240-139779-2 Matrix: Water

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
I,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/20 17:58	1	
urrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
,2-Dichloroethane-d4 (Surr)	105		70 - 133			·		11/12/20 17:58	1	
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)							ŝ
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:23	1	
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/18/20 22:23	1	
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			11/18/20 22:23	1	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:23	1	
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/18/20 22:23	1	
Vinyl chloride	1.0	U *	1.0	0.20	ug/L			11/18/20 22:23	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	121		75 - 130					11/18/20 22:23	1	
4-Bromofluorobenzene (Surr)	99		47 - 134					11/18/20 22:23	1	
Toluene-d8 (Surr)	111		69 - 122					11/18/20 22:23	1	
Dibromofluoromethane (Surr)	115		78 - 129					11/18/20 22:23	1	

Surrogate Summary

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

Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) DCA BFB DBFM TOL (75-130) (78-129) Lab Sample ID **Client Sample ID** (47-134) (69-122) 240-139779-1 TRIP BLANK 111 115 89 103 240-139779-2 MW-223S_110520 121 99 111 115 LCS 240-461636/4 Lab Control Sample 109 103 108 108 MB 240-461636/6 Method Blank 117 91 105 112 Surrogate Legend DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr) TOL = Toluene-d8 (Surr) DBFM = Dibromofluoromethane (Surr) Method: 8260B SIM - Volatile Organic Compounds (GC/MS) **Matrix: Water** Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) DCA

		2011
Lab Sample ID	Client Sample ID	(70-133)
240-139757-A-3 MS	Matrix Spike	113
240-139757-A-3 MSD	Matrix Spike Duplicate	114
240-139779-2	MW-223S_110520	105
LCS 240-460682/4	Lab Control Sample	105
MB 240-460682/5	Method Blank	105

Surrogate Legend

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

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

Lab Sample ID: MB 240-461636/6 Matrix: Water

Analysis Batch: 461636

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 19:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/18/20 19:47	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			11/18/20 19:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 19:47	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/18/20 19:47	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			11/18/20 19:47	1

	MB	MB				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		75 - 130		11/18/20 19:47	1
4-Bromofluorobenzene (Surr)	91		47 - 134		11/18/20 19:47	1
Toluene-d8 (Surr)	105		69 - 122		11/18/20 19:47	1
Dibromofluoromethane (Surr)	112		78 - 129		11/18/20 19:47	1

Lab Sample ID: LCS 240-461636/4 Matrix: Water Analysis Batch: 461636

	Spike	LCS LCS			%Rec.	
Analyte	Added	Result Qualit	ier Unit	D %Rec	Limits	
1,1-Dichloroethene	10.0	10.6	ug/L	106	73 - 129	
cis-1,2-Dichloroethene	10.0	9.94	ug/L	99	75 - 124	
Tetrachloroethene	10.0	7.64	ug/L	76	70 - 125	
trans-1,2-Dichloroethene	10.0	10.1	ug/L	101	74 - 130	
Trichloroethene	10.0	7.44	ug/L	74	71_121	
Vinyl chloride	10.0	13.8 *	ug/L	138	61 - 134	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	109		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	108		69 - 122
Dibromofluoromethane (Surr)	108		78 - 129

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

Lab Sample ID: MB 240-460682 Matrix: Water Analysis Batch: 460682	5						Client Sam	ple ID: Method Prep Type: To	
	MB	МВ							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/20 15:42	1
	MB	MB							
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 133					11/12/20 15:42	1

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

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Eurofins TestAmerica, Canton

Job ID: 240-139779-1

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

Lab Sample ID: LCS 240-	-460682/4					Clie	nt Sar	nple ID	: Lab Cor		
Matrix: Water Analysis Batch: 460682									Prep Ty	pe: lot	al/NA
Analysis Dalcii. 400002			Spike	LCS	LCS				%Rec.		
Analyte			Added	-	Qualifier	Unit	D	%Rec	Limits		
1,4-Dioxane			10.0	11.5		ug/L		115	80 - 135		
	LCS	LCS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	105		70 - 133								
Lab Sample ID: 240-1397	'57-A-3 MS						CI	ient Sa	mple ID: I	Matrix 3	Spike
Matrix: Water									Prep Ty		-
Analysis Batch: 460682										•	
-	Sample	Sample	Spike	MS	MS				%Rec.		
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits		
1,4-Dioxane	3.1		10.0	14.0		ug/L		109	46 - 170		
	MS	MS									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	113		70 - 133								
Lab Sample ID: 240-1397	57-A-3 MSD					Client	Samn	א י ח ו מו	latrix Spil		licato
Matrix: Water	or-A-o mob					onem	oump		Prep Ty		
Analysis Batch: 460682											
,	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,4-Dioxane	3.1		10.0	14.2		ug/L		111	46 - 170	2	26
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	114		70 - 133								

GC/MS VOA

Analysis Batch: 460682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	
240-139779-2	MW-223S_110520	Total/NA	Water	8260B SIM		
MB 240-460682/5	Method Blank	Total/NA	Water	8260B SIM		
LCS 240-460682/4	Lab Control Sample	Total/NA	Water	8260B SIM		
240-139757-A-3 MS	Matrix Spike	Total/NA	Water	8260B SIM		
240-139757-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM		
Analysis Batch: 461	636					
Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch	

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-139779-1	TRIP BLANK	Total/NA	Water	8260B	
240-139779-2	MW-223S_110520	Total/NA	Water	8260B	
MB 240-461636/6	Method Blank	Total/NA	Water	8260B	
LCS 240-461636/4	Lab Control Sample	Total/NA	Water	8260B	

Job ID: 240-139779-1

Client Sample ID: TRIP BLANK Date Collected: 11/05/20 00:00 Date Received: 11/07/20 09:40

Batch

Туре

Analysis

NK					Lab Sample ID: 240-13977 Matrix: W				
1	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analvst	Lab			
				11/18/20 22:00		TAL CAN			

Client Sample ID: MW-223S_110520	
Date Collected: 11/05/20 14:25	
Date Received: 11/07/20 09:40	

Batch

Method

8260B

Lab Sample ID:	240-139779-2
	Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	461636	11/18/20 22:23	LEE	TAL CAN
Total/NA	Analysis	8260B SIM		1	460682	11/12/20 17:58	SAM	TAL CAN

