

ANALYTICAL REPORT

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Tel: (330)497-9396

Laboratory Job ID: 240-119670-1
Client Project/Site: Ford LTP Livonia MI - E203728

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

Table of Contents

Cover Page	1
Table of Contents	2
Definitions/Glossary	3
Case Narrative	4
Method Summary	6
Sample Summary	7
Detection Summary	8
Client Sample Results	9
Surrogate Summary	12
QC Sample Results	13
QC Association Summary	18
Lab Chronicle	19
Certification Summary	20
Chain of Custody	21



Definitions/Glossary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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)

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Job ID: 240-119670-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

CASE NARRATIVE

Client: ARCADIS U.S., Inc.

Project: Ford LTP Livonia MI - E203728

Report Number: 240-119670-1

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.

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

RECEIPT

The samples were received on 9/28/2019 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-54_092719 (240-119670-1), MW-54S_092719 (240-119670-2) and TRIP BLANK (240-119670-3) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 10/10/2019.

The pH of sample MW-54S_092719 (240-119670-2) was 3. The sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably, Benzene, Toluene, and Ethylbenzene are susceptible to biological degradation if sample is not preserved to a pH of 2.

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

VOLATILE ORGANIC COMPOUNDS (GCMS SIM)

Samples MW-54_092719 (240-119670-1) and MW-54S_092719 (240-119670-2) were analyzed for volatile organic compounds (GCMS SIM) in accordance with EPA SW-846 Method 8260B SIM. The samples were analyzed on 10/04/2019.

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

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Job ID: 240-119670-1 (Continued)

Laboratory: Eurofins TestAmerica, Canton (Continued)

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- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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 Livonia MI - E203728

Job ID: 240-119670-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-119670-1	MW-54_092719	Water	09/27/19 10:34	09/28/19 09:45	
240-119670-2	MW-54S_092719	Water	09/27/19 12:15	09/28/19 09:45	
240-119670-3	TRIP BLANK	Water	09/27/19 00:00	09/28/19 09:45	

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- 10
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- 13
- 14

Detection Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Client Sample ID: MW-54_092719

Lab Sample ID: 240-119670-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,4-Dioxane	2.2		2.0	0.86	ug/L	1		8260B SIM	Total/NA
Vinyl chloride	0.84	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: MW-54S_092719

Lab Sample ID: 240-119670-2

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119670-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton



Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Client Sample ID: MW-54_092719

Lab Sample ID: 240-119670-1

Date Collected: 09/27/19 10:34

Matrix: Water

Date Received: 09/28/19 09:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	2.2		2.0	0.86	ug/L			10/04/19 15:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	98		63 - 125		10/04/19 15:04	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			10/10/19 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 17:39	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 17:39	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 17:39	1
Vinyl chloride	0.84	J	1.0	0.20	ug/L			10/10/19 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		59 - 120		10/10/19 17:39	1
Dibromofluoromethane (Surr)	94		75 - 128		10/10/19 17:39	1
1,2-Dichloroethane-d4 (Surr)	91		70 - 121		10/10/19 17:39	1
Toluene-d8 (Surr)	95		70 - 123		10/10/19 17:39	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Client Sample ID: MW-54S_092719

Lab Sample ID: 240-119670-2

Date Collected: 09/27/19 12:15

Matrix: Water

Date Received: 09/28/19 09:45

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			10/04/19 15:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	103		63 - 125		10/04/19 15:29	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			10/10/19 18:03	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 18:03	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 18:03	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 18:03	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 18:03	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 18:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		59 - 120		10/10/19 18:03	1
Dibromofluoromethane (Surr)	95		75 - 128		10/10/19 18:03	1
1,2-Dichloroethane-d4 (Surr)	90		70 - 121		10/10/19 18:03	1
Toluene-d8 (Surr)	94		70 - 123		10/10/19 18:03	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119670-3

Date Collected: 09/27/19 00:00

Matrix: Water

Date Received: 09/28/19 09:45

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			10/10/19 18:28	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 18:28	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 18:28	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 18:28	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 18:28	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 18:28	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		59 - 120		10/10/19 18:28	1
Dibromofluoromethane (Surr)	93		75 - 128		10/10/19 18:28	1
1,2-Dichloroethane-d4 (Surr)	90		70 - 121		10/10/19 18:28	1
Toluene-d8 (Surr)	94		70 - 123		10/10/19 18:28	1

