

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11096

EVENT NAME: Pajarito (TA-54) MY2017 Q2

SAMPLE ID: CAPA-17-129190

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	1/9/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1520		MEDIA:	UA	↓
PRS ID:	OK		SAMPLE TECH CODE:	OK	1/9/17 DG GSP
LOCATION ID:	R-55 S1		FIELD PREP:	UF	OK
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	↓
TOP DEPTH:	↓		SAMPLE USAGE:	INV	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	Y	NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

SAMPLE COMMENTS: 30 ft from running diesel generator

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Dissolved Oxygen	6.24	mg/L	Flow (in gpm)	2.94	GPM	Oxidation-Reduction Potential	221.6	mV
pH	8.29	SU	Specific Conductance	174.9	uS/cm	Temperature	20.3	deg C
Turbidity	0.27	NTU						

COLLECTED BY (PRINT): A. Tosh

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>[Signature]</i>	Date/Time 1/9/2017 1616	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>[Signature]</i>	Date/Time 1/9/17 1610
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 12/29/2016



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11096

EVENT NAME: Pajarito (TA-54) MY2017 Q2

SAMPLE ID: CAPA-17-129192

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	01/09/2017	ok	FIELD MATRIX:	WG	ok
TIME COLLECTED (HH:MM):	1305		MEDIA:	UA	
PRS ID:	ok		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-57 S1		FIELD PREP:	UF	
LOCATION TYPE:	mon		FIELD QC TYPE:	REG	
TOP DEPTH:	NA		SAMPLE USAGE:	INV	
BOTTOM DEPTH:	NA		EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B-VOA	40 ML SEPTUM AMBER GLASS	2	HCL	y	WSP 1417 NA
↓	WSP-LL-H-3	1 LITER POLY	1	NONE	↓	↓

SAMPLE COMMENTS: generator Running at about 50' away.

LOCATION COMMENTS: none

## FIELD PARAMETERS:

Dissolved Oxygen	5.77	mg/L	Flow (in gpm)	3.61	GPM	Oxidation-Reduction Potential	146.8	mV
pH	8.00	SU	Specific Conductance	138.5	uS/cm	Temperature	26.0	deg C
Turbidity	0.39	NTU						

COLLECTED BY (PRINT): W. Sanchez, A. Stanfield

RELINQUISHED BY (Printed Name) <i>Maurice Sando</i> (Signature) <i>Maurice Sando</i>	Date/Time 11/9/17 1406	RECEIVED BY (Printed Name) <i>M. Morley</i> (Signature) <i>M. Morley</i>	Date/Time 11/9/17 1406
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 12/29/2016

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11096

EVENT NAME: Pajarito (TA-54) MY2017 Q2

SAMPLE ID: CAPA-17-129220

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	1/9/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1520		MEDIA:	OK	↓
PRS ID:	OK		SAMPLE TECH CODE:	↓	KT 1/9/17 GSP DC
LOCATION ID:	R-55 S1		FIELD PREP:	UF	OK
LOCATION TYPE:	NA		FIELD QC TYPE:	FTB	↓
TOP DEPTH:	↓		SAMPLE USAGE:	OK	↓
BOTTOM DEPTH:	↓	↓	EXCAVATED:		YES / NO / <u>NA</u>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1 15/17 TB	HCL	Y	NA

SAMPLE COMMENTS: None

LOCATION COMMENTS: None

## FIELD PARAMETERS:

Dissolved Oxygen \_\_\_\_\_ mg/L      Flow (in gpm) \_\_\_\_\_ GPM      ~~KT 1/9/17~~      ~~Oxidation-Reduction Potential \_\_\_\_\_ mV~~  
 pH \_\_\_\_\_ SU      Specific Conductance \_\_\_\_\_ uS/cm      ~~Temperature \_\_\_\_\_ deg C~~  
 Turbidity \_\_\_\_\_ NTU

COLLECTED BY (PRINT): A. Tosh

RELINQUISHED BY (Printed Name) (Signature)	Katrina Tow <i>Katrina Tow</i>	Date/Time 1/9/2017 1610	RECEIVED BY (Printed Name) (Signature)	S. Sherwood <i>S. Sherwood</i>	Date/Time 1/9/17 1610
RELINQUISHED BY (Printed Name) (Signature)		Date/Time	RECEIVED BY (Printed Name) (Signature)		Date/Time

Report Date: 12/29/2016

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11096

EVENT NAME: Pajarito (TA-54) MY2017 Q2

SAMPLE ID: CAPA-17-129229

WORK ORDER: NA

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	01/09/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	1305		MEDIA:	VA	
PRS ID:	OK		SAMPLE TECH CODE:	DC	
LOCATION ID:	R-57 S1		FIELD PREP:	UF	
LOCATION TYPE:	Mon		FIELD QC TYPE:	FTB	
TOP DEPTH:	NA		SAMPLE USAGE:	QC	
BOTTOM DEPTH:	NA		EXCAVATED:		YES / NO / (NA)

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	1 127 78	HCL	Y	NA

SAMPLE COMMENTS: none

LOCATION COMMENTS: none

## FIELD PARAMETERS:

Dissolved Oxygen	NA	mg/L	Flow (in gpm)	NA	GPM	Oxidation-Reduction Potential	NA	mV
pH	NA	SU	Specific Conductance	NA	uS/cm	Temperature	NA	deg C
Turbidity	NA	NTU						

COLLECTED BY (PRINT): W. Sanchez, A. Stunfield

RELINQUISHED BY (Printed Name) Maurice Shendo (Signature) <i>Maurice Shendo</i>	Date/Time 1/9/17 1406	RECEIVED BY (Printed Name) <i>A. Stunfield</i> (Signature) <i>A. Stunfield</i>	Date/Time 1/9/17 1406
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 12/29/2016



## DATA VALIDATION REPORT

Chain Of Custody No. 2017-818

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
414011	SW-846:8260B	2		2		

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
414011	SW-846:8260B	1632582	1632582	2		2			2					4							

### 2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8260B	VOC	CAPA-17-129190	414011001	REG	80	3	0	0
SW-846:8260B	VOC	CAPA-17-129192	414011003	REG	80	3	0	0
SW-846:8260B	VOC	CAPA-17-129220	414011002	FTB	80	3	0	0
SW-846:8260B	VOC	CAPA-17-129229	414011004	FTB	80	3	0	0
SW-846:8260B	VOC	LCS	1203711157	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203711158	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203711164	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203711165	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203711156	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203711163	MB	80	3	0	0

### 3. Are any analytes missing?

No.