Laboratory References:

Prep Type

Total/NA

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

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-139779-1

Laboratory: Eurofins TestAmerica, Canton

Authority	Program	Identification Number	Expiration Date	
California	State	2927	02-23-21	
Connecticut	State	PH-0590	12-31-21	
Florida	NELAP	E87225	06-30-21	
Georgia	State	4062	02-23-21	
Illinois	NELAP	004498	07-31-21	
owa	State	421	06-01-21	
Kansas	NELAP	E-10336	04-30-21	
Kentucky (UST)	State	112225	02-23-21	
Kentucky (WW)	State	KY98016	12-31-20	
Minnesota	NELAP	OH00048	12-31-20	
Minnesota (Petrofund)	State	3506	08-01-21	
New Jersey	NELAP	OH001	06-30-21	
New York	NELAP	10975	03-31-21	
Ohio VAP	State	CL0024	06-05-21	
Oregon	NELAP	4062	02-24-21	
Pennsylvania	NELAP	68-00340	08-31-21	
Texas	NELAP	T104704517-18-10	08-31-21	
USDA	US Federal Programs	P330-18-00281	09-17-21	
Virginia	NELAP	010101	09-14-21	
Washington	State	C971	01-12-21	
West Virginia DEP	State	210	12-31-20	

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Market and the state of the stateof of the state of the stateoo of the state of the state of	City/State/Zip: Novi, MI, 48377	Email: kristoffer-hinskey@arcadis.com	Analysis Turnaround Time	Analyses	
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WI-NC-099

DATA VERIFICATION REPORT



November 23, 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: 30050315.0301.01 off site Event Specific Scope of Work References: Sample COC Laboratory: TestAmerica - North Canton Laboratory submittal: 139779-1 Sample date: 2020-11-05 Report received by CADENA: 2020-11-23 Initial Data Verification completed by CADENA: 2020-11-23 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 461636 LCS recovery was outlying biased high for the following analyte: VINYL CHLORIDE. Associated client sample results were non-detect so qualification was not required based on this high bias QC outlier.

GCMS VOC QC batch CCV response outliers 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.
Е	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.

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton Laboratory Submittal: 139779-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401397 11/5/20	791			MW-223 2401397 11/5/20	 792	20	
				Report		Valid		Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260B</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	
Tetra	achloroethene	127-18-4	ND	1.0	ug/l		ND	1.0	ug/l	
trans	s-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	
Trich	loroethene	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	
Viny	l chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	
OSW-8260BBSin	<u>n</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 # 240-139779-1 CADENA Verification Report: 2020-11-23

Analyses Performed By: TestAmerica North Canton, Ohio

Report # 39246R Review Level: Tier III Project: 30050315.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-139779-1 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:

			Sample		Analy	vsis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	VOC (Full Scan)	VOC (SIM)
TRIP BLANK	240-139779-1	Water	11/05/20		х	
MW-223S_110520	240-139779-2	Water	11/05/20		Х	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

		Rep	orted		mance ptable	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.

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, with the exception of the compounds presented in the following table.

Sample ID	Initial/Continuing	Compound	Criteria
TRIP BLANK	CCV %D	Tetrachloroethene	-27.8%
MW-223S_110520	CCV %D	Vinyl Chloride	+40.2%

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified.

Initial/Continuing	Criteria	Sample Result	Qualification
Initial and Continuing	RRF <0.05	Non-detect	R
Calibration	1111 50.00	Detect	J

Initial/Continuing	Criteria	Sample Result	Qualification
	RRF <0.01 ¹	Non-detect	R
		Detect	J
	RRF >0.05 or RRF >0.01 ¹	Non-detect	No Action
	RRF 20.05 01 RRF 20.01	Detect	NO ACION
	%RSD > 15% or a correlation coefficient <0.99	Non-detect	UJ
Initial Calibration	%RSD > 15% of a correlation coefficient <0.99	Detect	J
		Non-detect	R
	%RSD >90%	Detect	J
		Non-detect	No Action
	%D >20% (increase in sensitivity)	Detect	J
Continuing Colibustion		Non-detect	UJ
Continuing Calibration	%D >20% (decrease in sensitivity)	Detect	J
		Non-detect	R
	%D >90% (increase/decrease in sensitivity)	Detect	J

Note:

¹ RRF of 0.01 only applies to compounds which are typically poor responding compounds (i.e., ketones, 1,4-dioxane, etc.)

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.

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 sample was not collected for samples from 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	Reported		ormance eptable	Not
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMET	RY (GC/N	IS)			1
Tier II Validation					
Holding times/Preservation		Х		Х	
Tier III Validation					
System performance and column resolution		Х		Х	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х	X		
Instrument tune and performance check		Х		Х	
Ion abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD					Х
Internal standard		Х		Х	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		Х		Х	
B. Quantitation Reports		Х		Х	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		Х		Х	
E. Reporting limits adjusted to reflect sample dilutions		Х		Х	

Notes:

%RSD Relative standard deviation

- %R Percent recovery
- RPD Relative percent difference

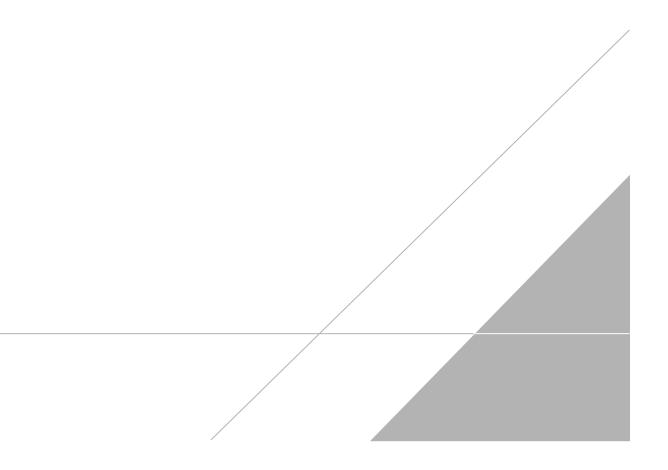
%D Percent difference

VALIDATION PERFORMED BY:	Hrishikesh Upadhyaya
SIGNATURE:	Curindialund
DATE:	December 01, 2020

