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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-126098-1
Client Project/Site: Ford LTP On Site

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

Attn: Kristoffer Hinskey

Authorized for release by:
2/25/2020 4:37:02 PM

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Definitions/Glossary

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

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Qualifiers

GC/MS VOA

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
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
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-126098-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP On Site

Report Number: 240-126098-1

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 1.0º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples TRIP BLANK (240-126098-1), MW-23_020720 (240-126098-2), TW-16-01_020720 (240-126098-3), PW-16-01_020720 (240-126098-4) and DUP-16 (240-126098-5) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 02/14/2020 and 02/17/2020.

Samples MW-23_020720 (240-126098-2)[200X], TW-16-01_020720 (240-126098-3)[13.33X] and DUP-16 (240-126098-5)[250X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-23_020720 (240-126098-2), TW-16-01_020720 (240-126098-3), PW-16-01_020720 (240-126098-4) and DUP-16 (240-126098-5) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 02/13/2020.

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 On Site

Job ID: 240-126098-1

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 On Site

Job ID: 240-126098-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-126098-1	TRIP BLANK	Water	02/07/20 00:00	02/11/20 08:40	
240-126098-2	MW-23_020720	Water	02/07/20 12:51	02/11/20 08:40	
240-126098-3	TW-16-01_020720	Water	02/07/20 14:51	02/11/20 08:40	
240-126098-4	PW-16-01_020720	Water	02/07/20 16:21	02/11/20 08:40	
240-126098-5	DUP-16	Water	02/07/20 00:00	02/11/20 08:40	

Detection Summary

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

Job ID: 240-126098-1

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-126098-1

No Detections.

Client Sample ID: MW-23_020720 — Lab Sample ID: 240-126098-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4800		200	32	ug/L	200		8260B	Total/NA
trans-1,2-Dichloroethene	200		200	38	ug/L	200		8260B	Total/NA
Trichloroethene	1300		200	20	ug/L	200		8260B	Total/NA

Client Sample ID: TW-16-01_020720 — Lab Sample ID: 240-126098-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	91		13	2.1	ug/L	13.33		8260B	Total/NA
Vinyl chloride	370		13	2.7	ug/L	13.33		8260B	Total/NA

Client Sample ID: PW-16-01_020720 — Lab Sample ID: 240-126098-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.77	J	1.0	0.16	ug/L	1		8260B	Total/NA
Vinyl chloride	1.8		1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: DUP-16 — Lab Sample ID: 240-126098-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	4500		250	40	ug/L	250		8260B	Total/NA
trans-1,2-Dichloroethene	160	J	250	48	ug/L	250		8260B	Total/NA
Trichloroethene	1200		250	25	ug/L	250		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

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

Job ID: 240-126098-1

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

Lab Sample ID: 240-126098-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (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			02/14/20 21:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/14/20 21:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/14/20 21:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/14/20 21:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/14/20 21:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/14/20 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*75 - 130*		*02/14/20 21:03*	*1*
4-Bromofluorobenzene (Surr)	*103*		*47 - 134*		*02/14/20 21:03*	*1*
Toluene-d8 (Surr)	*93*		*69 - 122*		*02/14/20 21:03*	*1*
Dibromofluoromethane (Surr)	*86*		*78 - 129*		*02/14/20 21:03*	*1*

Client Sample ID: MW-23_020720

Date Collected: 02/07/20 12:51
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-2

Matrix: Water

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

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 19:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 133*		*02/13/20 19:54*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	200	U	200	38	ug/L			02/14/20 21:28	200
cis-1,2-Dichloroethene	**4800**		200	32	ug/L			02/14/20 21:28	200
Tetrachloroethene	200	U	200	30	ug/L			02/14/20 21:28	200
trans-1,2-Dichloroethene	**200**		200	38	ug/L			02/14/20 21:28	200
Trichloroethene	**1300**		200	20	ug/L			02/14/20 21:28	200
Vinyl chloride	200	U	200	40	ug/L			02/14/20 21:28	200

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*75 - 130*		*02/14/20 21:28*	*200*
4-Bromofluorobenzene (Surr)	*98*		*47 - 134*		*02/14/20 21:28*	*200*
Toluene-d8 (Surr)	*95*		*69 - 122*		*02/14/20 21:28*	*200*
Dibromofluoromethane (Surr)	*84*		*78 - 129*		*02/14/20 21:28*	*200*

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

Job ID: 240-126098-1

Client Sample ID: TW-16-01_020720
Date Collected: 02/07/20 14:51
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-3
Matrix: Water