### 4. Were any holding times exceeded?

No.

## DATA VALIDATION REPORT

5. Any contaminants in blanks?

No.

6. Any surrogate recoveries outside the control limits?

No.

7. Any MS/MSD recoveries or RPDs outside the control limits?

No.

8. Any LCS/LCSD or BS/BSD recoveries or RPDs outside the control limits?

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203711157		SW-846:8260B	Carbon Disulfide	1632582	01-19-2017	W	54		138	69		10		

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?



## DATA VALIDATION REPORT

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Paramter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-55 S1	2017-818	CAPA-17-129190	REG	INIT	VOC	SW-846:8260B	Carbon Disulfide	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	01/09/2017	1632582	VAL	Y	
R-57 S1	2017-818	CAPA-17-129192	REG	INIT	VOC	SW-846:8260B	Carbon Disulfide	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	01/09/2017	1632582	VAL	Y	
R-55 S1	2017-818	CAPA-17-129220	FTB	INIT	VOC	SW-846:8260B	Carbon Disulfide	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	01/09/2017	1632582	VAL	Y	
R-57 S1	2017-818	CAPA-17-129229	FTB	INIT	VOC	SW-846:8260B	Carbon Disulfide	U	UJ	V12a	N	5.00	ug/L	5.00	ug/L			W	01/09/2017	1632582	VAL	Y	

### Reason Code

### Description

J\_LAB

The analytical laboratory qualified the detected result as estimated (J) because the result was less the PQL but greater than the MDL

U\_LAB

The analytical laboratory qualified the analyte as not detected.

V12a

The LCS percent recovery was < the LAL but >10%. Follow the external laboratory limits located within the associated data package.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAPA-17-129190	R-55 S1	REG	SW-846:8260B	0	80
CAPA-17-129192	R-57 S1	REG	SW-846:8260B	0	80
CAPA-17-129220	R-55 S1	FTB	SW-846:8260B	0	80
CAPA-17-129229	R-57 S1	FTB	SW-846:8260B	0	80



February 01, 2017

[gel.com](http://gel.com)

Mr. Keith Greene  
Los Alamos National Laboratory  
TA-03, SM271, Drop Pt. 02U, Rm111  
Los Alamos, New Mexico 87545

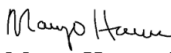
Re: LANL- WQH Water Samples  
Work Order: 414011  
SDG: 2017-818

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on January 11, 2017, and analyzed for GC/MS Volatile. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

  
Margo Herron for  
Valerie Davis  
Project Manager

Chain of Custody: 2017-818  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 414011**  
**SDG: 2017-818**



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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 414011  
SDG # : 2017-818**

**February 01, 2017**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt** The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on January 11, 2017 for analysis. The samples were delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperatures were checked, documented, and within specifications. There are no additional comments concerning sample receipt.

**Sample Identification** The laboratory received the following samples:

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
414011001	CAPA-17-129190
414011002	CAPA-17-129220
414011003	CAPA-17-129192
414011004	CAPA-17-129229

**Case Narrative**

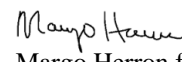
Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

**Data Package**

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: GC/MS Volatile.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.



  
Margo Herron for  
Valerie Davis  
Project Manager

**List of current GEL Certifications as of 01 February 2017**

<b>State</b>	<b>Certification</b>
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-21
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Chain of Custody and Supporting Documentation**





**SAMPLE RECEIPT & REVIEW FORM**

Client: <u>ESHL</u>			SDG/AR/COC/Work Order: <u>414011</u>		
Received By: <u>ZLW</u>			Date Received: <u>1/11/17</u>		
Suspected Hazard Information			Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags <u>Blue ice</u> Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1°C</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): <u>E5032015030</u>
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <input checked="" type="checkbox"/> FedEx Air <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other  <u>5900 1701 6283</u>

Comments (Use Continuation Form if needed):

 PM (or PMA) review: Initials ZLP Date 1/11/17 Page 1 of 1

ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 10JAN17  
ACTWGT: 26.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

EV 05/12 RRD

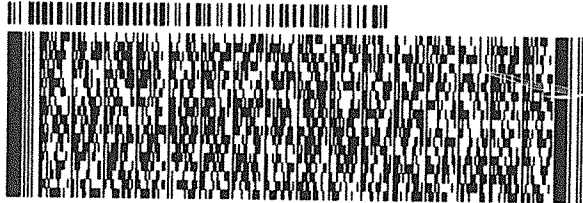
TO **VALERIE DAVIS**  
**GENERAL ENGINEERING LAB**  
**2040 SAVAGE RD**

10C

**CHARLESTON SC 29407**

(843) 668-3171

REF: WE6L11551000



**FedEx**  
Express



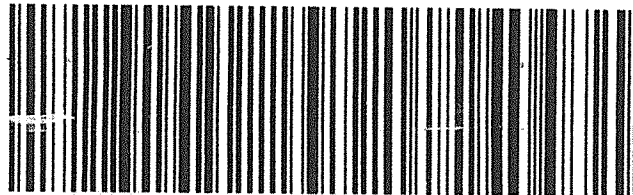
TRK#  
0201 5908 1781 6283

**WED - 11 JAN 10:30A**  
**PRIORITY OVERNIGHT**

**X7 CHSA**

**29407**  
**SC-US CHS**

Part # 156148V-434 RIT2 06/15 22



# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier	Explanation
-----------	-------------

*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.



P Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.  
For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

# **Volatile Analysis**

# Case Narrative

**GC/MS Volatile  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-818  
Work Order #: 414011**

**Method/Analysis Information**

**Procedure:** Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

Analytical Method: SW-846:8260B

Analytical Batch Number: 1632582

**Sample Analysis**

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

<b>Sample ID</b>	<b>Client ID</b>
414011001	CAPA-17-129190
414011002	CAPA-17-129220
414011003	CAPA-17-129192
414011004	CAPA-17-129229
1203711156	Method Blank (MB)
1203711157	Laboratory Control Sample (LCS)
1203711158	Laboratory Control Sample (LCS)
1203711159	414011001(CAPA-17-129190) Post Spike (PS)
1203711160	414011001(CAPA-17-129190) Post Spike (PS)
1203711161	414011001(CAPA-17-129190) Post Spike Duplicate (PSD)
1203711162	414011001(CAPA-17-129190) Post Spike Duplicate (PSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

**SOP Reference**

Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 23.

**Calibration Information**

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

**Initial Calibration**

The initial calibration criteria has been evaluated by SW846 8000D and method 8260B/C. All the analytes met the established 8260B/C method criteria. However, 2-Butanone and 2-Hexanone did not meet the guidance provided in SW846 8000D. It is the opinion of the laboratory that the data provided is usable for these compounds.

**Continuing Calibration Verification Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

**Quality Control (QC) Information****Blank (MB) Statement**

The blanks analyzed with this SDG met the acceptance criteria.

**Surrogate Recoveries**

Surrogate recoveries in all client and quality control samples were within the acceptance limits.

**Laboratory Control Sample (LCS) Recovery**

The LCS/and or LCSD (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported.

Sample	Analyte	Value
1203711157 (LCS)	Carbon disulfide	54* (69%-138%)

**QC Sample Designation**

Sample 414011001 (CAPA-17-129190) was designated for spike analysis.

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The associated spike and/or spike duplicate passed recoveries near the lower/upper end of the limits.

Sample	Analyte	Value
1203711159 (CAPA-17-129190PS)	Carbon disulfide	45* (61%-141%)
1203711161 (CAPA-17-129190PSD)	Carbon disulfide	46* (61%-141%)

**Relative Percent Difference (RPD) Statement**

The RPDs between the matrix spike pair met the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses in all client and quality control samples met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.



**Sample Preservation and Integrity**

All samples met the sample preservation and integrity requirements.

**Sample Dilutions/Methanol Dilutions**

The samples in this SDG did not require dilutions.

**Sample Re-extraction/Re-analysis**

Re-analyses were not required for samples in this SDG.

**Miscellaneous Information****Data Exception (DER) Documentation**

A data exception report (DER) 1598050 was generated for samples 1203711157 (LCS), 1203711159 (CAPA-17-129190PS) and 1203711161 (CAPA-17-129190PSD) in this SDG/batch.

**Manual Integrations**

Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

**TIC Comment**

Tentatively identified compounds (TIC) may be requested for samples in this delivery group/work order. Please note that non-requested calibrated analytes detected in a client sample may be reported on the Form 1/Certificate of Analysis as TICs. TIC data, if requested, were included on the Sample Data Summary (Form 1) and included with the sample raw data.

**Additional Comments**

Additional comments were not required for this SDG.

**Residual Chlorine**

Residual Chlorine was not detected in any of the samples in this SDG.

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**System Configuration**

The Volatile-GC/MS analysis was performed on the following instrument configuration:

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>	<b>P &amp; T Trap</b>
VOA1.I	Agilent 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	RTX-624	Restek, 60m x 0.25mm x 1.4um	Trap 10

**Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

## GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

### Qualifier Definition Report for

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-818 GEL Work Order: 414011

#### The Qualifiers in this report are defined as follows:

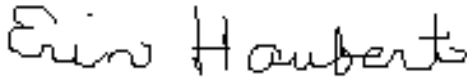
- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- B The target analyte was detected in the associated blank.
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

#### Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Erin Haubert

Date: 06 FEB 2017

Title: Data Validator

# **Sample Data Summary**

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011001	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129190	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 14:52	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 14:52		
<b>Data File:</b> 011917V1\1R416.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011001	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129190	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 14:52	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 14:52		
<b>Data File:</b> 011917V1\1R416.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011001	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129190	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 14:52	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 14:52		
<b>Data File:</b> 011917V1\1R416.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.9	50.0	ug/L 110	(71%-134%)
Bromofluorobenzene	50.0	50.0	ug/L 100	(70%-131%)
Toluene-d8	47.3	50.0	ug/L 95	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	12.4	ug/L	0	J

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-818</b>	<b>Date Collected:</b>	<b>01/09/2017 15:20</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414011002</b>	<b>Date Received:</b>	<b>01/11/2017 09:25</b>		
<b>Client Sample:</b>	<b>VOA</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>ESHL00114</b>
<b>Client ID:</b>	<b>CAPA-17-129220</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1632582</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/19/2017 15:21</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/19/2017 15:21</b>				
<b>Data File:</b>	<b>011917V1\1R417.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-818</b>	<b>Date Collected:</b>	<b>01/09/2017 15:20</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>414011002</b>	<b>Date Received:</b>	<b>01/11/2017 09:25</b>		
<b>Client Sample:</b>	<b>VOA</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>ESHL00114</b>
<b>Client ID:</b>	<b>CAPA-17-129220</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1632582</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/19/2017 15:21</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/19/2017 15:21</b>				
<b>Data File:</b>	<b>011917V1\1R417.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011002	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129220	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 15:21	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 15:21		
<b>Data File:</b> 011917V1\1R417.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	55.7	50.0	ug/L 111	(71%-134%)
Bromofluorobenzene	50.8	50.0	ug/L 102	(70%-131%)
Toluene-d8	48.5	50.0	ug/L 97	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.558	6.34	ug/L	0	J

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

**SDG Number:** 2017-818  
**Lab Sample ID:** 414011003  
**Client Sample:** VOA  
**Client ID:** CAPA-17-129192  
**Batch ID:** 1632582  
**Run Date:** 01/19/2017 15:50  
**Prep Date:** 01/19/2017 15:50  
**Data File:** 011917V1\1R418.D