PEER REVIEW: Andrew Korycinski

DATE: December 03, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS



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Chain of Custody Record



TestAmerica Laboratory location: Brighton -- 10448 Citation Drive, Suite 200 / Brighton, MI 48116 / 810-229-2763

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Address: 28550 Cabot Drive, Suite 500													au	_												coc mi	
City/State/Zip: Novi, MI, 48377	Telephone: 248						Te	lepho									Telep	hone:	330-4							I of I COO	35
Phone: 248-994-2240	Email: kristoff	fer.hinskey@ar	rcadis.	com			-	Ana	lysis	Turn	arou	nd Ti	ime							A	nalys	es		-		For lab use only	
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Sample Identification	Sample Date	Sample Time	Air	suconby	Sediment	Other:	H2SO4	HN03	HCI	NaOH	ZaAc/ NaOH	Unpres	Other:	Filtered S	Composit	1,1-DCE	cis-1,2-DCE 8260B	Trans-1,2-DCE	PCE 8260B	TCE 8260B	Vinyl Chlo	1,4-Dioxane				Sample Specific Note Special Instruction	
TRIP BLANK	-	-		1					ŀ					N	6	x	×	X	×	×	×	X				1 TRIP BLANK	
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Client Sample ID: TRIP BLANK Date Collected: 11/05/20 00:00

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

Lab Sample ID: 240-139779-1 Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:00	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/18/20 22:00	1
Tetrachloroethene	1.0	Ø UJ	1.0	0.15	ug/L			11/18/20 22:00	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:00	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/18/20 22:00	1
Vinyl chloride	1.0	U 👌	1.0	0.20	ug/L			11/18/20 22:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		75 - 130			-		11/18/20 22:00	1
4-Bromofluorobenzene (Surr)	89		47 - 134					11/18/20 22:00	1
Toluene-d8 (Surr)	103		69 - 122					11/18/20 22:00	1
Dibromofluoromethane (Surr)	111		78 - 129					11/18/20 22:00	1

Client Sample ID: MW-223S_110520 Date Collected: 11/05/20 14:25 Date Received: 11/07/20 09:40

Lab Sample ID: 240-139779-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/12/20 17:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	105		70 - 133					11/12/20 17:58	1
Method: 8260B - Volatile O	rganic Compo	unds (GC/	MS)						
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/18/20 22:23	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/18/20 22:23	1
Tetrachloroethene	1.0	J UJ	1.0	0.15	ua/l			11/18/20 22:23	1

Tetrachloroethene	1.0	J UJ	1.0	0.15 ug/L		11/18/20 22:23	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19 ug/L		11/18/20 22:23	1
Trichloroethene	1.0	U	1.0	0.10 ug/L		11/18/20 22:23	1
Vinyl chloride	1.0	UX	1.0	0.20 ug/L		11/18/20 22:23	1
Surrogate	%Recovery	Qualifier	Limits		Prepared	Analyzed	Dil Fac
Surrogate 1,2-Dichloroethane-d4 (Surr)	%Recovery 121	Qualifier	Limits 75 - 130		Prepared	Analyzed 11/18/20 22:23	Dil Fac
		Qualifier			Prepared	,	Dil Fac 1 1
1,2-Dichloroethane-d4 (Surr)	121	Qualifier	75 - 130		Prepared	11/18/20 22:23	Dil Fac 1 1 1

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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 240-140865-1

Client Project/Site: Ford LTP - Off Site

For:

.....Links

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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: 12/3/2020 11:15:18 AM

Michael DelMonico, Project Manager I (330)497-9396 Michael.DelMonico@Eurofinset.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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5

Qualifiers

GC/MS VO	Α	
Qualifier	Qualifier Description	
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.	
U	Indicates the analyte was analyzed for but not detected.	

Glossary

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
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 240-140865-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP - Off Site

Report Number: 240-140865-1

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 11/24/2020 9:20 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 2.0° C and 3.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-140865-1) and MW-215S_111920 (240-140865-2) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 11/29/2020.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Sample MW-215S_111920 (240-140865-2) was analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 11/30/2020.

The pH is greater than 2 for the following samples MW-215S_111920 (240-140865-2).

No additional 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

Sample Summary

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

l ch Comple ID	Client Sample ID	Matrix	Collected	Received	A (10
Lab Sample ID		INIALI IX	Collecteu	Received	Asset ID
240-140865-1	TRIP BLANK	Water	11/19/20 00:00	11/24/20 09:20	
240-140865-2	MW-215S_111920	Water	11/19/20 15:40	11/24/20 09:20	

Detection Summary

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-140865-1

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site						Job ID: 240-140865-1			
Client Sample ID: TRIP BLANK							mple ID: 2	40-140865-1	
Analyte	Result	Qualifier	RL		Unit	Dil Fac	D Method	Prep Type	
Tetrachloroethene	0.50	J	1.0	0.15	ug/L	1	8260B	Total/NA	
Client Sample ID: MV	V-215S_111920					Lab Sa	mple ID: 2	40-140865-2	
No Detections.									
								1	

This Detection Summary does not include radiochemical test results.

Client Sample ID: TRIP BLANK Date Collected: 11/19/20 00:00 Date Received: 11/24/20 09:20

Lab Sample ID: 240-140865-1

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			11/29/20 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/29/20 15:40	1
Tetrachloroethene	0.50	J	1.0	0.15	ug/L			11/29/20 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/29/20 15:40	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/29/20 15:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			11/29/20 15:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130					11/29/20 15:40	1
4-Bromofluorobenzene (Surr)	101		47 - 134					11/29/20 15:40	1
Toluene-d8 (Surr)	98		69 - 122					11/29/20 15:40	1
Dibromofluoromethane (Surr)	97		78 - 129					11/29/20 15:40	1

RL

MDL Unit

Analyte

Client Sample ID: MW-215S_111920 Date Collected: 11/19/20 15:40 Date Received: 11/24/20 09:20