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

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 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*70 - 133*		*02/13/20 20:20*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	13	U	13	2.5	ug/L			02/17/20 15:29	13.33
cis-1,2-Dichloroethene	**91**		13	2.1	ug/L			02/17/20 15:29	13.33
Tetrachloroethene	13	U	13	2.0	ug/L			02/17/20 15:29	13.33
trans-1,2-Dichloroethene	13	U	13	2.5	ug/L			02/17/20 15:29	13.33
Trichloroethene	13	U	13	1.3	ug/L			02/17/20 15:29	13.33
Vinyl chloride	**370**		13	2.7	ug/L			02/17/20 15:29	13.33

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*75 - 130*		*02/17/20 15:29*	*13.33*
4-Bromofluorobenzene (Surr)	*102*		*47 - 134*		*02/17/20 15:29*	*13.33*
Toluene-d8 (Surr)	*96*		*69 - 122*		*02/17/20 15:29*	*13.33*
Dibromofluoromethane (Surr)	*91*		*78 - 129*		*02/17/20 15:29*	*13.33*

Client Sample ID: PW-16-01_020720

Date Collected: 02/07/20 16:21
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-4

Matrix: Water

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

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 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 133*		*02/13/20 20:45*	*1*

Method: 8260B - Volatile Organic Compounds (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			02/17/20 15:54	1
cis-1,2-Dichloroethene	**0.77**	**J**	1.0	0.16	ug/L			02/17/20 15:54	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/17/20 15:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/17/20 15:54	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/17/20 15:54	1
Vinyl chloride	**1.8**		1.0	0.20	ug/L			02/17/20 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*75 - 130*		*02/17/20 15:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*47 - 134*		*02/17/20 15:54*	*1*
Toluene-d8 (Surr)	*93*		*69 - 122*		*02/17/20 15:54*	*1*
Dibromofluoromethane (Surr)	*92*		*78 - 129*		*02/17/20 15:54*	*1*

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

Job ID: 240-126098-1

Client Sample ID: DUP-16

Date Collected: 02/07/20 00:00
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-5

Matrix: Water

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

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 21:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 133*		*02/13/20 21:11*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	250	U	250	48	ug/L			02/14/20 22:44	250
cis-1,2-Dichloroethene	**4500**		250	40	ug/L			02/14/20 22:44	250
Tetrachloroethene	250	U	250	38	ug/L			02/14/20 22:44	250
trans-1,2-Dichloroethene	**160**	**J**	250	48	ug/L			02/14/20 22:44	250
Trichloroethene	**1200**		250	25	ug/L			02/14/20 22:44	250
Vinyl chloride	250	U	250	50	ug/L			02/14/20 22:44	250

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*75 - 130*		*02/14/20 22:44*	*250*
4-Bromofluorobenzene (Surr)	*98*		*47 - 134*		*02/14/20 22:44*	*250*
Toluene-d8 (Surr)	*95*		*69 - 122*		*02/14/20 22:44*	*250*
Dibromofluoromethane (Surr)	*91*		*78 - 129*		*02/14/20 22:44*	*250*

Surrogate Summary

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

Job ID: 240-126098-1

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

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(75-130)	(47-134)	(69-122)	(78-129)
240-126087-B-3 MS	Matrix Spike	92	104	93	91
240-126087-E-3 MSD	Matrix Spike Duplicate	89	103	91	89
240-126098-1	TRIP BLANK	85	103	93	86
240-126098-2	MW-23_020720	88	98	95	84
240-126098-3	TW-16-01_020720	90	102	96	91
240-126098-3 MS	TW-16-01_020720	87	102	94	91
240-126098-3 MSD	TW-16-01_020720	85	104	93	90
240-126098-4	PW-16-01_020720	84	100	93	92
240-126098-5	DUP-16	88	98	95	91
LCS 240-422858/4	Lab Control Sample	88	103	93	90
LCS 240-423052/4	Lab Control Sample	87	103	94	90
MB 240-422858/7	Method Blank	86	104	93	89
MB 240-423052/7	Method Blank	83	103	93	86

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
Lab Sample ID	Client Sample ID	(70-133)
240-126095-G-3 MS	Matrix Spike	100
240-126095-G-3 MSD	Matrix Spike Duplicate	101
240-126098-2	MW-23_020720	101
240-126098-3	TW-16-01_020720	99
240-126098-4	PW-16-01_020720	102
240-126098-5	DUP-16	101
LCS 240-422706/4	Lab Control Sample	97
MB 240-422706/5	Method Blank	98