**Date Collected:** 01/09/2017 13:05  
**Date Received:** 01/11/2017 09:25  
**Client:** ARSL004  
**Method:** SW-846:8260B  
**Inst:** VOA1.I  
**Analyst:** VXY1  
  
**Column:** DB-624

**Matrix:** W  
  
**Project:** ESHL00114  
**SOP Ref:** GL-OA-E-038  
**Dilution:** 1  
**Purge Vol:** 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

**SDG Number:** 2017-818  
**Lab Sample ID:** 414011003  
**Client Sample:** VOA  
**Client ID:** CAPA-17-129192  
**Batch ID:** 1632582  
**Run Date:** 01/19/2017 15:50  
**Prep Date:** 01/19/2017 15:50  
**Data File:** 011917V1\1R418.D

**Date Collected:** 01/09/2017 13:05  
**Date Received:** 01/11/2017 09:25  
**Client:** ARSL004  
**Method:** SW-846:8260B  
**Inst:** VOA1.I  
**Analyst:** VXY1  
  
**Column:** DB-624

**Matrix:** W  
  
**Project:** ESHL00114  
**SOP Ref:** GL-OA-E-038  
**Dilution:** 1  
**Purge Vol:** 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	BJ	2.04	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 13:05	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011003	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129192	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 15:50	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 15:50		
<b>Data File:</b> 011917V1\1R418.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.8	50.0	ug/L 110	(71%-134%)
Bromofluorobenzene	51.2	50.0	ug/L 102	(70%-131%)
Toluene-d8	47.5	50.0	ug/L 95	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	12.1	ug/L	0	J



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

**SDG Number:** 2017-818  
**Lab Sample ID:** 414011004  
**Client Sample:** VOA  
**Client ID:** CAPA-17-129229  
**Batch ID:** 1632582  
**Run Date:** 01/19/2017 16:19  
**Prep Date:** 01/19/2017 16:19  
**Data File:** 011917V1\1R419.D

**Date Collected:** 01/09/2017 13:05  
**Date Received:** 01/11/2017 09:25  
**Client:** ARSL004  
**Method:** SW-846:8260B  
**Inst:** VOA1.I  
**Analyst:** VXY1  
  
**Column:** DB-624

**Matrix:** W  
  
**Project:** ESHL00114  
**SOP Ref:** GL-OA-E-038  
**Dilution:** 1  
**Purge Vol:** 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 13:05	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011004	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129229	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 16:19	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 16:19		
<b>Data File:</b> 011917V1\1R419.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	BJ	1.99	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 13:05	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 414011004	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> VOA	<b>Client:</b> ARSL004	<b>Project:</b> ESHL00114
<b>Client ID:</b> CAPA-17-129229	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 16:19	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 16:19		
<b>Data File:</b> 011917V1\1R419.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.7	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	50.7	50.0	ug/L 101	(70%-131%)
Toluene-d8	47.9	50.0	ug/L 96	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	14.549	5.92	ug/L	0	J

# **Quality Control Summary**

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**Volatile**  
**Surrogate Recovery Report**

Page 1 of 1

**SDG Number: 2017-818****Matrix Type: LIQUID**

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Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203711158	LCS for batch 1632582	102	96	97
1203711157	LCS for batch 1632582	101	93	96
1203711156	MB for batch 1632582	105	97	101
414011001	CAPA-17-129190	110	95	100
414011002	CAPA-17-129220	111	97	102
414011003	CAPA-17-129192	110	95	102
414011004	CAPA-17-129229	109	96	101
1203711159	CAPA-17-129190PS	108	95	97
1203711161	CAPA-17-129190PSD	108	94	97
1203711160	CAPA-17-129190PS	102	92	93
1203711162	CAPA-17-129190PSD	103	96	96

**Surrogate****Acceptance Limits**

DCED4	= 1,2-Dichloroethane-d4	(71%-134%)
TOL	= Toluene-d8	(74%-124%)
BFB	= Bromofluorobenzene	(70%-131%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-818

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1632582

Matrix: WATER

Lab Sample ID 1203711157

Instrument: VOA1.I

Analysis Date: 01/19/2017 10:03

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	87.3	87	71-127
75-05-8	LCS Acetonitrile	1250	0.0	1070	86	61-125
67-64-1	LCS Acetone	250	0.0	275	110	48-157
74-88-4	LCS Iodomethane	250	0.0	188	75	72-128
75-15-0	LCS Carbon disulfide	250	0.0	134	54 *	69-138
108-05-4	LCS Vinyl acetate	250	0.0	261	104	67-125
78-93-3	LCS 2-Butanone	250	0.0	273	109	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	234	94	66-124
591-78-6	LCS 2-Hexanone	250	0.0	262	105	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	53.1	106	40-160
74-87-3	LCS Chloromethane	50.0	0.0	44.7	89	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	47.8	96	65-137
74-83-9	LCS Bromomethane	50.0	0.0	53.7	107	63-137
75-00-3	LCS Chloroethane	50.0	0.0	50.3	101	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	61.1	122	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	49.9	100	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	34.8	70	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	39.0	78	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	41.6	83	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	40.6	81	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	43.0	86	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	44.3	89	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-818

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1632582

Matrix: WATER

Lab Sample ID 1203711157

Instrument: VOA1.I

Analysis Date: 01/19/2017 10:03

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	46.4	93	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	46.1	92	76-125
67-66-3	LCS Chloroform	50.0	0.0	47.7	95	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	48.7	97	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	43.4	87	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	52.0	104	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	47.9	96	74-122
71-43-2	LCS Benzene	50.0	0.0	41.7	83	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	47.3	95	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	42.7	85	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	48.3	97	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	51.0	102	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	46.3	93	78-131
108-88-3	LCS Toluene	50.0	0.0	41.8	84	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	46.7	93	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	43.5	87	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	42.5	85	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	46.0	92	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	51.8	104	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	46.3	93	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	44.2	88	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	43.8	88	73-125