Surrogate Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	DCA	TOL
		(59-120)	(75-128)	(70-121)	(70-123)
240-119642-A-2 MS	Matrix Spike	103	88	82	95
240-119642-A-2 MSD	Matrix Spike Duplicate	104	88	84	97
240-119670-1	MW-54_092719	102	94	91	95
240-119670-2	MW-54S_092719	102	95	90	94
240-119670-3	TRIP BLANK	103	93	90	94
LCS 240-405042/6	Lab Control Sample	104	87	83	98
MB 240-405042/9	Method Blank	102	92	89	96

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA
		(63-125)
240-119670-1	MW-54_092719	98
240-119670-2	MW-54S_092719	103
240-119751-L-7 MS	Matrix Spike	102
240-119751-L-7 MSD	Matrix Spike Duplicate	102
LCS 240-404131/4	Lab Control Sample	98
MB 240-404131/5	Method Blank	97

Surrogate Legend

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

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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

Lab Sample ID: MB 240-405042/9
Matrix: Water
Analysis Batch: 405042

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			10/10/19 11:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			10/10/19 11:55	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			10/10/19 11:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			10/10/19 11:55	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			10/10/19 11:55	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			10/10/19 11:55	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		59 - 120		10/10/19 11:55	1
Dibromofluoromethane (Surr)	92		75 - 128		10/10/19 11:55	1
1,2-Dichloroethane-d4 (Surr)	89		70 - 121		10/10/19 11:55	1
Toluene-d8 (Surr)	96		70 - 123		10/10/19 11:55	1

Lab Sample ID: LCS 240-405042/6
Matrix: Water
Analysis Batch: 405042

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	20.0	16.6		ug/L		83	69 - 134
1,1,1,2-Tetrachloroethane	20.0	18.4		ug/L		92	65 - 139
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	17.9		ug/L		90	50 - 156
1,1,2-Trichloroethane	20.0	17.8		ug/L		89	78 - 133
1,1-Dichloroethane	20.0	17.5		ug/L		88	75 - 133
1,1-Dichloroethene	20.0	18.0		ug/L		90	65 - 139
1,2,4-Trichlorobenzene	20.0	16.5		ug/L		82	42 - 133
1,2,4-Trimethylbenzene	20.0	18.7		ug/L		94	74 - 120
1,2-Dibromo-3-Chloropropane	20.0	14.9		ug/L		74	46 - 132
1,2-Dibromoethane	20.0	17.7		ug/L		88	77 - 123
1,2-Dichlorobenzene	20.0	17.5		ug/L		87	78 - 120
1,2-Dichloroethane	20.0	16.3		ug/L		81	71 - 135
1,2-Dichloropropane	20.0	17.7		ug/L		89	78 - 133
1,3,5-Trimethylbenzene	20.0	18.8		ug/L		94	75 - 121
1,3-Dichlorobenzene	20.0	17.7		ug/L		88	78 - 120
1,4-Dichlorobenzene	20.0	17.7		ug/L		89	78 - 120
2-Butanone (MEK)	40.0	28.6		ug/L		71	39 - 163
2-Hexanone	40.0	27.2		ug/L		68	43 - 148
4-Methyl-2-pentanone (MIBK)	40.0	25.9		ug/L		65	49 - 143
Acetone	40.0	27.4		ug/L		69	21 - 162
Benzene	20.0	17.4		ug/L		87	80 - 123
Bromodichloromethane	20.0	17.2		ug/L		86	77 - 125
Bromoform	20.0	15.0		ug/L		75	49 - 141
Bromomethane	20.0	24.0		ug/L		120	41 - 175
Carbon disulfide	20.0	18.9		ug/L		95	60 - 138
Carbon tetrachloride	20.0	16.2		ug/L		81	63 - 140
Chlorobenzene	20.0	18.0		ug/L		90	80 - 121
Chloroethane	20.0	15.4		ug/L		77	33 - 173
Chloroform	20.0	17.3		ug/L		86	79 - 127

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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