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

Result Qualifier

Prepared

Analyzed

D

Job ID: 240-140865-1 Lab Sample ID: 240-140865-2 Matrix: Water Dil Fac

8

1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/20 15:59	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	100		70 - 133			-		11/30/20 15:59	1	
Method: 8260B - Volatile Org	ganic Compo	unds (GC/	MS)							ī
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/29/20 16:05	1	
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/29/20 16:05	1	
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			11/29/20 16:05	1	
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/29/20 16:05	1	
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/29/20 16:05	1	
Vinyl chloride	1.0	U	1.0	0.20	ug/L			11/29/20 16:05	1	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac	
1,2-Dichloroethane-d4 (Surr)	108		75 - 130			-		11/29/20 16:05	1	
4-Bromofluorobenzene (Surr)	102		47 - 134					11/29/20 16:05	1	
Toluene-d8 (Surr)	100		69 - 122					11/29/20 16:05	1	
Dibromofluoromethane (Surr)	92		78 - 129					11/29/20 16:05	1	

Surrogate Summary

Lab Sample ID

240-140865-1

240-140865-2

Matrix: Water

240-140742-D-2 MSD

240-140742-E-2 MS

LCS 240-463144/5

MB 240-463144/8

Surrogate Legend

TOL = Toluene-d8 (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr) BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

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

Matrix Spike

TRIP BLANK

Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) DCA BFB DBFM TOL 5 (75-130) (78-129) **Client Sample ID** (47-134) (69-122) Matrix Spike Duplicate 94 104 102 83 87 96 106 104 109 101 98 97 MW-215S 111920 108 102 100 92 Lab Control Sample 101 108 103 84 Method Blank 103 99 95 112 9 Method: 8260B SIM - Volatile Organic Compounds (GC/MS) Prep Type: Total/NA Percent Surrogate Recovery (Acceptance Limits) 13

		DCA
Lab Sample ID	Client Sample ID	(70-133)
240-140865-2	MW-215S_111920	100
240-140875-A-4 MS	Matrix Spike	99
240-140875-A-4 MSD	Matrix Spike Duplicate	100
LCS 240-463229/4	Lab Control Sample	99
MB 240-463229/5	Method Blank	102
Surrogate Legend		

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

12/3/2020

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

Lab Sample ID: MB 240-463144/8 Matrix: Water

Analysis Batch: 463144

MB	МВ							
Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1.0	U	1.0	0.19	ug/L			11/29/20 11:08	1
1.0	U	1.0	0.16	ug/L			11/29/20 11:08	1
1.0	U	1.0	0.15	ug/L			11/29/20 11:08	1
1.0	U	1.0	0.19	ug/L			11/29/20 11:08	1
1.0	U	1.0	0.10	ug/L			11/29/20 11:08	1
1.0	U	1.0	0.20	ug/L			11/29/20 11:08	1
	Result 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	MB MB Result Qualifier 1.0 U 1.0 U	Result Qualifier RL 1.0 U 1.0 1.0 U 1.0	Result Qualifier RL MDL 1.0 U 1.0 0.19 1.0 U 1.0 0.16 1.0 U 1.0 0.15 1.0 U 1.0 0.15 1.0 U 1.0 0.19 1.0 U 1.0 0.15 1.0 U 1.0 0.19 1.0 U 1.0 0.19 1.0 U 1.0 0.19	Result Qualifier RL MDL Unit 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.16 ug/L 1.0 U 1.0 0.15 ug/L 1.0 U 1.0 0.15 ug/L 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.10 ug/L	Result Qualifier RL MDL Unit D 1.0 U 1.0 0.19 ug/L D 1.0 U 1.0 0.16 ug/L D 1.0 U 1.0 0.15 ug/L 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.19 ug/L 1.0 U 1.0 0.10 ug/L	Result Qualifier RL MDL Unit D Prepared 1.0 U 1.0 0.19 ug/L 0.19 ug/L 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td>Result Qualifier RL MDL Unit D Prepared Analyzed 1.0 U 1.0 0.19 ug/L 1/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 <td< td=""></td<></td>	Result Qualifier RL MDL Unit D Prepared Analyzed 1.0 U 1.0 0.19 ug/L 1/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 11/29/20 <td< td=""></td<>

	MB	МВ				
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		75 - 130		11/29/20 11:08	1
4-Bromofluorobenzene (Surr)	103		47 - 134		11/29/20 11:08	1
Toluene-d8 (Surr)	99		69 - 122		11/29/20 11:08	1
Dibromofluoromethane (Surr)	95		78 - 129		11/29/20 11:08	1

Lab Sample ID: LCS 240-463144/5 Matrix: Water Analysis Batch: 463144

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	20.0	19.2		ug/L		96	73 - 129	
cis-1,2-Dichloroethene	20.0	19.0		ug/L		95	75 - 124	
Tetrachloroethene	20.0	17.1		ug/L		86	70 - 125	
trans-1,2-Dichloroethene	20.0	19.0		ug/L		95	74 - 130	
Trichloroethene	20.0	16.1		ug/L		80	71_121	
Vinyl chloride	20.0	18.2		ug/L		91	61 - 134	

	LCS	LCS	
Surrogate	%Recovery	Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	101		75 - 130
4-Bromofluorobenzene (Surr)	108		47 - 134
Toluene-d8 (Surr)	103		69 - 122
Dibromofluoromethane (Surr)	84		78 - 129

104

102

Lab Sample ID: 240-140742-D-2 MSD **Matrix: Water** Analysis Batch: 463144

4-Bromofluorobenzene (Surr)

Toluene-d8 (Surr)

,	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
1,1-Dichloroethene	1.0	U	20.0	22.1		ug/L		110	64 - 132	3	35
cis-1,2-Dichloroethene	1.0	U	20.0	21.0		ug/L		105	68 - 121	3	35
Tetrachloroethene	1.0	U	20.0	20.0		ug/L		100	52 - 129	3	35
trans-1,2-Dichloroethene	1.0	U	20.0	20.9		ug/L		105	69 - 126	2	35
Trichloroethene	1.0	U	20.0	18.5		ug/L		92	56 - 124	2	35
Vinyl chloride	1.0	U	20.0	15.6		ug/L		78	49 - 136	4	35
	MSD	MSD									
Surrogate	%Recovery	Qualifier	Limits								
1,2-Dichloroethane-d4 (Surr)	94		75 - 130								

Furofins	TestAmerica	Cant

Prep Type: Total/NA

Client Sample ID: Method Blank

10

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

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Eurofins TestAmerica, Canton