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 4

SDG Number: 2017-818

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1632582

Matrix: WATER

Lab Sample ID 1203711157

Instrument: VOA1.I

Analysis Date: 01/19/2017 10:03

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	43.6	87	74-126
100-42-5	LCS Styrene	50.0	0.0	44.1	88	72-130
75-25-2	LCS Bromoform	50.0	0.0	52.1	104	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	42.8	86	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	43.2	86	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	47.1	94	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	44.6	89	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	41.3	83	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	43.2	86	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	44.8	90	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	43.0	86	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	44.8	90	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	44.1	88	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	44.1	88	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	45.0	90	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	44.3	89	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	45.2	90	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	44.7	89	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	52.7	105	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	50.5	101	72-136
91-20-3	LCS Naphthalene	50.0	0.0	50.3	101	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	51.5	103	70-130



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 4

SDG Number: 2017-818

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1632582

Matrix: WATER

Lab Sample ID 1203711157

Instrument: VOA1.I

Analysis Date: 01/19/2017 10:03

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	50.8	102	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	49.5	99	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	44.8	90	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	5430	109	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-818

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1632582

Matrix: WATER

Lab Sample ID 1203711158

Instrument: VOA1.I

Analysis Date: 01/19/2017 09:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	209	83	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	287	115	61-148
107-05-1	LCS Allyl chloride	250	0.0	231	92	59-125
107-13-1	LCS Acrylonitrile	250	0.0	230	92	65-122
107-12-0	LCS Propionitrile	250	0.0	221	88	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	223	89	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	224	89	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	211	84	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2460	98	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	51.7	103	66-147

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-818

Sample Type: Post Spike

Client ID: CAPA-17-129190PS

Matrix: W

Lab Sample ID 1203711159

Instrument: VOA1.I

Analysis Date: 01/19/2017 17:46

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00 U	83.5	83	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	1080	86	56-131
67-64-1	PS Acetone	250	0.00 U	99.2	40	25-155
74-88-4	PS Iodomethane	250	0.00 U	174	70	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	113	45 *	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	260	104	48-133
78-93-3	PS 2-Butanone	250	0.00 U	138	55	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	218	87	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	163	65	33-138
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	43.6	87	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	38.7	77	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	41.1	82	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	51.5	103	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	43.7	87	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	60.8	122	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	47.5	95	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	31.2	62	59-130
75-09-2	PS Methylene chloride	50.0	0.00 U	36.2	72	62-123
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	39.2	78	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	38.4	77	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	41.5	83	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	42.6	85	69-127

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-818

Sample Type: Post Spike

Client ID: CAPA-17-129190PS

Matrix: W

Lab Sample ID 1203711159

Instrument: VOA1.I

Analysis Date: 01/19/2017 17:46

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	43.8	88	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	45.9	92	71-130
67-66-3	PS Chloroform	50.0	0.00 U	48.9	98	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	48.4	97	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	41.2	82	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	53.2	106	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	53.4	107	69-130
71-43-2	PS Benzene	50.0	0.00 U	39.5	79	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	45.2	90	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	42.0	84	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	50.7	101	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	53.8	108	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	45.4	91	70-134
108-88-3	PS Toluene	50.0	0.00 U	39.8	80	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	47.4	95	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	44.1	88	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	43.3	87	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	44.1	88	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	54.1	108	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	47.1	94	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	42.9	86	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	42.5	85	61-130

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-818

Sample Type: Post Spike

Client ID: CAPA-17-129190PS

Matrix: W

Lab Sample ID 1203711159

Instrument: VOA1.I

Analysis Date: 01/19/2017 17:46

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	PS o-Xylene	50.0	0.00 U	42.0	84	62-131
100-42-5	PS Styrene	50.0	0.00 U	43.0	86	59-135
75-25-2	PS Bromoform	50.0	0.00 U	54.6	109	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	40.4	81	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	41.8	84	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	48.5	97	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	42.9	86	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	38.7	77	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	41.1	82	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	41.9	84	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	41.1	82	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	42.2	84	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	41.8	84	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	41.3	83	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	42.1	84	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	41.4	83	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	42.6	85	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	41.8	84	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	54.9	110	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	48.4	97	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	50.7	101	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	49.9	100	52-135

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 4 of 8

SDG Number: 2017-818

Sample Type: Post Spike

Client ID: CAPA-17-129190PS

Matrix: W

Lab Sample ID 1203711159

Instrument: VOA1.I

Analysis Date: 01/19/2017 17:46

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	47.5	95	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	50.8	102	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	43.6	87	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	5560	111	60-140

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-818

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129190PSD

Matrix: W

Lab Sample ID 1203711161

Instrument: VOA1.I

Analysis Date: 01/19/2017 18:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00 U	82.5	82	59-132	1	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	1100	88	56-131	2	0-20
67-64-1	PSD Acetone	250	0.00 U	103	41	25-155	4	0-20
74-88-4	PSD Iodomethane	250	0.00 U	176	70	66-133	1	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	114	46 *	61-141	1	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	260	104	48-133	0	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	142	57	25-143	3	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	218	87	61-127	0	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	165	66	33-138	1	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	41.9	84	33-164	4	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	38.6	77	53-139	0	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	40.6	81	58-140	1	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	51.5	103	59-146	0	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	44.1	88	65-129	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	57.8	116	65-141	5	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	48.0	96	69-127	1	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	30.9	62	59-130	1	0-20
75-09-2	PSD Methylene chloride	50.0	0.00 U	37.3	75	62-123	3	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	41.6	83	69-132	6	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	38.5	77	65-127	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	41.8	84	67-127	1	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	43.4	87	69-127	2	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 6 of 8

SDG Number: 2017-818

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129190PSD

Matrix: W

Lab Sample ID 1203711161

Instrument: VOA1.I

Analysis Date: 01/19/2017 18:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	44.0	88	66-137	0	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	47.2	94	71-130	3	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	48.9	98	71-129	0	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	47.9	96	69-139	1	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	40.8	82	67-130	1	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	51.9	104	66-143	2	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	52.5	105	69-130	2	0-20
71-43-2	PSD Benzene	50.0	0.00 U	39.6	79	66-125	0	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	45.3	91	65-131	0	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	42.6	85	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	50.9	102	72-129	1	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	53.0	106	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	46.2	92	70-134	2	0-20
108-88-3	PSD Toluene	50.0	0.00 U	39.1	78	60-126	2	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	47.3	95	69-135	0	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	44.3	89	66-125	0	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	43.7	87	67-124	1	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	42.9	86	60-130	3	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	54.3	109	68-143	0	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	47.4	95	71-127	1	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	42.7	85	64-124	0	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	42.0	84	61-130	1	0-20