Lab Sample ID: LCS 240-405042/6

Matrix: Water

Analysis Batch: 405042

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloromethane	20.0	13.7		ug/L		68	54 - 143
cis-1,2-Dichloroethene	20.0	17.5		ug/L		87	76 - 128
cis-1,3-Dichloropropene	20.0	18.0		ug/L		90	64 - 132
Cyclohexane	20.0	19.0		ug/L		95	58 - 145
Dibromochloromethane	20.0	18.3		ug/L		92	70 - 132
Dichlorodifluoromethane	20.0	11.2		ug/L		56	29 - 148
Diethyl ether	20.0	17.4		ug/L		87	70 - 146
Ethylbenzene	20.0	18.2		ug/L		91	80 - 120
Isopropylbenzene	20.0	18.0		ug/L		90	74 - 120
Methyl acetate	40.0	27.3		ug/L		68	52 - 145
Methyl tert-butyl ether	20.0	15.8		ug/L		79	51 - 133
Methylcyclohexane	20.0	18.5		ug/L		93	60 - 125
Methylene Chloride	20.0	17.1		ug/L		86	70 - 134
Styrene	20.0	18.5		ug/L		93	79 - 120
Tetrachloroethene	20.0	18.4		ug/L		92	74 - 130
Toluene	20.0	18.9		ug/L		94	78 - 129
trans-1,2-Dichloroethene	20.0	18.3		ug/L		92	78 - 133
trans-1,3-Dichloropropene	20.0	17.8		ug/L		89	55 - 128
Trichloroethene	20.0	17.0		ug/L		85	76 - 125
Trichlorofluoromethane	20.0	14.6		ug/L		73	51 - 164
Vinyl chloride	20.0	15.2		ug/L		76	58 - 143
Xylenes, Total	40.0	36.3		ug/L		91	80 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		59 - 120
Dibromofluoromethane (Surr)	87		75 - 128
1,2-Dichloroethane-d4 (Surr)	83		70 - 121
Toluene-d8 (Surr)	98		70 - 123

Lab Sample ID: 240-119642-A-2 MS

Matrix: Water

Analysis Batch: 405042

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
1,1,1-Trichloroethane	200	U	4000	3210		ug/L		80	51 - 138
1,1,1,2-Tetrachloroethane	200	U	4000	3520		ug/L		88	60 - 137
1,1,2-Trichloro-1,2,2-trifluoroethane	200	U	4000	3270		ug/L		82	31 - 156
1,1,2-Trichloroethane	48	J	4000	3400		ug/L		84	76 - 132
1,1-Dichloroethane	200	U	4000	3490		ug/L		87	63 - 136
1,1-Dichloroethene	200	U	4000	3520		ug/L		88	53 - 140
1,2,4-Trichlorobenzene	200	U	4000	2900		ug/L		72	30 - 126
1,2-Dibromo-3-Chloropropane	200	U	4000	2890		ug/L		72	38 - 124
1,2-Dibromoethane	200	U	4000	3260		ug/L		82	71 - 123
1,2-Dichlorobenzene	50	J	4000	3250		ug/L		80	64 - 120
1,2-Dichloroethane	200	U	4000	3270		ug/L		82	65 - 135
1,2-Dichloropropane	130	J	4000	3660		ug/L		88	70 - 132
1,3-Dichlorobenzene	200	U	4000	3240		ug/L		81	62 - 120
1,4-Dichlorobenzene	87	J	4000	3330		ug/L		81	63 - 120

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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