47 - 134

69 - 122

QC Sample Results

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

Matrix: Water Analysis Batch: 463144	42-D-2 MSD						Client	Sam	ple ID: N	latrix Spike Du Prep Type: T	
Surrogate	MSD %Recovery		er	Limits							
Dibromofluoromethane (Surr)	83			78 - 129							
Lab Sample ID: 240-14074 Matrix: Water Analysis Batch: 463144	12-E-2 MS							C	lient Sa	mple ID: Matri Prep Type: T	
· · · · · , · · · · · · · · · · · · · · · · · · ·	Sample	Sample)	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifie	ər	Added	Result	Qualifier	Unit	D	%Rec	Limits	
1,1-Dichloroethene	1.0	U		20.0	21.4		ug/L		107	64 - 132	
cis-1,2-Dichloroethene	1.0	U		20.0	20.4		ug/L		102	68 - 121	
Tetrachloroethene	1.0	U		20.0	19.4		ug/L		97	52 - 129	
trans-1,2-Dichloroethene	1.0			20.0	20.5		ug/L		103	69 - 126	
Trichloroethene	1.0			20.0	18.0		ug/L		90	56 - 124	
Vinyl chloride	1.0			20.0	15.0		ug/L		90 75	49 - 136	
	1.0	0		20.0	15.0		uy/L		75	43-100	
	MS	MS									
Surrogate	%Recovery	Qualifie	er	Limits							
1,2-Dichloroethane-d4 (Surr)	96			75 - 130							
4-Bromofluorobenzene (Surr)	106			47 - 134							
Toluene-d8 (Surr)	104			69 - 122							
	87			78 - 129							
Aethod: 8260B SIM - V Lab Sample ID: MB 240-4	/olatile Org	janic	Com	pounds	(GC/M	S)		Cli	ent Sam	ple ID: Metho Prep Type: T	
Dibromofluoromethane (Surr) Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229	/olatile Org 63229/5			pounds	(GC/M	S)		Cli	ent Sam	ple ID: Metho Prep Type: T	
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229	/olatile Org 63229/5	MB ME	3	-						Prep Type: T	otal/NA
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 Res	MB ME sult Qu	3	F	RL	MDL Unit			ent Sam Prepared	Prep Type: T	otal/NA
Aethod: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water	/olatile Org 63229/5 Res	MB ME	3	F	RL					Prep Type: T	otal/NA
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 	MB ME sult Qu	3 Jalifier	F	RL	MDL Unit				Prep Type: T	otal/NA
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 	MB ME sult Qu 2.0 U	3 Jalifier	F	RL	MDL Unit		<u>D</u>		Prep Type: T	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U	3 Jalifier	F 2	RL	MDL Unit		<u>D</u>	Prepared	Prep Type: T Analyzed 11/30/20 10:56	Dil Fa
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 2 Limits	RL	MDL Unit		<u>D</u>	Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u>	Dil Fa
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 2 Limits	RL	MDL Unit		D I	Prepared Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u>	Dil Fa
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 2 Limits	RL	MDL Unit		D I	Prepared Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 : Lab Control S	Dil Fa Dil Fa
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 2 Limits	RL	MDL Unit		D I	Prepared Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56	Dil Fa Dil Fa
Method: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 2 Limits	RL	MDL Unit		D I	Prepared Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 : Lab Control S	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F 	<u>RL</u> .0 3	MDL Unit 0.86 ug/L		D I	Prepared Prepared	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 : Lab Control S Prep Type: T	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F <i>Limits</i> 70 - 133	<u>RL</u> .0 3	MDL Unit 0.86 ug/L LCS	Clie	D ent Sa	Prepared Prepared	Prep Type: T <u>Analyzed</u> <u>Analyzed</u> <u>Analyzed</u> <u>11/30/20 10:56</u> <u>Lab Control S</u> Prep Type: T %Rec.	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu	3 Jalifier	F <u>Limits</u> 70 - 133 Spike Added	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	D ent Sa	Prepared Prepared Imple ID	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control S Prep Type: T %Rec. Limits	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 Res %Recov	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier	F <u>Limits</u> 70 - 133 Spike Added	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	D ent Sa	Prepared Prepared Imple ID	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control S Prep Type: T %Rec. Limits	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F <u>Limits</u> 70 - 133 Spike Added	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	D ent Sa	Prepared Prepared Imple ID	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control S Prep Type: T %Rec. Limits	Dil Fac
Method: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F 2 <u>Limits</u> 70 - 133 3 Spike 3 3 3 3 3	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	D ent Sa	Prepared Prepared Imple ID	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control S Prep Type: T %Rec. Limits	Dil Fac
Aethod: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane Surrogate 1,2-Dichloroethane-d4 (Surr)	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F 2 <u>Limits</u> 70 - 133 Spike Added 10.0 Limits	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	<u>D</u> <u>I</u> <u>D</u>	Prepared Prepared ample ID %Rec 108	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 : Lab Control S Prep Type: T %Rec. Limits 80 - 135	Dil Fac
Aethod: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-14087	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F 2 <u>Limits</u> 70 - 133 Spike Added 10.0 Limits	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	<u>D</u> <u>I</u> <u>D</u>	Prepared Prepared ample ID %Rec 108	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control 3 Prep Type: T %Rec. Limits 80 - 135 mple ID: Matri	Dil Fau Dil Fau Dil Fau Sample otal/NA
Aethod: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-14087 Matrix: Water	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F 2 <u>Limits</u> 70 - 133 Spike Added 10.0 Limits	LCS Result	MDL Unit 0.86 ug/L LCS	Clie	<u>D</u> <u>I</u> <u>D</u>	Prepared Prepared ample ID %Rec 108	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 : Lab Control S Prep Type: T %Rec. Limits 80 - 135	Dil Fac Dil Fac Dil Fac Sample otal/NA
Aethod: 8260B SIM - V Lab Sample ID: MB 240-44 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-14087	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102	3 Jalifier B Jalifier	F 	LCS Result 10.8	MDL Unit 0.86 ug/L LCS Qualifier	Clie	<u>D</u> <u>I</u> <u>D</u>	Prepared Prepared ample ID %Rec 108	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control 3 Prep Type: T %Rec. Limits 80 - 135 mple ID: Matrix Prep Type: T	Dil Fac Dil Fac Dil Fac Sample otal/NA
Aethod: 8260B SIM - V Lab Sample ID: MB 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: LCS 240-4 Matrix: Water Analysis Batch: 463229 Analyte 1,4-Dioxane <i>Surrogate</i> 1,2-Dichloroethane-d4 (Surr) Lab Sample ID: 240-14087 Matrix: Water	/olatile Org 63229/5 	MB ME sult Qu 2.0 U MB ME rery Qu 102 LCS Qualifie Sample	3 Jalifier B Jalifier	F 2 <u>Limits</u> 70 - 133 Spike Added 10.0 Limits	RL .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	MDL Unit 0.86 ug/L LCS	Clie	<u>D</u> <u>I</u> <u>D</u>	Prepared Prepared Imple ID <u>%Rec</u> 108	Prep Type: T <u>Analyzed</u> 11/30/20 10:56 <u>Analyzed</u> 11/30/20 10:56 Lab Control 3 Prep Type: T %Rec. Limits 80 - 135 mple ID: Matri	Dil Fac Dil Fac Dil Fac Sample otal/NA