Volatile  
Quality Control Summary  
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-818

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129190PSD

Matrix: W

Lab Sample ID 1203711161

Instrument: VOA1.I

Analysis Date: 01/19/2017 18:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-47-6	PSD o-Xylene	50.0	0.00 U	41.9	84	62-131	0	0-20
100-42-5	PSD Styrene	50.0	0.00 U	43.3	87	59-135	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	54.7	109	64-138	0	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	39.9	80	55-133	1	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	43.1	86	62-129	3	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	49.9	100	70-124	3	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	43.4	87	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	38.6	77	50-133	0	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	40.5	81	53-135	2	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	41.2	82	56-128	2	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	41.1	82	53-130	0	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	42.4	85	55-135	0	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	42.1	84	53-132	1	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	41.5	83	50-138	1	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	41.8	84	49-138	1	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	42.7	85	56-126	3	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	43.4	87	55-125	2	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	41.6	83	43-142	0	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	56.0	112	62-141	2	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	49.2	98	40-147	2	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	52.5	105	62-134	4	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	51.8	104	52-135	4	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 8 of 8

SDG Number: 2017-818

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129190PSD

Matrix: W

Lab Sample ID 1203711161

Instrument: VOA1.I

Analysis Date: 01/19/2017 18:15

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	49.2	98	50-133	4	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	50.4	101	71-133	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	43.8	88	60-125	1	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	5890	118	60-140	6	0-20

## Volatile

Page 1 of 2

Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-818

Sample Type: Post Spike

Client ID: CAPA-17-129190PS

Matrix: W

Lab Sample ID 1203711160

Instrument: VOA1.I

Analysis Date: 01/19/2017 18:44

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00 U	221	88	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	294	118	57-149
107-05-1	PS Allyl chloride	250	0.00 U	226	90	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	259	103	59-129
107-12-0	PS Propionitrile	250	0.00 U	258	103	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	252	101	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	248	99	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	224	90	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	3220	129	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	52.2	104	63-146

## Volatile

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Quality Control Summary  
Spike Recovery Report

SDG Number: 2017-818

Sample Type: Post Spike Duplicate

Client ID: CAPA-17-129190PSD

Matrix: W

Lab Sample ID 1203711162

Instrument: VOA1.I

Analysis Date: 01/19/2017 19:13

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1632582

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00 U	221	89	49-141	0	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	295	118	57-149	0	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	227	91	54-128	1	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	253	101	59-129	2	0-20
107-12-0	PSD Propionitrile	250	0.00 U	250	100	58-131	3	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	246	99	59-134	2	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	241	97	62-135	3	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	225	90	60-136	1	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	3050	122	60-143	5	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	51.8	104	63-146	1	0-20

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-818	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1632582	Instrument ID:	VOA1.I	Data File:	011917V1\1R409BA.D
Lab Sample ID:	1203711156	Prep Date:	01/19/2017 11:30	Analyzed:	01/19/17 11:30
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1632582	1203711158	011917V1\1R405SLA.D	01/19/17	0935
02 LCS for batch 1632582	1203711157	011917V1\1R406LA.D	01/19/17	1003
03 CAPA-17-129190	414011001	011917V1\1R416.D	01/19/17	1452
04 CAPA-17-129220	414011002	011917V1\1R417.D	01/19/17	1521
05 CAPA-17-129192	414011003	011917V1\1R418.D	01/19/17	1550
06 CAPA-17-129229	414011004	011917V1\1R419.D	01/19/17	1619
07 CAPA-17-129190PS	1203711159	011917V1\1R422.D	01/19/17	1746
08 CAPA-17-129190PSD	1203711161	011917V1\1R423.D	01/19/17	1815
09 CAPA-17-129190PS	1203711160	011917V1\1R424.D	01/19/17	1844
10 CAPA-17-129190PSD	1203711162	011917V1\1R425.D	01/19/17	1913

# Quality Control Data

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Lab Sample ID: 1203711156

Client Sample: QC for batch 1632582

Client ID: MB for batch 1632582

Batch ID: 1632582

Run Date: 01/19/2017 11:30

Prep Date: 01/19/2017 11:30

Data File: 011917V1\1R409BA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Matrix: WATER

Lab Sample ID: 1203711156

Client Sample: QC for batch 1632582

Client: ARSL004

Project: QC

Client ID: MB for batch 1632582

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1632582

Inst: VOA1.I

Dilution: 1

Run Date: 01/19/2017 11:30

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/19/2017 11:30

Data File: 011917V1\1R409BA.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b> 2017-818	<b>Matrix:</b> WATER	
<b>Lab Sample ID:</b> 1203711156		
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1632582	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 11:30	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 11:30		
<b>Data File:</b> 011917V1\1R409BA.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	52.3	50.0	ug/L 105	(71%-134%)
Bromofluorobenzene	50.6	50.0	ug/L 101	(70%-131%)
Toluene-d8	48.3	50.0	ug/L 97	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Lab Sample ID: 1203711157

Client Sample: QC for batch 1632582

Client ID: LCS for batch 1632582

Batch ID: 1632582

Run Date: 01/19/2017 10:03

Prep Date: 01/19/2017 10:03

Data File: 011917V1\1R406LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		49.5	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		48.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		43.5	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		43.0	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		34.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		43.4	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.5	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		47.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		50.8	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		44.1	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		52.7	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		46.3	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		44.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		47.9	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.7	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		43.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		44.3	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.5	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		45.2	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		46.4	ug/L	0.300	1.00
78-93-3	2-Butanone		273	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		44.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		262	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		43.0	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		45.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		234	ug/L	1.50	5.00
67-64-1	Acetone		275	ug/L	1.50	10.0
75-05-8	Acetonitrile		1070	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		41.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		44.6	ug/L	0.300	1.00
74-97-5	Bromochloromethane		46.1	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		51.0	ug/L	0.300	1.00
75-25-2	Bromoform		52.1	ug/L	0.300	1.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Lab Sample ID: 1203711157