Surrogate Legend

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

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

Lab Sample ID: MB 240-422858/7
Matrix: Water
Analysis Batch: 422858

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/14/20 14:20	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/14/20 14:20	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/14/20 14:20	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/14/20 14:20	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/14/20 14:20	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/14/20 14:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*75 - 130*		*02/14/20 14:20*	*1*
4-Bromofluorobenzene (Surr)	*104*		*47 - 134*		*02/14/20 14:20*	*1*
Toluene-d8 (Surr)	*93*		*69 - 122*		*02/14/20 14:20*	*1*
Dibromofluoromethane (Surr)	*89*		*78 - 129*		*02/14/20 14:20*	*1*

Lab Sample ID: LCS 240-422858/4
Matrix: Water
Analysis Batch: 422858

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	10.0		ug/L		100	73 - 129
cis-1,2-Dichloroethene	10.0	10.4		ug/L		104	75 - 124
Tetrachloroethene	10.0	9.83		ug/L		98	70 - 125
trans-1,2-Dichloroethene	10.0	10.1		ug/L		101	74 - 130
Trichloroethene	10.0	9.56		ug/L		96	71 - 121
Vinyl chloride	10.0	11.6		ug/L		116	61 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*75 - 130*
4-Bromofluorobenzene (Surr)	*103*		*47 - 134*
Toluene-d8 (Surr)	*93*		*69 - 122*
Dibromofluoromethane (Surr)	*90*		*78 - 129*

Lab Sample ID: 240-126087-B-3 MS
Matrix: Water
Analysis Batch: 422858

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	1.0	U	10.0	9.80		ug/L		98	64 - 132
cis-1,2-Dichloroethene	1.0	U	10.0	9.59		ug/L		96	68 - 121
Tetrachloroethene	1.0	U	10.0	7.84		ug/L		78	52 - 129
trans-1,2-Dichloroethene	1.0	U	10.0	9.67		ug/L		97	69 - 126
Trichloroethene	1.0	U	10.0	8.75		ug/L		87	56 - 124
Vinyl chloride	1.0	U	10.0	11.9		ug/L		119	49 - 136

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*92*		*75 - 130*
4-Bromofluorobenzene (Surr)	*104*		*47 - 134*
Toluene-d8 (Surr)	*93*		*69 - 122*

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

Lab Sample ID: 240-126087-B-3 MS
Matrix: Water
Analysis Batch: 422858

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	91		78 - 129

Lab Sample ID: 240-126087-E-3 MSD
Matrix: Water
Analysis Batch: 422858

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	1.0	U	10.0	9.10		ug/L		91	64 - 132	7	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.07		ug/L		91	68 - 121	6	35
Tetrachloroethene	1.0	U	10.0	8.34		ug/L		83	52 - 129	6	35
trans-1,2-Dichloroethene	1.0	U	10.0	9.24		ug/L		92	69 - 126	5	35
Trichloroethene	1.0	U	10.0	7.96		ug/L		80	56 - 124	9	35
Vinyl chloride	1.0	U	10.0	11.6		ug/L		116	49 - 136	2	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		75 - 130
4-Bromofluorobenzene (Surr)	103		47 - 134
Toluene-d8 (Surr)	91		69 - 122
Dibromofluoromethane (Surr)	89		78 - 129

Lab Sample ID: MB 240-423052/7
Matrix: Water
Analysis Batch: 423052

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/17/20 14:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			02/17/20 14:14	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			02/17/20 14:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			02/17/20 14:14	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			02/17/20 14:14	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			02/17/20 14:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		75 - 130		02/17/20 14:14	1
4-Bromofluorobenzene (Surr)	103		47 - 134		02/17/20 14:14	1
Toluene-d8 (Surr)	93		69 - 122		02/17/20 14:14	1
Dibromofluoromethane (Surr)	86		78 - 129		02/17/20 14:14	1

Lab Sample ID: LCS 240-423052/4
Matrix: Water
Analysis Batch: 423052

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	10.0	10.3		ug/L		103	73 - 129
cis-1,2-Dichloroethene	10.0	10.0		ug/L		100	75 - 124
Tetrachloroethene	10.0	9.58		ug/L		96	70 - 125
trans-1,2-Dichloroethene	10.0	10.7		ug/L		107	74 - 130
Trichloroethene	10.0	9.60		ug/L		96	71 - 121