Lab Sample ID: 240-119642-A-2 MSD

Client Sample ID: Matrix Spike Duplicate

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 405042

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,2-Trichloro-1,2,2-trifluoroethane	200	U	4000	3370		ug/L		84	31 - 156	3	35
1,1,2-Trichloroethane	48	J	4000	3750		ug/L		92	76 - 132	10	25
1,1-Dichloroethane	200	U	4000	3610		ug/L		90	63 - 136	3	23
1,1-Dichloroethene	200	U	4000	3700		ug/L		92	53 - 140	5	35
1,2,4-Trichlorobenzene	200	U	4000	3130		ug/L		78	30 - 126	8	35
1,2-Dibromo-3-Chloropropane	200	U	4000	2890		ug/L		72	38 - 124	0	35
1,2-Dibromoethane	200	U	4000	3500		ug/L		88	71 - 123	7	27
1,2-Dichlorobenzene	50	J	4000	3440		ug/L		85	64 - 120	6	30
1,2-Dichloroethane	200	U	4000	3360		ug/L		84	65 - 135	3	24
1,2-Dichloropropane	130	J	4000	3860		ug/L		93	70 - 132	5	26
1,3-Dichlorobenzene	200	U	4000	3450		ug/L		86	62 - 120	6	31
1,4-Dichlorobenzene	87	J	4000	3540		ug/L		86	63 - 120	6	28
2-Butanone (MEK)	2000	U	8000	5700		ug/L		71	37 - 156	3	35
2-Hexanone	2000	U	8000	5580		ug/L		70	42 - 150	6	35
4-Methyl-2-pentanone (MIBK)	2000	U	8000	5440		ug/L		68	44 - 143	5	35
Acetone	2000	U	8000	6190		ug/L		77	10 - 168	10	35
Benzene	200	U	4000	3620		ug/L		90	71 - 122	5	22
Bromodichloromethane	200	U	4000	3570		ug/L		89	64 - 125	4	27
Bromoform	200	U	4000	2930		ug/L		73	44 - 129	6	28
Bromomethane	200	U	4000	5200		ug/L		130	19 - 187	1	35
Carbon disulfide	75	J	4000	3930		ug/L		96	43 - 144	5	33
Carbon tetrachloride	400		4000	3600		ug/L		80	41 - 143	4	30
Chlorobenzene	200	U	4000	3640		ug/L		91	70 - 123	9	23
Chloroethane	200	U	4000	3420		ug/L		86	11 - 189	2	35
Chloroform	6600		4000	9750		ug/L		80	68 - 130	1	23
Chloromethane	200	U	4000	2940		ug/L		73	31 - 154	4	35
cis-1,2-Dichloroethene	200	U	4000	3640		ug/L		91	64 - 130	5	21
cis-1,3-Dichloropropene	200	U	4000	3570		ug/L		89	48 - 127	4	30
Cyclohexane	200	U	4000	3420		ug/L		86	42 - 135	1	35
Dibromochloromethane	200	U	4000	3640		ug/L		91	60 - 129	8	26
Dichlorodifluoromethane	200	U	4000	2040		ug/L		51	28 - 136	8	35
Ethylbenzene	200	U	4000	3550		ug/L		89	66 - 120	8	24
Isopropylbenzene	200	U	4000	3370		ug/L		84	59 - 120	7	31
Methyl acetate	2000	U	8000	5860		ug/L		73	41 - 142	6	35
Methyl tert-butyl ether	200	U	4000	3240		ug/L		81	41 - 136	6	29
Methylcyclohexane	200	U	4000	3240		ug/L		81	37 - 123	1	35
Methylene Chloride	1000	U	4000	3990		ug/L		100	61 - 130	6	29
Styrene	200	U	4000	3600		ug/L		90	68 - 120	7	26
Tetrachloroethene	1800		4000	5190		ug/L		84	51 - 136	4	23
Toluene	100	J	4000	3810		ug/L		93	62 - 132	6	23
trans-1,2-Dichloroethene	200	U	4000	3710		ug/L		93	68 - 133	6	24
trans-1,3-Dichloropropene	200	U	4000	3450		ug/L		86	40 - 125	6	27
Trichloroethene	57	J	4000	3460		ug/L		85	55 - 131	4	23
Trichlorofluoromethane	200	U	4000	3000		ug/L		75	37 - 174	5	35
Vinyl chloride	200	U	4000	3280		ug/L		82	43 - 154	5	29
Xylenes, Total	400	U	8000	7140		ug/L		89	67 - 120	8	25

Eurofins TestAmerica, Canton

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

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

Lab Sample ID: 240-119642-A-2 MSD
Matrix: Water
Analysis Batch: 405042

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

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	104		59 - 120
Dibromofluoromethane (Surr)	88		75 - 128
1,2-Dichloroethane-d4 (Surr)	84		70 - 121
Toluene-d8 (Surr)	97		70 - 123

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

Lab Sample ID: MB 240-404131/5
Matrix: Water
Analysis Batch: 404131

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			10/04/19 13:00	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	97		63 - 125		10/04/19 13:00	1

Lab Sample ID: LCS 240-404131/4
Matrix: Water
Analysis Batch: 404131

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	11.6		ug/L		116	59 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		63 - 125

Lab Sample ID: 240-119751-L-7 MS
Matrix: Water
Analysis Batch: 404131

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	14		10.0	24.3		ug/L		106	52 - 129

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		63 - 125

Lab Sample ID: 240-119751-L-7 MSD
Matrix: Water
Analysis Batch: 404131

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	14		10.0	26.5		ug/L		129	52 - 129	9	13