Client Sample: QC for batch 1632582

Client ID: LCS for batch 1632582

Batch ID: 1632582

Run Date: 01/19/2017 10:03

Prep Date: 01/19/2017 10:03

Data File: 011917V1\1R406LA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		53.7	ug/L	0.300	1.00
75-15-0	Carbon disulfide		134	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		52.0	ug/L	0.300	1.00
108-90-7	Chlorobenzene		44.2	ug/L	0.300	1.00
75-00-3	Chloroethane		50.3	ug/L	0.300	1.00
67-66-3	Chloroform		47.7	ug/L	0.300	1.00
74-87-3	Chloromethane		44.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		51.8	ug/L	0.300	1.00
74-95-3	Dibromomethane		48.3	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		53.1	ug/L	0.300	1.00
60-29-7	Ethyl ether		49.9	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		43.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		50.5	ug/L	0.300	1.00
74-88-4	Iodomethane		188	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		42.8	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		39.0	ug/L	1.00	10.0
91-20-3	Naphthalene		50.3	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		44.1	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		46.0	ug/L	0.300	1.00
108-88-3	Toluene		41.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		47.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		61.1	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		261	ug/L	1.50	5.00
75-01-4	Vinyl chloride		47.8	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		44.3	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		46.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		87.3	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5430	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		44.7	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		41.3	ug/L	0.300	1.00
95-47-6	o-Xylene		43.6	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		44.1	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b> 2017-818		<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203711157		
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> LCS for batch 1632582	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 10:03	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 10:03		
<b>Data File:</b> 011917V1\1R406LA.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		41.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		44.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		40.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		46.7	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.7	50.0	101	(71%-134%)
Bromofluorobenzene	48.2	50.0	96	(70%-131%)
Toluene-d8	46.6	50.0	93	(74%-124%)

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Lab Sample ID: 1203711158

Client Sample: QC for batch 1632582

Client ID: LCS for batch 1632582

Batch ID: 1632582

Run Date: 01/19/2017 09:35

Prep Date: 01/19/2017 09:35

Data File: 011917V1\1R405SLA.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA1.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		51.7	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		209	ug/L	1.50	5.00
107-13-1	Acrylonitrile		230	ug/L	1.50	5.00
107-05-1	Allyl chloride		231	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

SDG Number: 2017-818

Matrix: WATER

Lab Sample ID: 1203711158

Client Sample: QC for batch 1632582

Client: ARSL004

Project: QC

Client ID: LCS for batch 1632582

Method: SW-846:8260B

SOP Ref: GL-OA-E-038

Batch ID: 1632582

Inst: VOA1.I

Dilution: 1

Run Date: 01/19/2017 09:35

Analyst: VXY1

Purge Vol: 5 mL

Prep Date: 01/19/2017 09:35

Data File: 011917V1\1R405SLA.D

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		211	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2460	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		223	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		224	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		221	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		287	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b> 2017-818		<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 1203711158		
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> LCS for batch 1632582	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 09:35	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 09:35		
<b>Data File:</b> 011917V1\1R405SLA.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.2	50.0	ug/L	102 (71%-134%)
Bromofluorobenzene	48.4	50.0	ug/L	97 (70%-131%)
Toluene-d8	48.0	50.0	ug/L	96 (74%-124%)

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

Page 1 of 3

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711159	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 17:46	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 17:46		
<b>Data File:</b> 011917V1\1R422.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.8	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		48.4	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.8	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		44.1	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.5	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		31.2	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		41.2	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		49.9	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		48.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		47.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		41.8	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		54.9	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		47.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		43.6	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		53.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.0	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		41.1	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		41.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		43.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		42.6	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		43.8	ug/L	0.300	1.00
78-93-3	2-Butanone		138	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		41.9	ug/L	0.300	1.00
591-78-6	2-Hexanone		163	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		41.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		42.1	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		218	ug/L	1.50	5.00
67-64-1	Acetone		99.2	ug/L	1.50	10.0
75-05-8	Acetonitrile		1080	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		39.5	ug/L	0.300	1.00
108-86-1	Bromobenzene		42.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		45.9	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		53.8	ug/L	0.300	1.00
75-25-2	Bromoform		54.6	ug/L	0.300	1.00



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711159	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 17:46	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 17:46		
<b>Data File:</b> 011917V1\1R422.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		51.5	ug/L	0.300	1.00
75-15-0	Carbon disulfide		113	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		53.2	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.9	ug/L	0.300	1.00
75-00-3	Chloroethane		43.7	ug/L	0.300	1.00
67-66-3	Chloroform		48.9	ug/L	0.300	1.00
74-87-3	Chloromethane		38.7	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		54.1	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.7	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		43.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		48.4	ug/L	0.300	1.00
74-88-4	Iodomethane		174	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		40.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		36.2	ug/L	1.00	10.0
91-20-3	Naphthalene		50.7	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		43.0	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		44.1	ug/L	0.300	1.00
108-88-3	Toluene		39.8	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.2	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		60.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		260	ug/L	1.50	5.00
75-01-4	Vinyl chloride		41.1	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		42.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		45.4	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		83.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5560	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.8	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		38.7	ug/L	0.300	1.00
95-47-6	o-Xylene		42.0	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		41.3	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-818</b>	<b>Date Collected:</b>	<b>01/09/2017 15:20</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203711159</b>	<b>Date Received:</b>	<b>01/11/2017 09:25</b>		
<b>Client Sample:</b>	<b>QC for batch 1632582</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129190PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1632582</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/19/2017 17:46</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/19/2017 17:46</b>				
<b>Data File:</b>	<b>011917V1\1R422.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		39.2	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.2	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		38.4	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.2	50.0	ug/L 108	(71%-134%)
Bromofluorobenzene	48.3	50.0	ug/L 97	(70%-131%)
Toluene-d8	47.3	50.0	ug/L 95	(74%-124%)