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

Lab Sample ID: LCS 240-423052/4
Matrix: Water
Analysis Batch: 423052

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Vinyl chloride			10.0	10.9		ug/L		109	61 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*75 - 130*
4-Bromofluorobenzene (Surr)	*103*		*47 - 134*
Toluene-d8 (Surr)	*94*		*69 - 122*
Dibromofluoromethane (Surr)	*90*		*78 - 129*

Lab Sample ID: 240-126098-3 MS
Matrix: Water
Analysis Batch: 423052

Client Sample ID: TW-16-01_020720
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,1-Dichloroethene	13	U	133	129		ug/L		97	64 - 132		
cis-1,2-Dichloroethene	91		133	225		ug/L		100	68 - 121		
Tetrachloroethene	13	U	133	116		ug/L		87	52 - 129		
trans-1,2-Dichloroethene	13	U	133	135		ug/L		101	69 - 126		
Trichloroethene	13	U	133	113		ug/L		85	56 - 124		
Vinyl chloride	370		133	516		ug/L		107	49 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*75 - 130*
4-Bromofluorobenzene (Surr)	*102*		*47 - 134*
Toluene-d8 (Surr)	*94*		*69 - 122*
Dibromofluoromethane (Surr)	*91*		*78 - 129*

Lab Sample ID: 240-126098-3 MSD
Matrix: Water
Analysis Batch: 423052

Client Sample ID: TW-16-01_020720
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	13	U	133	126		ug/L		95	64 - 132	2	35
cis-1,2-Dichloroethene	91		133	228		ug/L		103	68 - 121	1	35
Tetrachloroethene	13	U	133	115		ug/L		86	52 - 129	1	35
trans-1,2-Dichloroethene	13	U	133	130		ug/L		98	69 - 126	3	35
Trichloroethene	13	U	133	113		ug/L		84	56 - 124	0	35
Vinyl chloride	370		133	491		ug/L		88	49 - 136	5	35

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*75 - 130*
4-Bromofluorobenzene (Surr)	*104*		*47 - 134*
Toluene-d8 (Surr)	*93*		*69 - 122*
Dibromofluoromethane (Surr)	*90*		*78 - 129*

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

Lab Sample ID: MB 240-422706/5
Matrix: Water
Analysis Batch: 422706

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

Analyte	MB Result	MB 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

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*70 - 133*		*02/13/20 13:04*	*1*

Lab Sample ID: LCS 240-422706/4
Matrix: Water
Analysis Batch: 422706

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane			10.0	10.1		ug/L		101	80 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*70 - 133*

Lab Sample ID: 240-126095-G-3 MS
Matrix: Water
Analysis Batch: 422706

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,4-Dioxane	2.0	U	10.0	10.3		ug/L		103	46 - 170		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 133*

Lab Sample ID: 240-126095-G-3 MSD
Matrix: Water
Analysis Batch: 422706

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	2.0	U	10.0	10.1		ug/L		101	46 - 170	2	26

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 133*

QC Association Summary

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

Job ID: 240-126098-1

GC/MS VOA

Analysis Batch: 422706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126098-2	MW-23_020720	Total/NA	Water	8260B SIM	
240-126098-3	TW-16-01_020720	Total/NA	Water	8260B SIM	
240-126098-4	PW-16-01_020720	Total/NA	Water	8260B SIM	
240-126098-5	DUP-16	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	

Analysis Batch: 422858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126098-1	TRIP BLANK	Total/NA	Water	8260B	
240-126098-2	MW-23_020720	Total/NA	Water	8260B	
240-126098-5	DUP-16	Total/NA	Water	8260B	
MB 240-422858/7	Method Blank	Total/NA	Water	8260B	
LCS 240-422858/4	Lab Control Sample	Total/NA	Water	8260B	
240-126087-B-3 MS	Matrix Spike	Total/NA	Water	8260B	
240-126087-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 423052

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-126098-3	TW-16-01_020720	Total/NA	Water	8260B	
240-126098-4	PW-16-01_020720	Total/NA	Water	8260B	
MB 240-423052/7	Method Blank	Total/NA	Water	8260B	
LCS 240-423052/4	Lab Control Sample	Total/NA	Water	8260B	
240-126098-3 MS	TW-16-01_020720	Total/NA	Water	8260B	
240-126098-3 MSD	TW-16-01_020720	Total/NA	Water	8260B	