Eurofins TestAmerica, Canton

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

	MS	MS										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	99		70 - 133									
Lab Sample ID: 240-1408	75-A-4 MSD					Client	Samn	le ID: N	latrix Spil	ke Dun	licate	
Matrix: Water						onone	oump		Prep Ty			
Analysis Batch: 463229												
	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit	-
1,4-Dioxane	2.0	U	10.0	10.5		ug/L		105	46 - 170	1	26	
	MSD	MSD										
Surrogate	%Recovery	Qualifier	Limits									
1,2-Dichloroethane-d4 (Surr)	100		70 - 133									

QC Association Summary

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

GC/MS VOA

Analysis Batch: 463144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-140865-1	TRIP BLANK	Total/NA	Water	8260B	
240-140865-2	MW-215S_111920	Total/NA	Water	8260B	
MB 240-463144/8	Method Blank	Total/NA	Water	8260B	
LCS 240-463144/5	Lab Control Sample	Total/NA	Water	8260B	
240-140742-D-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
240-140742-E-2 MS	Matrix Spike	Total/NA	Water	8260B	
Analysis Batch: 4632	229				

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-140865-2	MW-215S_111920	Total/NA	Water	8260B SIM	
MB 240-463229/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-463229/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-140875-A-4 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-140875-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

12/3/2020

Lab Sample ID: 240-140865-1

Client Sample ID: TRIP BLANK Date Collected: 11/19/20 00:00 Date R

Date Collecte Date Receive								-	Matrix: Water
	Batch	Batch		Dilution	Batch	Prepared			
Prep Type	Туре	Method	Run	Factor	Number	•	Analyst	Lab	
Total/NA	Analysis	8260B		1	463144	11/29/20 15:40	НМВ	TAL CAN	
Client Sam	ple ID: MW	-215S 11192	20				Lab Sa	ample ID:	240-140865-2
Date Collecte	•							•	Matrix: Water

Clien Date Collected: 11/19/20 15:40 Date Received: 11/24/20 09:20

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	463144	11/29/20 16:05	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	463229	11/30/20 15:59	SAM	TAL CAN

Laboratory References:

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

12/3/2020

Client: ARCADIS U.S., Inc. Project/Site: Ford LTP - Off Site Job ID: 240-140865-1

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	02-23-21	
Connecticut	State	PH-0590	12-31-21	
Florida	NELAP	E87225	06-30-21	
Georgia	State	4062	02-23-21	
Illinois	NELAP	004498	07-31-21	
lowa	State	421	06-01-21	
Kansas	NELAP	E-10336	04-30-21	
Kentucky (UST)	State	112225	02-23-21	
Kentucky (WW)	State	KY98016	12-31-20	
Minnesota	NELAP	OH00048	12-31-20	
Minnesota (Petrofund)	State	3506	08-01-21	
New Jersey	NELAP	OH001	06-30-21	
New York	NELAP	10975	03-31-21	
Ohio VAP	State	CL0024	06-05-21	
Oregon	NELAP	4062	02-24-21	
Pennsylvania	NELAP	68-00340	08-31-21	
Texas	NELAP	T104704517-18-10	08-31-21	
USDA	US Federal Programs	P330-18-00281	09-17-21	
Virginia	NELAP	010101	09-14-21	
Washington	State	C971	01-12-21	
West Virginia DEP	State	210	12-31-20	





Client Contact Company Name: Arcadis		tory program:			DW		NPD			RCRA		Oth	ier											aboratories, l
ddress: 28550 Cabot Drive, Suite 500	Client Project 1	Manager: Kris	Hinske	y		Site	Cont	act: Ju	lia Mc	laffer	ty			Lab (Contac	t: Mik	te Del	Monic	0			co	C No:	
	Telephone: 248	3-994-2240				Tel	ephon	e: 734-	644-51	31		-		Telephone: 330-497-9396 Analyses										
City/State/Zip: Novi, MI, 48377	Email: kristoff	er.hinskey@ar	cadis c			-	Anab	vais Tu	rnarou	d Tim		T	-									4 of 4 COC For lab use only		
Phone: 248-994-2240	Linau. Ra Iston	er musike j @ m	chub.c			10	1 anux	14/201	10). 25-		arela di									T	TT	145	111	
Project Name: Ford LTP Off-Site	Sampler Name	yson H	ar-	12		TA	T if diffe	erent from	n below 3 we	sks L	-								Walk-in client					
Project Number: 30050315.402.04	Method of Ship					-	10 day	1	2 we							s					Lab	sampling		
						1			2 day	3	NI	ab=d			608			08	B SII			100		
PO # 30050315.402.04	Shipping/Track	king No:							1 day		Delo	/ Gr	B	32601	E 82			826	3260			Job	SDG No:	
			is the	Ma	trix	14	Cont	tainers a	& Prese	vatives	Sam	tten	826	CE	2-DC	808	OB	oride	ane			1933	A State State	
	Sample Identification Sample Date Sample Time Matrix Containers & Preservatives 1 1, 1, -DCE 83508 Sample Identification Sample Time 1, 1, -DCE 83508 1, 1, -DCE 83508	ns-1,2-U	ICE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM					ecific Notes /														
Sample Identification	Sample Date	Sample Time	Aĥ	Sed	Of Sel	H	Ĥ	HCNs	AnZ	5 8	14	ບິ	1.1	cis	Tre	5	10	- Zin	1,4	_		_	opeening	art actions:
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MW-2155_111920	11/19/20	15:40		6				6			N	10	F	K	×	X	×	K	X			3	VOFS -	N 8260
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and a second	and the second																							
Possible Hazard Identification	Irritant T Poise	on B	Unkn	own			Sample	e Dispo	to Clien	fee may	be asse Disp				e retai A) onths				
pecial Instructions/QC Requirements & Comments:														-										
iubmit all results through Cadena at jtomalia@cade	enaco.com. Cadena #	E203631																						
evel IV Reporting requested.	10							_																
telinquisbed by:	Company:	cadis	Ľ	ate/Tir	120	7:	00	Re	ceived	CNI	(de	15	ter	aa	e		Com	AV	ra	alls		Dat	e/Time:	017:0
telinquished by: 1 - Malthater	Company:	1	Г	ate/Tir	0.6			_	ceived		1	4.2	10.1		-		Com	pany:				Dat	e/Time:	011.0
Relinquished by for with any	Company:	radis		ate/Tir	3/20	10	50	-		U	1	-	-	1		_	0		ET4				11/23/2	0 1250
conduction of the second s	Company:			1/2:				R	cryvad	in Lab	oratory	oy:	/				Com	pany:	TA			Dat	e/Time:	3 9Z