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	102		63 - 125

QC Association Summary

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

GC/MS VOA

Analysis Batch: 404131

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119670-1	MW-54_092719	Total/NA	Water	8260B SIM	
240-119670-2	MW-54S_092719	Total/NA	Water	8260B SIM	
MB 240-404131/5	Method Blank	Total/NA	Water	8260B SIM	
LCS 240-404131/4	Lab Control Sample	Total/NA	Water	8260B SIM	
240-119751-L-7 MS	Matrix Spike	Total/NA	Water	8260B SIM	
240-119751-L-7 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B SIM	

Analysis Batch: 405042

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-119670-1	MW-54_092719	Total/NA	Water	8260B	
240-119670-2	MW-54S_092719	Total/NA	Water	8260B	
240-119670-3	TRIP BLANK	Total/NA	Water	8260B	
MB 240-405042/9	Method Blank	Total/NA	Water	8260B	
LCS 240-405042/6	Lab Control Sample	Total/NA	Water	8260B	
240-119642-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
240-119642-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Ford LTP Livonia MI - E203728

Job ID: 240-119670-1

Client Sample ID: MW-54_092719

Lab Sample ID: 240-119670-1

Date Collected: 09/27/19 10:34

Matrix: Water

Date Received: 09/28/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405042	10/10/19 17:39	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	404131	10/04/19 15:04	SAM	TAL CAN

Client Sample ID: MW-54S_092719

Lab Sample ID: 240-119670-2

Date Collected: 09/27/19 12:15

Matrix: Water

Date Received: 09/28/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405042	10/10/19 18:03	HMB	TAL CAN
Total/NA	Analysis	8260B SIM		1	404131	10/04/19 15:29	SAM	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-119670-3

Date Collected: 09/27/19 00:00

Matrix: Water

Date Received: 09/28/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	405042	10/10/19 18:28	HMB	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 Livonia MI - E203728

Job ID: 240-119670-1

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	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
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	01-12-20
West Virginia DEP	State	210	12-31-19

0-6/1-3

Chain of Custody Record

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

Client Contact Company Name: Arcadis Address: 28550 Cabot Drive, Suite 500 City/State/Zip: Novi, MI, 48377 Phone: 248-994-2240		Regulatory program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other	
Client Project Manager: Kris Hinsky Telephone: 248-994-2240 Email: kristoffer.hinsky@arcadis.com		Site Contact: Rachel Bielak Telephone: 244-946-6331	
Project Name: Ford LTP Project Number: M1001454.0004.0001B PO # M1001454.0004.0001B		Lab Contact: Mike DeMonico Telephone: 330-497-9396	
Method of Shipment/Carrier: Shipping/Tracking No:		Analysis Turnaround Time TAT if different from below: <input checked="" type="checkbox"/> 3 weeks <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day	
RACHEL BIEZAK		COCs For lab use only Walk-in client Lab sampling Job/SDG No:	
Sample Identification MW-54-0A2719 MW-54S-0A2719 TRAP BLANK		Filtered Sample (Y/N) Composite=C/Grab=C VOCs 8260B 1,4-Dioxane 8260B SIM	
Matrix Air Aqueous Sediment Solid Other:		Containers & Preservatives H2SO4 HNO3 HCl NaOH ZnOH Liners Other:	
Sample Date 9/27/19 9/27/19 -		Sample Time 1034 1215 -	
Possible Hazard Identification <input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Lammable <input type="checkbox"/> in Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Special Instructions/QC Requirements & Comments: Submit all results through Cadena at jim.tomalia@cadena.com, Cadena #E203728 Level IV Reporting.			
Relinquished by: RACHEL BIEZAK Paul Bielak		Received by: NEW COLD STORAGE Company: ATLAS	
Relinquished by: [Signature]		Received by: [Signature]	
Relinquished by: [Signature]		Received by: [Signature]	
Date/Time: 9/27/19 1300		Date/Time: 9/27/19 1300	
Date/Time: 9/27/19 1315		Date/Time: 9/27/19 1315	
Date/Time: 9/27/19 1435		Date/Time: 9/27/19 1435	
Company: ARCADIS		Company: ATLAS	
Company: ARCADIS		Company: ETA	
Company: ETA		Company: ETA	

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**Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility**

Login # : 119670

Client Aradis

Site Name _____

Cooler unpacked by:

Ryan Cribler

Cooler Received on 9-28-19

Opened on 9-28-19 945

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

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

TestAmerica Cooler # TA 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. 0.6 °C Corrected Cooler Temp. 1.3 °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 2 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# HC991818

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? Yes No NA  ← Larger than this.

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

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

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

Ryan

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: _____