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711160	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 18:44	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 18:44		
<b>Data File:</b> 011917V1\1R424.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		52.2	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		221	ug/L	1.50	5.00
107-13-1	Acrylonitrile		259	ug/L	1.50	5.00
107-05-1	Allyl chloride		226	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-818</b>	<b>Date Collected:</b>	<b>01/09/2017 15:20</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203711160</b>	<b>Date Received:</b>	<b>01/11/2017 09:25</b>		
<b>Client Sample:</b>	<b>QC for batch 1632582</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129190PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1632582</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/19/2017 18:44</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/19/2017 18:44</b>				
<b>Data File:</b>	<b>011917V1\1R424.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		224	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		3220	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		252	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		248	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		258	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		294	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711160	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 18:44	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 18:44		
<b>Data File:</b> 011917V1\1R424.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.2	50.0	ug/L 102	(71%-134%)
Bromofluorobenzene	46.7	50.0	ug/L 93	(70%-131%)
Toluene-d8	46.0	50.0	ug/L 92	(74%-124%)

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

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<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711161	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 18:15	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 18:15		
<b>Data File:</b> 011917V1\1R423.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		50.4	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		47.9	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		43.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		44.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.8	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		30.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		40.8	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		51.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		49.9	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		49.2	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		42.1	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		56.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		47.4	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		43.8	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		52.5	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		40.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		42.7	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		43.7	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		43.4	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		44.0	ug/L	0.300	1.00
78-93-3	2-Butanone		142	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		41.2	ug/L	0.300	1.00
591-78-6	2-Hexanone		165	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		41.1	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		41.8	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		218	ug/L	1.50	5.00
67-64-1	Acetone		103	ug/L	1.50	10.0
75-05-8	Acetonitrile		1100	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		39.6	ug/L	0.300	1.00
108-86-1	Bromobenzene		43.4	ug/L	0.300	1.00
74-97-5	Bromochloromethane		47.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		53.0	ug/L	0.300	1.00
75-25-2	Bromoform		54.7	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-818</b>	<b>Date Collected:</b>	<b>01/09/2017 15:20</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203711161</b>	<b>Date Received:</b>	<b>01/11/2017 09:25</b>		
<b>Client Sample:</b>	<b>QC for batch 1632582</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAPA-17-129190PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1632582</b>	<b>Inst:</b>	<b>VOA1.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>01/19/2017 18:15</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>01/19/2017 18:15</b>				
<b>Data File:</b>	<b>011917V1\1R423.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		51.5	ug/L	0.300	1.00
75-15-0	Carbon disulfide		114	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		51.9	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.7	ug/L	0.300	1.00
75-00-3	Chloroethane		44.1	ug/L	0.300	1.00
67-66-3	Chloroform		48.9	ug/L	0.300	1.00
74-87-3	Chloromethane		38.6	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		54.3	ug/L	0.300	1.00
74-95-3	Dibromomethane		50.9	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		41.9	ug/L	0.300	1.00
60-29-7	Ethyl ether		48.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.0	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		49.2	ug/L	0.300	1.00
74-88-4	Iodomethane		176	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		39.9	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		37.3	ug/L	1.00	10.0
91-20-3	Naphthalene		52.5	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		43.3	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		42.9	ug/L	0.300	1.00
108-88-3	Toluene		39.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.3	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		57.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		260	ug/L	1.50	5.00
75-01-4	Vinyl chloride		40.6	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		43.4	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		46.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		82.5	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		5890	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.6	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		38.6	ug/L	0.300	1.00
95-47-6	o-Xylene		41.9	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		41.5	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711161	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 18:15	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 18:15		
<b>Data File:</b> 011917V1\1R423.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		41.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		38.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.3	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.0	50.0	108	(71%-134%)
Bromofluorobenzene	48.3	50.0	97	(70%-131%)
Toluene-d8	47.0	50.0	94	(74%-124%)



**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711162	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 19:13	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 19:13		
<b>Data File:</b> 011917V1\1R425.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		51.8	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		221	ug/L	1.50	5.00
107-13-1	Acrylonitrile		253	ug/L	1.50	5.00
107-05-1	Allyl chloride		227	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711162	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 19:13	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 19:13		
<b>Data File:</b> 011917V1\1R425.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		225	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		3050	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		246	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		241	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		250	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		295	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-818	<b>Date Collected:</b> 01/09/2017 15:20	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203711162	<b>Date Received:</b> 01/11/2017 09:25	
<b>Client Sample:</b> QC for batch 1632582	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAPA-17-129190PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1632582	<b>Inst:</b> VOA1.I	<b>Dilution:</b> 1
<b>Run Date:</b> 01/19/2017 19:13	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 01/19/2017 19:13		
<b>Data File:</b> 011917V1\1R425.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.6	50.0	ug/L 103	(71%-134%)
Bromofluorobenzene	48.1	50.0	ug/L 96	(70%-131%)
Toluene-d8	47.8	50.0	ug/L 96	(74%-124%)

# Miscellaneous

### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 23-JAN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> VOA GC/MS	<b>Test / Method:</b> SW846 8260B DOE-AL	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1632582	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 414011(2017-818),414128(2017-826),414130(2017-825),414237(2017-835),414363(2017-856),414378(2017-858)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Failed Recovery for LCS/LCSD: QC 1203711157LCS 2. Failed Recovery for MS/MSD, or PS/PSD: QC 1203711159PS, 1203711161PSD		1. The LCS/and or LCSD (See Below) recoveries were not all within the acceptance limits. The unacceptable recoveries were less than 5% of the requested analyte list. This satisfies the client criteria. The results are reported. 1203711157 (LCS) Carbon disulfide [54* (69%-138%)]. 2. The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The associated spike and/or spike duplicate passed recoveries near the lower/upper end of the limits. 1203711159 (CAPA-17-129190PS) Carbon disulfide [45* (61%-141%)]. 1203711161 (CAPA-17-129190PSD) Carbon disulfide [46* (61%-141%)].	

**Originator's Name:**

Vanny Yib 23-JAN-17

**Data Validator/Group Leader:**

Erin Haubert 01-FEB-17