Lab Chronicle

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

Job ID: 240-126098-1

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

Lab Sample ID: 240-126098-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	422858	02/14/20 21:03	LRW	TAL CAN

Client Sample ID: MW-23_020720
Date Collected: 02/07/20 12:51
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		200	422858	02/14/20 21:28	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	422706	02/13/20 19:54	SAM	TAL CAN

Client Sample ID: TW-16-01_020720
Date Collected: 02/07/20 14:51
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		13.33	423052	02/17/20 15:29	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	422706	02/13/20 20:20	SAM	TAL CAN

Client Sample ID: PW-16-01_020720
Date Collected: 02/07/20 16:21
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	423052	02/17/20 15:54	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	422706	02/13/20 20:45	SAM	TAL CAN

Client Sample ID: DUP-16
Date Collected: 02/07/20 00:00
Date Received: 02/11/20 08:40

Lab Sample ID: 240-126098-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		250	422858	02/14/20 22:44	LRW	TAL CAN
Total/NA	Analysis	8260B SIM		1	422706	02/13/20 21:11	SAM	TAL CAN

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 240-126098-1

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
Iowa	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.

MICHIGAN 190

0-3/1-0

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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

Regulatory program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other

TestAmerica Laboratories, Inc.

Client Contact	Client Project Manager: Kris Hinskey	Site Contact: Julia McClafferty	Lab Contact: Mike DelMonico	COC No:
Company Name: Arcadis				
Address: 28550 Cabot Drive, Suite 500	Telephone: 248-994-2240	Telephone: 734-644-5131	Telephone: 330-497-9396	/ of / COCs
City/State/Zip: Novi, MI, 48377	Email: kristoffer.hinskey@arcadis.com	Analysis Turnaround Time	Analyses	For lab use only
Phone: 248-994-2240	Sampler Name: Gary Schafer	TAT if different from below: 10 day; ☐ 3 weeks ☑ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Walk-in client
Project Name: Ford LTP On-Site	Method of Shipment/Carrier:			Lab sampling
Project Number: 30042006.0401.02	Shipping/Tracking No:			Job/SDG No:
PO # 30042006.0401.02				

Sample Identification	Sample Date	Sample Time	Matrix: Air	Aqueous	Sediment	Solid	Other:	Containers & Preservatives: H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Unpres	Other:	Filtered Sample (Y/N)	Composite=C / Grab=G	1,1-DCE 8260B	cis-1,2-DCE 8260B	Trans-1,2-DCE 8260B	PCE 8260B	TCE 8260B	Vinyl Chloride 8260B	1,4-Dioxane 8260B SIM	Sample Specific Notes / Special Instructions:
TRIP BLANK	02/07/20	02pm																						1 VOA
MW-23-020720	02/07/20	12:51		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260SIM
TW-16-01-020720	02/07/20	14:51		6						6					N	G	X	X	X	X	X	X	X	1
PW-16-01-020720	02/07/20	16:21		6						6					N	G	X	X	X	X	X	X	X	
DUP-16	02/07/20	—		6						6					N	G	X	X	X	X	X	X	X	3 VOAs for 8260B 3 VOAs for 8260SIM

240-126098 Chain of Custody

Possible Hazard Identification: ☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☐ Archive For ____ month) Months

Special Instructions/QC Requirements & Comments:

Submit all results through Cadena at jtomalia@cadenaco.com. Cadena #E203728
Level IV Reporting requested.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Gary Schafer	Arcadis	02/07/20 1650	Heather Woodrow	Arcadis	2/7/20 1650
Relinquished by: Heather Woodrow	Company: Arcadis	Date/Time: 2/7/20 1900	Received by: Arcadis Cold Storage	Company: Arcadis	Date/Time: 2/7/20 1900
Relinquished by: Julia McClafferty	Company: Arcadis	Date/Time: 2/10/20 1345	Received in Laboratory by:	Company: ETA	Date/Time: 2/10/20 1320
	ETA	2/10/20 1440		TA	2-11-20 840

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 176058
Canton Facility

Client Arcadis Site Name

Cooler unpacked by:

Cooler Received on 2-11-20 Opened on 2-11-20

FedEx: 1st (Grd) Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 14 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp. 0.3 °C Corrected Cooler Temp. 1.0 °C
   IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	Yes	(No)
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No (NA) pH Strip Lot# HC995364
13. Were VOAs on the COC?	(Yes)	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	(No) NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	(Yes)	No
16. Was a LL Hg or Me Hg trip blank present? ____	Yes	(No)

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: AG

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____