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ent Ar codis Site Name	Cooler unpacked by:
oler Received on $11-24-2.0$ Opened on $11^{-}24\cdot2.0$	malisning
dEx: 1 st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courie	r Other
ceipt After-hours: Drop-off Date/Time Storage Location	
Packing material used: Bubble Wrap Foam Plastic Bag None Other COOLANT: Wet Ice Blue Ice Dry Ice Water None Cooler temperature upon receipt See Multiple Cooler IR GUN# IR-11 (CF +0.9 °C) Observed Cooler Temp. °C Corrected Cool IR GUN #IR-12 (CF +0.5 °C) Observed Cooler Temp. °C Corrected Cool Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity . -Were the seals on the outside of the cooler(s) signed & dated? -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? -Were tamper/custody seals intact and uncompromised? Shippers' packing slip attached to the cooler(s)? Did custody papers accompany the sample(s)? Were the custody papers relinquished & signed in the appropriate place? Was/were the person(s) who collected the samples clearly identified on the COC? Did all bottles arrive in good condition (Unbroken)? Could all bottle labels (ID/Date/Time) be reconciled with the COC? For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and Were correct bottle(s) used for the test(s) indicated? Sufficient quantity received to perform indicated analyses? Are these work share samples and all listed on the COC? If yes, Questions 13-17 have been checked at the originating laboratory. Were VOAs on the COC? Were air bubbles >6 mm in any VOA vials? Were VOAs on the COC?	er Temp. °C er Temp. °C res Temp. °C res No res No
	Tes No
ontacted PM Date by via Verbal	Voice Mail Other
nceming	
. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page	
SAMPLE CONDITION	
mple(s) were received after the recommended ho	olding time had expired.
mple(s) were receiv	ed in a broken container.
mple(s) were received with bubble >6 mr	m in diameter. (Notify PM)
SAMPLE PRESERVATION	
mple(s) were	further preserved in the laboratory.
mple(s)were ne preserved:Preservative(s) added/Lot number(s):	ruther preserved in the faboratory.
	the second s

Login # : 140845

Cooler Description (Circle)	IR Gun # (Circle)	Canton Sample Rec Observed Temp °C	Corrected Temp °C	Coolant (Circle)
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TA Client Box Other	11-12 IR-12	1.5	3.0	Wet Ice Blue Ice Dry Ice
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and an enter little of the second	IR-11 IR-12			Water None Wet Ice Blue Ice Dry Ice
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TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-11 IR-12			Water None Wet Ice Blue Ice Dry Ice
TA Client Box Other				Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-11 IR-12			Wet Ice Blue Ice Dry Ice Water None

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

DATA VERIFICATION REPORT



December 03, 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: 30050315.402.04 off site Event Specific Scope of Work References: Sample COC Laboratory: TestAmerica - North Canton Laboratory submittal: 140865-1 Sample date: 2020-11-19 Report received by CADENA: 2020-12-03 Initial Data Verification completed by CADENA: 2020-12-03 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:

SPV - GCMS VOC sample -002 preservation non-compliance as noted in the laboratory submittal should render all associated results as estimated and qualified with UJ flags if non-detect.

GCMS VOC TRIP blank had a detection below the RL for the following analyte: TETRACHLOROETHENE. Qualification of client sample results was not required based on this TRIP blank detection.

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.

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 <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.
Е	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.

Qualified Results Summary

CADENA Project ID: E203631 Laboratory: TestAmerica - North Canton Laboratory Submittal: 140865-1

		Sample Name: Lab Sample ID: Sample Date:	MW-215 2401408 11/19/2		20	
				Report		Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier
GC/MS VOC OSW-826	<u>0B</u>					
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l	UJ
	Tetrachloroethene	127-18-4	ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l	UJ
	Trichloroethene	79-01-6	ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4	ND	1.0	ug/l	UJ

Analytical Results Summary

Reportable Results Only

CADENA Project ID: E203631

Laboratory: TestAmerica - North Canton Laboratory Submittal: 140865-1

		Sample Name: Lab Sample ID: Sample Date:	TRIP BLA 2401408 11/19/2	3651			MW-215 2401408 11/19/2		20	
	Analysia		Decult	Report	11:0:40	Valid	Desult	Report	11	Valid
	Analyte	Cas No.	Result	Limit	Units	Qualifier	Result	Limit	Units	Qualifier
GC/MS VOC										
<u>OSW-8260</u>	<u>DB</u>									
	1,1-Dichloroethene	75-35-4	ND	1.0	ug/l		ND	1.0	ug/l	UJ
	cis-1,2-Dichloroethene	156-59-2	ND	1.0	ug/l		ND	1.0	ug/l	UJ
	Tetrachloroethene	127-18-4	0.50	1.0	ug/l	J	ND	1.0	ug/l	UJ
	trans-1,2-Dichloroethene	156-60-5	ND	1.0	ug/l		ND	1.0	ug/l	UJ
	Trichloroethene	79-01-6	ND	1.0	ug/l		ND	1.0	ug/l	UJ
	Vinyl chloride	75-01-4	ND	1.0	ug/l		ND	1.0	ug/l	UJ
<u>OSW-8260</u>	<u>)BBSim</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 # 240-140865-1 CADENA Verification Report: 2020-12-03

Analyses Performed By: TestAmerica North Canton, Ohio

Report #39498R Review Level: Tier III Project: 30050315.402.02

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 240-140865-1 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:

			Sample		Analy	vsis
Sample ID	Lab ID	Matrix	Collection Date	Parent Sample	VOC (Full Scan)	VOC (SIM)
TRIP BLANK	240-140865-1	Water	11/19/20		х	
MW-215S_111920	240-140865-2	Water	11/19/20		Х	Х

ANALYTICAL DATA PACKAGE DOCUMENTATION

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

		Rep	orted		mance ptable	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.

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.

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 sample was not collected for samples from 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		ormance eptable	Not
	No	Yes	No	Yes	Required
GAS CHROMATOGRAPHY/MASS SPECTROMET	RY (GC/N	IS)			
Tier II Validation					
Holding times/Preservation		Х		Х	
Tier III Validation					1
System performance and column resolution		Х		Х	
Initial calibration %RSDs		Х		Х	
Continuing calibration RRFs		Х		Х	
Continuing calibration %Ds		Х		Х	
Instrument tune and performance check		Х		Х	
Ion abundance criteria for each instrument used		Х		Х	
Field Duplicate RPD	X				Х
Internal standard		Х		Х	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		Х		Х	
B. Quantitation Reports		X		Х	
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		Х		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

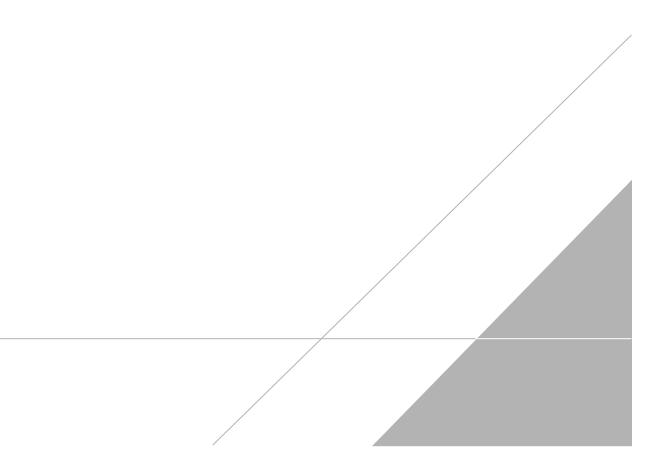
VALIDATION PERFORMED BY:	Hrishikesh Upadhyaya
SIGNATURE:	Curindialized -

DATE: December 14, 2020

PEER REVIEW: Andrew Korycinski

DATE: December 15, 2020

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS







Telephone: 248	Manager: Kris 3-994-2240	Hinsk	ey							-		_		_							_		TestAmerica Laboratories,
	3-994-2240					Site	Cont	act: .	Julia	McCI	afferty				Lab (ontac	t: Mik	Del	Monic	0			COC No:
Email: kristoff	Telephone: 248-994-2240 Telephone: 734-644-5131 Telephone: 330-497-9396					Tel	ephor	ie: 73	4-644	-5131					Telep	hone:	330-49	7-93	96				
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Sample Date	Sample Time	Air	Aqueous	Sediment	Solid Other:	H2SO4	EONH	HCI	NaOH	HOWN	Other:	Filtered	Compos	1,1-DCE	cis-1,2-E	Trans-1,	PCE 826	TCE 826	Vinyl Ch	1,4-Diox			Sample Specific Notes / Special Instructions:
	-	Π	1					1		T	T	N	1 5	X	X	X	1	×	X	1		T	Itrip blank
Inhala	16.10		0	+	-	$t \rightarrow t$	H	10	1	1	1	151	1	1	1	.1	1	X	1	V		+	
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Client Sample ID: TRIP BLANK

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

Lab Sample ID: 240-140865-1 Matrix: Water

	i gamo oompo								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/29/20 15:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			11/29/20 15:40	1
Tetrachloroethene	0.50	J	1.0	0.15	ug/L			11/29/20 15:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			11/29/20 15:40	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			11/29/20 15:40	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			11/29/20 15:40	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	109		75 - 130			-		11/29/20 15:40	1
4-Bromofluorobenzene (Surr)	101		47 - 134					11/29/20 15:40	1
Toluene-d8 (Surr)	98		69 - 122					11/29/20 15:40	1
Dibromofluoromethane (Surr)	97		78 - 129					11/29/20 15:40	1

Client Sample ID: MW-215S_111920 Date Collected: 11/19/20 15:40 Date Received: 11/24/20 09:20

Dibromofluoromethane (Surr)

Lab Sample ID: 240-140865-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.0	U	2.0	0.86	ug/L			11/30/20 15:59	
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	100		70 - 133			-		11/30/20 15:59	1

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

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Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	ΨUJ	1.0	0.19	ug/L			11/29/20 16:05	1
cis-1,2-Dichloroethene	1.0	Ψ UJ	1.0	0.16	ug/L			11/29/20 16:05	1
Tetrachloroethene	1.0	U UJ	1.0	0.15	ug/L			11/29/20 16:05	1
trans-1,2-Dichloroethene	1.0	U UJ	1.0	0.19	ug/L			11/29/20 16:05	1
Trichloroethene	1.0	U UJ	1.0	0.10	ug/L			11/29/20 16:05	1
Vinyl chloride	1.0	ψυJ	1.0	0.20	ug/L			11/29/20 16:05	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	108		75 - 130			-		11/29/20 16:05	1
4-Bromofluorobenzene (Surr)	102		47 - 134					11/29/20 16:05	1
Toluene-d8 (Surr)	100		69 - 122					11/29/20 16:05	1

78 - 129

11/29/20 16:05

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